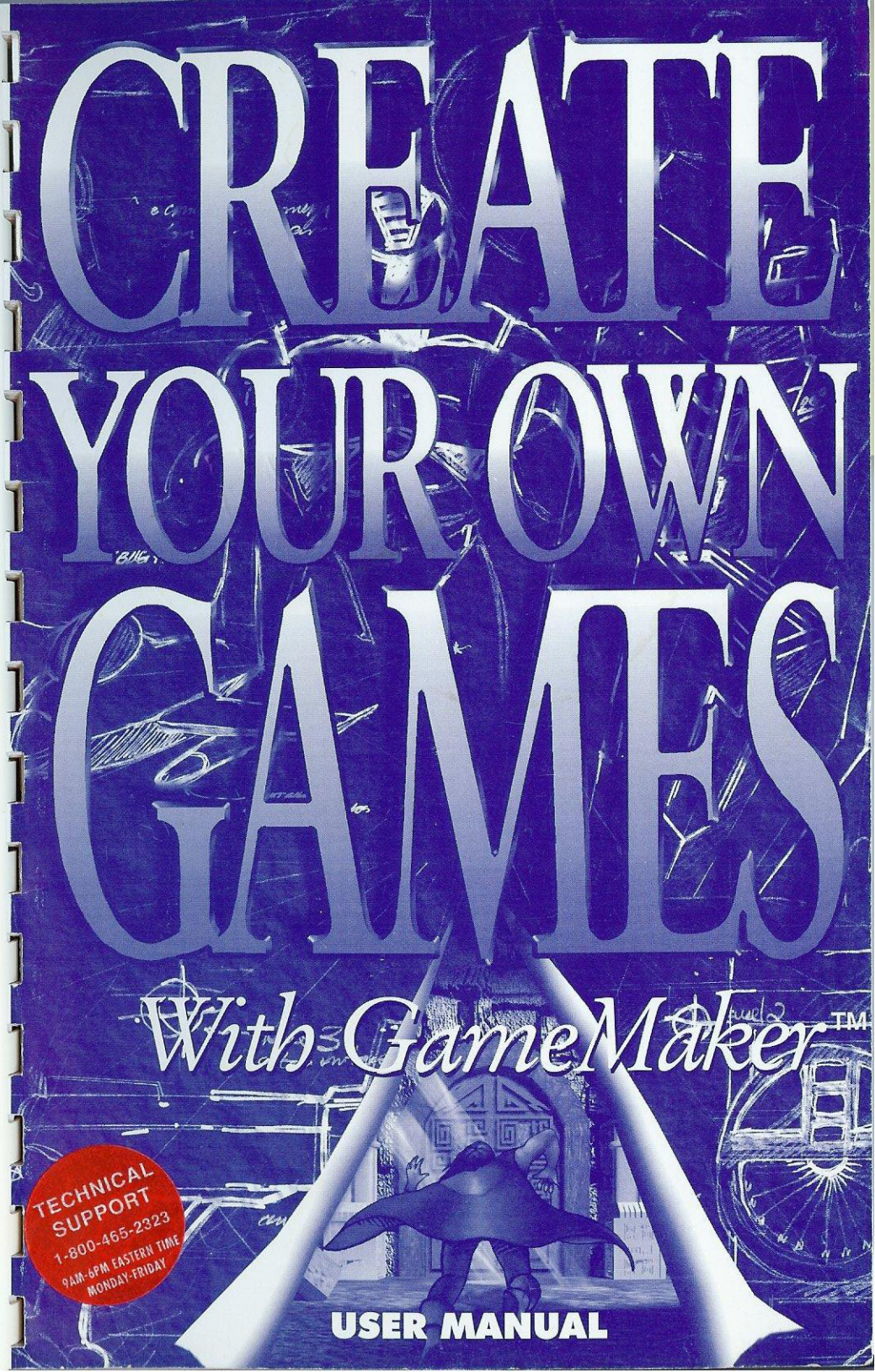
CREATE YOUR OWN GAMES

With GameMaker™



TECHNICAL SUPPORT
1-800-465-2323
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USER MANUAL

OWNER'S MANUAL
Version 3.0

CREATE YOUR OWN GAMES

WITH GAME-MAKER™

Microforum INC.

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Game-Maker
Gameware

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FAST START GUIDE

This guide is for experienced computer users or for the adventurous! It will get you started quickly, but many users will prefer to first read a little about Game-Maker and then follow the more detailed instructions in the Owner's Manual. Remember that Game-Maker is a fully featured product, and that eventually you will want to read the Owner's Manual to learn about the many features, methods, and gameware.

To protect your CD-ROM, keep it in read only mode.

INSTALLATION

To install the software, place your Game-Maker CD-ROM in the D: (or E:) drive, whichever corresponds with your CD-ROM drive. During installation, a subdirectory called GM will be created within the current directory. Type "CD C:\" to prepare to install GM within the root directory of the C disk. Alternately, make any other directory the current directory. Then simply type "x:INSTALL" where 'x' is the letter of the CD-ROM drive, and follow the displayed directions.

If you installed Game-Maker in C:, you can make running GameMaker easier by copying the GOGM.BAT file to your C:\ directory; type "COPY C:\GM\GOGM.BAT C:*.*" . You will then be able to start Game-Maker by simply typing "GOGM" when your current directory is C: (or from anywhere if the C:\ path is set up in your AUTOEXEC.BAT).

STARTING GAME MAKER and PLAYING GAMES

At the MS-DOS prompt while in the C:\GM directory, type 'GM'. Use the mouse or the arrow keys and the ENTER key to make selections. Select 'PLAY' from the main menu, then select a game area (a subdirectory containing a game), and then select the game. F1 is the help key. The ESC key exits.

USING GAME MAKER

You can start right away and try Game-Maker's development tools, but it wouldn't hurt to read your Owner's Manual first. However, if you don't 'SAVE' anything, you can't accidentally overwrite a data file. In the case where you do overwrite a file, you can always re-install Game-Maker. If you do want to save something you've created or modified and don't want to overwrite an existing file, enter a unique name and then save it under that name.

The SAMPLE gameware is provided for your experimentation and is easy to restore from your Game-Maker CD-ROM. Try changing a map, or editing some blocks first (choose MAP or BLOCK from the DESIGN submenu, and edit the SAMPLE gameware). The ESC key will always back you out, but it's best to select EXIT or MENU from the various screens.

If you have trouble installing or running Game-Maker:

1. Check to ensure that your system is compatible. Game-Maker works with IBM AT and PS/2 compatible machines. Game-Maker works with MS-DOS Version 4.1 or later. It does not work with OS/2, NT, or other non-DOS operating systems.

2. If you get an 'out of memory' error, ensure that you have enough memory (512K is more than enough). Check your AUTOEXEC.BAT and CONFIG.SYS files and comment out or remove any programs that you may be launching that use up memory. See paragraph 8 below.

3. If your video screen breaks up when running games, see section 7.1 of the Owner's Manual.

4. **Pro Audio Spectrum 16 sound card**. This card can behave in strange ways unless it is set up as follows: Using Game-Maker's Configuration Screen (select this option after running a game), set the sound card driver to MVSOUND.SYS and set the 'path' pointing to C:\PROAUDIO\. Set the Sound Blaster 'side' of the card to interrupt 2 and to DMA1 and set the Pro Audio side for interrupt 7 and DMA3. Your CONFIG.SYS file should contain the following line: DEVICEHIGH=C:\PROAUDIO\MVSOUND.SYS D:3 Q:7 J:1. Other settings may work, but we recommend these as the most reliable.

5. **Quarterdeck's QEMM Stealth Mode**. If you use QEMM, turn off the Stealth mode. It isn't compatible with Game-Maker. (Recent versions of Game-Maker and of QEMM may be compatible.)

6. A few types of machines do not support one program and launch a second program as done by Game-Maker's strip menus. Workaround: Use the alternate menu system (type GMBAT to start up, rather than GM) or run each tool directly by typing its name.

7. If the design tools fail when graphical edit screens are displayed, check, remove, or replace your joystick game card.

8. For other problems, try re-booting Game-Maker. If you have MS-DOS 6.0 or later, you can simply reboot your system (type CTRL, ALT, and Del at the same time), and then hold down the left shift key. This will give you a 'clean boot' and bring up MS-DOS without executing your AUTOEXEC.BAT and CONFIG.SYS files. After rebooting, start up your MS-DOS supplied mouse driver, usually by just typing 'MOUSE' from the subdirectory in which your mouse driver is located. (e.g., if your MOUSE.COM file is in the DOS subdirectory, you can type 'C:\DOS\MOUSE'.) Then try GameMaker. If it now runs, you have proven that your normal startup loads and runs other programs that use up too much memory, are incompatible, or start up a non-standard mouse driver.

INFORMATION AND SPECIFICATIONS GUIDE

It's as much fun to create computer games as it is to play them. Game-Maker lets you turn your game ideas into great games.

Previously you had to be a programmer to create almost any type of game, and you had to be an expert software engineer to make a top quality, fully animated, full color computer game. Game-Maker provides a set of easy to use computer aided design tools for making games. These tools totally eliminate all software development and let you design games quickly.

Game-Maker GAMES

Game-Maker games have full screen, 256 color VGA graphics. Game-Maker allows all scenes within games to be many times the size of a screen, and as your character moves, the scene scrolls rapidly and smoothly.

Animated objects include 'stationary' parts of the background, traveling objects called monsters, and the main character. A game can consist of just one scene or many scenes. The character, monsters, background, music, and sounds can be different in each scene.

Every drawing of every scene, monster, and character can be your design, or you can use and/or modify those provided with Game-Maker. For that matter, you can modify Game-Maker games designed by others, including adding completely new levels of play. Over 30 games are on the CD-ROM version of Game-Maker.

The characters that you design have up to twenty animation sequences, can shoot or not shoot (your option), and can travel at the speed you set. Characters can pick up and put down objects, pop to new worlds, die, and act in almost any way you can draw. You can control characters with the keyboard, joystick, or both.

Monsters are versatile, animated objects that move according to your directions. They can be helpful or harmful. They can be birds and butterflies, alligators and trolls, missiles and bullets, or just about anything. Up to 60 different monster types and up to 200 individual monsters are allowed per scene. After creating a monster, you can assign it straight forward or complex motion.

Game-Maker games keep track of character lives, money, hit points, and over 15 other counters. Characters can pick up and drop objects. A key stroke will bring up additional information about the progress of the game and pictures of your character's inventory.

Multimedia

You can create multimedia displays that present 'slide show' style FLI animations, still pictures, text, and text over images. These multimedia displays can be placed before or after all game levels and at other key points, such as telling the storyline upon game startup. The CD-ROM version comes with over 1000 GIF images, 200 sound clips, plus additional FLI files and music.

Game-Maker TOOLS

Game-Maker tools have menus and full color graphical edit screens. For ease of use, all tools are WYSIWYG (What You See Is What You Get) graphics based. A mouse is needed, as it provides easy and rapid creation of pictures, scenes, and other gameware. Menu selections can be made with the keyboard or mouse. Game-Maker includes an extensive set of artwork that can be used with the tools described below. You can modify the artwork Game-Maker provides or you can design completely original drawings.

Map Maker. This tool allows you to create scenes by placing picture blocks on a 'map'. It also allows you to place monsters and objects in the scene. You can view the scene as you build it, scroll around the scene, or zoom out and work with a global view.

Block Designer. Picture blocks are the basic components from which computer games are made. This tool allows you to draw background, monster, and character blocks. As you draw, you can watch how your new drawing fits into sections of scenes as well as see the drawing animate. Drawing tools allow you to

quickly construct shapes, invert images, change colors, and more. You can copy blocks from other games, associate attributes and powers with each block, and drag and drop blocks to where ever needed.

Character Maker, Monster Maker. These two tools create and assign powers to animated characters and monsters. As you design them, the characters and monsters cycle through their animation sequences (great WYSISYG tools).

Palette Designer. If the palettes (sets of 256 colors) provided with Game-Maker are not exactly what you need, create new palettes.

Image Reader. Import graphics into your game from industry standard format GIF files.

Sound Editor. Graphically construct sounds for use in your games, or use Sound Blaster compatible digitized sound clips (.VOC files). Each scene can have its own set of 30 sounds. With this tool, what-you-hear-is-what-you-get!

Integrator. Integrate scenes, monsters, characters, Multimedia displays, Sound Blaster music (.CMF files), and sounds into a game. Optionally present Multimedia displays between game levels, upon starting or ending, and for instructions, storyline, epilogue, saving/restoring games, and more.

Utilities. 'Transfer' utility to package a game for distribution. Calibrate and test joysticks. Show FLI animations and GIF images. Backup/restore.

SPECIFICATIONS

Hardware
Standard VGA (256 color mode).
Two button Microsoft compatible mouse.
CPU - 286 or better, AT or PS compatible.
Memory - 512K available
Hard Disk
Joystick (optional)
Sound Blaster compatible sound card (optional)

Maps (Scenes)
Size: 100 by 100 blocks (2000 by 2000 pixels) or optionally restrict the size of the scene (a standard VGA screen is 10 by 16 blocks).
Scrolling: Infinite in all directions (right side joins left, top joins bottom) or designer can control scrolling directions and area. Scroll rate automatically matches character speed.
Colors: 255 colors plus "clear".
Character can pop through "doors" to other scenes.

Picture Block Attributes

Solid blocks (each side separately set) and traversible blocks.
Gravitational Field (any of eight directions).
Object blocks can be picked up, put down.
Character contact with a block can play sounds and change over twenty counters such as money, hit points, lives, ammunition.
Change a displayed block based on time.
Change a displayed block upon contact with the character.
Birth a monster periodically from a block.

Character Attributes

Twenty distinct animation sequences per character (10 frames per sequence).
One or two blocks in size.
Acquires inventory.
Possesses initial inventory.
One character visible at a time.
Each scene can have different characters.
An object or a counter can enable an animation sequence.
Counters: Money, lives, hit points, score, five special designer defined counters, fifteen animation sequence counters.
Reacts with monsters.
Shoots designer drawn objects, auto-repeat or from one to ten shots per key stroke.
Dies if hit points reach zero.
Makes custom designed or digitized sounds.

Monster Attributes

Movement classes:
- toward or away from the character
- random
- traverse a path, each path segment has its own speed
- when in range, attack character along a path

Animation (20 frames per monster).
One block in size. Can be grouped to form larger monsters.
Lives until killed / dies at end of path / dies after designated time / never dies.
Power level attribute.
Blocked or not blocked by solid background.
Monster solid or not with respect to character.
Automatically birth another monster upon death.
Upon contact, change score, hit points, etc.
Kill another monster upon contact.

1.0 INTRODUCTION TO GAME-MAKER

Game-Maker is an extremely powerful and easy to use set of game making tools. These Computer Aided Design (CAD) tools are totally integrated and are intended for the game enthusiast and professional game designer.

Game-Maker allows you to create, modify and improve an unlimited number of arcade style and adventure style computer games for use on 286, 386, and 486 AT compatible computers with VGA displays.

A straightforward yet flexible concept is at the core of the Game-Maker software: as a character moves through a world it must overcome obstacles and acquire wealth, power, and objects in order to accomplish its mission.

Using Game-Maker, you can easily construct complex 'maps' or scenes through which the game's character travels. You can easily draw and edit picture blocks from which maps, characters, and monsters are constructed. You have complete control over the set of colors used in a map, as well as choices of alternate sets of colors for other maps.

The characters in your games can fly, walk, run, slide, glide, jump, hover, accelerate, shoot, sail, roll, twirl, and make sounds. They can acquire points, pick up and use objects, hook rides on certain monsters, throw things, and shoot weapons. On the other hand, they can lose points, get trapped, be hunted by monsters, and die. Characters can automatically pop between maps, collect objects, and gain or lose power. They have running tallies of score, money, lives, and hit points.

Monsters can travel around the map, be restrained to an area of the map, attack an approaching character, flee from the character, or glide along with the character.

It's as much fun to design games as it is to play them!

1.1 Game-Maker Terms

Let's talk the same language. The owner's manual uses the following terms:

USER	A person that uses Game-Maker to design a game.
PLAYER	A person that plays a game.
CHARACTER	The 'piece' that the player moves around the game.
MONSTER	An animated object which can hurt or help the character. Trolls, fire, insects, and bullets fired from a gun are all typical examples.
MAP	A playing field, scene, or game board.
WORLD	A collection of maps that are used by one game.
BLOCK	A small picture. Various blocks are arranged side by side to make Maps. Blocks are also used to make monsters and characters. Also called a picture block.
GAMEWARE	Data that provides the graphics and the controls of a computer game. Examples are picture blocks, scenes, character animation sequences, sounds, music, text, palettes, and monsters.
MB1, MB2	Mouse Button 1 (left) and Mouse Button 2 (right)
POINT AND CLICK	The act of selecting an item using the mouse by moving the mouse cursor to the item and then press ing a mouse button.
DRAG	The act of pointing at an object using the mouse cur sor, holding down mouse button 1, and then, moving the object with the mouse.

1.2 Understanding Graphics: From Pixel to World

This section of the Game-Maker user manual explains the fundamentals of computer game graphics.

A graphic image on a computer screen is constructed from many dot sized points of light. Each point is called a ***pixel***. Game-Maker supports VGA graphics, the most popular type of graphics on personal computers. On any VGA screen, each pixel can be one of 256 colors, and each color can be thought of as having a hue (a proportional amount of red, green, and blue) and an intensity (brightness or shade).

Your computer can display many different colors of pixels at the same time. Game-Maker uses a VGA mode that displays 256 different colors at one time. A set of colors is called a ***palette***.

The pixels in a full screen VGA image are arranged in an array with 320 pixels along the horizontal direction and 200 along the vertical direction. Multiplying these two numbers, we find that there are 64,000 pixels in one image.

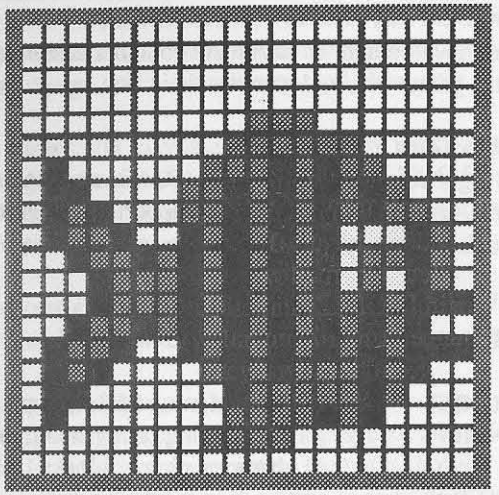


Figure 1. Picture blocks are 20 pixels high by 20 pixels wide.

Game-Maker constructs VGA images by arranging small ***picture blocks*** (20 by 20 pixels) next to each other to form a full screen image. Thus, a full screen image is ten blocks high by sixteen blocks wide. The actual size of a picture block on your monitor is about one half inch square. Because the picture blocks on a screen resemble tiles on a wall, game designers often refer to picture blocks as 'tiles'.

Computer games usually have a number of ***scenes***, also called ***maps,*** over which a character and some monsters roam as you play. For example, one game might have each scene be a room, and another might have one scene be a forest, another a cavern, and another a city. All of the scenes in one game comprise the ***world***.

Game-Maker lets you control pixels, blocks, scenes, and worlds. Typically, you will draw a set of blocks that fit next to each other to form larger pictures. For your convenience, Game-Maker includes many pre-drawn blocks that you can use. Using these blocks, you can construct one or more scenes and then link these scenes by creating exit and entrance points through which the character can travel between scenes.

Since each scene is 100 by 100 picture blocks (about 62 times the size of your monitor screen), you can design fairly intricate games with just one scene. Most game designers, however, like to use several scenes, each having its own distinctive look.

Picture blocks are also used for designing the monsters and characters that populate your scenes.

1.3 SOFTWARE OVERVIEW

Your Game-Maker development environment contains design tools, useful utilities, a game engine, gameware, and games.

1.3.1 Game Design Tools

Game-Maker has eight computer aided design (CAD) applications, two game execution programs, and several utilities and supporting programs. All of these are accessed through a menu system. The names and purpose of the software modules are:

MODULE	FUNCTION
PALETTE DESIGNER	For designing 256 color palettes
BLOCK DESIGNER	For drawing background, monster, and character picture blocks
MONSTER MAKER	For animating monsters
CHARACTER MAKER	For animating characters
MAP MAKER	For constructing maps (scenes)
IMAGE READER	For importing portions of GIF graphics files
SOUND EDITOR	For designing sounds
INTEGRATOR	For combining maps, monsters, characters, music, picture blocks, palettes, sounds, and GIF, FLI, text, and list files into a game
PLAYGAME	For running games when using the Game-Maker development system
XFERGAME	For running standalone games

Using Block Designer, you may create and draw your own picture blocks, change and enhance existing picture blocks, and copy blocks from other block sets.

The Map Maker application lets you quickly design maps. By arranging picture blocks next to each other you can create an infinite number of scenes (maps). In addition, you can easily modify the many maps that are supplied with Game-Maker.

The Palette Designer is used to control the colors in your games. Using Palette Designer, you create palettes or modify existing palettes. However, most

Game-Maker users find that the set of palettes provided are enough for their needs.

Monsters and characters appear as animated objects on your display. Actually they are sequences of blocks which, like frames in a motion picture, replace each other in rapid succession. The Monster Maker and Character Maker software allow you to design and view monsters and characters.

Sound Designer allows you to create sounds that are used within your games. You may also assign the names of digitized sounds (.VOC files) to particular events, so that when these events occur during game play, the sound will be played.

Image Reader imports graphics from GIF files into the Game-Maker environment, by transferring sections of a graphic image into picture block sets.

The Integrator software allows you to quickly combine maps, palettes, block sets, sounds, music, monsters, characters, images, text, and FLI animation into games. Using the Integrator, you can set up the paths through which the character can travel to get from one level of the game to another.

1.3.2 Utilities

You can calibrate and test your joystick, backup and restore gameware, and transfer games that you have made to diskettes or other subdirectories with Game-Maker's software utilities.

1.3.3 Games and Gameware

Quite a few games are provided with Game-Maker. Most of the games were designed with Game-Maker Version 2.x, as Version 3.0 was under development. The games called PEACH, ZARK, and NEBULA are some of the best games, and they have been updated with V3.0 features. Several games (TUTOR, HOUSES, TERRAIN, SAMPLE) are intended to help teach you about Game-Maker; they are not really games, but you can roam around their scenes and see some of the gameware that comes with Game-Maker and you can experience how Game-Maker games work.

The Game-Maker CD-ROM also contains Shareware games that have been created by fellow Game-Maker owners. Remember that these games and the gameware inside of Shareware games are copyrighted by the authors, who are fellow Game-Maker owners, and should not be distributed except as allowed by the author.

A large variety of gameware is provided for your use. Section 1.4 describes some of this gameware and tells you how to find game elements that you may place into your games.

1.3.4 Directories, Files, and File Extensions

With V3.0 it is easier to organize and manage your gameware.
All the files associated with a particular game are now stored in a 'game area' dedicated to just that game. **A game area is our name for a subdirectory that contains all the files needed by a particular game.** Each game has it's own game area. The Game-Maker installation routine copies several games to the hard disk.

You will find many games located on the CD-ROM. You can run games directly from the Game-Maker CD-ROM, but for serious play we suggest that you copy the games first to your hard drive. When you run games from the hard drive, you can save (and later restore) the game at any point, keep a record of high scores, automatically record the game's play-by-play, and experience game performance and timing exactly as the game author intended it to be. To copy a game from the CD-ROM to your hard disk, just create a directory for the game under the C:\GM\ directory and then copy the game over. For example:

C:\GM> **MKDIR C:\GM\RINGS5**
C:\GM> **COPY D:\GAMEWARE\RINGS5*.* C:\GM\RINGS5*.***

You can also copy games to and from diskettes, and you can run games from a diskette. However, be prepared for delays if you run a game from a diskette.

Using the Integrator tool you can develop many variations of a game and save these variations in the same game area. All such variations will share the same gameware located in the same game area. This not only saves disk space, but it makes game development easier.

The design tools allow you to quickly navigate through the game areas (subdirectories). **Click on a game area to select it. Click on "..\" to move to the next higher level directory. You may also type in the full name of a directory path.** The design tools allow you to quickly select gameware, as only the gameware that you use in a particular game and only the particular type of gameware you need, such as monster block sets, will be displayed on the selection list.

Each of the tools also allow you to select gameware from one game area and then save it in another game area.

We suggest that all game areas on your hard disk be subdirectories of the C:\GM directory. However, game areas can also be placed on diskettes or elsewhere on your hard disk.

WIZARD TECHNIQUE — DIRECTORY PATHS

Game-Maker shows the directory under which it is storing and retrieving data, and gives you the option of either navigating and selecting the directory path or directly entering the directory path. This is useful, for example, in retrieving graphic image GIF files and other gameware files from wherever you have them stored on your system. Once you select or enter a directory path, Game-Maker will display and use this path as the default path. See your MS-DOS manual to learn about paths and directories.

1.4 GAMEWARE

Picture blocks, scenes, monsters, characters, palettes, music, sounds, text files, image files, FLI animation files, and Game-Maker games are all examples of gameware. In computer terms, you would say that gameware is the data elements and the control information for a game.

In order to get you started quickly (and also to save you from having to draw a lot of pictures that we've already drawn) Game-Maker includes a wide assortment of gameware that you can use in your own games. The CD-ROM version of Game-Maker contains a very large selection of gameware.

For each type of gameware, Game-Maker provides a sample as part of the Sample Game. As you learn how to use each of Game-Maker's design tools, you will modify the sample gameware. If you want to restore this gameware to its original condition, follow the instructions in Section 5.1.

Since a picture is worth a thousand words, we recommend that as you read this chapter you use Game-Maker to display some of Game-Maker's gameware.

CD-ROM GAMEWARE	Description and location on CD-ROM
GAMES	The GAMEWARE directory contains many games. Each game contains sounds, monsters, characters, etc. that you can use in your games.
SHAREWARE GAMES	The SHARWARE directory contains many more games. Please honor the Shareware licenses.
IMAGES	Over 1000 GIF files have been selected and placed in subdirectories according to subject matter. These sub directories are found in the PICTURE directory.
ANIMATIONS	The ANIMATE directory contains FLI files. These video animations can be shown at the start or at the end of each game level, and at several other places in your game.

MUSIC	The MUSIC directory contains Sound Blaster compatible CMF music files that you can play at various times within your games.
SOUNDS	The SOUND directory contains digitized sound files in Sound Blaster compatible .VOC format.
VARIOUS	Quite a few block sets, monsters, palettes, and other gameware items can be found in the LIBRARY subdirectory of the GAMEWARE directory..

To give you a taste of the gameware that is included with Game-Maker, descriptions of some gameware items follow. The name of the directory that contains the item is shown in brackets.

1.4.1 Palettes

A palette shows the colors that you may use at any one time. We've provided a good selection of palettes. You will not need to create new and different palettes until you start making games with sophisticated color schemes. The following palettes are provided:

PALETTE	DESCRIPTION
SAMPLE	A general, many colored palette. As with all SAMPLE data, we assume that you will modify this palette as you learn Game-Maker. [SAMPLE]
HUES	The primary palette used by our gameware. HUES contains may colors in a moderate number of shades. It has some room for additional colors at the high end of the range so that you can add new colors if needed (unused colors have been set to the same blue color). [LIBRARY]
DEFAULT	The default palette is automatically used by Game-Maker software if you don't select a specific palette, saving you the effort to specify a palette name in each design tool. You must, however, first decide which palette you want as your default in the game you are working on, and then save that palette to the name 'DEFAULT'. [Unique to each game]
SHADES	This palette contains fewer colors but more shades of each color than the HUES palette. It has room for you to add many additional colors. SHADES is one of our favorite palettes as you can easily make objects with very smooth color gradations. [NEBULA]
SKINTONE	Graphic images of people contain a large number of colors of very similar hues. Each such image has its own set of colors. Because each image has its own colors, it is difficult to combine images of people into a single image. The SKINTONE palette contains a cross selection of typical hues for displaying pictures of people. It often is the palette of choice when you want to combine pictures you've read into Game-Maker using Image Reader. GIF files that you clip into block sets will each have their own unique palette. After bringing an image into a new block set, use the Convert Palette function in Block Designer to convert your images to a common palette such as SKINTONE, and then use the Transfer Blocks function to move the blocks to a common block set. See section 4.2.4 and 4.2.5 for details. [LIBRARY]
COMBO	This file combines the SHADES palette with a number of colors suitable for displaying skin tones. Although it contains fewer hues for displaying people, it contains more colors for creating scenes than the SKINTONE palette. [LIBRARY]

1.4.2 Background Block Sets

Background block sets contain pictures from which scenes are constructed. Game-Maker makes it easy to transfer picture blocks from other block sets into a new block set. The following library of background blocks are provided with this in mind.

BACKGROUND BLOCK SETS	DESCRIPTION
SAMPLE	Contains a variety of picture blocks lifted from the following background block sets. [SAMPLE]
TERRAIN	Contains pictures of grass, bushes, trees, sand, flowers, sky, water, etc. The TERRAIN map shows you examples of scenes you can build using these picture blocks. [TERRAIN]
HOUSES	Contains pictures for creating houses, castles, etc. The HOUSES map shows you how to build various houses from these picture blocks. [HOUSES]
OBJECTS	This block set contains pictures of weapons, money, food, and other objects that you might want to use in a game as the 'objects'

	that a character can pick up and use. [LIBRARY]
TUTOR	This block set contains groups of blocks that illustrate many of Game-Maker's features, such as animation of backgrounds, picture blocks changing on contact with the character, gravity, one way doors, etc. [TUTOR]

1.4.3 Monster Block Sets

Monster block sets contain pictures of monsters. A series of pictures of each monster is drawn, and each picture is a frame in an animation sequence.

MONSTER BLOCK SET	DESCRIPTION
SAMPLE	This block set contains pictures of various colorful monsters. [SAMPLE]
MONS1	Same as SAMPLE. It is assumed that you will play with and modify the SAMPLE monster block set, and preserve this set as a source of monsters. [LIBRARY]
WEAPONS	This block set contains pictures of bullets, rockets, knives, swords, arrows, etc. [LIBRARY]

1.4.4 Character Block Sets

Character block sets contain pictures of a character. The various animation sequences that the character performs are created from these picture blocks.

CHARACTER BLOCK SET	DESCRIPTION
SAMPLE	Contains pictures used to build a human male character. [SAMPLE]
HERO	Same as SAMPLE. [HOUSES]
BIKER	A hard pedaling bicyclist. [HOUSES]
PIPES	A high energy ball with feet sticking out every which way. [PIPEMARE]
HEROINE	Contains actual scaled down images from Eadweard Mugbridge first use of photography to study the movement of people and horses (we've put a dress on the lady). [HOUSES]
ZARK	A spaceship with several levels of firepower. [ZARK]
PEACH	A lobster with some great moves. [PEACH]

1.4.5 Monsters

Monster files contain the animated sequences and other special information about a set of monsters.

MONSTER SET	DESCRIPTION
SAMPLE	Shows the SAMPLE monster block set in action. [SAMPLE]
MONS1	Shows the MONS1 monster block set in action. [LIBRARY]
WEAPONS	Shows the WEAPONS monster block set in action. [LIBRARY]

1.4.6 Characters

Character files contain the animated sequences and other special information about a character.

CHARACTER SET	DESCRIPTION
SAMPLE	Shows the SAMPLE character block set in action. [SAMPLE]
HERO	Shows the HERO character block set in action. [HOUSES]
PIPES	Shows the PIPES character in action. [PIPEMARE]
BIKER	Shows the biker in action. [HOUSES]
HEROINE	Shows the heroine character in action. [HOUSES]

1.4.7 Maps

Maps are the playing field upon which the characters and monsters travel. Besides those listed below, there are many other maps used in the games that are packaged with Game-Maker.

MAP NAME	DESCRIPTION
SAMPLE	A map created from the other SAMPLE gameware. [SAMPLE]
TERRAIN	A map showing how to use the pictures in the TERRAIN background block set. [TERRAIN]
HOUSES	A map showing how to use the pictures in the HOUSES background block set. [HOUSES]
TUTOR	A map using the TUTOR block set. Play the TUTOR game to view blocks changing on time, blocks changing on contact, gravity, one way doors, etc. [TUTOR]

1.4.8 Sound Sets

Sound sets each have 30 PC speaker sounds and up to 30 digitized sound clips. The sounds can be associated with character sequences such as shooting or getting hurt, and with other game events.

SOUND SET	DESCRIPTION
SAMPLE	A set of 30 sounds for you to modify as you like. [SAMPLE]
SOUNDS1	The same set as SAMPLE. [LIBRARY]
STAR	Sound set used in the Nebula game. [NEBULA]
PENGUIN	Sound set used in the Penguin game. [PENGUIN]

1.4.9 Digitized Sounds

Game-Maker includes various sounds stored as .VOC files. These sounds will play on Sound Blaster compatible sound cards. A partial list of the sounds is shown below. The CD-ROM version of Game-Maker contains a large number of sounds in the subdirectories under the SOUNDS directory.

SOUND	DESCRIPTION
ALARMCLK	Alarm clock ringing.
BANG	Voice saying "bang".
BEBEEP	Beep sound.
BELL	Bell ringing
DEAD	Sound for a dying monster or whatever.
DROP	Sound of an object dropping.
EXCLNT	Voice saying "ex-excellent".
OUCH	Voice saying "ouch".

1.4.10 Music

Several music selections are provided. They are located in the MUSIC directory. Any Creative Laboratories, Inc. Sound Blaster compatible sound card is supported by Game-Maker, and most CMF music files can be played by Game-Maker. See section 4.7, Sound Editor, and 4.8, Integrator to learn how to incorporate music into each game level. A large selection of music can be found on Bulletin Board Systems.

1.4.11 Images

The CD-ROM version of Game-Maker has over 1000 GIF files in subdirectories according to subject matter. These subdirectories are found in the PICTURE directory.

1.4.12 Animations

Game-Maker can display FLICK video animations. These animated images are stored as files with .FLI extensions, and can be found on many BBS systems, and can be created with tools such as the AUTODESK MULTIMEDIA EXPLORER. The CD-ROM version of Game-Maker includes quite a few .FLI files in the ANIMATE directory.

1.4.13 Games

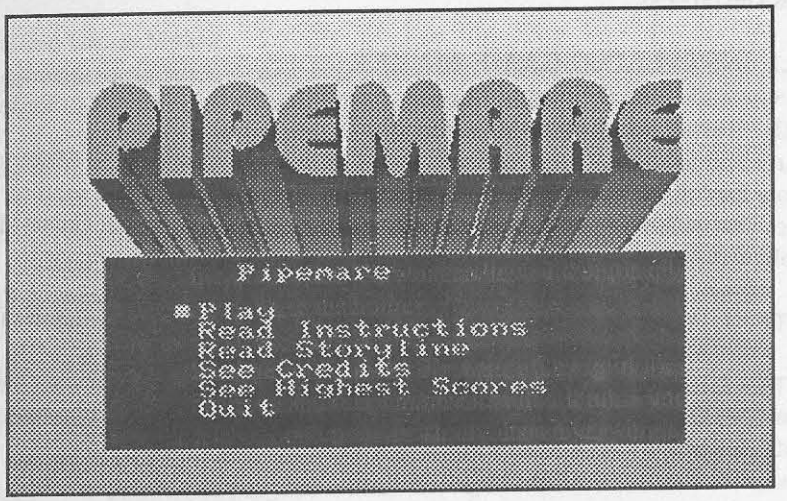


Figure 2. The Pipemare game's opening screen.

Game files contain the information that links together all the gameware pieces into a playable game.

GAME NAME	DESCRIPTION
SAMPLE	A single level game that uses the other SAMPLE gameware. As you modify the other SAMPLE game ware, this game will reflect each of those modifications.
PEACH	A lobster must rescue the land of Norumbega from Fang Duck. Good art, lots of action, challenging.
TERRAIN	Shows the TERRAIN map in action (not really a game).
HOUSES	Shows the HOUSES map in action (not really a game).
TUTOR	Shows examples of game features (not really a game).
ZARK	A space game with good art and creative use of monsters.
NEBULA	This game has both a hard and an easy version. It has good outer space graphics, multi levels, and several tricks that you must master to win. The hard version is a very difficult game. NEBULA illustrates the use of FLI files.

2.0 GETTING STARTED

This section of the Owner's Manual guides you through installing Game-Maker. Game-Maker is copyrighted. You may install Game-Maker on one and only one computer at any one time, since your software license is a single use license. In addition to installing Game-Maker onto your computer system you are allowed to make one copy of the Game-Maker software for backup purposes. You may also backup the Game-Maker software on your system as part of your normal backup process.

2.1 INSTALLING GAME-MAKER

2.1.1 Installation Under MS-DOS

An automatic installation routine is provided that will install Game-Maker on your hard disk. This routine will create a directory called GM and subdirectories into which Game-Maker software will be installed. To install Game-Maker follow these steps:

STEP 1. Power up your system. If you are in MS-Windows, exit windows to get to the MS-DOS prompt.

STEP 2. Ensure that your current directory is the one in which you want the Game-Maker subdirectory GM installed. For example, to prepare to install Game-Maker in the C drive type:

C> CD C:

STEP 3. Make sure that you don't already have a subdirectory named 'GM'. If you do, either move its contents, or install Game-Maker from a different directory such as C:\GAMES\ .
To check for a sub-directory called GM, type:

C> DIR GM.*

A directory called GM <DIR> should not be displayed.

STEP 4. Place your Game-Maker CD-ROM in your CD drive.

STEP 5. Use the automatic install procedure to install Game-Maker. To install from drive D, where drive D: is your CD-ROM drive type:

C> D:INSTALL

Follow the directions displayed on the screen.

Required Copyright Notice: The Game-Maker installation routine uses the LZH decompression software, which is copyrighted by and made freely available for use by Haruyasu Yoshizaki.

2.1.2 Installation Under MS-Windows

Game-Maker includes a MS-Windows (V3.1) menu system. Game-Maker design tools and Game-Maker games will run under MS-Windows in DOS full screen mode. Many users prefer installing and using Game-Maker under Windows. If you install under Windows, you can also run Game-Maker from

MS-DOS just as if you had installed under MS-DOS. On some systems, running games will corrupt the Windows display (just restart Windows to clean the display), and on others, the music and digitized sound will not work unless the Windows settings are changed (see section 7.0). If the Sound Blaster music and sounds don't work properly, you can 'configure' Game-Maker to not use your sound card, or you can change your Windows setup. A typical change would be to turn off any other applications, such as the Windows Sound System, that might be trying to simutaneously control the sound card.

Installing Game-Maker

An automatic installation routine is provided that will install Game-Maker on your hard disk. This routine will create a directory called GM and subdirectories into which Game-Maker software will be installed. To install Game-Maker follow these steps:

STEP 1. Power up your system and run MS-Windows. Select the Program Manager's File pull down menu and then select Run...

STEP 2. Place your Game-Maker CD-ROM in your CD drive or the Disk 1 diskette in Drive A or B.

STEP 3. In the box provided, to install from drive D: type

D:INSTALL

STEP 4. Windows may display a message warning you that the install program will use the MS-DOS screen mode (just continue if you see this message). The Game-Maker installation program will be displayed. Follow the directions on the screen.

Setting Up An Icon

STEP 1. Point and click on the Program Group in which you want to install Game-Maker. (Of course, you could set up a new group.)

STEP 2. Select the Program Manager's **File** pull down menu and then select **New....** You will be given a choice of Program Group or Program Item. Select Program Item and point and click the OK box.

STEP 3. Fill in the requested information: For example

DESCRIPTION:	**Game-Maker**
CALL LINE:	**C:\GM\GMWIN.EXE**
WORKING DIRECTORY:	**C:\GM**

STEP 4. Click on **Change Icon.** A message will be displayed saying that there are no icons available and that you can select from the available Program Manager icons. Click on OK. An icon selection window will be displayed. Type **C:\GM\GM.ICO** into the File Name box and then click on OK. The Game-Maker icon will be displayed. Click on OK. The Program Item box will once again be displayed. Click on OK. The icon will appear in the Program Group you initially chose. Click on this icon to run Game-Maker.

2.2 STARTING GAME-MAKER

To start Game-Maker, type 'GM' at the MS-DOS prompt while in the GM directory. The following main menu strip will appear on your display.

GAME-MAKER V2.0					
Play	Design	Utilities	About	Quit	Help

Use the mouse or the left and right arrow keys to highlight a selection, and MB1 or the ENTER key to select one of the items in the menu.

When starting to play games for the very first time, the configuration screen will be displayed. If the default configuration values are correct for your system, or if you don't know your configuration, use the configuration choices that Game-Maker provides. The 'Help' button on the configuration screen provides additional instructions. (You can easily change the configuration values later if you would rather not fix the up now.) Select 'Done' on the configuration screen and you will next be able to select games to play.

If you select 'Design' in order to start designing or changing games, the design menu strip will be displayed. The design menu is explained in section 4.

If you select 'Utilities' from the main menu strip, you can backup, restore, and transfer Game-Maker files and you can calibrate and test your joystick.

If you select 'About' you can check the revision level of your copy of Game-Maker and learn about how your friends can order Game-Maker.

If you select 'Help', an on-line help message will be displayed.

General Design Tool Features and Conventions

After making a selection from a menu strip, you will start running one of Game-Maker's programs. Most of these programs will display a drop down menu. Use the mouse or arrow keys to highlight an item, and use MB1 or the Enter

key to select the highlighted item. If you select 'Quit' from a drop down menu, you return to the main menu strip.

When you need to locate gameware (files) or game areas (subdirectories), another drop down menu will be displayed. You can select one of the items listed, or select "..\" to see a list of game areas, or type in the actual MS-DOS path and name of an item.

Game-Maker programs also have graphical edit screens that make it easy to design games. Each of these is designed to best fit the job at hand. Use on-line help, a little trial and error, and/or this manual to learn how to use each graphical edit screen. These screens have images of push buttons and/or menus which let you easily obtain help, select actions, and return to previous menus.

Throughout Game-Maker, you can return to a previous prompt or screen by typing the ESC (Escape) key. ESC will not save a partially entered prompt or any work you've done.

2.2.1 Running Under MS-Windows

Game-Maker's design tools will run within the MS-Windows V3.1 environment as a full screen DOS application.

Game-Maker games require the full resources of your computer in order to provide high speed animation and screen scrolling. Although Game-Maker games are not specifically designed to run under MS-Windows, games do run under MS-Windows as a DOS application. When you start running a game, Windows will tell you that Game-Maker is attempting to run in full screen mode, and then iconize Game-Maker. Just select the icon and the game will start running. If your MS-Windows sound setup does not support Game-Maker music and digitized sounds, you will want to use the Configuration Menu to unselect Sound Blaster support. Alternately, see Section 7.0 to learn about setting up Windows sound. With some Windows setups, upon returning to MS-Windows after playing a game, the Windows display may be somewhat overwritten. Just close and then restart Windows to clear the display.

2.2.2 Technical Tips

Remember that you must be in the GM directory to run Game-Maker. To automatically go to the GM directory and start running Game-Maker no matter what directory you are in, add a batch file called GOGM.BAT to your top level directory containing the following command lines:

```
ECHO OFF
drive:
CD path-to
GM.EXE
CD path-back
```

Where *"drive"* is the drive on which you installed Game-Maker (e.g., C:), *"path-to"* is the path to your GM directory, such as "C:\GM", and *'path-back'* is the path of the directory to which you want to go when you quit running Game-Maker (e.g., C:\). A GOGM.BAT file is provided on the Game-Maker

distribution disk that works for C:\GM. You can copy this file from your C:\GM\ directory into your C:\ root directory as follows:

COPY C:\GOGM.BAT C:\GOGM.BAT

2.3 USING MENUS AND GRAPHICAL EDIT SCREENS

Game-Maker displays menus when you need to make a selection, and graphical edit screens when you are designing games.

Menus all work the same way. You can use either the mouse or the keyboard to make your selection. Move the mouse to highlight an item, and click MB1 to select. Use the arrow keys to highlight an item, the ENTER key to select, and the ESC key to return to a previous menu or screen.

When asked to enter data, Game-Maker will provide you with choices. You may select from the list of choices, enter in new data, or edit the displayed data. If there are many choices, the list of choices will scroll when you attempt to move beyond the end of the displayed list with an arrow key or mouse.

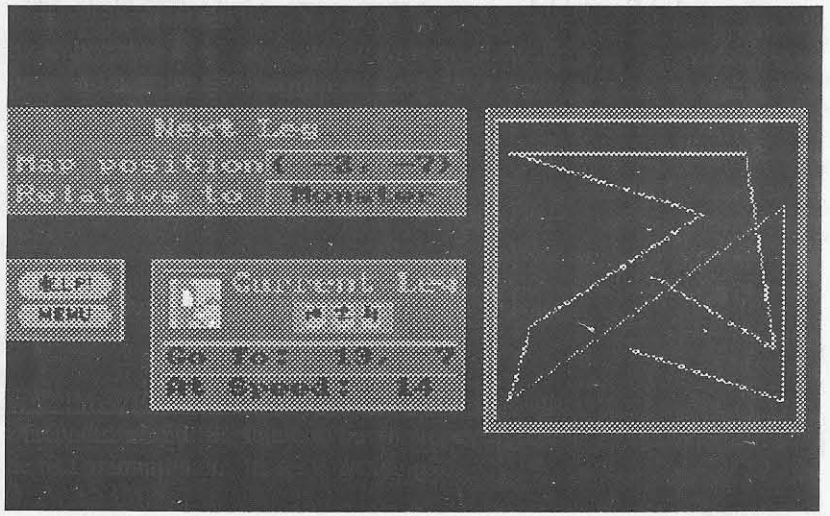


Figure 3. This graphical edit screen in the Monster Maker design tool lets you quickly draw a path over which a monster will travel.

Graphical Edit Screens are optimized for the task being performed, such as drawing pictures. You can do most tasks with the mouse or with the arrow keys. For a quick understanding of the major features, display the help message available with each graphical edit screen. For a complete description of all the capabilities available on each graphical edit screen, read the corresponding section of this manual.

3.0 PLAYING GAMES

To play a game, start Game-Maker as described in section 2.2, and then select 'Play'. At the next menu, all games in the default game area will be available for quick selection, or you can select "..\" to see all game areas beneath the GM directory. Another option is to select the game area and then the name of the game that you want to play.

3.1 Configuring Game-Maker for Your System

When starting to play games for the very first time, the configuration screen will be displayed. This screen allows you to tell Game-Maker about your system configuration. If the default configuration values are correct for your system, or if you don't know your configuration, use the configuration choices that Game-Maker provides. The 'Help' button on the configuration screen provides additional instructions.

After you play each game, a menu will be displayed that allows you to display the configuration screen just in case you want to make changes to your configuration. Transferred games (that is, games that are being run independently of the Game-Maker development environment, see section 5.2) can be configured by typing "CONFIGURE" at the MS-DOS prompt.

3.2 Games and Game Conventions

Several games are included with Game-Maker (see Section 1.4). Some of these 'games' are simply demonstrations of certain Game-Maker gameware and capabilities, and by moving the character around the scenes, you can learn about Game-Maker. TUTOR is a tutorial game that is a good one to play first.

At the start of each game, the game designer usually provides instructions on how to play a game. If no instructions are provided, go ahead and experiment with the keys and/or with a joystick; you can't cause any problems. Several of the function keys perform specific tasks:

KEY	STANDARD KEY USAGE
F1	Help.
F2	Status and Inventory. Push once more to return to game.
F3	Turn music on or off.
F4	Turn game sounds on or off.
F5	Save Game.
F6	Restore Game.
F7	Reserved for future Game-Maker use.
F8	Turn on and off joystick. Press after starting a game to enable the joystick.
F9	Calibrate your joystick.

F10	About Game-Maker.
ESC	When pressed during play, stop the game and return to game selection menu. When pressed after F1 to F10, return to game.
ARROW KEYS	Recommended use: character movement in four directions.
NUMERIC KEY PAD	Recommended use: character movement in eight directions.
OTHER KEYS	Used for character actions as specifically defined in individual games.

Go ahead and play a game.
At the end of a game, a high score list will be displayed. You can add your name to the list if your score is higher than the lowest score shown on the list. Your score will also be displayed, so that you can compare your score with previous high scores.

3.3 Saving and Restoring Games

Type function key F5 to save a game in progress. Any time a game is playing, you can type F6 to restore and restart the game at the exact point at which it was saved. In fact, you can save the game at up to ten different points in time during game play, and later restore the game and continue playing from any of these points. After quitting a game, Game-Maker remembers all the saved games. Just start playing it again at a later time and then press F6 to restore and continue playing from any saved point.

3.4 Recording and Playing Back Game Play

Game-Maker can automatically play back recorded games. This capability makes for great demos, screen savers, attention grabbers, and, of course, proof that a difficult game can be mastered!

Game-Maker records the first 1000 keystrokes of all games played. This data is stored in a file called *game_name*.rec. In addition to saving the last game played, the top scoring ten games are also recorded and saved as DATA1.REC through DATA10.REC. Each time you play a new game, the old copy of *game_name*.rec is deleted and a new one created.

Each game can be set up, at the option of the game designer, to automatically start playing a recorded game if the user doesn't start playing the game within 30 seconds. Many of the games provided with Game-Maker are set up to play recorded games.

Games can be set up to play back the last game played or they can also be set up to play a specific demo game that you have prepared. When playing recorded

games, Game-Maker will first play the game specified by the game designer and then randomly choose the high score games and play them. Due to unavoidable but very small timing differences between recording a game and playing it back, there can be small differences in playback. The worse case would be if a narrow miss during the actual game play became a hit during playback. In most recordings, you will not see any such timing problems.

For more information on recording games, see section 4.8 (Integrator) and section 5.2 (transferred games).

4.0 DESIGNING GAMES

In assembling the game design, instructions below, we have assumed the following:
1. You have previously played some arcade/action style computer games.
2. You have played some of the games supplied with Game-Maker.
3. You have read chapter 1 of this manual.

You probably have noticed that the basic elements of the games were a character that you can move around, monsters that move here and there and sometimes attack, a scene over which the action takes place, and a game objective or 'storyline'.

Although there is more than one way to design a game, the steps outlined below have proven to be effective.

Decide on a game storyline
Select or create picture blocks from which to make the first scene
Lay out the first scene
Select or create a character
Select or create monsters
Place monsters in their starting position in the scene
Select the character's starting and an ending location on the scene (you can play the game at this point)
Add music, sounds, game instructions, storyline, epilogue
Add more scenes (levels) as desired

Game-Maker's design tools allow you to accomplish the above in record time. The order in which the design tools are described is a good order in which to learn them. Each tool can be tried without reading or knowing about the subsequent sections.

In order to learn quickly, we suggest that you play the TUTOR and SAMPLE games to get the feel of two relatively simple Game-Maker games. In the following sections, this manual will have you work with the SAMPLE gameware. You will see how various changes to the map, background blocks, sound, and other gameware affect the game. The SAMPLE game and gameware can be easily restored to its original state by retrieving the SAMPLE gameware from your Game-Maker software distribution disk (see section 5.1).

Select 'Design' from the main strip menu and the design strip menu will be displayed as shown below. Select an item from the menu to start designing, or just to see what each design tool does. If you modify any gameware, you should probably not save your changes back under its original name as this will permanently change the original gameware and the game that uses it. It's best to save modified gameware under a new name. It's easy to set up a new game to use the changed gameware.

GAME-MAKER

Palette Block Monster Map Character Image Sound Integrator Main Help

SAVING AND DELETING GAMEWARE

Each Game-Maker design tool allows you to save the work that you've done. Before exiting a design tool, decide if you want to save your work. If you wish to save it, select 'Save a ————-' from the menu, and supply a name (eight characters or less). If you save the gameware that you've been working on under its original name, the changes you've made will be instantly incorporated into all games in the game area. If you save it under another name, you will have created a new piece of gameware which you can incorporate into games at a later time.

You can use the 'Delete a ————' menu selection to dispose of old gameware.

4.1 MAP MAKER

When playing a game, Game-Maker displays a scene on your screen. The scene is many times larger than the screen. The scene scrolls as the player moves. Scenes are constructed from picture blocks, have dimensions of 100 by 100 picture blocks, and are square in shape. During a game your character can roam over a scene. Unless you set up impenetrable walls, the character can go forever in any direction; this effect is possible because Game-Maker wraps the right side of a scene to the left side, and the top to the bottom.

In a game, many scenes may exist. The character can pop (that is, tunnel, transfer, hyper warp, whatever your favorite name is) from one scene to another. A scene is defined as the combination of a map (the background picture), monsters placed on the map, and a character to roam the map. Map Maker is the software that allows you to construct maps for your games, and place monsters on the map.

4.1.1 Starting Map Maker

Start up Game-Maker as described in section 2.2, and select 'Design' on the main menu strip and 'Map' on the next menu strip.
Map Maker will display the following menu:

MAP MAKER
Version 2.0
by Gregory Stone
Copyright (C) - 1990

Choose a Map
New Map
Choose Block Set
Choose a Monster Set
Choose a Monster Block Set
Choose a Palette
Edit Chosen Map
Save a Map
Delete a Map
Quit

Before you edit a map, Map Maker lets you select a map, a background block set, monsters (optional), and a palette of colors. Each map uses a specific set of gameware. It is fairly easy to guess what gameware goes with what map, as most game designers choose the same name for each map's supporting gameware. If after you display the map things don't look right, go back to the above menu and re-select the item that you think needs to be changed.

If you are using Game-Maker for the first time, we suggest you use the SAMPLE map, the SAMPLE background block set, the SAMPLE monster set, the SAMPLE monster block set, and the HUES palette as an aid in learning what these items are and how to make maps. This gameware is all found in the SAMPLE game area.

After selecting one of the above menu items, you will see a second menu showing the relevant gameware belonging to a particular game. If the correct game area and gameware aren't displayed, select "..\" and then select the desired game area from the list of displayed game areas.

Remember, use your mouse or the arrow keys to highlight a menu item and then use a mouse button or the ENTER key to select the item.

Enter the requested data by selecting it from a list or by typing it in. By specifying a block set, you select a set of background picture blocks from which to construct your map. By specifying a map, you can edit an already created map. By specifying a palette, you choose the colors in your game. If you don't specify a palette, the DEFAULT palette will be used. Finally, by specifying a monster set and a matching monster block set, you choose which monsters can populate your map.

4.1.2 Creating and Editing a Map

If first creating a map, choose 'New Map', a block set, its matching palette, and optionally a monster set. If editing a map, choose a map, a block set, and a palette, and optionally a monster set. Then select "Edit Chosen Map" from the menu to start creating or editing the Map.

A graphical edit screen will be displayed. The screen will show a zoomed out view of the entire scene. Each picture block of the scene is represented by one small square in the zoomed out view.

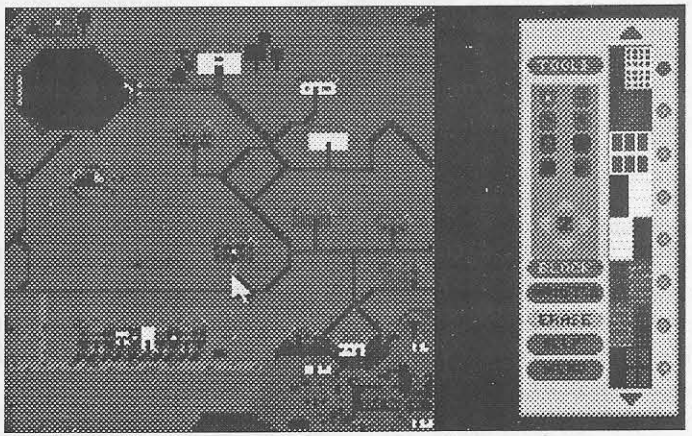


Figure 4. The HOUSES map shown zoomed out.

On the right of the screen, a scroll bar is displayed. The scroll bar contains the background block set that you selected. A set of icon buttons is displayed beside the scroll bar. The icon buttons turn on power drawing tools. Below the power drawing tools is a button for zooming the map in and out. Below that are

buttons for selecting either the background block set or the monster set. When a background block set or monster set is selected, the selected blocks will be shown in the scroll bar. When the monster set is selected, clicking the erase button will allow the mouse to erase monsters from the map. Press the HELP button for on line help, and press the MENU button to return to the main Map Maker menu.

Game-Maker supports maps of 10,000 picture blocks laid out in a 100 by 100 array. Since you could grow old designing ten thousand unique picture blocks, maps are constructed from a set of 150 'background blocks'. You place background picture blocks next to each other to form larger pictures, much like placing pieces in a puzzle. A different set of blocks can be used with each map. Maps also contain animated monsters. Monsters are located at specific positions on a map at the instant a game starts being played, but then can move.

View a portion of a zoomed out scene at its full size by clicking on the zoom button. This button is labeled with a 'Z'. (After you select the icon, it will be highlighted. You can deselect it by clicking on it a second time.) Next, point to and click on any portion of the zoomed out scene, and that portion of the scene will be displayed. You may also point to a portion of the map and type a 'G' (for GO) to zoom in. Type 'Z' or click the zoom icon to return to the zoomed out view.

If this is a new map, the entire map will initially contain 10,000 pictures of background block #0. Therefore, it is a good idea to have block #0 be the most used block in a map, such as a picture of grass or a geometric background.

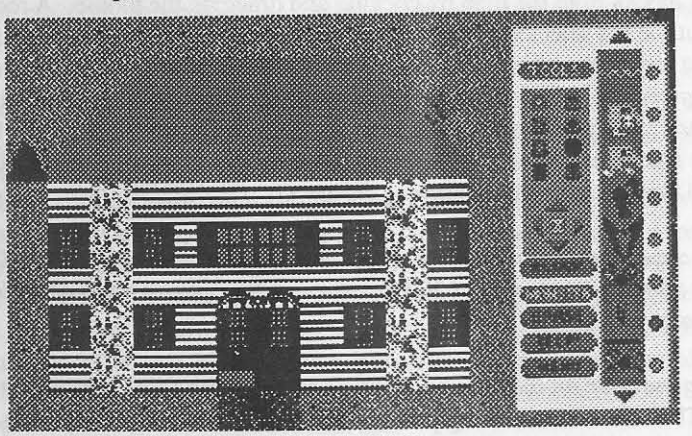


Figure 5. The HOUSES map shown zoomed in.

Scroll the picture blocks in the scroll bar by pointing and clicking (or pointing and holding down the mouse button) on the arrows located at each end of the scroll bar. Go ahead and try it a few times. You can't do any damage. If you have a high performance video and scroll for about a second, Game-Maker will detect the speed of your computer and adjust the scroll speed so that it is fast,

but not too fast.

Select a picture block from the scroll bar by pointing at it with the mouse cursor and clicking. The selected block will be highlighted by a bright button on its right.

Place a selected block into multiple positions on the map. Map Maker has a set of block drawing tools, similar to popular pixel drawing tools, except as you point and click and/or drag the mouse, you will be drawing entire blocks and groups of blocks. First, select one of the top seven icons. From top to bottom on the left side and then on the right, the icons let you draw single blocks, lines of blocks, rectangles of blocks, filled rectangles of blocks, circles of blocks, disks of blocks, and flood-fills of blocks. Once you've selected an icon, use the mouse and MB1 to paint the blocks onto the scene. With the top left icon selected, single click to paint single blocks on the map or hold down MB1 and move the mouse to paint multiple blocks. Using the shape drawing icons, press down MB1 and drag the mouse to vary the size of the shape, releasing the mouse when you see the size that you want. ***You may paint the picture blocks and monsters on the zoomed in or the zoomed out scene.*** When you place or paint a background block on top of another background block, the old block is replaced permanently by the new block. It is best to place monsters on the zoomed in map, as they are not visible on the zoomed out map.

The eighth drawing tool is the most powerful. It allows you to draw patterns of blocks on the map. When you select the eighth icon, you can then select a pattern of blocks from the map by clicking and dragging the mouse. A rectangle will outline the selected pattern. Once such a group of blocks is selected, you can use any of the other buttons ***to draw or fill repetitive patterns of that outlined group.*** In fact, Map Maker behaves as if the entire map has an invisible repeating pattern of blocks behind the visible ones, and this pattern will become visible wherever you draw. To return to single block drawing mode, click a second time on the eighth button to unselect it.

Select a monster block from the scroll bar by pointing and clicking. Game-Maker allows a maximum of 200 monsters on any one map and up to 50 monsters on a computer's screen.

Place a monster on the map by pointing and clicking at the desired map location. This will be the starting position for the monster when the game starts to be played. You may not place a monster on top of another on the map. If you wish to replace a monster with a new one, first delete the old one. Remember, monsters are only visible on the zoomed in map.

Delete monsters off of a map by clicking the erase button, and then clicking the monsters on the map that you wish to delete.

To scroll around the zoomed in map use the arrow keys, or place the mouse cursor on one of the arrows located on each side of the zoom button and press MB1.

To move quickly to a place on a map, first zoom out by typing 'Z' or by selecting the zoom button. Next use the zoom button and the mouse, or point with the mouse and type a 'G' (for Go) to zoom back in at the new location.

4.2 BLOCK DESIGNER

Picture blocks are the foundation from which maps, monsters, and characters are constructed. Each picture block consists of 400 pixels (dots) in a 20 by 20 array (see section 1.2). In a set of 150 blocks, there are 60,000 pixels, each of which you may paint the color of your choice from the 255 color choices available in the block designer palette. Block Designer has powerful features that assist you in drawing pictures in picture blocks; you won't have to color 60,000 pixels one at a time!

Maps consist of picture blocks placed in an array. Game-Maker supports maps of 10,000 picture blocks laid out in a 100 by 100 array. A map is constructed from a set of 150 'background blocks'. You place background picture blocks next to each other to form larger pictures, much like placing pieces in a puzzle. A different set of blocks can be used with each map. Maps also contain animated monsters. Monsters, which are also created using picture blocks, are located at specific positions on a map at the instant a game starts being played, but then can move.

Block Designer not only shows you an enlarged picture of the block you are painting, it simultaneously provides a viewing window so that you can instantly see how a new picture block fits into a bigger scene.
Game-Maker uses the term 'monsters' to describe animated objects. Monsters are one picture block in size, but can be located next to each other on a map to create larger monsters. Animation is the result of the rapid display of a sequence of pictures, each of which shows the object in a slightly different position, just like motion picture film. Block Designer is used to draw these monster picture blocks. Game-Maker allows 100 picture blocks to be grouped together as a 'Monster Block Set'. You will draw all the monsters needed for one scene in a game in one monster block set.

'Characters' are the game pieces (wizard, warrior, space ship, whatever) that you control when playing a game. Game-Maker builds characters out of picture blocks, much like monsters. Characters can be one picture block in size or two (one on top of the other). The picture blocks for a character are kept in a 'Character Block Set' containing fifty blocks.

4.2.1 Starting Block Designer

Start up Game-Maker as described in section 2.2 and select 'Design' from the main menu strip and 'Block' from the design menu strip.
Upon start up, Block Designer will display the following menu:

```
Block Designer
Version 2.0
by Gregory Stone
Copyright (C) - 1991

Choose a Block Set
New Block Set
Choose a Palette
Edit Chosen Blocks
Save a Block Set
Transfer Between Sets
Convert Palette
Delete a Block Set
Quit
```

In general, you will first choose an existing set of blocks. Next, you will select the palette that was used to develop that set of blocks. If you don't specify a palette, DEFAULT palette is used. If you want to create a new set of blocks, select 'New Block Set' and choose a palette which contains the colors you want to use.

We suggest you use the HUES palette file and the SAMPLE block file in the SAMPLE game area as an aid in learning how to draw picture blocks.

4.2.2 Drawing and Editing a Set of Blocks

When you choose 'Edit a Block Set' from the menu, the block drawing screen is displayed as shown on the next page. On the bottom of this screen is the block bar and on the top is the palette. On the left of the screen is your drawing area. The drawing area is an enlarged picture of the block currently being edited, showing each pixel as a small square. Above the drawing area are a set of icons that turn on powerful editing features.

Displayed on the right is a viewing area which contains an array of blocks shown actual size. You may use the viewing area to check how blocks look when placed next to each other. Initially, the array is set so that every block in it is a copy of block #0.

Select a color with which to draw by pointing the mouse cursor at a color in the palette bar at the top of the screen and pressing MB1 or MB2. One color can be

selected with MB1 and another with MB2. Centered below the color bar is a window which displays both of the selected colors and the number of each selected color. The left and right arrow keys can also be used to change the colors. Each time these keys are pressed, the selected colors will become the next or previous colors in the palette bar.

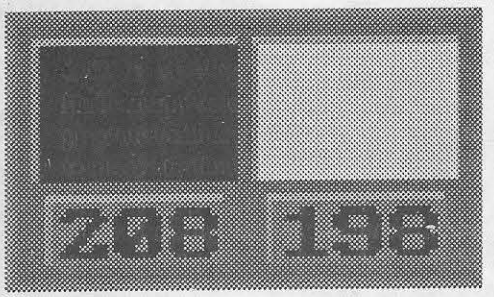


Figure 6. The color window shows the selected colors.

Pick up (select) a color from anywhere on the screen by first point-and-clicking on one of the rectangular color buttons in the color window and then by point-and-clicking at any area of the screen.

Scroll the blocks in the block bar to find the one you want to edit. You can do this by placing the cursor at either side of the block bar on the small arrow and pressing MB1. The arrows indicate which direction the window moves (think of the contents of the window as stationary and the window movable). If you scroll for a second or two using a computer with fast video performance, Game-Maker will detect the speed of your computer and automatically slow down the scroll speed to be mildly fast and effective. Until you leave the design tool, scrolling will occur at the adjusted rate.

Move blocks to the viewing area or the drawing area by placing the cursor on a block in the block bar, holding down MB1, and dragging the block to the desired position. You can place a block into multiple positions in the viewing area. You can also drag blocks from the viewing area to the drawing area, to other positions in the viewing area, and back to positions within the block bar.

Erase a block from within the block bar by dragging a blank block from elsewhere in the block bar or the viewing area and dropping it on top of the block to be erased. Careful! It's gone forever.

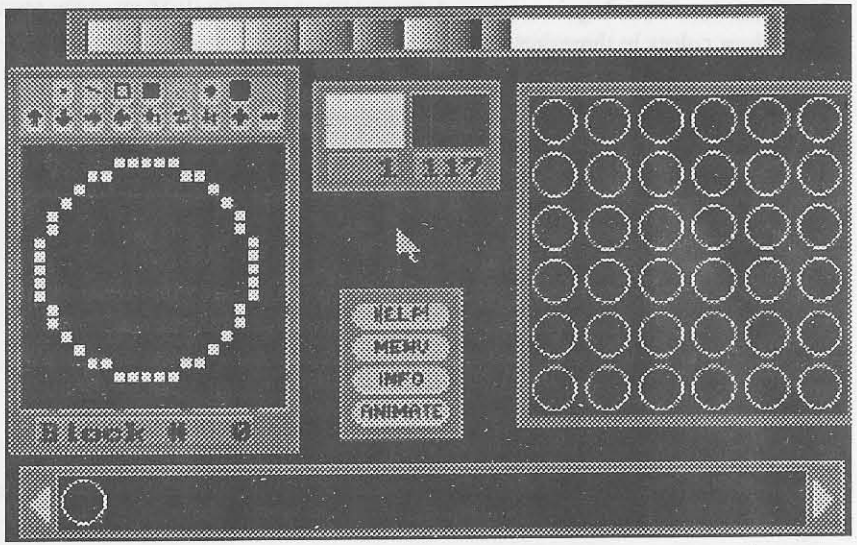
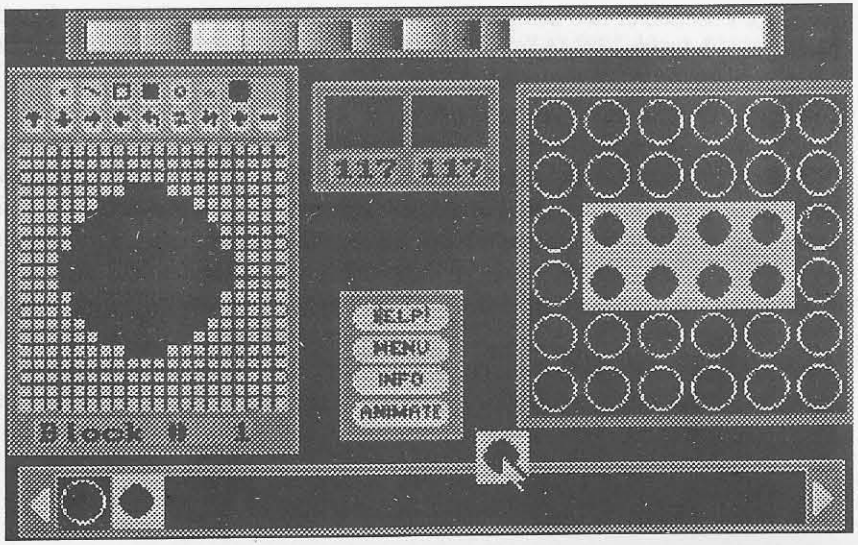


Figure 7 & 8. The picture block drawing screen is shown after the circle drawing tool has been used to draw a circle. Below, a disk has been drawn. Eight copies of the disk have been dragged into the viewing area, and a ninth is in the process of being dragged.



Draw picture blocks by moving the mouse cursor to the enlarged block and pointing the cursor at a pixel. When you press MB1 or MB2 the selected color will be placed into the pixel. Hold down a mouse button and move the cursor around the drawing area to quickly paint portions of the block.

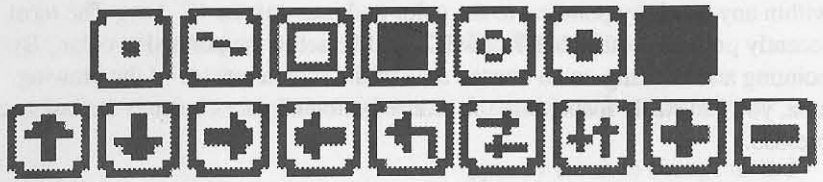


Figure 9. Drawing tool icons.

Use the drawing tools by pointing and clicking on one of the icons above the drawing area. Select the top left icon, the one containing a dot, to draw single pixels and to paint with the mouse. Select one of the next five icons to draw lines, rectangles, boxes, circles, or disks. Just point to a pixel with the mouse and then hold down either mouse button. Next, move the mouse and the object that you are drawing will change shape and location, with the first point being the start of the line, the corner of the rectangle, or the center of the circle. Release the mouse button to make the object a permanent part of the block.

The right top icon enables 'flood fills'. When selected, point and click at one pixel with either mouse button and all adjacent pixels of the same color will change to the selected color of that mouse button.

The bottom row of icons allow you to quickly manipulate the picture in the drawing area. In order from left to right, they cause the image to shift up, shift down, shift right, shift left, rotate ninety degrees counter clockwise, flip left for right (mirror image), and flip up for down. The last two icons shift the palette colors of MB1 and MB2 up or down one position on the palette bar.

WIZARD TECHNIQUE — USING THE KEYBOARD

Erase a block and fill it entirely with the last color selected by placing the cursor in the drawing area or in any block and pressing the 'E' key (Erase)

Change the color selection to any color displayed within the enlarged block or within any block by pointing to the color and pressing the 'C' key. The most recently pressed mouse, MB1 or MB2, will be set to the pointed at color. By pointing and clicking on an unused area of the screen outside of the drawing area, you can easily insure that the mouse button of your choice is the last one pressed.

Swap, rotate, or flip the image in a block by positioning the cursor on any block on the screen and then pressing the 'S', 'R', or 'F' key respectively. Swap gives you a mirror image and flip turns the image up side down.

Shift all pixels in any block one row up or down or one column left or right by holding down the Shift key an then pressing the up, down, left, or right arrow key, respectively.

Copy a block to a new position on the block bar by selecting it with MB1 and dragging it to the new position. If the new position is not visible in the block bar, just continue to hold down MB1 and drag the block over to the scroll arrow at either end of the block bar. The blocks in the block bar will scroll until you find the position you want, then drag the block (yes, it has stuck to your cursor even as you scrolled) to the desired position and release it by releasing MB1. Alternately use the technique preferred by this writer. Drag the block from the block bar to the viewing area, then scroll to the desired position in the block bar, and drag the block back to its new position in the block bar.

4.2.3 Setting Block Attributes

One of the more powerful concepts in Game-Maker is that picture blocks have attributes. You can assign the attributes shown in the following table according to the needs of your games. For example, when a character travels over a background block whose 'gravity' attribute is set, the character is accelerated in the direction of the gravity. Besides down, gravity can be up, right, or left. You can set it for two directions at once, such as down and left.

Block attributes for character block sets have no meaning or effect during game play. In monster block sets, only the solid attribute and the money/score/hit-points/lives/counters attributes have any effect during game play. However, the Block Designer does allow you to set character and monster blocks to change on time to other blocks for animation visualizing purposes. During game play,

however, only the animation that you set up using the Character Maker and Monster Maker shows up in the game.

BLOCK ATTRIBUTES	SETTINGS
Solid Sides (impenetrable by characters)	Top, Right, Bottom, Left
Contains Gravity Field	Up, Right, Down, Left
Is an Object (block can be picked up)	Is an object, Is not an object
Change based on time	Specify block to change to and time (1 to 9999, 0 for no change). There are about 18 time units per second, 1092 units per minute.
Change on contact with character	Specify block to change to
Character repetition counters including Lives, Money, Score, Hit Points, 15 character sequence counters, and 5 special character counters.	Range: -32766 to 32766. Initial setting: -9999 to 9999. Special counters cannot be decremented past zero during the course of a game, but can initially be negative.
Birth monster periodically	Time between emitting a monster. Range: 0 to not birth, 1 to 9999 time units (about 9 minutes).

Additional attributes for Characters and Monsters are set in Character Maker and Monster Maker (sections 4.3 and 4.4).

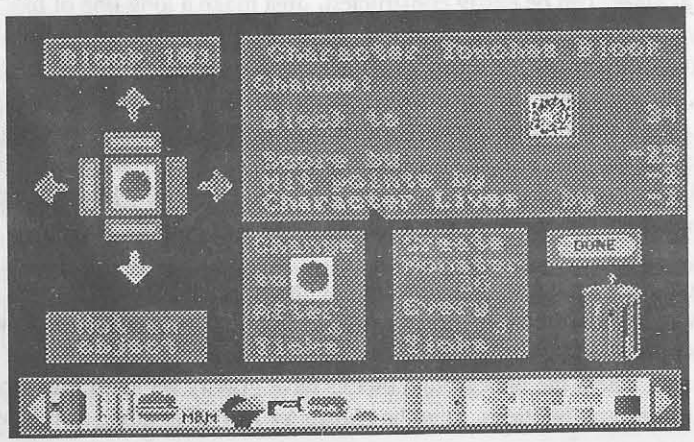


Figure 10. Use the block information screen to set block attributes.

To set attributes for blocks, click on the INFO button. The above Information Screen is displayed showing the attributes of the block that was in Block Designer's drawing area.

You can change the selected block by dragging another block into the box on the left center of the screen. The Information Screen shows the selected block and its attributes, and allows you to change these attributes. Point at an area of the screen to select an attribute and either use the arrow keys to change the attribute or just click on it. Use the left and right arrow keys to change numbers by one, up and down arrow keys to change numbers by 100. Click and drag blocks from the block scroll bar into the indicated positions for birthing monsters, changing the block to another on time, and changing the block to another on contact. Drag blocks from the INFO screen and into the trash can to remove them from the INFO screen (don't worry, they aren't deleted from the block scroll bar!).

4.2.3.1 Solid Sides, Gravity, Glide Areas

The 'Solid' attribute defines which sides of a block are impenetrable by Characters and Monsters. The default is all sides of the block. Note that once a Character or Monster passes into a block, it may leave through any side, so ***one way doors*** exist whenever a block is not completely solid. Point and click on one of the small rectangles surrounding the selected block on the INFO screen to set or clear solid sides for each direction.

The 'Gravity' attribute moves the Character in the direction of the gravity. For example, if the character is in an area where all the blocks have downward gravity, then a character sequence that has the character jump into the air will result in a jump followed by the character floating down. (If there were no gravity, the character would remain up in the air.) When in an area where all the background blocks have gravity, the character accelerates up to a maximum speed. ***Gravity 'pipes'*** can be easily constructed. Just make a long line of blocks with gravity pushing in the same direction. If you don't want the character to be able to get out of the pipe, place blocks with solid sides on each side of the gravity blocks. When a character enters the pipe, it will be pushed along the pipe, and exit at a high speed. For example, if the pipe pushes the character straight up, a character in the pipe will be shot into the air, and if downward gravity is all around the top end of the pipe, the character will eventually float back down and stop when it encounters a solid block or an area without gravity.

Point and click on the arrows surrounding the selected block to turn off or turn on gravity in that direction. Setting gravity in two non-opposing directions, such as up and left, creates a force that moves characters diagonally. If a scene has an area where the background blocks have gravity set in all four directions or two opposing directions, then the ***character will glide*** along as if it were on

ice or in outer space. For example, if the character accelerates from a section with gravity into a section that has gravity set in all four directions, the character will glide at the velocity it had when it entered the glide area.

4.2.3.2 Object Blocks

Characters can pick up an object pictured in a picture block. The default value for each block is 'Not an object', and this changes to 'Object can be picked up' upon pointing and clicking the 'Not an object' button. Objects can be anything, such as weapons, money, or magic wands. ***Possession of an object can enable a character sequence,*** such as the sequence controlling shooting a gun (use Character Maker to tie an object to a sequence). When an object is picked up by the character during game play, you can and should have the picture of that object be replaced by another picture block, by dragging a block into the 'Change: Block to' box on the Information Screen.

4.2.3.3 Time Based Block Changes

A background block can change to another background block based on time. This feature is used to create background animation. Drag the change-to block into the "Change to { } after x ticks" box. Point to the ticks with the mouse cursor and use the arrow keys to set the count. The maximum time is 9999, about nine minutes. When the ticks are 0 or 'None', the block will not change on time. When using this feature, you will want to create loops of blocks; i.e., the first changes to the second, the second to the third, etc., and the last to back to the first. You can create effects like flickering candles. See section 6.0 for further details on the use of this feature.

> *WIZARD TECHNIQUE — TIME CONVERSIONS*
>
> One second is 18 time units
>
> One minute is 1092 time units
>
> When the blocks in a loop of blocks change at the maximum speed of one time unit (or tick) each, the animation will be very fast as each block will only be displayed for one eighteenth of a second.

Viewing Background Animation. Picture blocks that have been set up to animate in games will animate in the Block Designer viewing area. Click on the 'Animate' button and any blocks set up for background animation will animate. You can even set up character and monster block sets to animate in Block Designer; however such animation is useful only as a drawing aid for monster and character blocks, since actual animation of monsters and characters is set up only via the Monster Maker and the Character Designer.

4.2.3.4 Character Contact Based Block Changes

You can make a background block change to a different background block whenever the character touches it. Simply drag the change-to block into the

"Change: block to" box. During game play, the character must start to cross over the first block to trigger the change. The character can carefully slide adjacent to the first block and not cause the change to occur.

4.2.3.5 Repetition counts and counters, Lives, and Money

Repetition counters are one of the most powerful and the most advanced features of Game-Maker. You might want to wait to master the use of these counters until after you've played with most of the other features.

Using repetition counts and counters, you can control the number of times a character can fire a gun, the number of objects that can be picked up, the number of times a character can jump, or whatever. Except for the 'Idle', 'Injured', and 'Drop an Object' sequences which the character can perform an unlimited number of times, there is one repetition count associated with each character sequence. Repetition counts are numbered from 1 to 15 and correspond to the character sequences as shown in Character Maker. The 'Pick up an Object' and 'Die' sequences have a special repetition count called 'Money' and 'Lives', respectively. There are also five additional Special counters, numbered 1 to 5. These five counters are ideal for keeping track of counts of keys found, powers acquired, food eaten, or whatever you decide.

Each repetition count denotes the number of times that a character sequence can be repeated. The count goes down by one each time the character sequence is repeated. All repetition counts range from a low of -32768 to a high of 32768. When a count reaches 0 or is below 0, the character sequence associated with the count won't work (for example, you can't shoot without bullets). However, note that using Character Maker, you can set any character sequence to have an unlimited # of repetitions, and the repetition count will then be ignored by the character.

The 'Lives' counter is unique. Whenever it is decremented, the character automatically performs its death sequence. And when the 'Lives' counter reaches zero, the game is over and Game-Maker performs the game's ending scene.

The following paragraphs explain how to set up and use repetition counters.

Contact between a character and a picture block can force a change to the value of any one repetition counter. Point to bottom line in the top right hand box of the INFO screen. Use the left and right arrow keys to cycle through Lives, Money, and all of the counters until you find the one you want. Only one may be selected per block. Next, point to the count value and change it using the arrow keys. **To avoid letting a character touch a background block multiple times and run up or down a count, have the block change into another block when it is touched,** by selecting a new block in the 'Change: Block to { }' box. If you want to force the character to lose counts unless it

moves quickly away from a background block, have the background block decrement the count and not change to another block on contact.

Besides the 15 numbered character sequence counters, there are 5 special counters and there are the 'Die' and the 'Pick Up' character sequence counters. The repetition counter for 'Die' simply represents the number of lives a player has, and is called the Lives counter.

The repetition counter for 'Pick Up' is called the Money counter in Game-Maker. If you think of this count as the amount of money in a character's possession, you can see that the repetition count can be used to acquire money (count goes up) and to pay for items (count goes down). Whenever the pickup character sequence occurs, one 'coin' is spent. Picking up an object therefore costs at least one coin. Additionally, when you set up a block to be an object, you may force the character to pay even more for that object. Set the object's picture block to decrease the repetition count by one less than the price of the object (one less because the act of picking up the object costs one coin). If the character doesn't have enough money (i.e., count), then the object can't be picked up. Lastly, if you want an object to be free, than set the block to give the character a count of one to compensate for the one count spent in picking up the object. Similarly if you want to have the character acquire money by picking it up, set the block to give the character one more coin than the net amount of money to be acquired.

Both blocks which are and are not objects may increase and decrease the money count when a character contacts the block. Never-the-less, we recommend you only associate acquiring money counts with non-object blocks. This will insure that a character's inventory of objects doesn't contain a picture of, say, a pile of coins, even though the money count has been spent down to zero. Also, only associate spending money with picking up objects, contacting blocks which picture something the character might want to buy, or contacting a monster that looks like a thief, bandit, or whatever. These recommendations will insure that it is easy for a game player to understand what is effecting the character's wealth during a game.

Note: If an object is set to increment the money counter by one or more, the 'Pick Up' sequence will pick up even if the character's money counter is at 0.

Using the special counters, you can enable or disable the actions that occur when a character touches a background block. The trick is that special counters won't respond to any attempts to decrement their counts past zero, even though they can be initialized to a negative number. A background block that tries to decrement a special counter upon contact with the character can not do so if that special counter is at zero, and therefore can not change into another block, affect hit points, or affect the score. For example, upon contact by a character, a

block showing a key could increment Special Counter #1 by one. A solid block showing a door could decrement the same counter by one before changing to an open door non-solid block. If the special counter's initial value was zero, until the counter is incremented by the 'key', the door will not change on contact to the picture block of the open door block.

4.2.3.6 Hit Points and Score

Hit points are a measure of the strength that a character has. Hit points can be increased or decreased when a character touches a block. A character dies if it's hit points reach 0. That is, the 'Die' character sequence will be initiated and one life will be lost. Using the Information Screen shown above, you may set a background or monster block to increment or decrement the hit points by up to 9999, although usually just a few points is typical. Just point at the "Hit points by x" line and use the arrow keys.

Score can be increased or decreased when a character touches a block. Select "Change Score by 0" and use the arrow keys to enter the number that you want the score to change when the character contacts the block. As with all blocks that change a counter, it is usually best to have the block change on contact to another block that doesn't effect the character, so that the count will only be incremented or decremented once.

4.2.3.7 Birthing Monsters

Background blocks can emit (or birth) a monster at regular time intervals. This feature can be used to make rain, falling rocks, gun emplacements, etc. It is a good idea to birth monsters that will die after a reasonable period of time, as once 200 monsters are roaming around a scene, no new monsters can be birthed by background blocks or be shot by the character. To set up a background block to birth a monster, go to the Information Screen, put the background block in the left window, and then click on the 'Birth Monster' window. Next select a monster set and monster blocks from the lists shown, and then select a monster from the displayed monsters. Upon returning to the Block Designer Information Screen, set the time interval that you want between each birthing of a monster. To conserve monsters and CPU usage, monsters will only be birthed from blocks when the character approaches within a screen and a half of the block.

4.2.3.8 Copying Block Attributes

When using the Information Screen, if you drag a block from one position in the block bar and drop it on another block in the block bar, the first block's information will be copied to the second block without affecting the second block's picture. This provides an extremely quick way to set up attributes for blocks in a block set.

4.2.4 Transferring Blocks from one Block Set to Another

Quite often you will want to move blocks from other block sets into one that you are creating. This is very easy to accomplish. While working on your block set (that is, you have already chosen a block set and palette), return to the menu and select "Transfer Between Sets".

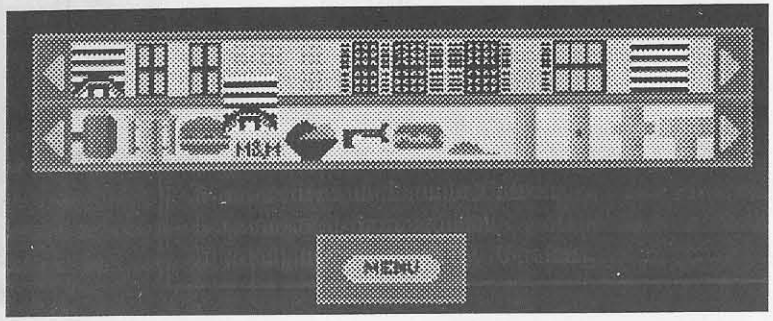


Figure 11. A block being transferred from the Houses background set to the PIPEMARE block set. The block is being dragged from the left top and is about to overlay the M&M block.

You will be asked to select the block set from which to transfer picture blocks.

A graphical edit screen will be displayed with two block bars. Simply drag the blocks you want from the top bar down to the lower bar using the mouse and MB1. Don't forget to save your block file after you return to the menu.

4.2.5 Converting to Another Palette

The 'Convert Palette' selection on the main menu allows you to convert a block set to a different palette. This is very useful when you want to transfer blocks from one block set and palette to another block set with a different palette. If you tried to transfer blocks between block sets with different palettes without first converting the palette, the transferred blocks would have strangely colored pixels. When transferring blocks that you've taken from a GIF image, you will certainly want to use the Convert Palette feature.

NOTE: If you convert the palette of a block set and save the block set using the same name, the original block set's colors will be lost. Since some color information will be lost upon every palette conversion, converting back to the original palette won't restore all the colors to their original state. We recommend that you first save the block set you want to convert under a new name, and then convert the newly named block set. Alternatively, you can save the converted block set by specifying a new name.

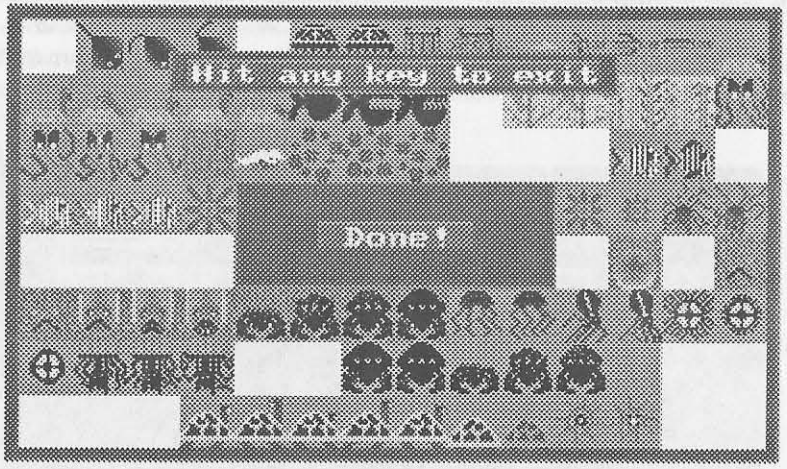


Figure 12. During palette conversions you can watch the blocks as the conversion takes place.

To convert a block set's palette, first select a block set using the 'Choose a Block Set' menu item, and then select the block set's palette using the 'Choose a Palette' menu item. Next select 'Convert Palette'. You will be prompted for the palette to which to convert. After you select or specify a palette, the conversion will proceed. In a few seconds Game-Maker will mathematically determine the best color conversion between the old palette and the new palette, and will display the results of the conversion on the screen. You will be prompted for a name to which to save the converted block set, with the default being the original name. Use the default only if you don't want to save the original block set/palette combination.

4.2.6 Block Drawing Hints

Block 0 will be the initial block that a new map will display in every block position. Thus it's usually best to make block 0 a 'background' drawing of some sort, like grass, a block of uniform color, or a background pattern.

You'll often want blocks that are mirror images of other blocks. To do this, copy the block by dragging its image from its position on the block bar to a new position, and while pointing the cursor at the new block, type 'S' for swap. This technique can also be used to create rotated or flipped (up for down) blocks by typing R or F, respectively. The S, R, and F commands also work whenever you point at a block in the block drawing screen.
You can draw objects that appear to have a rounded surface, like a pipe, by gradually changing the color shade from one side of the object to the other.

When drawing a monster or a character, use the CLEAR color (color #255) for the background. This allows the scene to show through parts of the monster or character picture blocks.
When drawing 'frames' for an animated monster or character, there is usually no need to have the subject move around within the blocks. You can draw the monster or character centered in the blocks, as during game play the blocks will glide over the map.

4.3 CHARACTER MAKER

Characters are animated objects that can move within your game maps. The movement of a character is controlled by keys or a joystick. Characters can pick up objects, use the objects, and discard the objects. Characters can gain or lose 'hit points', and will die if the hit points decline to zero.

Creating characters is a two step process. First, use Block Designer to draw a set of character picture blocks. You will draw one picture block of the character for each of the positions into which it moves during animation. Secondly, use Character Maker to create character animation sequences.

4.3.1 Hints for Drawing Character Picture Blocks

Before using Character Maker, you need a set of character picture blocks. Use Block Designer (section 4.2) to create or edit character picture blocks, or just use a set provided by Game-Maker. You draw picture blocks for characters the same way as for maps. However, when creating picture blocks for maps, you plan to place those pictures next to each other to form a larger scene. When creating picture blocks for characters, plan to have the pictures rapidly replace each other in a sequence you later define, creating a single animated block. Fifty picture blocks are allowed in a set of character blocks. Use Block Designer to look at various character block sets to get an idea of how to draw characters.

Note: You need only draw character blocks facing one direction, as Character Maker will rotate and flip your pictures blocks according to your needs.

Non-animated characters are the simplest. Any single picture block can become a character, but the lack of animation will generally make your game less exciting.

Characters move as defined in character animation sequences. The maximum length of an animation sequence is ten frames. You don't have to draw ten different picture blocks to make use of a ten frame sequence, as any block can be placed multiple times into the sequence. You will usually find that two to eight blocks will form a character sequence that moves smoothly and is visually pleasing.

See section 4.2.6 for additional block drawing hints.

4.3.2 Starting Character Maker

To start creating characters, select 'Design' on the main menu strip and 'Character' on the design menu strip (see section 2.2).

Upon startup, Character Maker displays the following menu:

```
Character Maker
Version 2.0
by Oliver Stone
COPYRIGHT (C) 1993

Choose a Character Set
New Character Set
Choose a Block Set
Choose a Palette
Choose a Sound Set
Edit Characters
Save Character Set
Delete Character Set
Quit
```

Go ahead and try out Character Maker as you read these directions. Use the gameware in the SAMPLE game area. Enter SAMPLE as your character set, SAMPLE as your block set, HUES as your palette, and SAMPLE as your sound set.

Note that if you were starting a new character set, you would first select 'New Character Set', and then choose the names of the block set, palette, and sound set that you would use to define the characters. Next, you would create sequences of blocks to form characters, and then save them as a character set. Character set names must be legal MS-DOS file names (eight or less characters long) without a file extension.

4.3.3 Setting up a Character's Initial State

Once you've started Character Maker and selected 'Edit Characters' from its menu, the Character Sequence Menu will be displayed. This menu allows you to select character sequences to edit, and it allows you to set initial conditions for your character.

Character Sequence Menu

```
Return to previous menu   Define Inventory at start.
Hit Points at start: 1          Define Money at start:
Number of lives: 1

  - - switch columns - - >                  < - - switch columns - -
Idle                                  Key for sequence 6:   Undefined
Die                                   Key for sequence 7:   Undefined
Injured                               Key for sequence 8:   Undefined
Pick up an object:   Undefined        Key for sequence 9:    Undefined
Drop an Object:      Undefined        Key for sequence 10:  Undefined
Key for sequence 1:  Undefined        Key for sequence 11:  Undefined
Key for sequence 2:  Undefined        Key for sequence 12:  Undefined
Key for sequence 3:  Undefined        Key for sequence 13:  Undefined
Key for sequence 4:  Undefined        Key for sequence 14:  Undefined
Key for sequence 5:  Undefined        Key for sequence 15:  Undefined
  - - switch columns - - >                  < - - switch columns - -
```

Use the mouse to navigate around the above menu. Clicking on one of the arrows will move the mouse cursor to the other side of the menu.

You can ***assign from 1 to 255 initial hit points*** (your character dies if it ever reaches 0 hit points). Each time the character is born, it starts with the number of hit points that you assign. You can also assign from 1 to 256 initial lives to a character.

Characters are allowed to pick up and retain (inventory) objects found in games. Objects are background blocks which, using Block Designer, you've designated as objects. Usually such blocks will contain pictures of weapons, money, magic wands, etc. You can ***define an initial list of objects*** by selecting 'Define inventory at start' from the menu. You will be led through two menus that allow you to select the background blocks to be displayed. Use this display to pick your initial objects. Just point and click on the objects in the block scroll bar to move them to inventory. Point and click on an object in the inventory to remove it. The character will start a game with any objects defined in the initial list of objects. From that point on the character's inventory changes as objects are set down, are picked back up, and/or new objects are picked up.

WIZARD TECHNIQUE — MOVING INVENTORY BETWEEN SCENES

If you are going to use the same character in multiple scenes, be sure and have the objects in the same block positions (same block numbers) in the background block set for each scene. Inventory acquired in one scene will remain in possession of the character in the next scene. Game-Maker remembers this inventory in terms of block numbers in the block file. If the next scene's block file doesn't have the same objects in the same block numbers in its block file, the objects will change to the pictures in the new block file. If the new block file doesn't have objects in those block numbers, the character will not have possession of any objects.

We recommend using the last 10 to 20 blocks in background block sets for objects.

4.3.4 Character Animation Sequences

Twenty character sequences are shown on the menu. You may use all twenty to set up twenty unique actions, but you need not use all twenty.

The ***Idle sequence*** should always be set up. This sequence defines how your character looks when you aren't pressing any keys and/or the joystick is centered.

The ***Die sequence*** will automatically be displayed when a character dies. A character dies whenever its hit points decrease to zero.

The ***Injured sequence*** will be displayed whenever the character loses hit points. Hit points are lost when the character makes contact with a background picture block whose hit points attribute is set to a negative number. The Injured sequence will also be displayed if the character contacts a monster whose power level is higher than 100 and which contains a block which is set to decrease hit points.

The ***Pick Up an Object sequence*** is the motion that you assign to a character when you want it to pick up an object. Objects must not have solid sides. The object will be replaced with the 'on contact change to' background block (see section 4.2.3). Only background blocks that have been set to be objects will be picked up. During game play, the Pick Up an Object sequence will remove an object from the scene and add it to the character's inventory if the character is near or touching the object. If the character already has ten objects in inventory, an object must be dropped before another can be picked up.

During game play when the ***Drop an Object sequence*** is executed, the player will be given the choice of which object to drop.

All the other character animation sequences can be associated with a keyboard key or a joystick state. Use these sequences for movement, shooting, jumping, ducking, etc.

4.3.5 Setting Up a Character Sequence's Attributes

If you point and click on any of the twenty character animation sequences, the following second level menu will be displayed. This menu lets you set up each sequence to behave as you so choose.

Add Sound (None)
Enter Key
Enter Joystick Configuration
Define Sequence
Enter Number of Executions (No Limit)
Tie to Block (None)
Can Interrupt Sequence
Do once per keystroke
No Momentum
Menu

The first item on this menu allows you to ***associate a sound with a character*** sequence. These sounds are the ones you can design and assign with Sound Designer.

The menu will let you ***pick a key and a joystick position that will, when pressed, initiate the sequence*** during game play. You may set up both a key and a joystick setting for a character sequence. When assigning joystick controls to character sequences, be careful to select exactly what controls you want. For example, to move left choose 'left' and 'no buttons'. To shoot, choose just one button. For a left jump, you might want to choose 'left' AND 'button 2' (the joystick must be moved to the left position first, and then the button pressed). Setting up the joystick can be tricky. See section 6.4 for details.

In some cases you might want to ***limit the number of times a sequence can be performed,*** such as firing a gun. You may set up these initial limits on character sequence repetitions for the 15 numbered sequences as well as for the "Pick up an object" sequence. The "Die", "Idle", "Injured", and "Drop an object"

have an unlimited number of repetitions. The maximum initial repetition count is 32766, unless you set the repetitions to 'unlimited'. Remember that during game play, the character can acquire or lose repetition counts by contacting background and monster blocks whose attributes have been set accordingly.

You may choose to ***have a sequence work only when the character has acquired an object***, such as a gun. To do this, select 'Tie To Object' from the menu. Next, select a background block set and then specify the object by selecting an object picture block. Special Note: If you use the same character in multiple scenes with different background block sets, you should insure that the same or similar objects are in the same block positions as they were in the original background block set.

You can choose to ***have a character sequence go to completion or let it stop whenever the user releases the key or joystick***. For example, set a sequence up for 'can interrupt sequence' if you want the user to control how high a jump is by releasing the key part way through a jump. A second example: if you set up a shooting sequence so that it must be completed, the character will always complete the action even if you just tap the key, including reaching the frame in the sequence that launches the weapon.

You can let the character sequence display only once per keystroke or auto repeat as long as the key is held down. Besides the obvious uses such as having a character kick only once or kick multiple times, this feature is especially useful to create machine gun type shooting. Select 'Do once per keystroke' and it will change to 'Auto repeat', and vice versa. When shooting with auto repeat set, be sure to make at least one frame of the sequence contains a picture block of the character, else so many monsters will be shot so quickly that they will all be on top of each other and they will use up all your computer's power.

Characters have three modes of moving across background blocks; standard, glide, and momentum. 'Standard' mode permits characters to travel exactly the distance as defined in the character sequences. 'Glide' mode allows the character to glide over the background in the direction last traveled or as pushed by gravity. 'Momentum' not only allows the character to glide over the background, but the character accelerates in the direction of each character sequence movement.

When setting up a character sequence's attributes, a menu item allows you to assign 'momentum' or 'no momentum'. When a character sequence is set for 'no momentum', it moves exactly the distances defined in the character sequence. When set to 'momentum', each movement of the character adds to or decreases the character speed. For example, if the character starts from a stopped condition, upon pressing and holding down a key that moves the character to the right, the character will start to glide to the right. If the first frame

of the sequence moves the character two pixels to the right and has a pause length of three time units, the character will move at a speed of two pixels per time unit for three time units and then go on to the next frame. If this next frame moves the character one pixel to the right with a pause length of four time units, the character will move three pixels per time unit for the next four time units. In this manner, the character's momentum becomes the vector sum of the frame movements. Hint: when using momentum, usually you will want to set the character to move a small number of pixels per frame, with the pause length of each frame set anywhere from five to very high, otherwise the character's acceleration might be excessive.

Glide areas are sections of a scene where the background blocks are set to have gravity. The character glides through these areas and is accelerated in the direction of the gravity. A unique case is when gravity is set in opposing directions, as the character will glide over this area but won't accelerate since gravity sums to zero. When a character that has been set to 'no momentum' is in a glide area, it will respond to the keys or joystick, but these movements won't add to the character's momentum. On the other hand, when a character sequence has been set to 'momentum', the character will glide in all areas and the sequence will influence its momentum (i.e., the character will accelerate in the direction of movement in that character sequence).

For outer space games in which you want momentum to be conserved, be sure that all sequences are set for 'momentum', or alternatively, that the background is set up as a glide area. Otherwise, the character will come to a screeching halt whenever a 'no momentum' sequence is executed.

4.3.6 Character Movement

When you select 'Define Sequence', a graphical edit screen is displayed as shown below. Use this screen to arrange the animation sequences of your characters.

Note that several of the sequences have predefined actions. You should design these sequences to act as indicated (idle, die, injured, pick up an object, put down an object).

Near the top of the graphical edit screen is a scroll bar containing the set of character picture blocks from which you'll make your characters. Also on the left of the screen is a grid on top of which you will lay out a sequence of character frames. The dots of the grid show the size of picture blocks, giving you a sense of how far the character is traveling between frames. On the right of the screen is a picture of the fully animated character. As you create and edit a character sequence, this picture instantly shows the results (for example, the addition of a new frame to the animation sequence).

Attached to the mouse cursor is a rectangular box, one block wide by two blocks high. You may create characters that are one block in size, or characters that are two blocks in size. In either case, the rectangular box is used to create, edit, and arrange character frames.

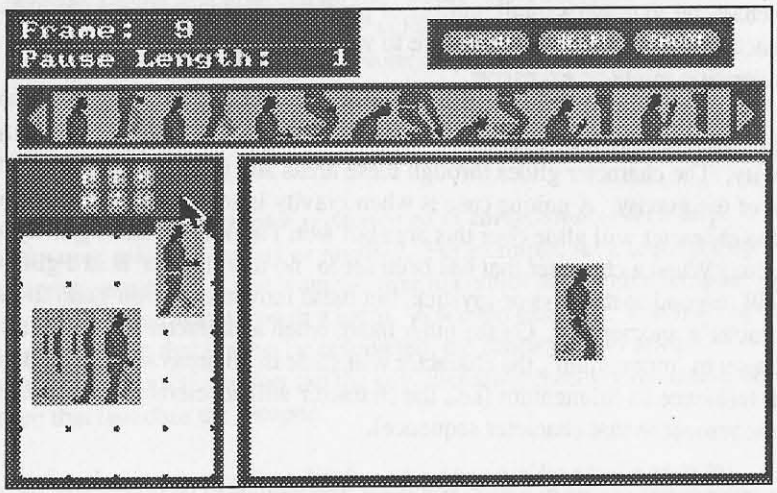


Figure 13. Setting up character movement.

NOTE: There is a major difference between monster animation and character animation. For monster animation, each frame (i.e., block) of the monster animation sequence is placed precisely on top of the last frame. Game-Maker moves the monsters around, thus providing across-the-screen motion. Character animation is more sophisticated. The frames in a character animation sequence are placed across the screen in the direction that movement is to occur. The keyboard, mouse, or joystick will initiate particular animation sequences depending upon what keys (or equivalent) the user presses.

The reference position for your character animation sequence is shown by the empty rectangular frame in the center of the grid. **This frame represents the position of the character in a game prior to starting the animation sequence you are presently defining.** For example, if you locate your next frame three pixels to the right of this rectangle, then the character will start this sequence by moving that far to the right. Usually, you will want to have the first frame of a character sequence offset from the reference frame so that the character won't seem to stop as it moves from the last frame of the previous sequence to the first of the new sequence.

Move a character picture block to the rectangular cursor's lower half by pointing and clicking with MB2 on a block in the block bar. Point and click with MB1 to move a block to the upper half of the rectangle. If you are making a single block character, use just the lower half of the rectangle. After you select one or two picture blocks, they will be visible in the rectangle and you can move them around the screen.

Use the up and down arrow keys to change the time that each character frame is displayed on the screen. Each frame will initially be set to one time unit (the minimum time, about one eighteenth of a second). The maximum time is 255 time units (about 14 seconds). Each time an up or down arrow is pressed the time increases or decreases by one time unit, respectively. As you do this, you can see the effect by looking at the animated character on your screen.

Drag the rectangle containing the character frame to the grid, locate the frame so that the character moves the desired direction and distance from the last frame, and press a mouse button to deposit the character frame onto the grid. The freshly deposited frame will jump to the center of the grid, and all other frames will shift accordingly. Frames that extend past the edges of the grid aren't displayed.

Repeat the above two steps until the entire animation sequence is placed on the grid.

Use the BACKSPACE key to erase the last frame(s) deposited.

Use the left and right arrow keys to step through the sequence on the grid and edit particular frames of the sequence. When stepping through the frames, you can drag any frame up to the block scroll bar and change a picture block in that frame. You can move the frame to a new position. And you can eliminate a frame by pressing the 'Backspace' key. You can use the up and down arrow keys to change the frame's display time. You may also use the arrow keys to move to the next unused frame, and from there continue depositing additional frames. When you deposit a frame on to the end of the sequence, Game-Maker will automatically fill the next frame with the same blocks as used for the last frame. The new frame is not part of your sequence until you deposit it, although it will be displayed as part of the animation so that you can see what it would look like in action. You can remove the blocks from this frame with the rubout key.

Rotate or Swap a block in the rectangle by typing 'r' or 's' for the bottom block, 'R' or 'S' for the top block, or use the provided buttons. This is useful when you want your character to face a certain direction as it moves in a corresponding direction.

Select the SHOOT button to birth a monster from a frame in the sequence. After selecting a monster set and a monster block set, a graphical edit screen will be displayed that allows you to select a monster. Next you will be asked to decide if the monster is to shoot out from the top or the bottom block of a character. If the monster's movement is set to move away from the character, the monster will shoot out and away in the direction that the character has been traveling. Thus 'away' movement is a good way to have a monster throw or shoot a projectile. A stationary short-lived monster is a good way to have the character swing a sword out from the character and damage what it hits. A monster whose movement is set to a pattern can be used to create boomerang paths, lobs, etc. See section 6 for advanced techniques. Note: you don't have to have any character frames in a character sequence that shoots. The sequence can just shoot! This type of a shoot sequence will cause the monster to be launched from any place in any other interruptable character sequence. It is best to have this type of shoot sequence to be set for 'Do once per keystroke'.

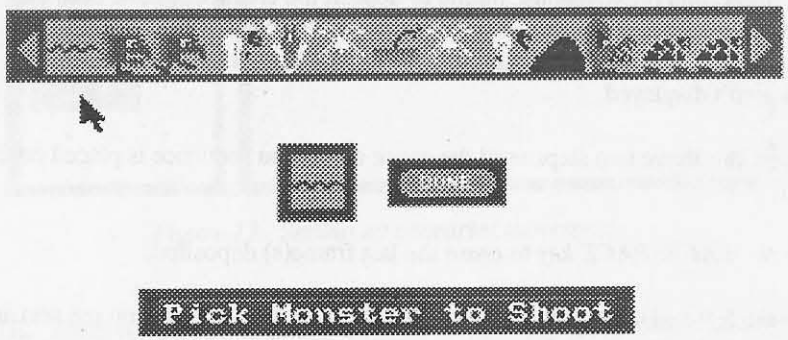


Figure 14. Selecting a monster to shoot out from the character.

4.4 MONSTER MAKER

Monsters are animated objects that can move within your game maps and generally attack your game's character. But Game-Maker monsters play a much more versatile role. For example and in spite of their name, monsters can be pleasant things, such as butterflies, blooming flowers, and twinkling stars. Bullets fired by your characters are also a form of monsters. Think of Game-Maker "monsters" as general purpose animated sprites.

Creating monsters is a two step process. First, use Block Designer to draw a set of monster picture blocks. You will draw one picture block of a monster for each of the positions into which it moves during animation. Next, use Monster Maker to create animation sequences and to assign movement to each monster.

You can have one set of monsters per map. One monster set can contain sixty four different monsters. One hundred picture blocks are in the block set from which the monster set is created. Since about three to four blocks are used to animate a typical monster, you will find that plenty of different monsters can be designed and put into any map. Secondly, you can use the same picture blocks in a different order, with different frame times, or with different monster movement and thus create differently behaving monsters from just a few blocks. Finally, you can have your monster facing any of four directions; you don't have to draw different picture blocks of monsters facing different directions.

4.4.1 Hints for Drawing Monster Picture Blocks

Before using Monster Maker, you need a set of monster picture blocks. Use Block Designer (section 4.2) to create pictures of monsters. You draw picture blocks for monsters the same way as for maps. However, when creating picture blocks for maps, you plan to place those pictures next to each other to form a larger scene. When creating picture blocks for monsters, plan to have the pictures rapidly replace each other in a sequence you later define, creating a single animated block.

Use Block Designer to look at various monster block sets to get an idea of how to draw monsters.

Non-animated monsters are the simplest. Any single picture block can become a non-animated monster.

Monster Maker's flexible animation sequence is useful. The maximum length of an animation sequence is 20 frames but you don't have to draw twenty different picture blocks to make use of the twenty frames, as any block can be placed multiple times into the sequence. More importantly, you will usually find that two to ten blocks will form a monster that moves very smoothly with plenty of animation.

Blocks may be sequenced in any order and with any time intervals, allowing one set of blocks to be used for many differently behaving monsters.

See section 4.2.6 for additional block drawing hints.

4.4.2 Starting Monster Maker

To start creating monsters, select 'Design' on the main menu strip and 'Monster' on the design menu strip (see section 2.2).
Upon start up, Monster Maker displays the following menu:

```
Monster Maker
Version 2.0
by Oliver Stone
COPYRIGHT (C) 1993


Choose a Monster Set
New Monster Set
Choose a Block Set
Choose a Palette
Edit Monsters
Save Monster Set
Delete a Monster Set
Quit
```

Go ahead and try out Monster Maker as you read these directions. Using the SAMPLE game area, enter SAMPLE as your monster set, SAMPLE as your block set, and HUES as your palette.

4.4.3 Sequencing Monsters

After selecting a monster set, block set, and palette, select 'Edit Monsters' from the menu. A graphical edit screen will be displayed. Use this screen to arrange the animation sequences of your monsters.

Monster Bar. At the top of the screen is the Monster Bar. Up to 64 monsters can be designed and placed into the Monster Bar. Ten are displayed at any one time. At each end of the bar is an arrow for scrolling back and forth through your monsters. To edit a monster, point to any displayed block in the monster bar and click. To start creating a new monster, point to an unused block in the monster bar and click.

Sequence Bar. In the middle of the screen are two graphic areas. On the left is a single block, in which the currently selected monster's image appears fully animated. On the right is the Sequence Bar. The Sequence Bar is used to arrange picture blocks for the currently selected monster in an animation sequence. The Sequence Bar displays eight picture blocks in sequential order, and has scroll arrows that allow you to see any of the twenty picture blocks allowed in one sequence.

Block Bar. At the bottom of the screen is a graphic block bar that displays the contents of the block file you selected. Arrows are located on each end for looking back and forth through the block file.

New blocks can be dragged from the Block Bar up to the Sequence Bar. Any block in the Sequence Bar can also be dragged to any number of new positions within the Sequence Bar. Drag a block by pointing and holding down MB1, then moving the mouse to the drop position and releasing MB1. When a block is dropped on top of an existing block, it replaces the existing block. When a block is dragged and placed to the right of the last block in a sequence, it automatically shifts to become the right-most block in that sequence. Another interesting feature: when you fill in the last blank block on the right side of the Sequence Bar, all blocks will automatically scroll one to the left, giving you a place to insert another block.

Insert blocks into a sequence by pointing and clicking on the picture block that occupies the desired insertion point. A space will open up into which you can drag a block. Delete a space by clicking on it.

Delete blocks in a sequence by dragging a blank block from the Sequence Bar on top of the to-be-deleted block. Use MB2 to drag blocks within the Sequence Bar. The blank block replaces the deleted block, and a click of MB1 on the blank block will delete and close up the sequence. To delete the last block in a twenty block sequence, click on any block to open up a blank block and force the last block into the 'bit-bucket'; then click on the blank block to close up the sequence.

Control the speed of monster animation by setting the display time of each block in a sequence. Just point the mouse at a block in the Sequence Bar, and the present display time will be displayed under the Sequence Bar. Press the up or down arrow key to raise or lower the pause (display) time. Each frame in a monster sequence can be displayed for from 1 to 255 time units. Each time unit is about 1/18 of a second; therefore the maximum time, 255 units, is about 14 seconds long.

4.4.4 Making Monster Movement Paths and Assigning Attributes

Point to a block in the Monster Bar and Press MB2, type "I", or click on the 'INFO' button. A menu will be displayed from which you can choose types of monster movement and attributes. The default values shown on this screen are illustrated below:

Monster Movement Menu
Monster #1

Return to graphical edit screen
Help

Move according to the movement pattern
Make movement pattern
No Attack Movement

Monster passes through all blocks.
Power level: 0
Monster lives until another hits it.
No monster is born at death
If killed, increase score by 0 points.

By selecting items on this menu, you have several choices of monster movement. You can have the monster move towards the character, away from the character, randomly, or in a holding pattern. Additionally, when the monster comes into range of the character, you can have the monster start two types of attack patterns as described in 4.4.4.2.
Select any line item from the menu by using the mouse and MB1 or the arrow keys and the ENTER key.

4.4.4.1 Standard Monster Movement

Upon starting a new level of a game, all the monsters will start moving from their starting positions on the map. Select 'Move according to the movement pattern', you will be given four choices of movement: Away, Pattern, Towards, and Random. If you select 'Away' or 'Towards', the monster will move away from or towards the Character. If you select 'Random', the monster will drift around the scene randomly. You will also be asked for the speed that the monster should move. The range is from 1 to 20. Select one of the four types of movement, enter a speed, and the menu shown above will display your choices.

The menu selection "Make movement pattern" is only displayed when you've chosen to have the monster move according to a pattern. When you select "Make movement pattern" a new graphical edit screen will be displayed (see Figure 3, page 17). On the right is a box that represents a 30 by 30 block area on a map with a point in the middle representing the monster. The monster will cruise around this area in the pattern you set up. Using the mouse, you can draw a path for the monster to follow. When the monster reaches the end of the path, it will repeat the movement pattern using the end position of the path as the starting position. In this way, you can have the monster move all over the

map as each repeated pattern will move it farther from its starting point. Alternatively, you can have the end of the path coincide with the starting point, and then the monster will move on the same exact path over and over.

This design tool allows you to quickly set up repetitive patterns of movement. Use the Rub Out key to erase segments of the path starting from the last one you have drawn. Use the right and left arrow keys to select and highlight a segment of the path. Use the up and down arrow keys to set the speed of the monster (1 is slow, 20 is fast) for each selected segment of the path. Use the R and S keys or the buttons to rotate or swap your monster so that it faces the right direction along the path segment. This important feature means that, when using block designer, you only have to draw your monster facing one way even though you will have the monster move in any direction. Note: since a combination of several buttons can result in the same orientation as another combination, Game-Maker will automatically highlight the buttons to show the simplest combination.

4.4.4.2 Monster Attack Movement

The Game-Maker Playgame engine recognizes when a character moves within the attack zone of a monster.

When you select "No Attack Movement", this line will change to "Attack movement is independent of the character". Select this line again, and it will read "Attack movement is relative to the character". Select it a third time and it returns to "No attack movement". These three selections give you a powerful way to direct the monster's movement when the character is in the attack zone.

Select "No attack movement" when you don't want your monster to enter a special attack pattern when it comes within range of a character.

Select "Independent movement" if you want the character to have to avoid the monster. In this case, at the moment the monster comes within range of the character, it will begin an attacking pattern according to a pattern you design, but the monster will stay within an attack field and will not be aware of the character's position. This movement pattern will be repeated if the character hasn't gotten out of range. The ending position of the pattern will become the starting position for each subsequent pattern.

Select "Relative movement" if you want the character to have to avoid, out run, or destroy the monster. If you select relative movement, the monster behaves much like the above, except the attack pattern will be relative to the character, thus chasing the character around the map no matter where the character moves. In other words, after completing each segment of travel along the path you have defined, the monster will begin moving towards the next segment end point,

which is a position relative to the character's present position, even if the character has moved. Typically, you can have the monster close in on the character in some round-about way or simply pace along side of the character where ever it goes. For example, if the path is a segment ending at position 2,3, the monster will keep trying to move two blocks to the right and three blocks above the character. If the segment ends at position 0,0, the monster will keep trying to close in on the character's last known position. If the monster moves slower than the character, the character will be able to move out of range and the monster will return to its non-attack movement pattern.

The "Make attack movement" selection will appear on the menu if you select either 'independent' or 'relative' attack movement. When you select "Make an attack movement", a graphical edit screen appears. This edit screen behaves like the one described in section 4.4.4.1 with the following differences. First, the monster's path is purposely restricted to an area exactly four times the size of your monitor's screen. Secondly, the center of the drawing area represents the character's position at the time the attack starts. The monster will start moving from wherever it is at the edge of the screen toward the starting point that you have drawn with the mouse, and once there, will follow the path you have drawn.

4.4.4.3 Monster Attributes

You can decide to ***have a monster pass through all blocks, or be stopped by solid blocks.*** Just select the menu item 'Monster passes through all blocks' and it will change to 'Monster blocked by solid blocks'. Monsters will be stopped cold by most single lines of solid blocks and all double thick lines of solid blocks. Monster have a nasty knack of very occasionally sneaking through solid blocks in a random sort of way.....monsters are, at heart, tricky devils.

Select the 'Power Level' line and you'll be asked to enter a power level. Higher power level monsters kill lower power level monsters when the two monsters touch. For example, a bullet monster with power level 55 could kill a ghost monster with power level 51. The power level can range from 0 to 255. The character's power level is 100. If and only if the monster's power level is higher than the character's will the counter changing attributes that you've set for the monster blocks affect the character. Specifically, when the monster and character are in contact with each other, the character touches each frame of the monster as the monster frames progress repeatedly through the monster animation sequence. If any of these frames are blocks that change money, hit points, or any other counter, the character will be appropriately zapped or helped.

Select the ***"Monster lives until another hits it"*** line from the menu, and you will be given four choices; never die, die after completing movement pattern, die only when killed (hit by another monster), and die after a specified time (1 to 9999 time units). Bullets are good examples of monsters that should have a

short life and die a short period of time after birth.

When one monster dies, another can take its place. For example, the second monster could be a death dance and travel a short pattern before dying itself, or the second monster could be more deadly than the first. You can use this feature to have a bullet become a swirling killing cloud after it travels a set distance away from its source. Select 'No Monster is Born at Death' and another graphical edit screen will be displayed. At the top of the screen is a scroll bar containing the monsters that you can select, and the middle window shows the selected monster. Point and click on a monster to select it, choose another to change your selection, or click on the 'NONE' button to cancel a selection. Click on the 'MENU' button to return to the Monster Movement Menu. This menu will now indicate which monster you have selected to be born upon the demise of the first monster.

The character's score can be increased when the monster dies. Select "If killed, increase score by 0 points" and type in the number of points.

4.5 PALETTE DESIGNER

Game-Maker uses your VGA color graphics display, which can display 256 colors at the same time. A set of 256 colors is called a palette, and you can have many different palettes. For example, one palette could have mostly dark colors, another mostly bright colors, and a third all pastel colors. With VGA, only one palette is active at any one time. This means that you will use the same palette for the picture blocks, monsters, and characters on any one level of a game.

Palette Designer lets you create you own palettes. Initially, you will probably find that the palettes supplied with Game-Maker are all that you need.

Some of the names of the palettes we've included with Game-Maker are SAMPLE, SHADES, HUES, SKINTONE, and COMBO. SAMPLE and HUES actually have the same colors. We assume that you will experiment with SAMPLE, but you should not change HUES. The SHADES palette has a large set of unused color numbers. The bright white section on the SHADES palette bar and the solid blue section of the HUES palette bar are unused color numbers. You can tailor these unused color numbers to your needs without fear of changing any colors in the picture blocks provided with Game-Maker.

4.5.1 Starting Palette Designer

Start Game-Maker as described in section 2.2, and select 'Design' from the main menu strip and then 'Palette' from the design menu strip. Go ahead and try out Palette Designer as you read these directions.

Upon start up, Palette Designer displays the following menu:

```
Palette Designer
Version 2.0
by Gregory Stone
Copyright (C) - 1993

Choose a Palette
New Palette
Edit Chosen Palette
Save a Palette
Delete a Palette
Quit
```

In general, you will first choose a palette. Next, you will change colors in the palette, and then you'll save it.

4.5.2 Editing a Palette

When you select 'Edit Chosen Palette' or 'New Palette' from the menu, Palette Designer will display a palette of 256 colors at the top of your screen, a color block on the right of your screen, the intensities of the RED, GREEN, and BLUE components the selected color on the left of your screen, and the mode near the bottom of the screen. If you specified an existing palette it will be displayed. If you selected 'New Palette', the software will display a starting unnamed palette of colors.

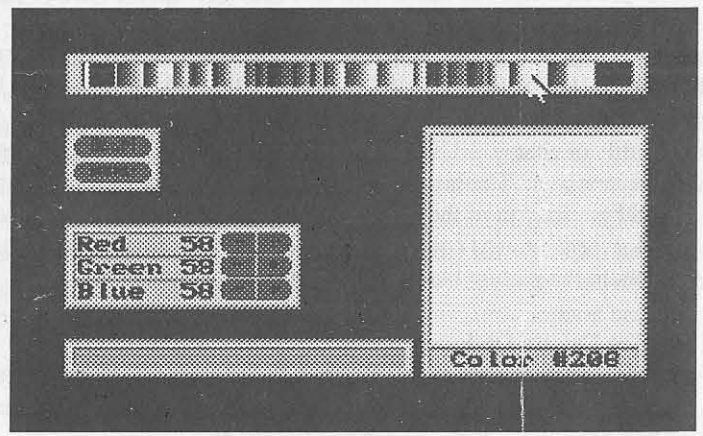


Figure 15. The Palette Designer graphical user interface.

Select any color from the palette by moving the mouse to the color's position on the palette bar, and then pressing MB1. Change your selection to another color in the same manner. The color block on the screen will become the selected color, and the red, green, and blue intensities will be shown beside it. Once you've selected a color with the mouse, you may use the right and left arrow keys to select the next or previous colors in the color bar.

Change the intensity and hue of a color by placing the cursor on any of the three intensity numbers and pressing a mouse button. Palette Designer will prompt you for a new intensity number in the lower left hand window. Type in a number from 0 (black) to 63 (brightest) and press RETURN. Alternatively, place the mouse cursor on the button containing the "-" to the right of the RED, GREEN, or BLUE and press and hold down MB1 to decrease the intensity, or on the button containing the "+" to increase the intensity. A single click with the mouse cursor positioned on one of theses buttons will decrease or increase the intensity by one unit, respectively.

Recommended colors. We recommend color #0 be black or very dark, because it is the background color used by Palette Designer and other Game-Maker software. Color #255 can't be selected for background blocks. For Monster and Character picture blocks, #255 (the last color in the bar), will be clear (transparent) during game play allowing the background to show through. However, while drawing blocks with Block Designer, color 255 will be displayed as the color you have set.

Move or copy a color to a new position on the color bar by first selecting the move or copy mode. Just type 'M' for move, or 'C' for copy. When you click MB2 on the color bar, the mode that you've selected will be displayed in the lower left window. In the move mode, you can use MB2 to drag a color to a new position. Alternatively, hold down both MB1 and MB2 and the other colors in the color bar will instantly shift and make a hole for the color being dragged. In copy mode, select the color to copy by clicking and holding MB2. Release MB2 on the position to which you want to copy the color, or click MB1 on every position to which you want to copy the color.

4.5.3 Changing the Default Palette

Most Game-Maker software uses the default palette (named DEFAULT) if no other palette is specified. Having the DEFAULT palette be the same as the one you are using during a design session saves you time, as you don't have to bother selecting the palette in any of the design. You can change the default palette to any other palette simply by first choosing the desired palette and then by saving it as 'DEFAULT'. The old default palette will be overwritten.

WIZARD TECHNIQUES — SPECIAL COLORS

Color #0 is the initial color for picture blocks, and is used as the background color for all graphical edit screens. It's usually best to have color #0 black. Color #15 is the mouse cursor color. It should be a bright color.

No matter what hue you set color #255, it will appear 'clear' when your characters and monsters traverse your game maps. Color #255 can not be used in background picture blocks.

Game-Maker uses other colors in its graphical user interfaces besides #0 and #15. Because in any particular palette, there is no guarantee as to what color number corresponds to what color, Game-Maker searches the palette and uses the best match for the colors needed.

4.6 IMAGE READER

Image Reader allows you to include graphic images into your games.

One of the most popular ways to store graphic images on your personal computer is GIF files. GIF files contain both color image information and palette information. Game-Maker lets you make use of GIF files to enhance the games you create. If you have a graphics file that is not GIF, you may convert it to GIF using one of the graphics utilities available on the market, such as the Graphic Workshop, available through Shareware, or HiJaak from Inset Systems.

Using Image Reader, you may extract portions of a GIF image into blocks within a Game-Maker block file. Image areas as small as the size of a single Game-Maker block can be 'cut' from a GIF image. Rectangle sections of a GIF image, sized up to 9 by 15 blocks, can be cut and moved to blocks in a block file. GIF files contain their own palette information. This information is automatically captured and you can save it as a palette file.

Secondly, you can select a portion of a GIF file to be displayed as a 'backdrop'. A backdrop can be displayed at various times, such as upon game startup and upon completion of a game (see section 4.8). If a GIF image is smaller than the Game-Maker's map display area, all of the image is usable as a backdrop. If the image is larger, you may select a 320 by 200 pixel section of the image that you want displayed as a backdrop.

4.6.1 Starting Image Reader

To start the Image Reader, select 'Design' at the main menu strip and 'Image' at the design menu strip. Go ahead and try out Image Reader as you read these directions. Upon start up, Image Reader will display the following menu:

Graphics Image Reader
Version 2.0
by Oliver Stone
Copyright(C) - 1993

Choose a GIF File
Choose a Set of Blocks
New Set of Blocks
Cut Images to Block Set
Save Block Set and Palette
Get Backdrop
Delete a Backdrop
Quit

4.6.2 Capturing a Backdrop Image

Starting with Version 3.0 of Game-Maker, we no longer recommend using backdrops. Instead, we recommend that you use your favorite graphics tool, or one of the tools mentioned above, to scale GIF files to 320 by 200 pixels. Game-Maker V3.0 can directly display GIF files. Nevertheless, for reasons of backward compatibility, Image Reader still supports backdrops.

Copy the GIF files that you want to use in a game into the game subdirectory. From the menu, first select "Choose a GIF File", select the name of a GIF file, and then select "Get Backdrop".

If the image is smaller than the Image Reader's backdrop display size (320 by 200 pixels), you'll directly be shown the image.

If the image file is larger than Image Reader's scene display size, a one quarter size image will be displayed. Overlaying this image will be a selector box, which you can position with the mouse. Press MB1 to select a screen sized portion of the image as outlined by the selector box. The backdrop will be displayed for your approval. Press MB1 and you will be asked to save or not save the backdrop.

NOTE: Game-Maker saves information about what portion of a GIF file you want to use as a backdrop, and where on your system that GIF file is located. If at some later time you delete the GIF file or move it to another directory, Game-Maker won't be able to find it. When you use the 'Transfer' utility to save a game on a diskette or into a subdirectory, Game-Maker will copy the GIF file (along with all other gameware) to the diskette or subdirectory. Thus transferred games will have their own copy of any required GIF files.

4.6.3 Capturing Images for Block Files

From the menu, choose a GIF image file. If you want to move images into an existing block file, choose one, else you can move images into a new block file by choosing 'New Set of Blocks'. Even if you want to move the captured image into another block set, you usually will move the captured blocks into a new blocks set with a new palette, then convert that block set to the palette of the target blocks set, and finally transfer the image blocks from the new block set into the target blocks set. By using this process, you will preserve the image's colors.

Once you've selected a GIF image file, if the image file is smaller than the Image Reader's scene display size (320 by 180 pixels), the Capture Image Editor screen will be displayed. If the image file is larger than Image Reader's scene display size, a one quarter size image will be displayed. Overlaying this image will be a selector box, which you can position with the mouse. Press MB1 to select a screen sized portion of the image from which you can capture images into your block file. The image you outlined with the selector box will be displayed.

At the bottom of the screen is a block bar containing the block set. Press MB1 in the block bar to select an unused block or a section of unused blocks into which you will capture the image. Press MB2 with the cursor outside of the block bar to automatically select the next available unused block in the block set. A block within the block bar can be erased by pressing MB2 while pointing at the block.

Use the mouse to move the capture box around the image area. The right and down arrow keys will make the capture box bigger, and the left and up arrow keys will make it smaller. Press MB1 to capture all of the image contained in the capture box, or hold down MB1 and drag the capture box anywhere on the image. Release MB1 to capture the outlined image. As you move the capture box, you can see to-be-captured image in the blocks in the block scroll bar. If the capture box is bigger than one block, multiple blocks will be captured and placed in order in the block file. If there is not enough contiguous unused blocks in the block file, starting with the block selected in the block bar, capture will not occur.

Once you've captured your images, return to the menu and save the block set and palette.

WIZARD TECHNIQUES — SUCCESSIVE IMAGE CAPTURES

When capturing images, pressing MB2 automatically moves the block bar selection point to the next unused block, and scrolls the blocks in the scroll bar. This saves time when capturing multiple block images from one GIF image. Backdrops consist of the original GIF file along with information on what portion of it is to be displayed. If you own a graphics utility that allows you to crop images, you can and should save disk space by cropping large GIF files to about the right size and then directly display the GIF file, rather than setting up a backdrop.

4.7 SOUND DESIGNER

Game-Maker allows you to design sounds for the PC speaker and import digitized Sound Blaster compatible .VOC sound files. You can assign these sounds to a particular character animation sequence or event. Use the Sound Designer to create and listen to the sounds, and use Character Maker to assign a particular sound to a character animation sequence.

The Sound Designer also changes the clock speed, if necessary, within CMF music files to the timing used by Game-Maker. This doesn't not effect the music, and the CMF file remains a true CMF file.

4.7.1 Starting Sound Designer

To start Sound Designer, select 'Design' at the main menu strip and 'Sound' at the design menu strip. Go ahead and try out Sound Designer as you read these directions. Try the SAMPLE sound set found in the SAMPLE game area. Upon start up, Sound Designer will display the following menu:

Sound Designer
Version 2.0
by Oliver Stone
Copyright(C) - 1993

Choose a Sound Set
New Sound Set
Edit Sounds
Save a Sound Set
Delete a Sound Set
Convert a CMF File
Quit

To make your own sounds, you will either start with a brand new sound set or start with one of the sound sets that come with Game-Maker.

4.7.2 Preparing Music for Game-Maker

Sound Blaster CMF files can contain different timing data, and unless standardized might play at the wrong speed. To convert a CMF music file to standard timing, first copy the file to a game area. Then select 'Convert a CMF File' from the menu. If needed, select the "..\" selection to navigate to the game area. A list of CMF files are displayed. Select the newly copied CMF file and it will be converted. Add music to any game level using the Integrator (section 4.8).

4.7.3 Designing PC Speaker Sounds

Each sound set contains up to 30 sounds. When you select 'Edit Sounds' a graphical edit screen will be displayed. The screen will show a bar graph and some control buttons. On the Y axis is frequency, with high frequencies at the top and low near the bottom. All the way to the top of the graph is beyond human hearing, and the bottom of the graph represents silence. The X axis is time, with the total time lasting for about a quarter of a second.

Creating a sound is easy. A default line on the graph shows a mid frequency beep. Click MB1 on any portion of the graph and a small segment of the bars will be repositioned at the mouse cursor. Move the mouse around the graph with MB1 pressed down, and you'll redraw the graph. Each bar on the graph will cause your computer to make a short sound at the frequency indicated. The bar graph sounds play on your PC speaker.

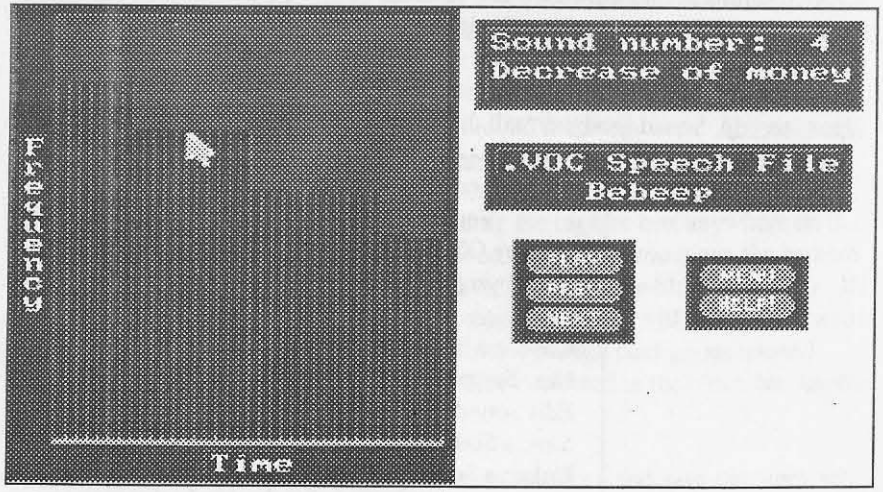


Figure 16. Design sounds by drawing the sound envelope.

Point and click on the 'PLAY' button to hear the sound, or continually move the mouse cursor within the button with MB1 held down to listen repeatedly to the sound. Press the plus or minus keys to select the next or previous sound from the sound set.

4.7.4 Setting up Digitized Sounds

Digitized sound clips can be assigned to any of the thirty sounds in each sound set and played via a Sound Blaster compatible sound card. Sound clips are stored as .VOC files. Copy the .VOC files that you want in a particular game into that game's game area (subdirectory).

To place a sound clip into a game, run Sound Designer, click on the lower text display window, and type in the name of the .VOC file you want for each sound in a sound set. If a Sound Blaster compatible sound card is not available or if a .VOC file is not specified, Game-Maker will play the corresponding PC speaker sound. Several sound clips are included with Game-Maker and others are found in each of the games. The CD-ROM version of Game-Maker has a large number of sound clips organized by type in subdirectories below the SOUND directory. Use the digitized sound player that comes with your sound board, or a Windows sound player to listen to the many sound clips.

4.7.5 Game Actions That Trigger Sounds

The following sounds are generated by Game-Maker when specific actions occur during game play. If an action occurs while another action's sound is still playing, the first sound stops and the second is played.

SOUND	ACTION TO GENERATE SOUND
Sound # 1	Hit Points Gained
Sound # 2	Monster Dies
Sound # 3	Money is Acquired
Sound # 4	Money is Spent
Sound # 5	A Life or Lives are Acquired
Sound # 6	The Score is Increased
Sound # 7	The Score is Decreased
Sound # 8	Any Other Counter is Increased
Sound # 9	Any Other Counter is Decreased

Besides the above actions, you will often want Game-Maker to play a sound when a character loses hit points, dies, shoots, or moves in some unique way. Using the Character Maker, any of the 30 sounds in a sound set can be assigned to character sequences.

4.8 INTEGRATOR

The Integrator brings together all the components of a game. You will use the Integrator to name all the scenes in your game, and to specify which palette, map, character, monsters, sounds, and music are to be found in each scene. Integrator lets you define when characters can pop from a location in one scene to a location in another scene.

4.8.1 Starting Integrator

To start Integrator, select 'Design' at the main menu strip and 'Integrator' at the design menu strip. Go ahead and try out Integrator as you read these directions. For practice, you can start with a clean slate by selecting 'New Game' or select the game SAMPLE. If you start with SAMPLE, it would be best to not save any changes you make under the same name SAMPLE, as your changes would overwrite the original SAMPLE game.

Upon start up, Integrator will display the following menu:

```
Integrator
Version 2.0
by Gregory Stone
Copyright (C) 1993

Choose a game
New game
New game area (directory)
Edit the chosen game
Save the chosen game
Delete a game
Quit
```

If you want to create a new game area into which you want to move gameware files, select "New game area" and then enter the name of the game area. If you are integrating a brand new game, select "New game". If you are updating a game, select "Choose a game" and then select or specify which game.

4.8.2 Putting It All Together: Defining a Game

Integrator's graphical edit screen is divided into two windows, as can be seen in the figure 17. The bottom window is used to display the "world" of the game. The top window is used to make selections and enter data.

A game's world simply consists of a group of scenes each of which is populated with monsters and a character. At the top of the world is a green square representing the Title Screen. At the bottom is another green square representing

Game Won. The Title Screen and Game Won squares are always present, and all games must start from the Title Screen and end at Game Won.
Point and click on the "SELECT" and "DELETE" buttons as directed in the following paragraphs. One click sets a button, a second click unsets it.

Place scenes in the game's world simply by moving the mouse cursor to any position in the bottom box and pressing MB1. (The SELECT and DELETE buttons should NOT be set.) Each scene will be represented by a small square. **Drag the scene** to a new location using MB2.

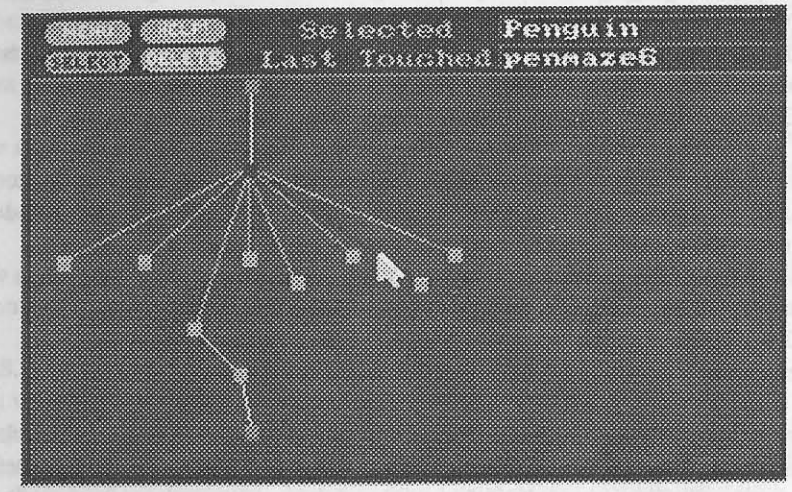


Figure 17. Selecting a link between scenes.

You may place up to twenty scenes in a game during one working session. If you need more scenes, simply save your work and quit, then restart Integrator. Each scene uses a small block of memory, and the more scenes that you have the less memory Game-Maker will have for handling sound and music files. A trick you can use to conserve scenes: rather than have a large number of scenes made from maps that only allow the character to travel over a small part of the map, create several scenes within one map. Using Integrator, you can have the character enter the map multiple times in the area of the map of your choice.

Name scenes by first pointing (but not clicking) at a scene's square with the mouse cursor, and then pointing and clicking at the scene name which will be displayed in the top window. Use the Backspace key to rub out the old name and type in a new one. All scenes are named "Untitled" until you have entered a name.

Define each scene that you've placed in the world by pointing and clicking on

it (with the "Select" button NOT set). An information form will appear that will allow you to select the palette, map, background block set, monsters, monster block set, character, character block set, sound set, music, type of scrolling, and initial and ending multimedia displays. The form will show you any previous information you have selected.

Define the Title Screen and Game Won by pointing and clicking on the gray squares located at the top and bottom of the world box. An information form will be displayed that will allow you to specify a set of multimedia displays. Multimedia displays can be set up for the game kickoff, opening menu backdrop, storyline, game instructions, credits, high score background, save background, restore backgounds, game won, and game lost. When the game starts up or ends, the multimedia display you specified will be displayed. Section 4.8.3 below explains how to create multimedia displays.

You may also ***designate a demo game*** that will automatically play (see section 3.2). If you choose the demo to be 'GAME_NAME.REC', a recording of the last game played will become the demo game. To create a permanent demo game, just play the game, and then copy the GAME_NAME.REC file which Game-Maker automatically records to a permanent file name such as 'DEMO.REC'. The file extension must be .REC. Then specify in the Title Screen scene's information form that this file is the demo.

Game-Maker will play Sound Blaster .CMF files on Sound Blaster compatible sound cards. Place your CMF music files in the game's subdirectory, and then convert the CMF file as explained in section 4.7.2.

Select a scene in order to assign or examine the character travel routes between scenes. Do this by pointing and clicking the "Select" button in the top window and then pointing and clicking at a scene in the world. The scene you just selected will turn green. All valid routes that a character can take from the selected scene to other scenes will be highlighted in red. Other routes will be shown in blue. Once a scene is selected, you can move the mouse cursor to empty space anywhere in the world, and press and hold down MB1. A black line will instantly extend from the selected scene to the mouse cursor. ***Drag the line to any scene to which you want the character to travel,*** and release MB1. The line will change to red, showing the new travel path. A maximum of ten paths of 'hyperwarp travel' can exist for any one scene.

To set up exact locations from and to which a character will travel between scenes, first select the scene from which the character will travel. Next, point and click on the link between the two scenes. A graphical edit screen will be displayed showing the maps of both scenes. Link a position on the left map to a position on the right map. Black and white squares containing a gray "L" show

the designated Link positions. Use the arrow keys to move around the map in which the mouse cursor is located. When the cursor is on the desired link location, point and click and the old link square is erased and a new one is placed into position.

Create multiple links from one scene to another by first placing multiple lines between the scenes in the 'World' box. Note that link lines that connect two scenes will overlay each other and appear as one line. Next select the 'from' scene and click on the line between the two scenes. After the two maps are displayed, use the 'NEXT' and 'PREV' buttons to set up or edit multiple link positions from one scene to the other. Note: when setting up links, the Title Scene and Game Won scene are displayed simply as empty maps, and can each link to just one scene.

To select another scene, point and click the SELECT button to unset it; this unselects the previously selected scene. Now select another scene just as you did the first one, starting with a point and click of the SELECT button.

To delete a scene, point and click the 'Delete' button, then point and click at a scene.

4.8.3 Multimedia Displays (Storyline, Instructions, etc.)

At various times during game play, a 'multimedia display' can be shown. Game-Maker supports the display of .GIF image files, .FLI animation files, text files, and text over image files. A CMF music file can often be selected to play as these files are displayed. Not only does Game-Maker display these files, but it can display a group of these files in 'slide show' fashion.

For example, as a game starts up you can show a 'Title Graphic' multimedia display, which can be followed by a "Menu Graphic" multimedia display. The game engine will display its opening menu after the Menu Graphic, and can even place this menu on top of the last image in that multimedia display.

There are many Shareware and commercially available products that allow you to create and edit text, image, and animation files. In addition, the CD-ROM version of Game-Maker includes over 1000 GIF image files and a good number of FLI animation files for your use.

4.8.3.1 Placing Multimedia Displays in Your Game

Using the Integrator, you can specify multimedia displays to be shown at the following times. Just select a scene with MB1 and then select any of the menu items listed below, and a list of available files in the game area will be displayed from which you can choose. All of these are optional and don't have to be specified.

MULTIMEDIA DISPLAYS

Title Screen Scene	Each Game Scene
Title Graphic	Level Intro Graphic
Menu Graphic	Level Exit Graphic
Storyline Graphic	
Beginning Credits	**Game Won Scene**
High Score Backdrop	Game Won Graphic
Load Game Background	Game Lost Graphic
Save Game Background	
Game Instructions (see section 4.8.3.3)	

The Title Graphic is displayed upon game startup. The Menu Graphic is displayed next, and the game's opening menu will be displayed on top of the last image in the Menu Graphic. Using the opening menu, the game player can choose to display the Storyline, Game Instructions, Beginning Credits, and High Score.

During game play, the Save Game Background and the Load Game Background are displayed when the player saves or restores a game in progress. At the start and end of each game level, another multimedia display can be shown. Finally, at the end of the game, either the Game Won Graphic or the Game Lost Graphic will be displayed.

The Game Instructions are also displayed during the game if the user types the F1 key.

4.8.3.2 Multimedia Display Files

Multimedia Displays handle five types of files, each of which must have a particular file extension:

File Type	File Extension
Text files	.TXT
GIF image files	.GIF
FLI animation files	.FLI
List files	.LST
Backdrop files	.BKD

You can make text files and list files with your favorite text editor, or even with a word processor if you know how to covert the file to ASCII text. Each line of a text file should be limited to 30 characters, as only 30 characters per line are displayed and excess characters can cause display problems. Any length text files are permissible, as Game-Maker will display the text a screen full at a time. The viewer can type any key to see the next screen.

GIF files are industry standard GIF format image files. We recommend that you scale and crop your image files to 320 by 200 pixels (see section 4.6). FLI files are industry standard 'flick' animation files. Use your favorite paint program and FLI animation program to create GIF and FLI files.

List files contain list of text, image, and animation files along with control information (see the following section).

BKD files are produced by the Image Reader (see section 4.6). **We no longer recommend the use of BKD files and may stop supporting them in the future,** as GIF files, cropped to size, are much more efficient.

4.8.3.3 Setting Up List Files

Using your favorite text editor, you can make a list of .GIF, .FLI, .TXT, .BKD, and .LST files. Name this list file with a .LST extension. Do not use list files recursively (that is, a list file should not contain the name of itself or of another list file that contains the name of itself).

After each file on the list, you may place a number which represents the seconds that this file will be displayed before automatically displaying the next file. If you do not specify any number, the file will remain displayed until the game player types a key. Text files will be displayed on top of the previous .FLI or .GIF file if these files are followed by a number. Place a 0 beside the .FLI or .GIF file if you want the following text to appear as soon as the graphic image is displayed. For example, a .LST file might look like the following:

```
KEYS.GIF  10
PLAQUE.GIF  0
ITEMS.TXT  30
MON1.FLI  30
MON2.GIF  30
PLAQUE.GIF
ROUNDS.TXT 20
```

Special Note: We recommend not placing .FLI files in the Game Instructions display. This display can be seen by the user upon selecting 'Game Instructions' from the game menu, and also during game play when key F1 is pressed. Because only limited memory is available during game play, there is a chance that although Game Instructions with .FLIs will work perfectly from the menu, they will not be displayed correctly when F1 is pressed. At the time this manual was written, placing a .GIF file after a .FLI often solved the problem, but for large .FLI files the system sometimes would hang, and the ESC key would have to be pressed several times rapidly to continue. (The hanging situation may have been eliminated with the code that you received.)

4.9 GAME PLAYING SOFTWARE

Game-Maker automatically performs certain activities during game play. Some of the less obvious ones are explained in this section.

4.9.1 Configuring Game-Maker Software

The Configuration Screen is displayed the very first time any game is played, and is an item on the game playing menu. The Configuration Screen allows the user to tell Game-Maker about your computer's hardware configuration.

Game-Maker will usually work with your Sound Blaster compatible sound card and your video display without any need to enter configuration data. If you do experience a problem, use the configuration screen to change the relevant data. Select the HELP message on the configuration screen to learn about configuring Game-Maker to match your hardware.

4.9.2 Game Behavior During Game Play

If you don't start playing a game within about 30 seconds, it will start playing a previously recorded game.

When a character loses one or more hit points, it automatically performs its 'injured' sequence.

A character dies when it's hit points reach zero or go negative. Game-Maker watches the hit points, and automatically executes the 'die' character sequence. If the character has any remaining lives, the present level will be restarted from the beginning.

When a character goes to a new level, all counters, money, lives, hit points, inventory, and score are preserved. Some of these values can be initially set; for example, each character has an initial inventory, hit points, and initial lives. *These initial values apply only upon game start up.* When a character dies with one or more lives left, the values that have been accumulated during game play are also preserved, except hit points are re-initialized as defined in the character set.

See the table in section 3.0 to learn how to observe the status of the counters, hit points, score, etc.

At the end of a game, a High Score List will be displayed which also shows the score for the game just played. You will be allowed to enter your name if your score is higher than the lowest on the list. One list exists for each game.

5.0 GAME-MAKER UTILITIES

Game-Maker provides several utilities that assist you in the administration of your Game-Maker data files.

5.1 BACKUP AND RESTORE

Game-Maker provides a utility to backup and restore the maps, picture blocks, characters, monsters, palettes, and other Game-Maker data files that you have created. **Back up your data files on a regular basis to a floppy disk!** Sooner or later your hard disk will fail or you will accidentally delete, overwrite, or mis-edit a file. Be sure and clearly labeled your backup diskettes.

Backup files by selecting 'Utilities' on the Main Strip Menu and 'Backup' from the Utilities Strip Menu. Restore files by selecting 'Restore' from the Menu.

You may choose to backup files to and restore files from any directory on any hard disk or any floppy disk. In standard Game-Maker fashion, Backup and Restore will display all the files in a named directory of a given type, such as Palette or Monster Block files, and allow you to select which one you want.

When backing up, accept the default disk and path A: or enter the MS-DOS path designating the drive and directory to which you want to save a file, and then select a file type and the specific file to backup. When restoring, accept the default disk and path (A:) or select another path from which to restore, and then select the file type and specific file .

Sample Files. Besides providing Backup and Restore for your data files, Game-Maker provides a quick method of restoring all the SAMPLE files that were provided with Game-Maker. We assume that as you learn how to use Game-Maker you will destructively modify all the SAMPLE files, and the following process quickly restores all these files.

STEP 1. If you want to keep any changes that you have made to the sample palette, block sets, monsters, character, or game, use Game-Maker to save those changes under names other than SAMPLE.

STEP 2. Using MS-DOS, go to the C:\GM\SAMPLE\ directory.

STEP 3. Place the Game-Maker CD-ROM in its drive.

STEP 4: At the MS-DOS prompt type:

COPY D:\SAMPLE*.* C:\GM\SAMPLE*.*

5.2 TRANSFER GAMES TO DIRECTORIES AND DISKETTES

The Transfer utility automatically 'packages' into a subdirectory or diskette all the files needed to run a game and creates an .EXE file, named the same as your game name, which can be run to play the game. For example, you may want to transfer a game to a diskette to give to a friend. Alternately, you may want to transfer one of your games to a game subdirectory so that you save a stable copy of your games in one place, and yet can continue to make changes to the same game in your Game-Maker directories. Transfer does not disturb or delete any data, it simply copies gameware and software.

To use TRANSFER, select 'TRANSFER' at the Utilities Menu and follow the displayed instructions.

To run a transferred game, go to the directory or diskette that contains the game and just type the name of the game — the Game-Maker development environment is not required.

Note: You may freely give 'transferred' games to friends (see your license agreement and the 'Copying and Distributing Games' paragraph on the second page of this manual). You may also distribute your games through Shareware, the Game-Maker BBS, or by any other method. A small royalty payment is required for most commercial types of distribution.

When a transferred game is first run, the configuration menu is displayed. If the user wants to re configure at a later time, a CONFIG.BAT file is included with every transferred game. Just type 'CONFIG'. When packaging a game for Shareware or other distribution, it is a good idea to package a freshly transferred game, or delete the CONFIG.DAT file: in either case, this will cause the configuration screen to be displayed upon first running the game.

You can directly run a game demo of a transferred game. Instead of first waiting thirty seconds for the user to respond before playing the demo, it will start right up. Just start up the game by typing the name of the game followed by the name of the demo: **C:\> PEACH DEMO.REC**

5.3 JOYSTICK SETUP AND DIAGNOSTICS

To setup and check out your joystick, if you have one, first select 'Joystick Setup' from the Utilities strip menu. The setup utility will ask you to move the stick into various positions so that Game-Maker can make a record of how your individual joystick behaves. Since most joysticks drift over time, you might want to do this whenever the joystick isn't behaving well.

The Joystick Diagnostic utility can also be selected from the Utilities strip menu. This utility will let you see the readings that your joystick sends to your computer. If the center position for the joystick doesn't give you readings centered between far left and far right or all the way up and all the way down, then use the knobs on your joystick to adjust it. Afterwards, run the Joystick Setup again to record your new settings.

5.4 GIF FILE VIEWER AND FLI FILE VIEWER

A basic GIF file viewer called 'SEEGIF' is included with Game-Maker, although we expect most users will prefer to use their favorite image viewer. The SEEGIF viewer is in the PICTURE subdirectory on the Game-Maker CD-ROM. Type "SEEGIF" when in SEEGIF's directory to display instructions on how to use this viewer. In brief, when using SEEGIF you type three arguments after you type "SEEGIF": the directory where the file(s) are located, the SVGA board driver, and the video mode that you wish to use. Before displaying a file, SEEGIF will display the directory and the driver. After you type RETURN to confirm, additional instructions will be displayed.

Not all SVGA boards are supported and not all boards support all modes. We recommend that you usually choose the "FIT" mode, which will automatically give you the best fit. If your board has a mode that your monitor doesn't support, "FIT" may use that mode but at best a garbled image will be displayed. If this happens, use one of the numbered modes for that particular file.

Several drivers are provided for various SVGA boards, and can be found in the same directory as SEEGIF.

If for a particular video mode the picture is larger than the screen, just the upper left of the picture will be displayed.

Use FLI.EXE, found in the ANIMATE subdirectory, to display .FLI files. Just type in "FLI" followed by the path and full file name of the file to be displayed. The FLI file will display the FLI animation one time. For example:

D:\> **FLI D:\ANIMATE\EARTH1.FLI**

6.0 ADVANCED TRICKS AND TECHNIQUES

This chapter will explain some of the interesting effects that you can achieve by using Game-Maker in creative ways. But first a suggestion or two. When making a game, you will usually have more fun if you first decide on a general theme, and then improvise. Alternately, you can plan out each scene in advance, perhaps to insure that each scene has its own personality and that the character will move from scene to scene in a logical way. Next, borrow as much gameware as you can from other sources if speed of development is more important to you than having an entirely original game.

Chapter 4 of this manual contains many game design techniques. Be sure and read Chapter 4 before reading this chapter, as this chapter assumes that you already know Game-Maker's features fairly well .

6.1 BACKGROUND ANIMATION

The term 'background animation' means that sections of your background map can change over time. In fact, you could animate every part of your background, except your processor probably couldn't handle the computation required. Typical uses of background animation are having fire flicker, lights light, animals move, rivers run, windows and doors open and shut, and spikes stick victims.

A background animation is created by setting a background block to change on time to another block, which in turn changes to another block, etc., until the last block changes back to the first block (see section 4.2.3.1). You may set the time that each of these blocks is displayed to be from one eighteenth of a second to about six minutes. When blocks change as fast as one eighteenth of a second, the animation is very smooth and fast, but more computer resources are used.

Synchronous and Sequenced Animations

Here's an example that will help show you some of the flexibility of background animation. Assume that you've set up three blocks, A to B to C back to A, into an animation loop. When placing these blocks on your map, you may place either A, B, or C on the map. When the game starts, the locations you've set to A display A, those set to B display B, and those set to C display C. When placed next to each other, you can see that the blocks maintain their time offset throughout the game. You have really created three loops: A-B-C, B-C-A, and C-A-B. Use this feature to create synchronous (all the same) and sequenced (delayed progressively in time) animations.

Time Offset Animations

You can also delay an animation's start time by creating an initial 'time offset' block, which changes to the animation sequence after an initial offset time. For

example, you might set an initial block to wait 2 minutes before changing to an animation sequence A-B-C. There is one tricky concept here. When the initial block changes to the sequence A-B-C, it won't necessarily change to block A. This is because as soon as the game started, the software was keeping track of the A-B-C sequence, invisibly having it do it's thing. When the initial 'time offset' block changes, it changes to which ever block is current.

Large Animations

By placing background animations next to each other, you can create large animated areas. If these loops have the same total time, you can make sizable animations that stay synchronized.

Using Attributes within Animations

Any block in an animation loop can have an attribute set, such as 'add -10 to the character's hit points'. Selectively set the blocks' attributes to make dangerous or beneficial animations. As long as the character is touching a block (except when the character is in its 'injured' sequence), it will increment or decrement the attribute every time click (e.g., the entire time the character is in contact with a picture of fire it continues to lose score). To limit this effect, you can have just one block in an animation sequence change the character's attribute, and you can set this block to be displayed for just one time unit. This gives the character time to move away while the other blocks are being displayed (e.g., the character only loses hit points when a spike springs out or a fire flickers white hot).

Changing Blocks on Contact with the Character

The character makes contact with a block when it attempts to travel across the block. It is not in contact when it is just adjacent to the block. A background block can be set to change to another block when the character contacts it, and usually a simple replacement of one block for the other results.

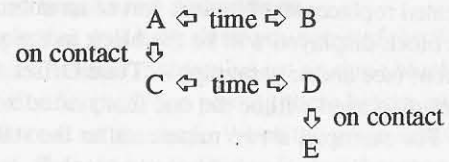
However, if the designated replacement block is part of an animation sequence, the actual replacement block displayed will be the block in the animation sequence which is current (see above paragraph - 'Time Offset Animations'). The animation sequence displayed will be the one that started with the designated replacement block. For example, if two minutes after the start of the game the character contacts a block that is set to change to block B, but block B changed one minute after the start of the game to a stable block C, then C will be displayed. Second example: if the character contacts block D which changes to block F in the animation loop F-G-H, then whatever block in F-G-H is current will replace D and be displayed.

Changing Animations on Contact with the Character

If a block in an animation loop is set to change to another block on contact with

the character, one of several things happen. If the designated replacement block is the first block in another animation loop, the first loop will be replaced by the second. If the new block is simply a normal background block, the map will display that background block. Thirdly, if the new block is the first block in the animation sequence currently being displayed, no change will occur as a change to the current animation loop is really no change. In all cases when changing to another animation loop, the current block in that loop is displayed since the block shown in Block Designer's Information Menu represents the animation loop.

The following example shows one of the almost unlimited complex tricks you can set up. Let's say you want to have an hidden area in the scene react to contact with the character, add score or whatever, display a new picture block for a short period of time, and then become a stable background block. To do this, set up a time sequence A-B, where A changes to B in 2 time units, and B changes back to A in 18 time units. Have both blocks look exactly like the surrounding background, so they are 'hidden', and have A set to change the score/hit-points/whatever. Also have block A change to block C on contact, and have a time sequence C-D where C has 18 time units and D has 2 time units. Make blocks C-D different looking than the background so that when displayed, they will stand out. Since sequence A-B and C-D both total to 20 time units, they will always be in sync with each other. When the character touches block A, it will first change the score or whatever and then change to block C. Block C will have about 18 time units to go before changing to D, and thus it will be visible for about a second. Have block D change on contact to a stable block E. As a result, when the character moves across A-B, as soon as A is displayed it immediately changes to C. C flashes on the screen for a second, but when C changes to D if the character has not moved, C will be in contact with D. Since you set D to change to E on contact, E will be displayed. Graphically:



6.2 MONSTERS

Chaining Monsters

Examples: A harmless bug turns into a scorpion. A bullet explodes at the end of its path or when it hits something. A creature has a very long and detailed animation sequence. Technique: When a monster dies, it can birth another monster. You can use this to create many special effects. Since the monster that is birthed can also die and birth a third monster, (and on and on), you can 'chain' monsters together. If the last monster births the first one in the chain, the chain of monsters can not be killed even if members of its chain are killed.

Repetitive One Way Movement

Examples: A bird flying from one tree to another once a minute. A bullet firing every five seconds from a gun emplacement. There are two techniques to do this. First, you can have a background block birth a monster every so often. This works fine unless you want the monsters to stop once one of them is killed. Second technique: Make a monster travel according to the pattern you want, and have it die at the end of the pattern. Have a second monster be born on death of the first, and have the second monster return on a path to the starting point at the speed that will give you the repetition rate you want. The second monster should also die at the end of its path and upon death, birth the first monster. This starts the process all over again. If the second monster does not have any picture blocks in its animation sequence (sort of a null monster!) player will only see one way repetitive movement. Give the invisible monster the highest power level so it can't die, but don't set any of its monster block attributes; that way as the invisible monster returns to the starting position, it won't hurt the character.

Mysterious Forces on the Character

Set up a monster with a completely clear picture block, with solid sides, and with a power level of 100, and set to never die. Make the monster move back and forth on a repetitive path. When the character is in the path of the monster, the character will get pushed around. You can also use this technique to have a door mysteriously and invisibly open from time to time (i.e., have the monster move out of the way occasionally).

Ganging Monsters

Example: A multi-block sized monster cruises around the map. A flock of bees fly around the map. Technique: Have a monster move according to a path, and place several of these near each other on a map. They will stay in formation. Or make several different monsters with identical paths, and place them next to each other on the map.

Bird-dogging the Character
Example: Everywhere the character moves, a helper or so moves along, but at a distance. These helpers can kill monsters if desired. Technique: Create a monster and have it's movement set to "relative to character". Set its speed fairly high, and have it's path be just a point (or a small set of steps) near by the character reference point when you set up the path. As long as the character can't out run the monster, it will track along. A bullet fired by the character would not kill this monster if its power level exceeds that of the bullet, or if it is set to never die.

Multiple Hits Before Being Killed
Example: Your character fires a weapon at a monster, but instead of dying it shudders and then comes back fully alive. Technique: Have your character's weapon kill the first monster, but have it change to another upon death. This second monster can shudder and shake, then have it die after a period of time and change into a third monster at death. This third monster can look like the first, but when hit, you can have it completely die. Many variations are possible using these techniques.

Death of a Monster Spawns a Group of Monsters.
Set up a stationary monster so that it turns into another monster upon death. This second monster should have a very high power level, and have it move in a particular direction and then die after a period of time. As this second monster moves across it's path, it can touch a bunch of stationary monsters that you've placed just where it would travel. The entire bunch will die. Have each of them turn into other monsters (preferably ones that don't die easily, as the second monster may still be touching them when they are born).

6.3 CHARACTERS

Character Changing Size or Action in One Scene

Examples: The character picks up a hat, and from that point on it is wearing the hat, as is done in the PIPEMARE game. The character touches a magic book, and can then jump higher. Technique: There are two techniques for changing the character during a scene. The first uses the feature of Character Maker that 'ties' a character sequence to a block (object), and the second uses repetition counts.

You can set up 15 character sequences. Any of these sequences can be set up to be executed when the same key, say Up Arrow, is pressed. However, only the first sequence that can be executed will be displayed. If, for example, sequence #1 is tied to an object but the character hasn't picked up that object, sequence

#1 will be passed over and a subsequent sequence will be displayed. If the next sequence set to Up Arrow only executes if it's repetition count is greater than zero, it will be passed over whenever the repetition count is zero. By drawing the picture blocks and movements for each of these sequences differently, the character will change behavior or looks based on objects picked up or on acquisition of repetition counts.

Besides the above, when the game progresses to a new scene (level), you can have an entirely new or completely modified character be associated with the new scene.

Extending the Size of Characters
Example: A character steps forward, swings a sword that kills an attacking monster, and then returns to walking. Technique: You can draw a monster as an arm, or a sword, or whatever, that will appear as an extension of the character. This is a two step process. In the following example, the extension to the character will appear on the character's right side. First, create an (optionally invisible) monster and have it move on a path one block to the right at a speed of 50. Set this monster to die at the end of its path. Also create a monster that will be the extension to the character. Set this second monster's movement to move on a null path by having the monster stay in one place rather than move on a path simply by not specifying any path (the path will appear as a point on the path design screen). Have this second monster die after a specific time has elapsed. Create a character sequence that goes to completion, is stationary, and shoots out the first monster. When the character shoots the first monster, the first monster will quickly go one block to the right of the character, die, and turn into the second character. This happens so fast that the first monster doesn't actually have to be invisible. The second monster is born, stays in place for the designated time, and of course animates in any way that you've set up. You should time the monster's animation to move in synchronization with the movement of the character sequence. The result is a character that suddenly has an animated extension.

In the above example, you might want to make the power level of the second monster fairly high so that it can kill other monsters. The character will remain unharmed by the extension monster if you insure that none of the monster's picture blocks harm the character.
You can make even more complex extensions, by having the second monster move, by shooting out more than one extension, by having the second monster die and birth a third, etc. Use your imagination.

Jumping on a Monster and Killing It
Make a character sequence that jumps up and comes back down. On the way down have a monster with 'away' type movement shoot from the character.

Since the character is on the way down, the shot monster will come out of the bottom of the character and kill any lower power level monster that it hits. Because a visible part of a monster must touch another monster to kill it, you can't do this trick with invisible monsters.

Shooting Techniques

Using Character Maker, you can set a single character sequence to shoot once each frame, resulting in multiple identical or different monsters shooting from the character for each stroke of the key or joystick button. (Be sure an have at least one frame of the character's animation sequence be a picture of the character, else so many monsters will shoot that your computer will be overwhelmed). If you have your shooting frames alternate with frames containing the character, and if the character moves in a new direction in each frame, monsters with 'away' motion will shoot out in each new direction.

It is usually best to have non-solid sides on all monster blocks that shoot from the character. This prevents the monster from pushing or jerking the character backwards.

Special Counter Techniques

Typically, special counters are used to accumulate items like keys, which then let you unlock doors (see section 4.2.3.5). The doors decrement the counter, the keys increment the counter. Special counters can also be used in reverse, usually to grant the character special powers. For example, you can have some background blocks set to injure the character (i.e., decrement hit points) and also decrement a special counter. If the initial value of the special counter is high, then the character will be seriously hurt or killed when it passes over these background blocks. You can set the character's initial value by forcing it to contact a block somewhere in a scene. However, if the character finds and touches a magic potent block or whatever that decrements the special counter to zero, then the character can be said to acquire the power to move across the above mentioned background blocks without receiving an injury. As explained in prior sections, have the blocks that set the initial count and the 'magic potent' block change on contact to regular background blocks so that the counter only gets affected once upon contact.

6.4 JOYSTICK TECHNIQUES

Setting up Character Sequences that use the joystick and joystick buttons can be tricky, but by the proper use of a combination of a direction and a button choice, you can achieve the joystick behavior that meets almost any need.

Use the most straight forward joystick setting first when setting up a character sequence. For standard movements, just use the joystick settings of 'Left', 'Right', 'Up', 'Down', 'Up-left', 'Up-right', 'Down-left', and 'Down-right'

with the buttons set to "No buttons". When these settings are used, the character sequence that you've associated with the joystick setting will execute when the joystick is moved to that corresponding position. If the joystick is held in that position and the character sequence allows for repetition, the sequence will be repeated over and over.

For shooting, it's best to use one button. When the button is pushed it will interrupt any interruptable character sequence and the shoot sequence for the depressed button will execute.

If you set up a character sequence for BOTH a direction (such as 'Left') and a button, then when the joystick is moved to that direction and SUBSEQUENTLY (after the joystick has first been moved to that direction, and while the joystick is still in that direction) the button is pressed, then the character sequence associated with the combination will be executed. Note that the joystick must be moved to the position first. If this character sequence is set to allow repetitions, then both the button and the joystick must be released in order to stop the repetitive movement. Holding either one will allow the character sequence to continue repeating itself.

If you set up a character sequence with a direction and a button, and you have also used the same button for shooting, you will not be able to shoot while executing that character sequence. You might run across this situation when you've started up such a sequence, then released the button but continued to hold the joystick in position. The character sequence repeats over and over, but the button, even when released and repressed, won't cause a shoot sequence to execute. This is simply because the character sequence associates that button with the movement character sequence.

Finally, if you set up a sequence to a direction such as 'Right' and 'Doesn't matter' for the buttons, then the sequence will be executed when the joystick is moved to the position, the same is if you had set the buttons for 'No buttons'. However, the sequence will ignore any depression of the buttons, thus preventing all sequences that you've associated with JUST the buttons, such as shooting, from interrupting the first sequence.

6.5 HELPFUL SOFTWARE

Game-Maker users have contacted us and recommended software utilities that they have found to be very useful in developing their games. A list of these recommendations follow along with a short description of the product.

GRAPHIC WORKSHOP and GRAPHIC WORKSHOP FOR WINDOWS are Shareware programs that display graphic files and let you transform these files in various ways, including adjusting an image to the size you need before you import the image using Game-Maker's Image Reader design tool.

HiJaak: This commercial product converts graphic image files from almost any format to almost any format. It also allows you to manipulate the image, crop it, and scale it.

ANIMATORS: Autodesk Animator (also available as part of the Autodesk Multimedia Explorer product). There are also Shareware FLI animators available. A product called 'PC Animate' can convert .ANI files to .FLI files, although reports are that it can be tricky to actually do these conversions.

FILE COMPRESSION/DECOMPRESSION SOFTWARE is useful for packaging your transferred games. File compression software packs your files into an 'archive' file that occupies much less space than the native files use. Matching decompression software restore all the files to their original state. Popular tools include LHARC.EXE by Haruyasu Yoshizak and PKZIP and PKUNZIP by PKWARE, Inc. LHARC.EXE is copyright reserved but free for you to use. LHARC software and user document are included in your Game-Maker distribution diskette. PKZIP and PKUNZIP is Shareware.

DELUXE PAINT by Electronic Arts is recommended by several of Game-Maker users for creating and editing GIF files.

7.0 TROUBLESHOOTING GAME-MAKER

7.1 When Playing a Game, the Graphics Display Strangely

Symptom: When playing a game the screen breaks up, displays trashed blocks, blocks are not lined up, etc.

This is a Super VGA board driver compatibility problem. Game-Maker supports all standard VGA boards. Super-VGA boards are seldom truly compatible with standard VGA, in spite of what they claim, when the software is performing sophisticated graphics such as high speed scrolling. Game-Maker supports the most popular Super-VGA boards by detecting what kind of chip set each has and automatically adjusting for each chip set.

If you experience the above symptoms and Game-Maker is configured for "auto-detect", you can assume that your SVGA board is not automatically handled by Game-Maker. You will need to manually specify the type of chip set you have. To do so, select the CONFIGURE menu item that is displayed each time you finish running a game, and then try each of the SVGA chip sets until one works. The "SIMULATE" driver should work on all SVGA boards, but it is not as efficient. Try the others first. (Read the help message that can be displayed from the CONFIGURE menu for more information.)

If you are running a 'transferred' game and experience this difficulty, quit the game and type 'CONFIG'. The CONFIGURE menu will be displayed. Follow the above instructions.

At the time that this manual was written, Game-Maker supported all the popular chip sets. If your SVGA board isn't compatible, let us know what kind of video board you have. Let us know the board's manufacturer, and if you can, the video chip type, the BIOS version (usually written on the video chip), and board model number. If practical, we'll add special code to support it. Write to RSD, PO Box 1163, Amherst NH 03031. Thanks.

7.2 Strange Colors Appear on the Graphic Displays

Symptom: Everything displays correctly, but the colors are weird.
The graphics being displayed were developed using a different palette. If you don't know what palette to use, tryout each of them. Most of the gameware included with Game-Maker uses the HUES palette.

7.3 Can't Run Game-Maker

You are probably not running Game-Maker from the right directory. At the MS-DOS prompt type 'C:' Next type 'CD C:\GM' or 'CD *path*' where path is the subdirectory path to where Game-Maker is installed. You might want to install the GOGM.BAT file, which will make startup a snap. See section 2.2.2.

If the first strip menu displays but you can not run the design tools, you might have a computer that doesn't support the chaining of programs. Start up Game-Maker by typing GMMENU instead of GM. We've supplied an alternative menu system for use on your type of system.

If the graphical edit screens in the design tools go bananas, it could be interference from a joystick game board. Just remove the board. If that works, you might try to change any settings on the game board, or switch to almost any other game board, as most all of them do work.

7.4 MS Windows Problems

The design tools and games will run within the MS-Windows 3.1 environment (but not V3.0) as a full screen DOS application. If your SB compatible sound card or your games do not run, you need to configure your MS-Windows parameters. Most users report that everything works, but we haven't as yet isolated the setup conditions that cause some systems not to work.

7.5 Mouse Problems

You probably have a strange mouse driver or no mouse driver installed. Try installing Microsoft's mouse driver (type MOUSE and the system prompt, or put 'MOUSE' into your AUTOEXEC.BAT file). Microsoft compatible mice and mouse drivers work.

7.6 Configuration Problems

Most problems related to configuring Game-Maker are due to incorrect or unsupported interrupts, addresses, or hardware. Be sure and read the help message available in the configuration menu. (Remember, you can access the configuration menu after running any game.)

The easiest way to fix most configuration problems is to just try each of the available selections until you find one that works. In rare cases, you may have to set up your sound card hardware differently.

If the configuration menu doesn't seem to be working properly, or if it is giving strange results, go to the C:\GM\ directory and delete the CONFIG.DAT file. This file has been known to become corrupted. The file will be recreated the next time you access the configuration menu.

7.7 Compatibility Notes

Game-Maker design tools are incompatible with some versions of Quarterdeck's QEMM Stealth mode. Turn off Stealth mode.

APPENDIX I

BLOCK AND MONSTER ATTRIBUTES

Quick Reference Guide

Picture Block Attributes

Set the following attributes with Block Designer. These attributes apply to Background blocks and Monster blocks as indicated.

ATTRIBUTE	VALUES	BACK	MON
Solid Walls	Top, Right, Bottom, Left	Y	Y
Gravity Field	Up, Right, Down, Left	Y	N
Object	Is, Is not	Y	N
Change after time	New block. 0 to 9999 units	Y	N
Birth a Monster	Monster Number (0 to 59) 1 to 9999 time units	Y	N
UPON CONTACT WITH CHARACTER CHANGE:	see below		
Repetition count	One of: Character Lives Money Repetition Count 1 to 15 Counter 1 to 5 Change by -9999 to 9999	Y	Y
Character Hit Points	Yes, No. (-9999 to 9999)	Y	Y
Score	Yes, No. (-9999 to 9999)	Y	N
Change to Block	New block	Y	N
Periodically Birth a Monster	Monster Block	Y	N

N means that the attribute can not be set in Block Designer.

Monster Attributes

Set the following attributes with Monster Maker.

MONSTER ATTRIBUTE	VALUE
Standard Motion	One of: Toward Character Away From Character Random Pattern Plus speed of 1 to 20 for any of the above
Attack Pattern	One of: Toward Character Away From Character Random Independent Motion Pattern Relative Motion Pattern Plus speed of 1 to 20
Pass through solid walls	Yes, No
Power Level	0 to 255 (Note: the character power level is 100)
Monster dies when	One of: A monster with a higher power level contacts it Reaches end of pattern A set time is up Never
Upon death, birth another monster	Yes, No. New Monster.
If killed, increase character score	Yes, No. By -9999 to 9999.

APPENDIX II

SPECIFICATIONS

Microforum reserves the right to change product specifications without notice.

Hardware Requirements:

CPU - 286 or better (286 machines will run some games slowly)
Standard VGA 320 by 200 pixels with 256 colors
Supports Super VGA boards with the following chip sets:
ATI, ATI Wonder, Trident 8800, Trident 8900, Paradise, Tseng ET3000, Tseng ET4000, and others that are compatible with our general driver or with standard VGA.
Double spin CD-ROM drive
Two button Microsoft compatible mouse
102 key keyboard (most other keyboards are supported)
Optional: Joystick and/or Creative Labs compatible Sound Board

Map and game level attributes:

Pop character to another map
Multimedia Displays (FLI animation, GIF images, text, text over image)
'Never ending' maps (top joins bottom, left joins right). Restrict character movement via scrolling modes or via solid blocks.
Size: 100 by 100 blocks (or 2000 by 2000 pixels) using 256 colors
Choice of music on each game level (.CMF files)
Highest ten scores
Record and playback games
Save and restore games

Picture block attributes:

Solid blocks, one way 'doors', and blocks that freely allow characters and monsters to pass
Gravitational field (any of eight directions)
Character's momentum is preserved (glides along) or not preserved
Character can acquire (pick up) a pictured object block
Change a characters hit points, lives, money, score
Change a character sequence repetition count , which can enable a character to perform an action a specific number of times
Change a character's special counters, which can enable or disable a character's ability to affect or be affected by a background block
Change picture block based on time and/or upon contact with a character
Birth a monster periodically
Play custom designed sounds or digitized sounds (.VOC files) for most of the above 'changes'

Character attributes:

One character displayed at a time
Different keys can display different characters in one scene
Possession of an object can cause a different character to be displayed
A game can have any character set assigned to any of its scenes
Twenty distinct animation sequences per character set
Three modes of moving: standard, glide, acquire momentum
Acquire inventory
Possess initial inventory
17 animation sequences can be limited by repetition counts
Trigger animation sequence upon when hurt
Money, Lives, Hit Points, and Score Counters
Five special counters, user definable
15 animation sequences can be dependent on possession of particular objects
React with monsters
Shoots (births monsters) multiple times per keystroke
Die if hit points go to zero
Plays custom designed sound or digitized sound per animation sequence

Monster attributes:

Six directed movement classes:
- toward character
- away from character
- random
- traverse a path
- when in range, attack along path relative to character
- when in range, attack along path independent of character

Speed. Each path segment can be separately set
Animation
Lives until: killed, reaches end of path , designated time, never dies
Power level attribute
New monster optionally born on death of another
Blocked / not blocked by solid background blocks
Character score, hit points, repetition counters, etc. all optionally changed by monsters upon contact
Kill another monster upon contact

APPENDIX III

DIRECTORY STRUCTURE

GAME-MAKER Version 3.0 uses a new directory structure which keeps your games and your CD organized. It also helps prevent user problems, such as accidental deletion of a file that is used in multiple games. All files associated with a particular game are stored in a subdirectory dedicated to that game. A diagram of the directory structure follows:

```
C:  (or your chosen top level directory)
    |
    GM____
          HEART
          NEBULA
          PEACH
          SAMPLE
          TUTOR
          ZARK
          other_games
          :
```

Gameware File Extensions

Game-Maker uses the following file extensions:

Map Files	.MAP
Background Block Files	.BBL
Monster Block Files	.MBL
Character Block Files	.CBL
Monster Set Files	.MON
Character Files	.CHR
Palette Files	.PAL
Sound Set Files	.SND
Music Files	.CMF
Digitized Sound Files	.VOC
Text Files	.TXT
List Files	.LST
Image Files	.GIF
Animation Files	.FLI
Backdrop Files	.BKD

APPENDIX IV

HOW GAME-MAKER WORKS

Game-Maker's PLAYGAME.EXE software module is the heart of the Game-Maker software system. It controls all the real time actions in a game. This module responds to the keyboard or joystick commands of the player, directs the movement of all the monsters and the character during play, and drives the music, sound, scrolling, and background animation.

The computer aided design (CAD) software modules are used to design all elements of the game (draw blocks, design sounds, make maps, etc.). They save the design information for each element of a game in files that can be used by other games as well. Game-Maker's CAD tools emphasize WYSIWYG (what you see is what you get) style of graphical human interface. Easy to use menus and help screens further guide the user.

Game-Maker is based on what is technically known as 'data driven' software. Within Game-Maker are many types of objects, such as monsters, characters, and background blocks. Objects have attributes (data) associated with them. For example, attributes can be associated with locations on the map (e.g., if the character crosses this map location, pop it to another map), with blocks themselves (e.g., if the character runs into this block, gain 10 points), and with monsters and characters (e.g., this character can shoot).

As the player directs the character around the map, a game's action is determined by several factors:

- the path the character traverses
- time (background blocks change on time)
- the highly variable motion of monsters
- results of actions taken by the character (such as shooting)
- attributes of blocks and map locations traversed by the character

As you can see, with the rich set of attributes that Game-Maker allows you to associate with maps, blocks, characters, palettes, and monsters, a very wide variety of games can be designed. Because of the variation in character actions, monster movements, and the passage of time, playing a game is never the same from one play to the next.

Game-Maker is written in C, C++, and in assembly language.

APPENDIX V

COPYING AND DISTRIBUTING GAMEWARE

GENERAL

Recreational Software Designs (copyright owner) encourages you to distribute Game-Maker gameware that you've created. Gameware includes block sets, monster sets, character sets, palettes, sound sets, maps, and Integrator 'games' (i.e., Integrator files). Other people who own Game-Maker will be able to play your games and reuse your gameware.

Recreational Software Designs retains ownership of the software that creates and runs games, and except with the exceptions explained in your license agreement, distribution of this software is prohibited. We ask you to please stay within the law when distributing our software.

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- May distribute games commercially as outlined in the next section.

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Under your Game-Maker license agreement, you may distribute any game you create to up to ten people and your gameware to any number of people. You may not distribute the Game-Maker design tools, but you may include Game-Maker's gameware (picture blocks, monsters, characters, sounds, etc.) along with your games or gameware.

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Commercial Standalone Games

Standalone Games are games that are distributed for the purpose of selling or profiting from the game itself, and games that are distributed, with other related or non-related material, in which the user's primary interest would likely be the game. Shareware distribution is a special case (see below).

The following standard royalty rate schedule is for Standalone Game distribution. This schedule applies to the total unit quantity of games distributed to wholesale, end user, or other channels. The unit quantity includes the cumulative units of different games produced by one company:

Quantity	Royalty
Up to 200	$ 500.00 *
200 to 1000	$ 1.50 each
1001 to 5000	$ 1.00 each
5001 to 10K	$ 0.75 each
Over 10K	$ 0.50 each

* Upon payment of this initial fee Recreational Software Designs will supply ten user manuals and grant the right for your business to install up to 10 copies of Game-Maker, and automatically update your software for a two year period.

Promotional Games

Promotional Games are games that are distributed for the purpose of promoting a product (other than the game itself) and games that are distributed as part of a product demonstration/promotion kit. As such, a promotional game is not sold as a game. Typically, a promotional game is part of a product demonstration diskette which is given away or distributed on a cost basis. The following table

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For Each Promotional Kit

Quantity	Royalty
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Over 25000	No additional charge

Royalty rates for Promotional Game distribution apply to each different type of promotional kit.

Shareware Distribution

All Game-Maker owners are hereby granted a license to distribute Shareware games that they design under the following terms.

1. the author of the game requests the eventual users of the game to pay a registration or license fee, and
2. the registration or license fee is a minimum of $5.00, and
3. the author of the game pays Recreational Software Designs 10% of all registration and license fees collected, payments to be made quarterly.

Bulletin Board Distribution

Bulletin boards are popular ways to distribute Freeware and Shareware, as well as a source of information on a variety of subjects. The FrontLine BBS provides information, support, and gameware for Game-Maker users. It is operated by one of our enthusiastic Game-Maker customers. Feel free to contact the FrontLine BBS to see what is new, to download gameware and utilities, to get some support, or to just chat about what is going on.

On the next page is a notice describing the FrontLine BBS.

Other Situations

If the above terms don't match your situation, feel free to write RSD with your special request. Include your telephone number if you wish us to call and discuss your request. Address: Recreational Software Designs, PO Box 1163, Amherst, NH 03031.

FRONTLINE BBS

207-967-0618 Up to 14.4 kbaud, 8N1, ANSI

The FrontLine BBS is your bulletin board system for **GAME-MAKER.**


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Purchase GAME-MAKER games and offer your own for sale


Trade games, meet other developers


Receive GAME-MAKER support


Read about game design hints and techniques


Download useful GAME-MAKER utilities


Upload (or send us) your GAME-MAKER games

APPENDIX VI

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