

GAMES MAKER

is an extraordinary computer program which allows you to make your own professional arcade games. Dozens of favourite space-action games can be created –but you don't have to learn programming to do it! Simply chose what you need from the different screens the program presents.

GAMES MAKER comes with eight sample games already loaded to give you a taste of the programs you can make.

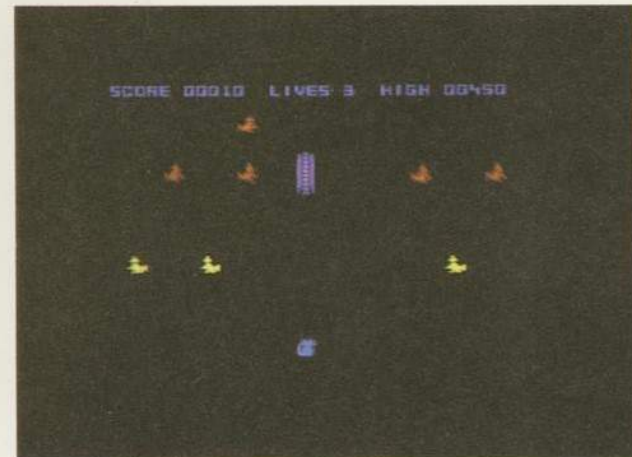
St Michael

COMPUTER PROGRAMS

GAMES MAKER

Design and Play Your Own Games

GAMES MAKER



St Michael

Author: Max Phillips
Designer: Ben White
Covers: Pinpoint Design
Illustration: Hayward Art
Group
Editor: Christopher Maynard

Published exclusively for
Marks and Spencer p.l.c.
by Grisewood & Dempsey Ltd
Computer Publishing Division
40 Bowling Green Lane
London EC1 0NE
© Grisewood & Dempsey Ltd
1984

All rights reserved. No part of
this program, documentation or
packaging may be reproduced,
adapted or transmitted in any
form or by any means without
the prior written permission of
Grisewood & Dempsey Ltd.
Unauthorised copying, hiring,
lending or sale and repurchase
is prohibited.

Games Maker is a new and
revised edition of *Games
Designer* published originally by
Quicksilver Limited, 1983.

Printed in Great Britain

CONTENTS

1	INTRODUCTION	4
2	GETTING STARTED	6
3	PLAY THE GAMES.....	10
4	A QUICK TOUR	13
5	GAME OPTIONS.....	18
6	A WORKED EXAMPLE	32
7	LOADING AND SAVING	41
8	APPENDICES	43
9	GLOSSARY	47
10.....	INDEX	48

Program Requirements

Games Maker will work on any 48K Spectrum, issue 1, 2 or 3 with or without a ZX Interface 1 or 2. A Kempston joystick interface is optional. If you have any problems loading the program and have any unusual add-ons, there is a chance that the problem is one of incompatibility. If you suspect this, remove the add-on and try loading the program again. However, the chances of such problems are slim and most add-ons do not affect the operation of Games Maker.

Welcome! Congratulations on your purchase of the Games Maker package. You've just bought a program that will keep you and your computer happy for hours on end. Games Maker is no ordinary games tape. It is a program which lets you write your own arcade-style games of the Space Invaders, Asteroids, Scramble and Berserk variety.

You don't need to be able to program in complex machine code or even in simple BASIC. Games Maker has all the programming it needs already built-in. All you have to do is tell it the type of game you want, what the various aliens and spacecraft in it look like, how they move, the noises they make and so on. You do this simply by selecting choices from the screen – there are no complex commands to learn and it is almost impossible to make mistakes!

What's more, Games Maker can keep a set of eight games instantly available in memory and also comes loaded with eight ready-made games so you can start playing straight away

and see some of the things the package can do.

Learning to use Games Maker isn't hard although obviously it will take more time than learning to play an ordinary arcade game. But don't be put off; you should treat it as something of an entertainment. Because Games Maker is so flexible, there are no set rules for designing a game – everyone will develop their own particular methods. The program is also very forgiving – everything you do is checked so that you can't 'crash' the computer and it's also easy to go back and change something you don't like.

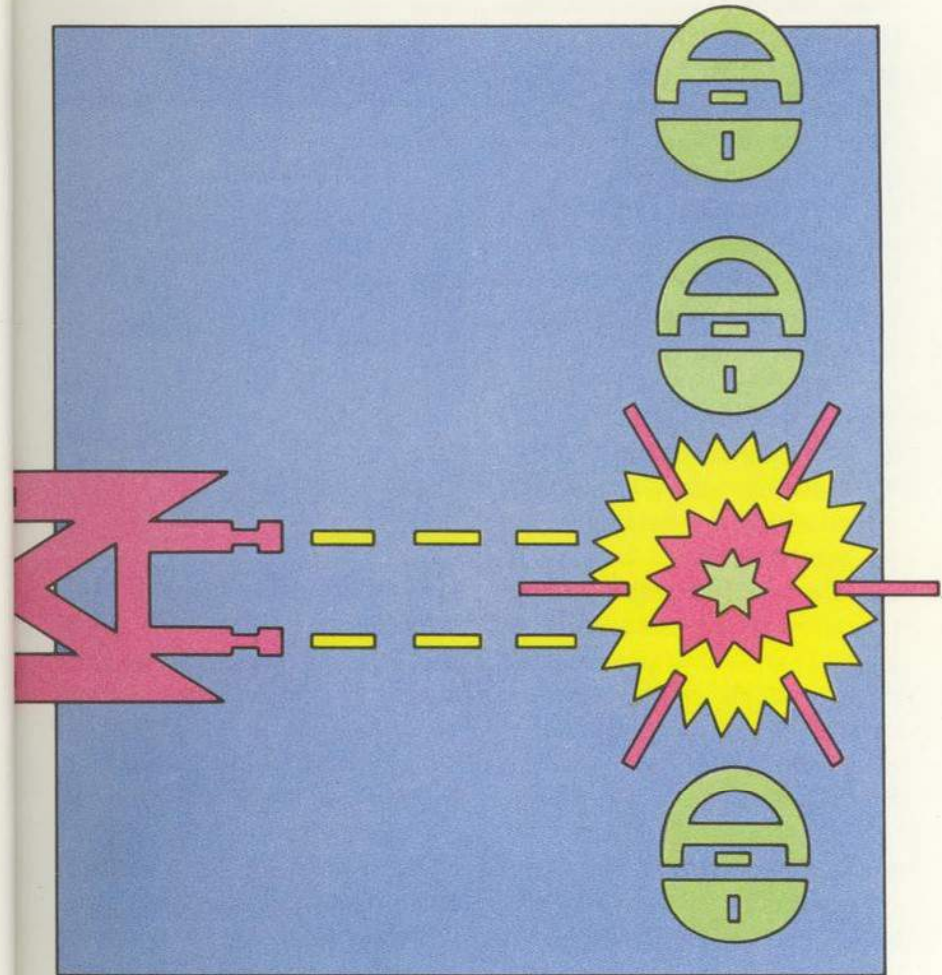
As a result, the best way to learn Games Maker is by using and experimenting with it. This guide will take you step by step through all of its facilities with detailed diagrams, examples and discussions. But feel free to try out the various bits of the program and see for yourself what they do. You can't damage the program or your computer by experimenting but you can learn a lot.

So you can use this book in

two ways. Follow it all the way through, with your computer in front of you as you go. Or load up Games Maker and refer to the relevant sections of this guide as and when you need to. Once you get used to the program, you'll find that the handy reference section at the end of the book is most use-

ful. It will serve as a quick reminder of anything you might need to look up while using the program. In addition, there's an index which will let you find topics you're unsure of quickly.

Have fun learning, playing and creating new computer games with Games Maker!



Loading the Program

Games Maker is loaded in the same way as most other Spectrum programs. So, if you're familiar with loading tapes, you should have no problems with Games Maker. First, make sure that your cassette recorder is connected properly:

- 1) The EAR lead on the recorder should run to the EAR jack on the Spectrum. It is not necessary to have the MIC jacks connected in order to load the program.
- 2) Any tone controls should be set to maximum.
- 3) The volume control should be nearly maximum.
- 4) Place the tape, either way up, into the recorder and rewind it fully.
- 5) After the flashing K prompt on the Spectrum, type LOAD "" by pressing the **J** key, followed by **SYMBOL SHIFT** and **P** twice.
- 6) Now press **ENTER** on the Spectrum, followed by PLAY on the cassette recorder.

The screen border will alternate between blue and red until

the tape reaches the beginning of the program. You will then hear the program and see a blue and red striped border. If the tape is working correctly, you will soon after get a loading screen.

The program takes around four minutes to load. When it is ready, you will see the Games Maker Main Menu:



Games Maker's Main Menu.

Take the time to stop and rewind your tape before going on!

Cassette Problems

As with all cassettes, minor variations between different tapes, cassette recorders and computers may mean that you will have trouble loading your

program. The Games Maker tape is of the highest quality in order to minimize these problems.

If you do experience difficulty, however, first interrupt the loading procedure by pressing **BREAK** (**CAPS SHIFT** and **SPACE** together). You may need to do this several times to get the computer's attention. Holding both keys down for a few moments is usually the best method. Rewind the tape and repeat the loading procedure with a slightly different setting of the recorder controls.

If the problems persist, there is a second copy of Games Maker on the other side of the tape. You might even want to try using a different cassette recorder.

Should you still fail to load the tape, please take the complete package, including this guide, back to the store where you bought it, along with your receipt.

Getting Back to Basic

Once in Games Maker, you'll find that there is no obvious way to get back into Spectrum Basic to load and run other programs. The **BREAK** key and any errors are trapped so that there is no chance of acci-

dentally leaving Games Maker and losing the games you are working on.

To leave the program, you will have to switch off your computer. If your Spectrum is plugged into a wall socket with a switch, use the switch as it will save wear and tear on the jack plug used to connect the Spectrum to its power pack. Leave the computer off for a few seconds before switching on again.

Remember that any partially-completed games you may have in memory will be lost when you do this. Always save your work to another cassette tape (Main Menu option 8) before switching off.

Using Games Maker

Games Maker is very easy to 'drive'. There are no long, complicated commands to learn. Instead it is programmed by selecting from lists of choices on the screen (called menus) by pressing certain keys. As a result, it's almost impossible with Games Maker to produce a game which 'crashes' the computer. Everything you have to enter is clearly prompted and your answer is checked on the spot.

This system also makes it very easy to go back and

change your mind about something. You just return to the relevant menu and pick the same item again. So Games Maker actually encourages you to experiment and play about with games rather than adopt the strict, disciplined approach needed to write your own arcade programs from scratch.

Just a few keys are used throughout most of the program:

ENTER

As in normal use, **ENTER** is used to indicate that you have finished what you are doing and want to go on. With Games Maker, if you select an option by mistake, pressing **ENTER** will cancel it and take you back to wherever you were before. By pressing **ENTER** once (or in some cases twice) you will always find your way back to the Main Menu at the start of the program.

0 to **9**

Most of the options in Games Maker are numerical and are selected by pressing the appropriate number keys. These keys are also used to move the cursor about the screen and play the games themselves. Sometimes, some of the number keys are used to move

around the screen while others are used to type in values. This will become obvious as you use the program.

Terminology

We've adopted a number of conventions in this guide to help explain what's happening. If text is included in a box like this –

ENTER

– we want you to press a Spectrum keyword. Text like this –

SELECT FUNCTION: [1–8]

– refers to messages on the computer's screen. In addition, if there are any words you are not familiar with there's a glossary on page 47 where you can look them up.

Menus & Editors

When you are designing games, there are two basic types of screen you will meet. A menu screen is a list of options, which may lead to another menu, or which may ask you for a number or some other answer. To choose an item, you just push the relevant key.

Editors are screens on which you actually make changes to some of the detailed informa-



The Configuration Menu controls eight different options.

tion in a game such as the sounds the various objects make, the shape they take, the way they move and so on. Each editor is very different and



The Sprite Editor changes the shape of objects in the game.

works by combining cursor moves with the entry of numerical values. It's well worth taking the trouble to have a good play on each editor when you first meet it so that you are familiar with the way to

operate it.

A Word About Aliens

All of the games in Games Maker have the same basic elements and we've given them names throughout this guide as follows:

Ship: The player's object, be it a spaceship, laser base, tank or whatever.

Aliens: The enemy, be it aliens, animals, household objects or whatever you like.

Missiles: The bullets that the player fires at the aliens.

Bombs: The bullets that some of the aliens fire back.

Bear in mind that these names may seem a little inappropriate if you design games with unusual objects in them!

Once you've got Games Maker loaded, the first thing to do is try out the games that come with it! This will give you a good idea of the sort of games you yourself can make with the program. The Games Maker package includes eight ready-designed games and these are loaded into memory whenever the program is loaded.

Playing a Game

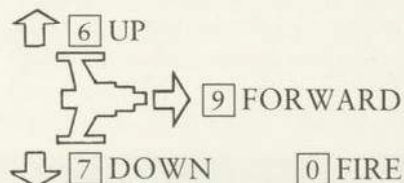
To try the first game out, choose the appropriate option from the Main Menu – that is, press **1**. The screen will clear and the game will start:



Playing game 1.

All of Games Maker's games have the same basic objective – kill or be killed. If you manage to shoot your way through the

first wave of aliens, you'll find that a second, more aggressive wave follows. And watch out! Some aliens can shoot back! Each new set of aliens usually has a different score when you hit one of them; the meaner the alien, the more it's worth. The controls for the first game are:



The keys pressed in game 1.

With all the games, pressing **ENTER** at any time stops play and returns you to the Main Menu. In every game, you get four lives – the number you have left appears at the top of the screen. When you lose all of these, the game ends by going to a chart where you list your highest scores.

Your Name In Lights

If you get one of the top six high scores, Games Maker gives you the chance to enter your name on a high score ladder. To do this, use the keys

6 and **7** to select a particular letter and then press **0** to enter the letter on the line below. Use the open box shape (**□**) to enter a space and select the hash symbol (**#**) when you've finished entering your name. If you decide not to bother with the high score ladder and want to play again immediately, press the **S** key.

Games Maker's high score list consists of the top six scores, for any of the eight games, starting from when Games Maker was loaded. The list of names is kept in the Spectrum's RAM memory and is lost when you switch off the computer or load another program. If you want to have a long-running competition with yourself and your friends, remember to note down the high scores on paper before turning the machine off.



Entering a high score.

Today's Greatest!

Whether or not you get a new high score, at the end of every game, Games Maker gives you a list of the names and scores to beat before returning to the Main Menu.



The high score ladder.

Play it Again!

After each game, there are two ways to play again. If you have a high score, you can skip entering your name and play again immediately by pressing the **S** key. Otherwise, you must wait for the high score ladder to be displayed and the program to return to the Main Menu. Pressing **1** will start the game again.

Selecting Games

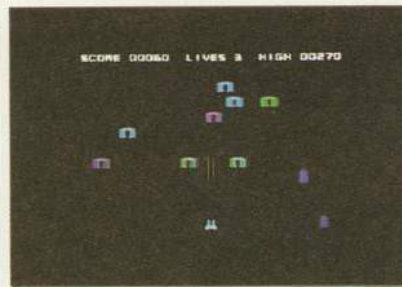
So far, we've been playing just the first of the eight games that come with Games Maker. To play one of the others, you use the second Main Menu option. From the Main Menu, press the

2 key. The prompt at the bottom of the screen changes from:

SELECT FUNCTION: [1-8]
to
SELECT GAME: [1-8]

Type the number of the game you wish to play. This game is now the 'selected' or 'current' game and you'll see its number in brackets after option 1 on the Main Menu. Any changes that you make to the features of the game will be made to this particular game and not to the others. So, in effect, you have a set of eight games in memory but only one of them is 'selected' for playing or altering at any one time.

These are just a few of the perils that lie in store for you in the eight games included with Games Maker.



Try playing with menu options 1 and 2 so that you have a crack at all eight games and are confident about switching between them. In the next section we'll go on to look at some of the magic that Games Maker can do by altering the games you've just been playing.

4

A QUICK TOUR

4

In this section, we're going to take a quick tour of some of the things Games Maker can do so that you have an idea of the facilities available and can see how easy it is to make changes to the games.

We'll start with a few alterations to the first of the ready-made games. Remember that when we do this, we'll just be changing a memory copy of the game. The original copy on the tape won't be altered or spoilt in any way although the copy in memory could end up quite different. If you create a game you like, you may want to save it on another tape for future use. If you do, skip ahead to page 41 to see how to save finished games.

Once you have Games Maker up and running make sure you are working with game one by using option 2 on the Main Menu. Press **2** followed by **1**. The simplest things to change are the keys which are used to play the game. Games Maker can do this just like lots of other games programs.

Press **[CAPS SHIFT]** and **1**

together. The screen clears and you'll see the message:

SELECT NEW
CONTROL KEYS
WHICH KEY FOR UP

Press whichever key you feel happy with. Next the screen prompts:

WHICH KEY FOR DOWN

and so on. Once you've defined all the keys, the game will start. This is the only option that goes straight into a game so that players can set the keys however they like when they start a game. However, when you next try the game from Main Menu, you'll notice that Games Maker remembers the new key settings.

Altering Sprites

Now let's try something that you can't do with other games programs. From the Main Menu, select option 3: SPRITE MENU. The screen will change to a set of numbered shapes. Each of these is a sprite; a moving object on the screen. Notice that there are sprites for everything – the player's ship,

the different aliens, even the explosions. You'll also see that there are several different versions of the same basic sprite. By displaying each version in turn, Games Maker can animate the alien creatures (or whatever) as they move across the screen.



The Sprite Menu.

This screen is the Sprite Menu. From here, you can pick a particular sprite and alter its shape or colour however you want. Let's change the colour of the first lot of aliens. Select the first sprite by typing `00`. There is no need to press `ENTER`.

The screen now switches to the Sprite Editor. On the left is a list of controls, on the right an enlarged view of the sprite shape and in the bottom centre an actual-size view of how the sprite will look in action.

To set the colour of the sprite, hold down the

`CAPS SHIFT` key and press the appropriate number key from `0` to `7` on the keyboard. You'll see that the Spectrum has the colours neatly labelled above the appropriate keys. For now, make the sprite yellow with `CAPS SHIFT` and `6`. Press `ENTER` twice to get back to the Main Menu and give the game a try with option `1`.

Well, it's nearly yellow! The alien is flashing between green and yellow. Remember that this alien consists of four slightly different sprites being shown in turn. We've only changed the colour of the first one – the other three are still green. This feature can be used to produce aliens which flash or change colour as they cross the screen.

If you want all-yellow aliens, stop the game and return to the Sprite Menu (press `3` from the Main Menu). Now select sprites 01 to 03 in turn and use `CAPS SHIFT` and `6` to make them yellow. Check that you've got it right when you've finished by playing the game.

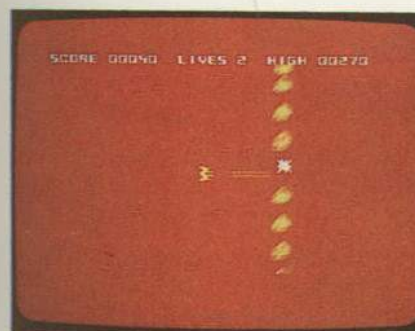
Configuration

What else can we do? Option 4: CONFIGURATION MENU has some rather nice facilities. Some of these can have dra-

matic results – so be warned! Press `4` from the Main Menu. Select option 2: BACKGROUND. The prompt at the bottom asks:

ENTER NEW VALUE: [0-7]

Type a `2` for the colour red. Press `ENTER` to go back to the Main Menu and `1` to play the game. It should be obvious what the BACKGROUND option does!



The BACKGROUND option sets the overall colour of the screen on which the objects appear.

With the screen background red, the stars don't really show up. To make them clearer, go back to the Configuration Menu and set the FOREGROUND to `0`.

We can also change the sounds that the various elements of the game produce. Select option 5: MISSILE SOUND from the Configuration Menu. The screen will



The Sound Editor is used to produce all the games' noises.

now show the Sound Editor.

This Editor allows you to 'design' your own sounds; it even looks like the controls on a real sound mixer. Press `SYMBOL SHIFT` and you'll hear how the sound for the missile currently sounds. For now, don't worry about what the controls mean. To adjust them, use the number keys. These move the various 'sliders' up and down. Play with the Editor until you have a missile sound you like. When you're ready, press `ENTER` to go back to the Main Menu and `1` to play the game and hear the new sound in action.

Movement

Next, try option 5: MOVEMENT-EDITOR in the Main Menu. This option controls the way the aliens move by giving them a short series of directions to follow. Don't be put off by

the apparent complexity of this screen – everything will be explained in detail later.

In game one, the first set of aliens follows pattern 0 – the top row of figures on the left. Type a **0** to select this row. The cursor will jump up onto the row of numbers and the prompt will change to:

ENTER PATTERN <8 9>

You'll also notice a squiggly line appear in the box on the right of the screen – this is the path that the aliens follow as they move across the screen.

The Movement Editor designs the paths that alien creatures follow across the screen.

Type a row of 15 **6**s; as you do this you'll notice the movement path straighten out.

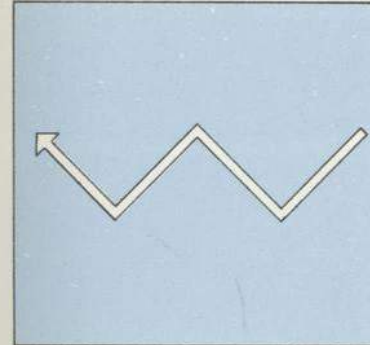
A '6' in the movement pattern means move left – 15 **6**s is a straight line going left. Try the game now by pressing **ENTER** twice, followed by **1** from the Main Menu. The first wave of aliens now attacks in straight lines. This is obviously a bit boring – let's make it a more interesting pattern.

Press **ENTER** to stop the game and select **5** for the Movement Editor. Press **0** to select pattern 0 and type the following line of figures:

555577775555777



Use the **8** and **9** keys to move along the line and correct any mistakes. This should give a zig-zag pattern like this:



Go back to the game (press **ENTER** twice, then **1**) and you should see that the aliens are now following this pattern.

The last thing in this quick tour of Games Maker is to adjust the speed of the first alien wave. This is on the Attack Wave Editor and you should select it by pressing **6** in the Main Menu.

This editor screen co-

ordinates many of the different elements of a game. It defines the waves of aliens – how many points they are worth, how they are animated, which movement pattern or patterns they follow, their speed and so on. All the settings are numbers; to set them you move the cursor to the relevant position with the Spectrum's arrow keys (**CAPS SHIFT** and **5**, **6**, **7** and **8**) and then type the appropriate number.

To change the speed of the first wave, hold **CAPS SHIFT** down and press **8** six times. The cursor should now be in the SPD (speed) column, over the number 0. Change this to a 1 by pressing **1**. Press **ENTER** once to go back to the Main Menu and **1** to play the game. You should find that the aliens are now even harder to shoot!

So far, we've taken a hurried look around the program and tried out some of its features. You can see how easy it is to make changes to the current game and should by now feel more confident about using the program. Feel free to take a break from the manual and have a longer fiddle with the program; you can't do any damage and you will learn a lot about Games Maker.



The Attack Wave Editor.

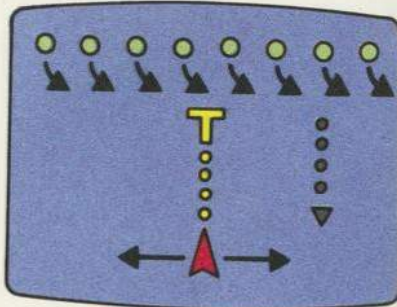
In the last section, we took a quick tour of some of the facilities of the program. Obviously, to create a game, we need a more organised approach. In this section we deal with all of the options of Games Maker in detail, and roughly in the order that you'll use them as you create a game. However, as you use the program you will develop your own ideas as to the way in which things should be done, so feel free to use the facilities in whatever order you want.

Game Formats

Games Maker provides four basic formats for all its games although you can use the Movement and Attack Wave options to make your games very different. The game formats are set on the Configuration Menu, option 4 of the Main Menu. When you design a game, the formats option is the one you need to select first as it dictates the whole shape of the game. The formats are:

GAME FORMAT 0 Invaders

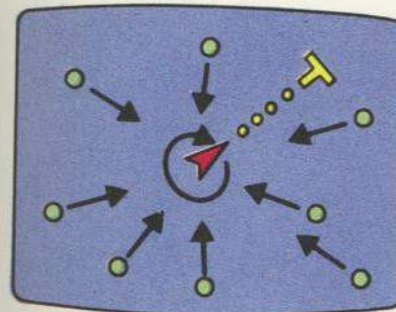
The ship moves from left to right and can fire upwards. The aliens come from the top of the screen and shoot downwards.



You will need:
Aliens: sprites 0 to 15
Ship (pointing upwards):
sprite 16
(or shield): sprite 27
Missiles (pointing upwards):
sprite 24
Bombs (pointing downwards):
sprite 25
Explosions: sprites 28-31

GAME FORMAT 1 Asteroids

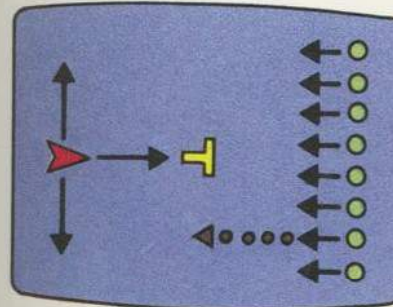
The player's ship starts off in the centre of the screen and can spin round to one of eight positions or move around the screen in the direction it is facing. The aliens come from all sides.



You will need:
Aliens: sprites 0 to 15
Ship (in eight positions):
sprites 16-23
Missiles (non-directional):
sprite 24
(or shield): sprite 27
Bombs (non-directional):
sprite 25
Explosions: sprites 28-31

GAME FORMAT 2 Scramble

The player's ship travels from left to right and the aliens move right to left.

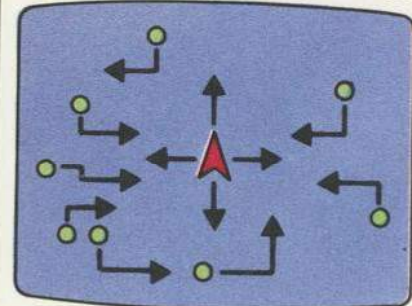


You will need:
Aliens: sprites 0 to 15
Ship (pointing right): sprite 16
(or shield): sprite 27
Missiles (pointing right):

sprite 24
Bombs (pointing left): sprite 25
Explosions: sprites 28-31

GAME FORMAT 3 Berserk

The player's ship can move and shoot in any of four directions. The aliens come from all sides.



You will need:
Aliens: sprites 0 to 15
Ship (in four directions): sprites
16, 18, 20 and 22
(or shield): sprite 27
Missiles (non-directional):
sprite 24
Bombs (non-directional):
sprite 25
Explosions: sprites 28-31

The game formats also control whether or not a game is played from the keyboard or with joysticks. A value from 0 to 3 plays with the keyboard. The joystick values are:

- 4 Invaders with Joystick
- 5 Asteroids with Joystick
- 6 Scramble with Joystick
- 7 Berserk with Joystick

From the Main Menu, press [4] to get the Configuration Menu, then [1] to select game formats. Now type a number from [0] to [7] for the format you want.

The Configuration Menu also has three other options that relate to the overall format of the game.

Background

This sets the background colour of the game. Type a [2] to select the option and then type a number from [0] to [7] corresponding to the colours marked on the Spectrum keyboard.

Foreground

This sets the colour of the score line at the top of the screen and

of the moving star display if it is switched on. Type a [3] to select the option and then enter the appropriate number for the colour you want.

Special FX

This option can be set to any of eight values, numbered from 0 to 7. It controls three things. Firstly, whether new aliens appear singly or in groups. Secondly, whether pressing 'fire' shoots a missile at the aliens or activates a shield around the player's ship. The shield option can be used in games where contact with the player's ship destroys aliens rather than the usual shooting of missiles. Special FX also controls whether or not a moving star display is shown.

SPECIAL FX TABLE

Value	Alien entry	Stars	Fire button
0	Single	No	Missile
1	Single	Yes	Missile
2	Block	No	Missile
3	Block	Yes	Missile
4	Single	No	Shield
5	Single	Yes	Shield
6	Block	No	Shield
7	Block	Yes	Shield

The Sound Editor

Finally, the Configuration Menu lets you set the sound of the objects in the game.

In Games Maker you select and create the sounds of four objects in every game: the player's missiles, the alien's bombs and the noises of the player's ship exploding and an alien being hit. These options are on the Configuration Menu and can be accessed by pressing [4] in the Main Menu.

The Configuration Menu offers options 5 to 8 for each of the sounds. After selecting the one you want to alter you get the Sound Editor screen looking like this:

number keys. [1] and [2] move the first slider up and down, [3] and [4] control the second and so on. Each slider controls a particular aspect of the sound:

FREQ

The first slider sets the overall frequency of the sound produced – at the top the sound is low, at the bottom, the sound is high.

RAMP1 & RAMP2

These control the 'shape' of the sound. RAMP1 is the speed at which the pitch increases and RAMP2 is the speed at which it decreases.

SOUND EDITOR SCREEN



- [1] ↑ [2] ↓ Frequency of sound
- [3] ↑ [4] ↓ Speed of increase in pitch
- [5] ↑ [6] ↓ Speed of decrease in pitch
- [7] ↑ [8] ↓ Amount of pitch change caused by RAMP1 and RAMP2
- [9] ↑ [0] ↓ Length of sound

There are five controls, each one being an animated 'slider' like the one you might find on a real sound mixer. The sliders are moved by pressing the

LEVEL

This controls the length of the two Ramps, and hence how much the pitch changes while the sound is made.

TIME

This sets the length of the sound. Note that if the two Ramps and Level are set in such a way that their sound is shorter than the time set, the sound system will repeat the Ramps several times producing some interesting sound effects.

You don't really need to understand the way the sliders work as it is usually best to find the sounds you want by experimenting with the controls. To try out the sound at any time while you are creating it, press **SYMBOL SHIFT**. You may find that the sound is slightly different in play and you may therefore need to return to the Sound Editor and make fine adjustments.

When you have the sound required, press **ENTER** to return to the Main Menu.

If you don't want a sound for a particular event, then just set the time slider to the bottom!

Sprites

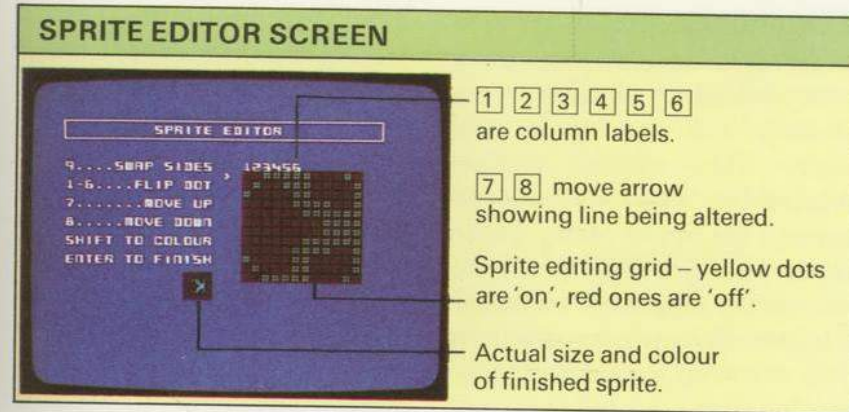
All of the moving objects in a game are called 'sprites'. Games Maker lets you design their shapes, pick their colours and animate them anyway you like. Select option 3 from the Main Menu to have a look at the sprites. This screen is the Sprite Menu; from here you can select which sprites to alter and also copy sprites to different numbers.

Exactly which sprites are used for which objects depends on the game you are designing. And the position in the menu of the ship sprite depends on the game format; the missile sprite, bomb sprite, shield sprite and the four explosion sprites are always the same. The alien sprites are always from 0 to 15, but their exact arrangement depends on how you want the various attack waves arranged and how you want the aliens animated.

The Sprite Editor

The sprite editor looks like the screen above.

On the left is the list of keys you can use. On the right is an enlarged view of the sprite being altered and in the bottom centre of the screen is an actual-size view of how the sprite will



appear in play. A sprite is a 12 by 12 grid of individual pixels (or dots) on the screen. To design one sprite you just set which dots are 'on' (yellow on the editor screen) and which are 'off' (red).

You do this with the number keys. Press **7** and **8** to select which row of the sprite you wish to work on. You'll see an arrow (>) symbol move up and down the grid. Next, the keys **1** to **6** will turn dots on and off in the appropriate column. Try it now. You'll see that these keys 'flip' the dots – if a dot is on, pressing the appropriate key will turn it off. If it's off, selecting that key will turn it on. You'll also notice that you can only alter the left-hand half of the sprite. To get at the other side of the grid, press **9**. The 123456 column labels will swap over and re-

verse – you'll get 654321 on the far side. Pressing **1** to **6** will now alter the dots on the right-hand side of the sprite.

These controls may seem a little complicated at first but they are very convenient once you have practised them. In particular, because the **1** to **6** keys reverse when you swap them over, it is easy to generate sprites that are symmetrical. When you first start working you may find it easiest to:

- 1) Clear the whole grid before starting.
- 2) Draw your shapes on paper first.

Besides its shape, a sprite has a colour. To set this, hold down **CAPS SHIFT** and press a colour key from **0** to **7**. When you have finished, press **ENTER** to go back to the Sprite Menu.

Copying Sprites

It is often necessary to have several slightly different versions of the same sprite. To make this easier, Games Maker lets you copy sprites around the Sprite Menu. Hold down **[CAPS SHIFT]** and type a sprite number. Games Maker will then ask you where you want to move that particular sprite to and you respond by typing a second sprite number.

You can use this to produce four almost identical sprites that create an animated alien. Or you can just change where certain sprites occur in the game. To swap two sprites over, you'll need a temporary 'parking space'. Sprite 26 isn't used in any of the game formats because it is reserved specially for this. Suppose you decided that you really wanted sprite 01 to be where sprite 00 was. You would type:

[CAPS SHIFT] **[0]** **[0]**

And Games Maker would reply:

MOVE SPRITE 00 TO **[2]** **[6]**

[CAPS SHIFT] **[0]** **[1]**

MOVE SPRITE 01 TO **[0]** **[0]**

[CAPS SHIFT] **[2]** **[6]**

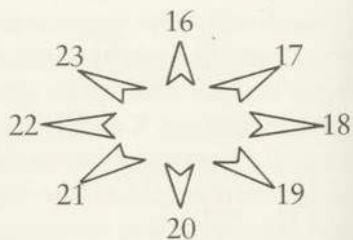
MOVE SPRITE 26 TO **[0]** **[1]**

The Ship Sprite

This is very straightforward for both Invaders-type games and Scramble-type games. Sprite 16 is used for the player's ship – it should face upwards for an Invaders game and right for a Scramble game.

For Berserk-format games, you will need four versions of the ship, one pointing in each of four directions. The sprites to use are: 16 (up), 18 (right), 20 (down) and 22 (left).

For Asteroids-format games, you need eight versions of the player's sprite arranged to point in eight directions like this:



Of course, you could design a ship that was square or round and didn't obviously face in any one direction. However, the player would constantly have to remember which direction the ship was pointing in to know where he or she was firing!

Missile Sprites

Sprite 24 is always used for the player's missile. You should be careful when you are designing this to leave the trailing edge (that is the bottom row or left column depending on the game format) of the sprite blank. If you don't, the missile will leave a trail as it moves. You may, however, like to experiment with your missile designs to see if you can use this feature to provide an attractive effect.

Explosions

All the explosions in a game are created by showing sprites 28 to 31 in order followed by erasing the whole area. To create an explosion, you just design four appropriate sprites.

The Shield Sprite

On games which use a shield

rather than firing missiles, you should design the shield shape as sprite 27. It is usually some form of circle so that, when it appears, it looks as if it is surrounding the player's ship.

Alien Sprites

These are the most complex to position as the numbers of sprites and their position depends on how you set up the various attack waves in the game and how the aliens are animated. This is explained when we look at ANIM numbers on page 28.

Attack Waves

Main Menu option 6 is the Attack Wave Editor and is really the hub of a game as it links all the other sections together. The Attack Wave Editor screen looks like this:

ATTACK WAVE EDITOR SCREEN



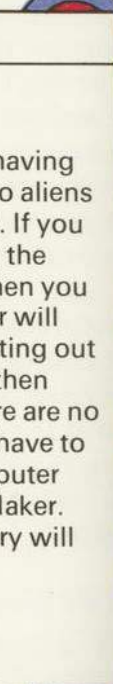
Up to 8 attack waves in one game.
ANIM controls animation of sprites.
SCORE controls score per alien.
PAT defines starting movement pattern.
MAX gives the total number of aliens in a wave.
SPD sets speed of each alien wave.
NEXT links one wave to the next one.

This may seem a bit complicated at first but you will soon get used to it! Let's get the simple bits out of the way first. There are up to eight different attack waves in a game and these are linked together so that the program cycles around them.

In each wave is a number for each of the following settings: ANIM, SCORE, PAT, MAX, SPD and NEXT. SCORE is the points value for each alien in that wave. In most games, each successive wave is harder than the last and the scores you set up should reflect this. To set the SCORE value, just like any of the other values in the Attack Wave Editor, hold down **[CAPS SHIFT]** and press the arrow keys **[5]** to **[8]** to move the cursor to the required setting and then type the number.

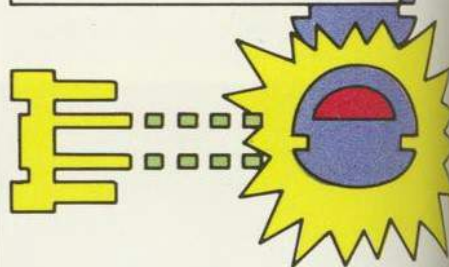
MAX is also easy – it controls the number of aliens in each attack wave. The maximum is 99 but you should keep it to reasonable limits or else that particular wave will be very boring or difficult! You may even like to include a one-alien only wave as the final objective in a long, difficult game before the game cycles round to its first wave again!

The SPD (speed) column



WARNING

There is no point in having waves which have no aliens (setting MAX to 00). If you set MAX to 00 for all the waves in a game, when you play it, Games Maker will loop, constantly starting out on a new wave and then discovering that there are no aliens in it. You will have to switch off your computer and reload Games Maker. Any games in memory will be lost.



move, how many are on-screen at once and whether or not they drop bombs. You can enter a value from 0 to 7 as follows:

SPD VALUE TABLE (Attack Wave Editor)

SPD Value	Aliens	Speed	Bombs
0	8	Slow	No
1	8	Fast	No
2	4	Slow	No
3	4	Fast	No
4	8	Slow	Yes
5	8	Fast	Yes
6	4	Slow	Yes
7	4	Fast	Yes

Note that when there are four aliens on the screen (SPD set to 2, 3, 6 or 7), they move faster than an equivalent wave of eight aliens. A wave of four aliens is therefore often harder to deal with than a wave which has eight aliens on screen at once. As with the scores, you should choose your values for SPD carefully so that the game gets progressively harder as players get better at it.

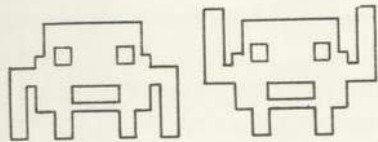
The NEXT column tells Games Maker which wave to go on to after all the aliens in that particular wave have been destroyed. You can use all eight waves or just have three or four cycling round. A game ends when the player has lost four lives; if he makes it through all the attack waves the last wave

should send the program back to an earlier wave so that the game can continue until the player is killed four times.

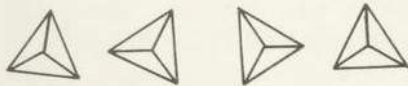
ANIM controls how a wave of aliens is animated and consequently which sprites and which movement patterns it uses. Until you are used to the game, it can be quite difficult to get the hang of this section.

Aliens can be animated in several different ways. Here, animation means that the creature's shape itself changes as it moves across the screen – its arms wave or it rotates or whatever. Games Maker lets you have non-animated aliens by setting ANIM to 0, 2, 4 or 6. These make use of only one sprite per alien and are the easiest to deal with.

Alternatively, you can use two sprites per alien giving a two-stage animation. A good example of this is a space invader character which has two positions:



ANIM needs to be set to 1 or 3 for this. Finally, you can have four sprites for each alien. An example might be an alien that spins round as it moves:



ANIM is set to 5 or 7 for this. In addition, ANIM controls how many different types of alien

are on screen at once. If you have an animated alien, it will be the only type on screen. If the aliens are not animated, then you can set ANIM so that there are two or four different sorts of alien on screen. If you want just one non-animated alien on screen then you have to use identical sprites for both of the types that are being shown.

The final twist to ANIM is its movement patterns; the invisible paths which the aliens follow as they move across the screen. You design these with the Movement Editor (option 5 of the Main Menu) but ANIM also controls whether each of the different sorts of alien on the screen follows the same path or has its own path.

The values for ANIM are as below:

VALUES OF ANIM (Attack Wave Editor)

Value	No. of alien types	Animation	Movement patterns
0	2	No	Same
1	1	Two-stage	Same
2	2	No	Different
3	1	Two-stage	Different
4	4	No	Same
5	1	Four-stage	Same
6	4	No	Different
7	1	Four-stage	Different

Depending on the attack wave number and the setting of ANIM, Games Maker *has* to use particular sprite numbers for the aliens in that wave and *has* to use particular movement patterns. The table on pages 44–45 gives full details of these restrictions. So, designing attack waves is a matter of coordinating sprites, ANIM numbers and movement patterns while making extensive use of the table on pages 44–45. You'll see an example of this in the next section of the guide.

The final element of the Attack Wave Editor is PAT. This sets the precise movement pattern the attack wave will use.

values of ANIM dictate which pattern will be used for a particular attack wave; if you enter the number of a pattern that shouldn't be used for that value of ANIM, Games Maker will ignore your choice and use the pattern it should.

When you have finished work on the Attack Wave Editor, press **ENTER** to go back to the Main Menu.

Movement Editor

The Movement Editor defines the paths taken by aliens in the game. To alter these, use option 5 from the Main Menu. The Movement Editor looks like this:

MOVEMENT EDITOR SCREEN

8 movement paths.

NEXT links one path to another.

Flashing cursor appears on the path currently being altered.

A reminder of which direction is which.

Graphic display of the path being created.

This is the first pattern that the aliens will follow. If it is linked to another different pattern, the aliens will then move onto it. Don't forget that certain

There are eight different movement patterns numbered from 0 to 7. These are linked to particular sprites using the ANIM and PAT settings on the Attack

In this section, we are going to create a game from scratch, showing you step by step how it is done. It is not supposed to be the ideal Games Maker game but it is designed to demonstrate many of the different features of the program. Do try this section with your machine in front of you. If you want your screen to match exactly with the examples below, make sure that you have just loaded Games Maker afresh and that the first game is the one selected.

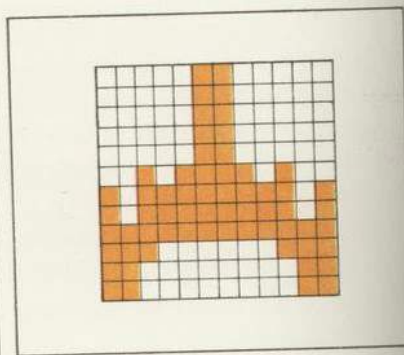
Invaders

Our game is going to be of the Invaders format, so go to the Configuration Menu (press **4** from the Main Menu) and set the game format to 0 (press **1** then **0**). While we are there, we might as well set the background to black (press **2** then **0**) and the foreground to white (press **3** then **7**). This is a game where we fire missiles at the aliens so Special FX needs to be set to 0, 1, 2 or 3. Let's say for now that the aliens appear singly and that we don't want the star display.

Looking at the table on page 44, the value for Special FX should therefore be 0. Press **4** then **0** to set it. Let's leave the sound for now so press **ENTER** to go back to the Main Menu.

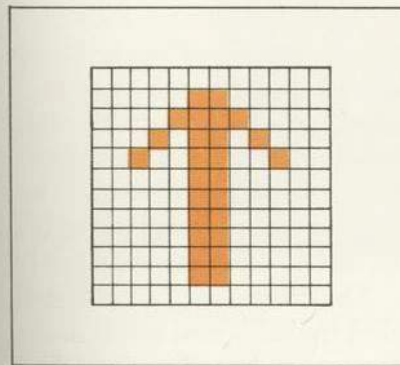
Ship Shapes

We'll go to the Sprite Editor and design shapes for the player's ship, the missiles, alien bombs and the explosion. We have to leave the aliens themselves until we have decided what the attack waves are and how the aliens will be animated. Press **3** to call up the Sprite Menu. In an Invaders-style game, the player's ship should be sprite 16 so call up sprite 16 by typing **1** **6**. Here's our design for the ship:



Use the Sprite Editor to enter this design or, if you like, do a ship of your own. We've got a black background so we need a colour that will show up well. Press **CAPS SHIFT** and **6** to make the ship yellow. When you're satisfied with your design, press **ENTER** to return to the Sprite Menu.

Next is the player's missile: sprite 24. Type **2** **4** to call it up and then make it a shape like this:

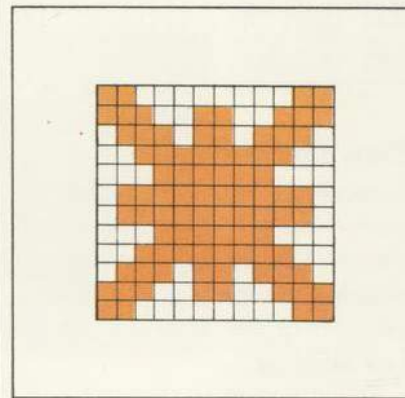


Press **CAPS SHIFT** and **5** to make the missile cyan in colour and then **ENTER** to return to the Sprite Menu. Select sprite 25 and enter a design for the alien's bombs. We leave the design up to you!

Big Bang

Finally, we should have an explosion sequence. This is a set of four sprites and it would be

nice if it gave the effect of debris scattering. The way to do this is to have sprite 28 for the initial explosion and then make sprites 29 to 31 similar but with each one having fewer and fewer remaining particles. We can use the sprite-copying facility to make this easy. First, select sprite 28 for editing and create a pattern like this:

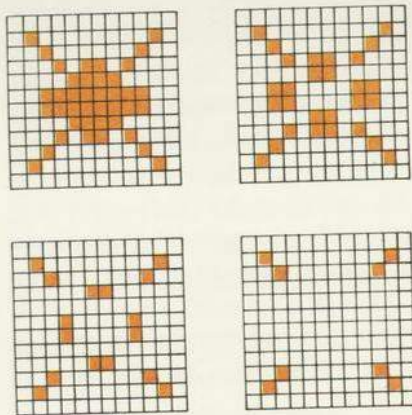


Press **ENTER** to go back to the Main Menu and then press **CAPS SHIFT** **2** **8**. Games Maker asks:

MOVE SPRITE 28 TO

Type **2** **9**. Now press **CAPS SHIFT** **2** **8** again and copy the sprite to **3** **0**. Finally, copy the sprite to position **3** **1**. Now, edit each of sprites 29 to 31 in turn, knocking out more and more of the dots as you go. You should end

up with an explosion sequence something like this:



Play The Game

Remember that because you can't make mistakes with Games Maker you can always play a game to test your alterations – even when it's only half finished.

We can take a short break now to try out our new sprites. Press **ENTER** to get back to the Main Menu and then **1** to play the game. You should see your game taking shape. However, the aliens in it (and their movement and attack) are those left over from a previous game number one before we started editing it. We now have to go on to set up our own attack waves. This bit can be a bit tricky. It requires a lot of reference to the table on pages 44–45.

Attack Waves

We'll have four different attack waves, each using a different animation setting. Let's start with an easy wave of slow, non-shooting aliens. These aliens will be of two different types and they can follow the same movement pattern. The first attack wave is always wave 0 and we want to use ANIM 0. The table on pages 44–45 tells us that this wave will use sprites 00 and 01. It can have any movement pattern, so for now we'll choose PAT 0.

The next wave (wave 1) can be an animated two-stage alien, also slow but this time shooting. This will use ANIM 1 and sprites 2 and 3. Again, we can use any movement pattern we like so we'll choose PAT 1.

The third wave (wave 2) will have the same two aliens as the first wave but this time they will follow different movement patterns, as well as shooting and moving quickly. This is ANIM 2 and notice that the chart on page 44 points out that Games Maker will use sprites 4 and 5 and movement patterns 2 and 3.

So far our three waves are numbered in order – 0, 1 and 2. The final wave should have a four-stage animated alien, moving as quickly as possible

and shooting. This is ANIM 5. However, looking on page 44, if we made this wave number 3, Games Maker would use sprites 4, 5, 6 and 7 for the alien – and we've already used sprites 4 and 5 in wave 2. So we must give this final wave a

higher wave number. If we use wave number 4, ANIM 5 will tell Games Maker to use sprites 08, 09, 10 and 11, which is fine. We can have any movement pattern we like so we might as well use PAT 4. Our attack waves look like this:

SPRITE MENU (Example Game Attack Wave)

Wave 0
ANIM 0, PAT 0
slow, not shooting

Wave 1
ANIM 1, PAT 1
2-stage alien
slow, shooting

Wave 4
ANIM 5, PAT 4
very fast, shooting
(sprites 08, 09, 10, 11)

Wave 2
ANIM 2, PAT 2
& 3 fast, shooting
(sprites 04 & 05 are copies of sprites 00 & 01)

From the Main Menu, press **6** to get the Attack Wave Editor. Let's enter our attack information for wave 0 and ANIM 0.

We'll use movement pattern 0

NO.	ANIM	SCORE	PAT	MAX	SPD	NEXT
0	...	0	...	10	...	0
...	...	10	...	0	...	15
...	...	15	...	0	...	1

After this wave, we go to wave 1

It's an easy wave so it has only 10 points per alien

The aliens are slow and don't shoot so let's use speed 0

It's a short wave so we only need 15 aliens

The next wave (wave 1) should look like this:

NO.	ANIM	SCORE	PAT	MAX	SPD	NEXT
1	...	1	...	20	...	1
...
...	25	...	4
...	2

More points per alien

More aliens this time

This wave drops bombs

Wave 2 should look as follows:

NO.	ANIM	SCORE	PAT	MAX	SPD	NEXT
2	...	2	...	30	...	2
...
...	25	...	5
...	4

ANIM 2 is two non-animated aliens following two different patterns

This wave is fast moving and drops bombs

Because of ANIM 2, Games Maker will automatically use patterns 2 and 3

We need to go to wave 4 next

Our final wave for this game (wave 4) is:

NO.	ANIM	SCORE	PAT	MAX	SPD	NEXT
4	...	5	...	40	...	4
...
...	25	...	7
...	0

A 4-stage animated alien needs ANIM 5

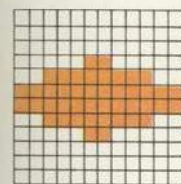
These are very fast aliens (only four on-screen at once) and they drop bombs

We'll use pattern 4

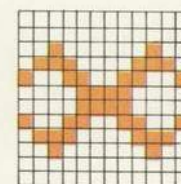
If the player makes it through this lot, we need to start again at wave 0

Use the Attack Wave Editor to enter these details and check them carefully before going on. When you're ready, go back to the Main Menu by pressing **ENTER** and call up the Sprite Menu by pressing **3**. We can now design and enter the different aliens of the game. Here are the designs we used, though there's no reason why you can't use some of your own.

The first wave has two sorts of alien like this:

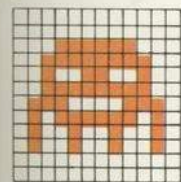


sprite 00

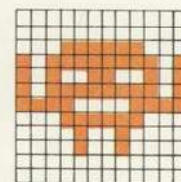


sprite 01

Next, we have a two-stage animated alien. Let's use a familiar friend – the Space Invader! Design sprite 02 first and then use **CAPS SHIFT** and **0 2** from the Sprite Menu to copy it to sprite 03. You then call up sprite 03 and make the few changes necessary to get the pattern shown below:



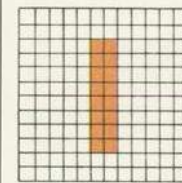
sprite 02



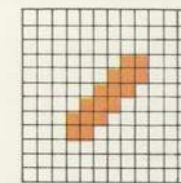
sprite 03

The next wave uses sprites 4 and 5. These are already taken care of since we said that we wanted the first two sprites to reappear but this time dropping bombs and moving faster. We still need to use sprites 4 and 5 but we can copy their designs from 00 and 01. From the Sprite Menu press **CAPS SHIFT 0 0** then type **0 4**. Then press **CAPS SHIFT 0 1** and type **0 5**.

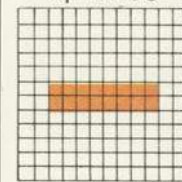
Finally, we need to use sprites 08 to 11 to form a four-stage animated alien for the final attack wave. The designs we use are:



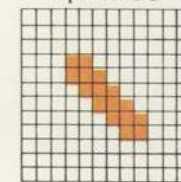
sprite 08



sprite 09



sprite 10

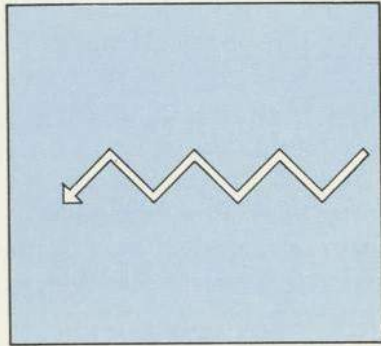


sprite 11

We're nearly there now! The last major thing to do is set the movement patterns for each of our alien attack waves. Press **ENTER** to get back to the Main Menu, if you're not already there, and then press **5** to go to the Movement Editor.

The first wave uses pattern 0 for both its aliens. Press to edit the pattern. Now, on the whole, we want the aliens to move slowly down the screen. So a suitable pattern would be:

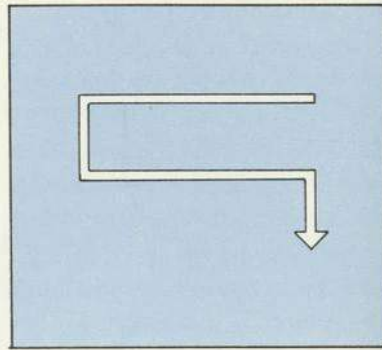
557755775577555



Notice that the alien ends up in a lower position at the end of the movement than where it started. This means that the alien will gradually move down the screen although it will take several repetitions of the movement to drop all the way down. You should set the NEXT value for pattern 0 to 0, so that the alien is forced to repeat the same pattern over and over again.

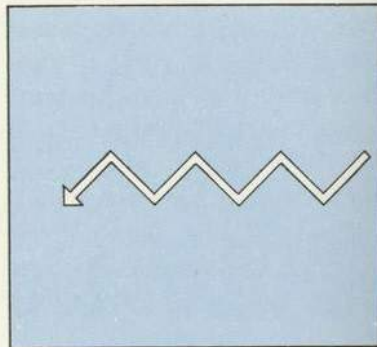
Our next wave makes use of a Space Invader style sprite so it seems suitable to give it a vaguely Space Invader style of movement. Press then to edit PAT 1 so it looks like this:

NO. PATTERN NEXT
1 ... 666666442222224. 1



The third wave has two different sorts of alien, each following its own pattern. We are using patterns 2 and 3 for this and the movements we chose are:

2...557755775577555...3



This is the same pattern used in the first wave. By repeating it we are emphasising the idea that the first wave of aliens has returned, only this time it is more aggressive. The second of

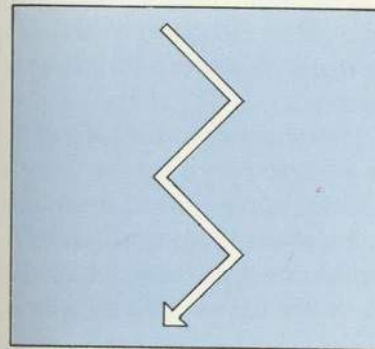
the two patterns does the same thing only going the other way:

3...331133113311333...2

Notice that the NEXT values for these two movements have been set so that the two patterns are linked to each other. After completing one movement pattern, the two different aliens will swap over and follow each other's pattern. This creates a very effective attack!

Finally, our last lot of aliens (the four-stage animated ones) make up the meanest attack wave of all. Our movement pattern should make them very difficult to get. This can be done with a pattern that makes them drop almost straight down:

4...555533335555333...4



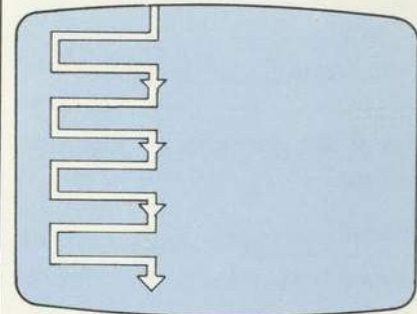
Notice that this pattern is linked to itself by setting

NEXT to 4 so that it repeats over and over again.

Right! It's time to try out your new game. Press for the Main Menu and press to play the game. Good Luck!

Improve The Game

Phew! That's not an easy game. There are one or two little improvements we could make. If you got as far as the Space Invader wave (of course you did!), you'll have noticed that it only really plays on the left-hand side of the screen. If you look at the movement pattern you'll see why:

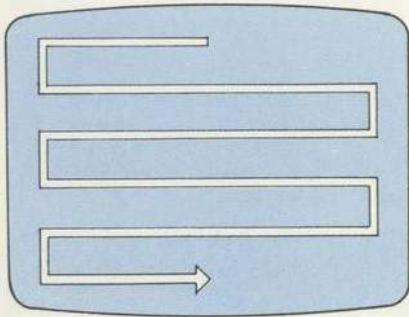


Wrong Invader pattern

We've got some spare movement patterns (numbers 5, 6 and 7). Maybe we could link one of these into the path of the Space Invaders and get them to use the rest of the screen. Let's use pattern 5. Go to the Movement Editor by

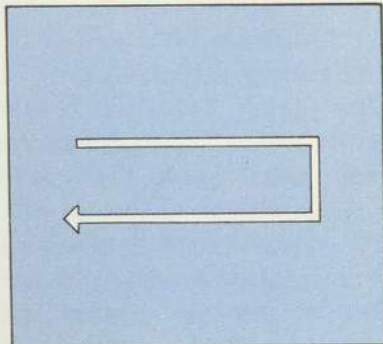
pressing **5** from the Main Menu and press **1** to edit the pattern for the Space Invader. Press **8** once and the cursor will move onto the value for NEXT, currently set to 1 so that pattern 1 repeats over and over again. Change this to a **5** and press **ENTER**.

Now let's set up pattern 5. We really want the invader to move like this:



So make pattern 5 into this shape:

2222224466666666



Set its NEXT value to 1 so that

the Space Invader then goes back and does pattern 1 again. Press **ENTER**. This is nearly right now. Press **1** to edit pattern 1 again. The 4 on the end of the pattern isn't really needed – use the **9** key to position the cursor over it and then type a **2**. Press **ENTER** twice and run the game. Play as far as the second level and you should see that the Space Invader wave is now much improved.

It's also a bit too easy to stand in one place and 'pop off' the aliens as they enter one by one. Maybe we ought to have the aliens appear in blocks. Go to the Configuration Menu and change Special FX to 2 if you think this is better. Whenever you have finished a game, no matter how much planning and paperwork you've done, it is always best to play-test it extensively and ask yourself "How can I make this better?"

Oh, and we almost forgot... we've still to go to the Sound Editor and design some unique sounds for our game. Nor have we specified the keys which we want to use with the game. Make these, and any other changes you want, at your leisure. Remember to save the game to tape for future use.

7 LOADING AND SAVING 7

Obviously, you will want to keep the games you create; both those that are finished and those that are partially-complete. Games Maker lets you save and load games to and from tape in the same way as your Spectrum usually handles programs.

Saving Games

To save a game, make sure that the MIC socket on the cassette recorder is connected to the MIC socket on the Spectrum. To improve reliability, it is always preferable to disconnect the EAR cable as this can cause a 'feedback' hum on the recording.

Games Maker always saves the current game – the one you've just been playing or working on. So you should make sure that the game you want to save is selected by using option 2 on the Main Menu. To save the game, select option 8 in the Main Menu. Games Maker asks you to:

START TAPE THEN PRESS
ENTER
Press PLAY and RECORD on

your cassette recorder and then press **ENTER** on the computer. It takes about fifteen seconds to record the game. Next, the computer prompts:

REWIND TAPE FOR
VERIFICATION

Make sure that the EAR cable is now connected, rewind the tape to the start of the recording and press PLAY. There is no need to press **ENTER**. Games Maker will check the recording against the copy of the game in memory. If there is an error, you will get the message:

TAPE VERIFICATION HAS
FAILED

In this case, press **ENTER** and try saving the game again at a different volume setting.

Loading Games

To load a game, position the tape at the start of the game to be loaded, make sure the EAR cable is connected and select option 7 on the Main Menu. The computer will prompt:

PRESS PLAY ON TAPE

The game you are loading will become the current game, replacing whatever the previous current game was. You should be careful not to load an old game over the top of a new game that you have yet to save. Incidentally, both loading and saving can be interrupted if necessary by pressing the **BREAK** (**CAPS SHIFT** then **SPACE**) and **ENTER** keys several times.

Further Hints

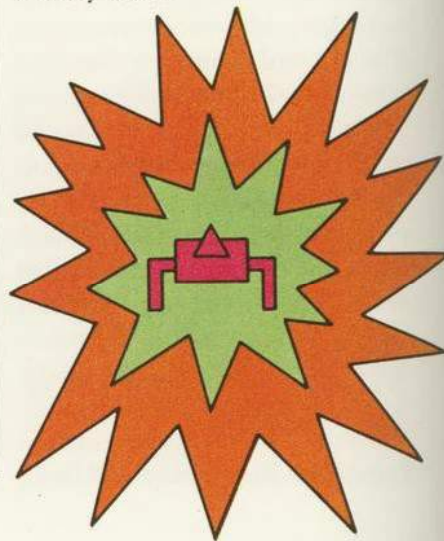
The load and save options can be very helpful when used carefully. Remember that Games Maker does not name games as it saves them to tape, so you have to keep a careful record of which games are stored, and where, on your tapes. It is possible to build up a single tape with eight favourite games on it by loading each one into Games Maker in turn and then saving each game in turn onto one tape. You could do this to build up a competition with your friends who have their own copies of Games Maker. Each person in a group of eight players designs a game and you then combine all eight on a single tape and compete for the highest scores.

Another useful trick is to use load and save to copy games.

Suppose you wanted to create a new game that used some sprites and movement patterns from a game you've just finished. By saving the finished game onto tape, then selecting another game from memory and reloading the saved game over it, you'll have two copies of the same game in memory and can then work on one without ruining the other!

Spare Cassette

To help you get started, your Games Maker package includes an extra blank cassette on which you can store games you have created. Use both sides of the cassette for these, and be sure to keep a record of what is on them. The extra cassette can be kept in the lower slot of the Games Maker library case.



Appendix A: Games Maker's Author

Games Maker is the work of John Hollis, when he was Technical Director of Quicksilva – the software house. Quicksilva started life as a hardware company making add-ons for the Sinclair ZX81 and John helped to produce products that gave the ZX81 colour and high resolution graphics.

When the Sinclair Spectrum was launched, it incorporated many of the features that Quicksilva had been producing as add-ons. The company turned its attention to software and John followed, producing QS Intruders and QS Meteor Storm and the hugely popular Time Gate.

John Hollis wrote the program using an ordinary 48K Spectrum with one ZX Microdrive and a slightly modified version of the Picturesque Assembler/Editor.

Appendix B: How Games Designer Works

If you're a programmer, you may find it very useful to know how Games Maker works. The techniques used are more or less the same as other arcade programs. But here you can see them working because information, such as movement patterns and sprites, is open for the user to change as he or she likes.

Each game consists of 2K of information which is entered and altered by the different menus and editors. All the information is verified when you enter it to reduce the amount of checking that needs to be done when the game runs, therefore making the action as fast as possible. When you choose a game from the Main Menu, Games Maker quickly processes the information that you previously entered and transfers sections of it to the part of the program that actually plays the game.

While you're playing, the Spectrum's interrupt facility is used, in effect, to do two things at once. For example, the stars are automatically kept moving while the sprites and sound are being processed. Games Maker sensibly avoids the Spectrum's ROM instructions for anything other than loading and saving to tape.

Appendix C: Reference Tables

Table 1: Settings for ANIM (Attack Wave Editor)

ANIM Value	No. of alien types	Animation	Movement patterns
0	2	No	Same
1	1	Two-stage	Same
2	2	No	Different
3	1	Two-stage	Different
4	4	No	Same
5	1	Four-stage	Same
6	4	No	Different
7	1	Four-stage	Different

This table lists the settings for ANIM in the Attack Wave Editor. Once you have selected the type of animation you require for each wave from the upper table, look in the corresponding column in the lower table. This will tell you which sprites Games Maker will use

for that particular value of ANIM on that particular wave. The table also tells you which, if any, movement patterns *must* be used for the attack and you will need to arrange your movement patterns and wave numbers to fit. See pages 28 and 29 for a more detailed discussion.

Wave	Sprites	Pattern	Sprites	Pattern	Sprites	Pattern	Sprites	Pattern
0	00,01	Any	00,01	0,1	00,01,02,03	Any	00,01,02,03	0,1,2,3
1	02,03	Any	02,03	0,1	00,01,02,03	Any	00,01,02,03	0,1,2,3
2	04,05	Any	04,05	2,3	04,05,06,07	Any	04,05,06,07	0,1,2,3
3	06,07	Any	06,07	2,3	04,05,06,07	Any	04,05,06,07	0,1,2,3
4	08,09	Any	08,09	4,5	08,09,10,11	Any	08,09,10,11	4,5,6,7
5	10,11	Any	10,11	4,5	08,09,10,11	Any	08,09,10,11	4,5,6,7
6	12,13	Any	12,13	6,7	12,13,14,15	Any	12,13,14,15	4,5,6,7
7	14,15	Any	14,15	6,7	12,13,14,15	Any	12,13,14,15	4,5,6,7

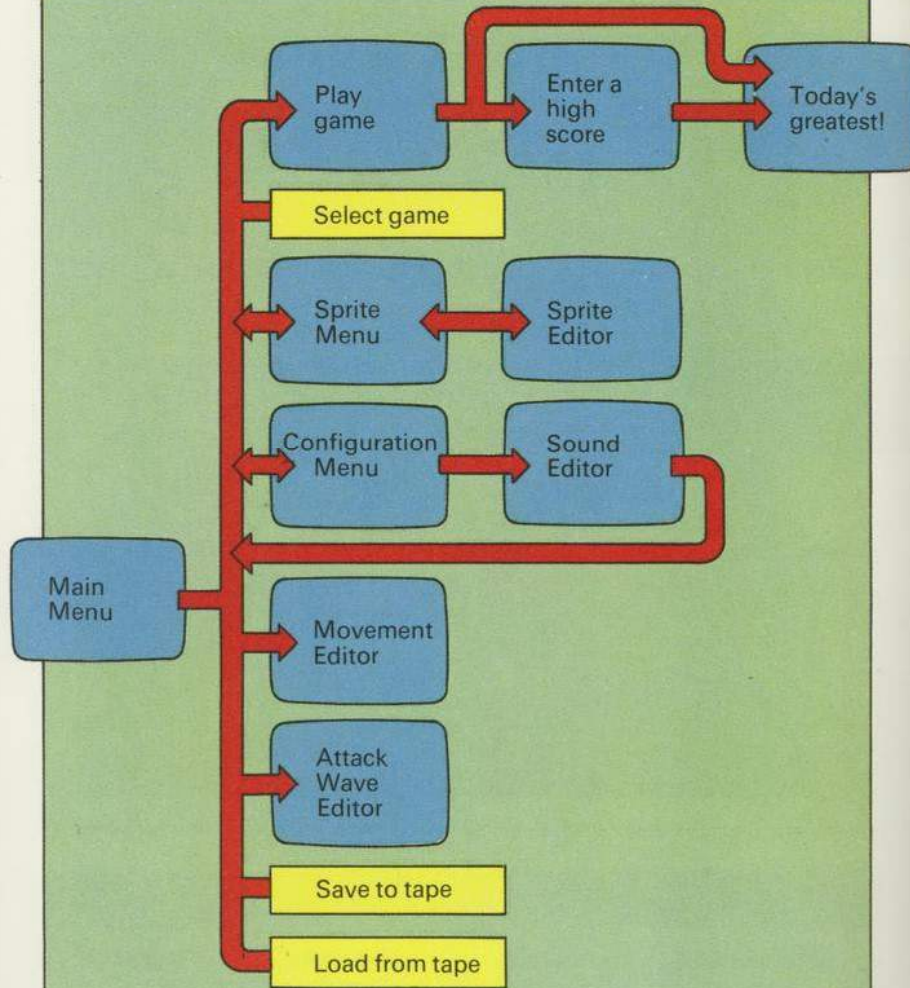
Table 2: Values for Special FX (Configuration Menu)

FX Value	Alien entry	Stars	Fire button
0	Single	No	Missile
1	Single	Yes	Missile
2	Block	No	Missile
3	Block	Yes	Missile
4	Single	No	Shield
5	Single	Yes	Shield
6	Block	No	Shield
7	Block	Yes	Shield

Table 3: Values for SPD (Attack Wave Editor)

SPD Value	Aliens	Speed	Bombs
0	8	Slow	No
1	8	Fast	No
2	4	Slow	No
3	4	Fast	No
4	8	Slow	Yes
5	8	Fast	Yes
6	4	Slow	Yes
7	4	Fast	Yes

Table 4: Program Map



This diagram shows you how all the various menus and editors in the Games Maker program are linked and how you can move

between them. When you first start using Games Maker this map will be a great help in finding your way around.

This glossary explains many of the terms you will meet using the Games Maker (and other programs). It is not a complete glossary for micros but one designed specifically for this program.

Attack Wave Aliens attack in groups, each group being more difficult to wipe out than the last. You can have up to eight such 'waves' in Games Maker.

Cursor A flashing square that marks your position on the computer screen. Whatever you type next will appear where the cursor is.

Editor A part of a program that let's you amend, create and alter information stored in a computer.

ENTER The key on the keyboard usually used to tell the computer you've finished what you were doing.

Game format The basic scenario behind a game. Games Maker has four of these called Invaders, Asteroids, Scramble and Berserk.

Main Menu The central 'crossroads' of a program from where you choose whatever you want to do next.

Menu A list of choices on the screen. You pick which one you want by pressing the appropriate number key.

Option A particular choice on a menu.

Pixel An individual coloured point or dot on the computer screen. All of the shapes and text in a game are made up of these tiny points.

Prompt A message on the computer screen inviting you to do something or type in some information.

Sprite A shape (made up from pixels) that moves around the screen. All of the moving objects in a Games Maker game are sprites.

- Alien entry* 20
 ANIM..... 27, 35, 44
Animation..... 27
Background..... 15, 20
 BASIC..... 7
Cassette
 blank..... 42
 problems 7
Changing control keys..... 13
Colour 14, 23
Editors
 attack wave 17, 25
 general 8
 movement 15, 29
 sound 15, 21
 sprite..... 14, 22, 32
Explosions 25
Fire button 20
Foreground 20
Game format..... 18, 32
High score..... 10
Joysticks 19
Loading
 games 41
 the program..... 6
 MAX 26, 35
Menus
 configuration 14, 18
 general 8
 main..... 6
 sprite..... 14, 22
 NEXT
 attack waves 26, 35
 movements 30, 38
 PAT 29, 34
 Playing a game 10, 34, 39
 Reference tables 44, 45, 46
 SCORE 26
 Selecting games 11
 SPD..... 26, 35
 Special FX..... 20, 32, 44
 Sprites..... 22
 Stars..... 20
 Terminology 9