



SCRATCH

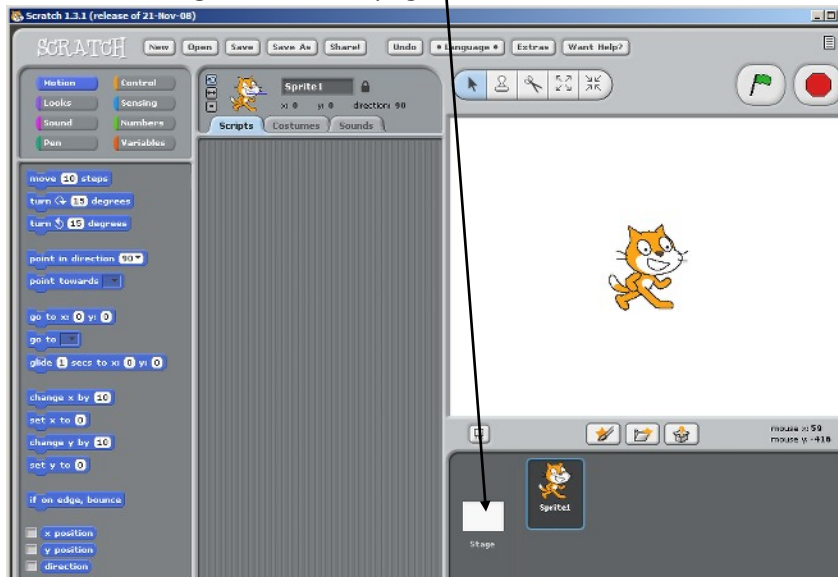
Pacman Game

Advanced

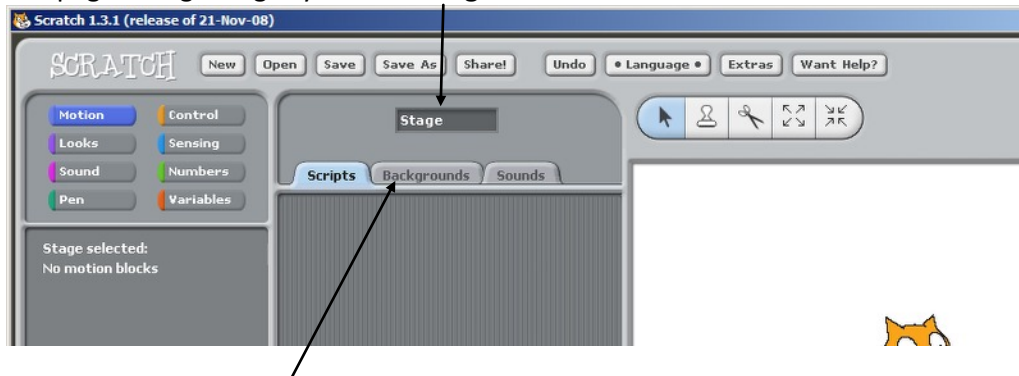
Maze Game: Making a Background

To alter the background do the following:

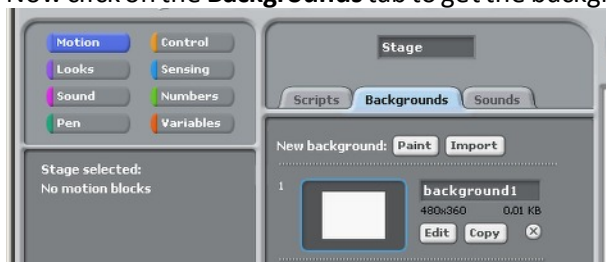
1. Click on the **Stage** on the main page:



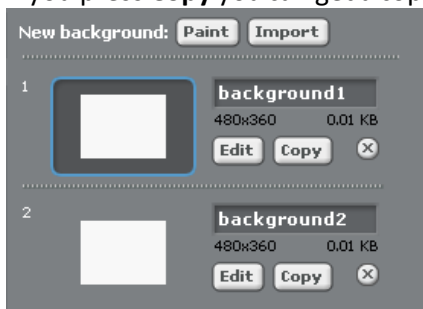
2. The page changes slightly with the **Stage** in the middle



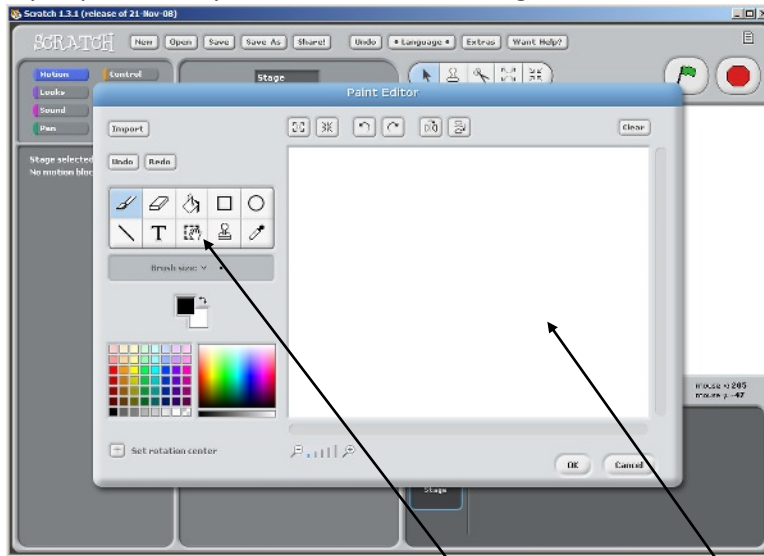
3. Now click on the **Backgrounds** tab to get the background area:



4. If you press **Copy** you can get a copy of your background:

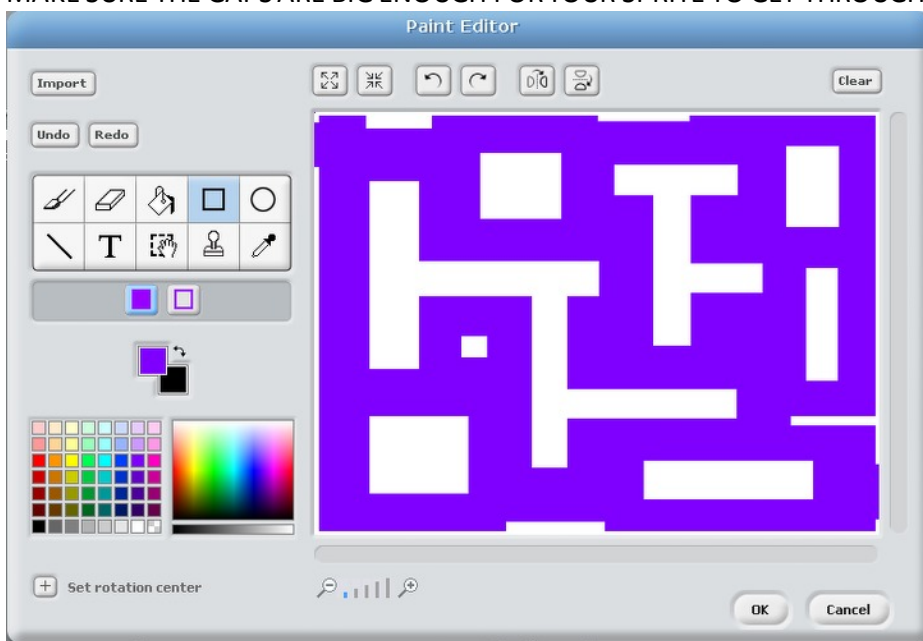


5. If you press **Edit**, you are taken to the Background Paint editor:

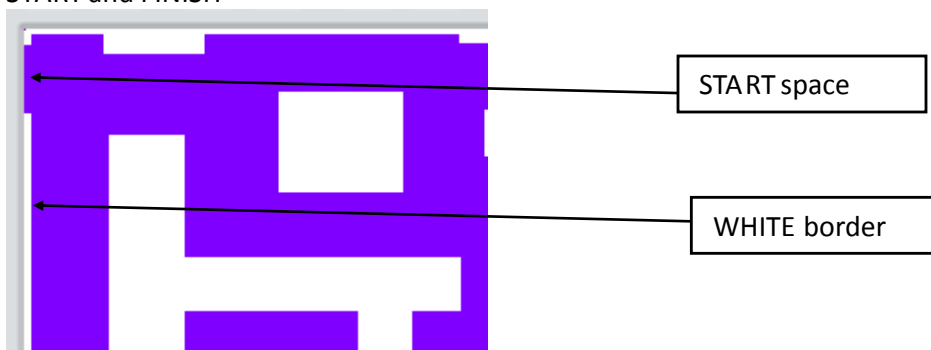


6. The tools are very similar to Paint. Click on an icon and click on the main menu and draw:
7. To make a maze you want to colour the background one colour and add in filled rectangles for the walls in **ONE COLOUR**.

MAKE SURE THE GAPS ARE BIG ENOUGH FOR YOUR SPRITE TO GET THROUGH!



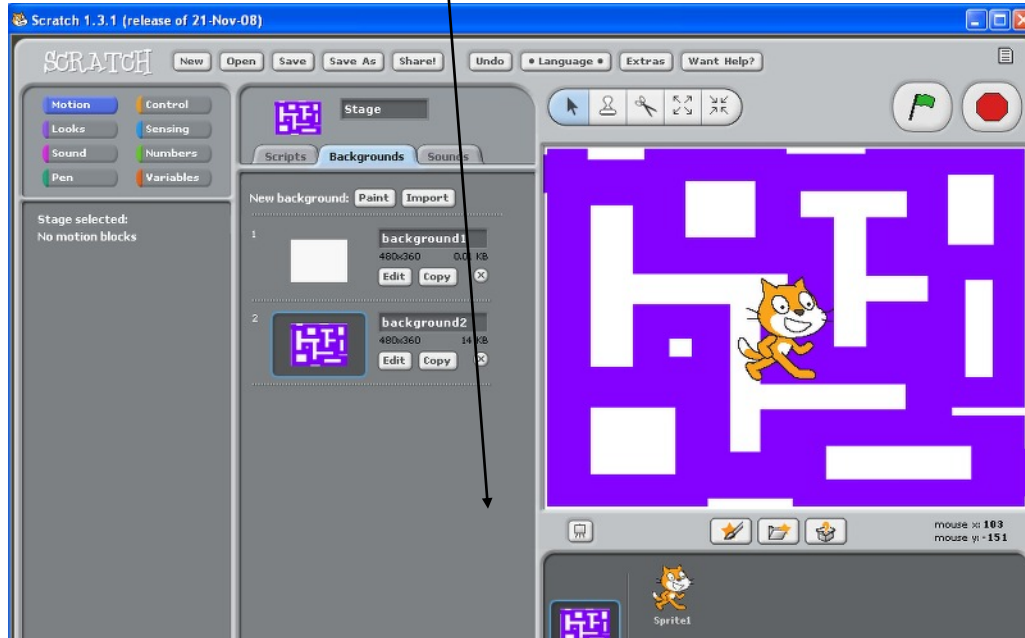
8. I have added a white BORDER using the HOLLOW square and made two gaps for the START and FINISH



Maze Game: Adding a New Sprite

This helpsheet shows you how to replace the Cat sprite and add in a new one. You can follow this helpsheet or make a PacMan style sprite using a different helpsheet

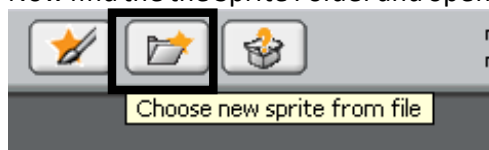
1. Here is your maze game with the cat sprite:



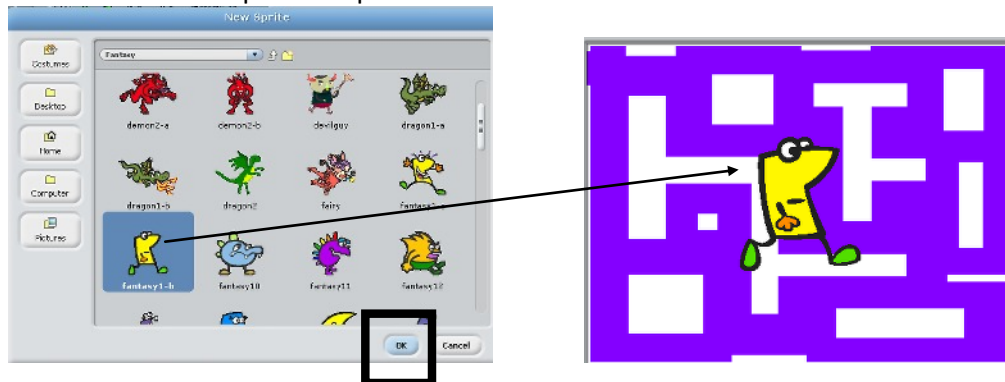
2. Right click on the cat and press **Delete**:



3. Now find the the Sprite Folder and open it:



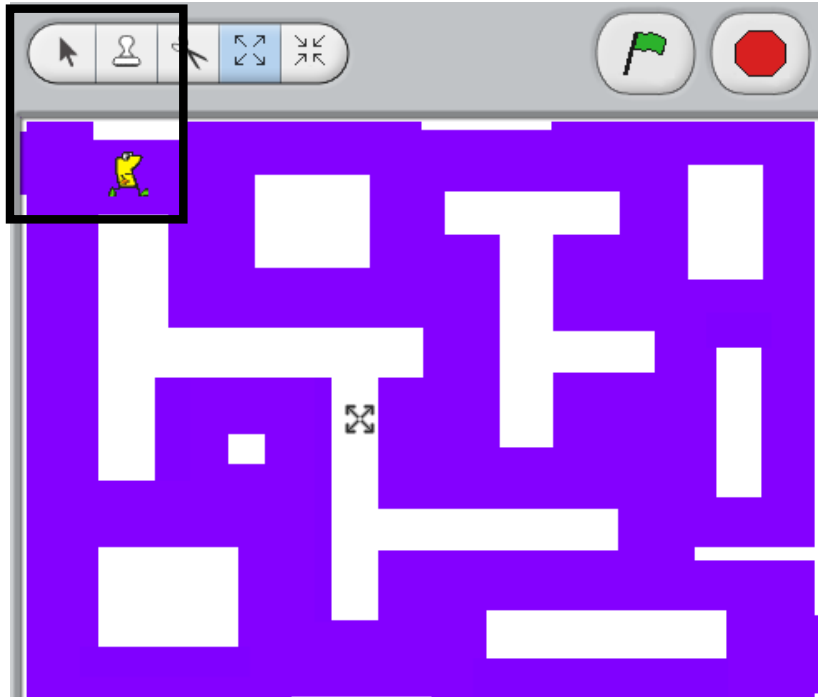
4. Look for a suitable sprite and press **OK**:



5. To make the sprite smaller, click on the **SHRINK** icon and then click on your Sprite:



6. Make the sprite small enough to fit through all the walls.
7. Click on the **ARROW** icon and drag it around your maze to check:



8. Rename the sprite to give it a better name:



9. That is how to make a sprite – you can change the sprite later one to make an animated one.

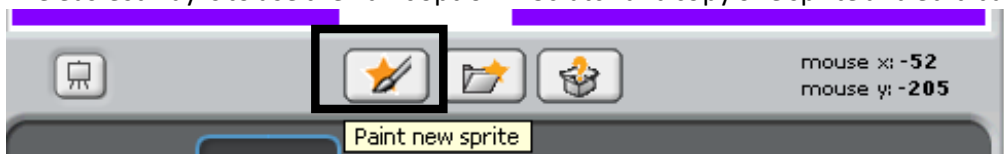
Maze Game: Making a Pacman Style Sprite

Pacman avatars works really well as when you move the Pacman changes and pretends to eat..

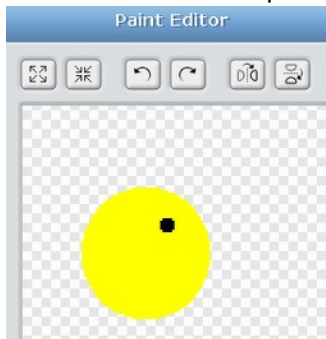
1. To make a game like this you need to create two avatars – one with a closed mouth and one with an open mouth:



2. The easiest way is to use the **Paint** option in Scratch and copy one sprite and edit it again:



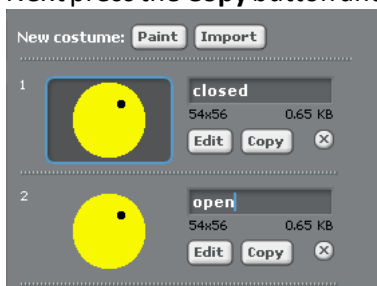
3. Now create a closed sprite:



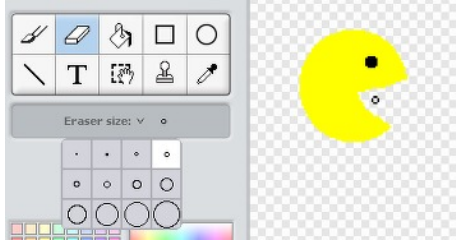
4. Make sure you name your sprites differently:



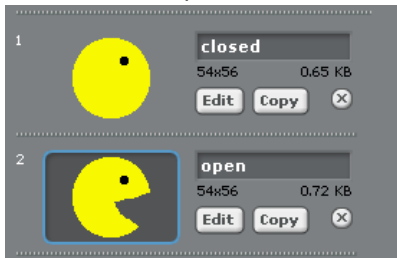
5. Next press the **Copy** button and rename the sprite to **Open**:



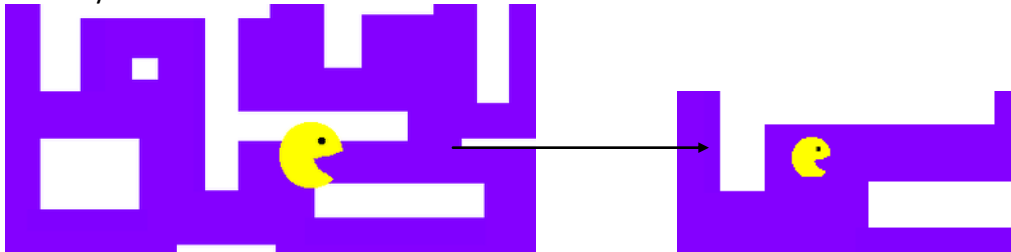
6. Edit the **Open** sprite using the **Eraser** to create a mouth:



7. Save the new sprite:



8. You may need to RESIZE it on the screen to fit into the maze:



9. When you resize one the other automatically changes:



10. Now you need to write a command like this for your sprite:

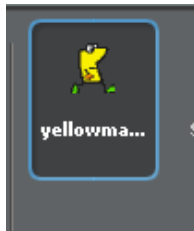


11. This makes the Pacman change shape every ½ second or so.
12. If this it too quick then change the timings to make it slower eg 0.8secs

Maze Game: Controls for Maze Movement

You now need to make your sprite move – follow these instructions

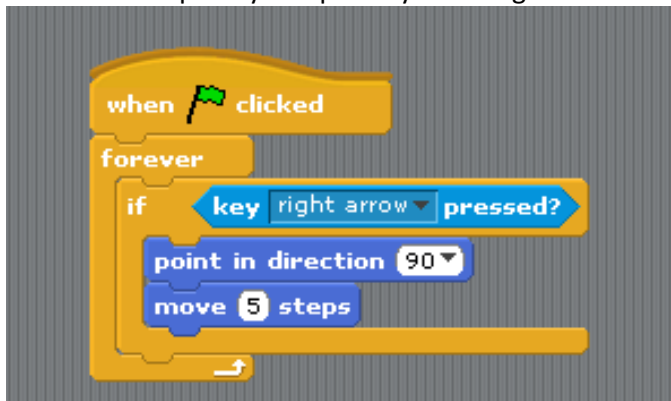
1. At the bottom of the page, click on the sprite to highlight it:



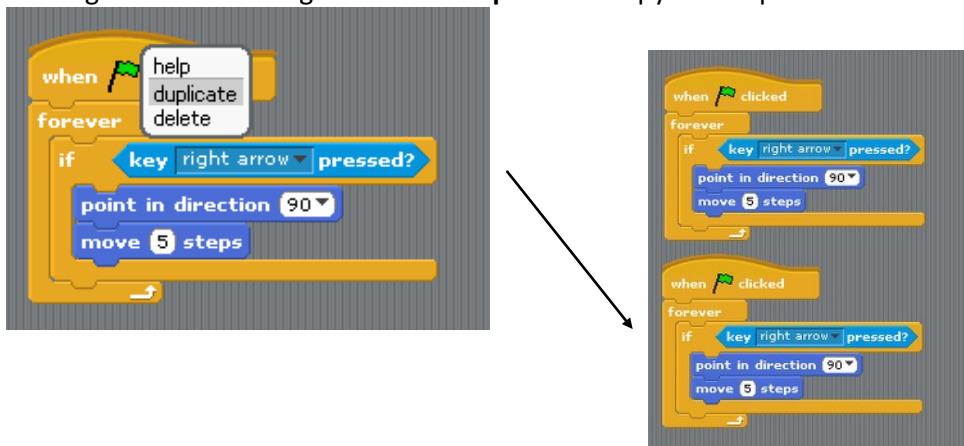
2. Click on **Scripts** on your sprite:



3. Add in this script for your sprite by choosing the correct colour commands



4. Now right click on the flag and choose **Duplicate** to copy the script and move it down:



5. Now ALTER the script to make commands for **LEFT RIGHT UP** and **DOWN**:

The image shows four Scratch scripts for movement, each starting with a 'when clicked' event and a 'forever' loop. The 'if' statements check for specific arrow keys: right arrow, left arrow, up arrow, and down arrow. The 'point in direction' blocks are set to 90, -90, 0, and 180 degrees respectively. The 'move 5 steps' block is present in each script. Callouts point to the direction values with the text 'DONT FORGET TO CHANGE DIRECTION!'.

```
when clicked
  forever
    if key right arrow pressed?
      point in direction 90
      move 5 steps

when clicked
  forever
    if key left arrow pressed?
      point in direction -90
      move 5 steps

when clicked
  forever
    if key up arrow pressed?
      point in direction 0
      move 5 steps

when clicked
  forever
    if key down arrow pressed?
      point in direction 180
      move 5 steps
```

6. If you make the number SMALLER you have SMOOTHER movement.
7. Right click on the grey space and press **Clean Up** to tidy up your scripts:

The image shows a Scratch script for movement. The script starts with a 'when clicked' event, followed by a 'forever' loop containing an 'if' statement for the 'key up arrow pressed?' condition. The 'if' statement contains a 'point in direction 0' block and a 'move 5 steps' block. A context menu is open over the script, showing options: 'clean up', 'save picture of scripts', and 'add comment'.

8. Test out the script by pressing the Green Flag.

Maze Game: Not Going through the Walls

You will see that your sprite can go through the walls. You need to write a script to stop this from happening

1. Click on your sprite and write in these commands:



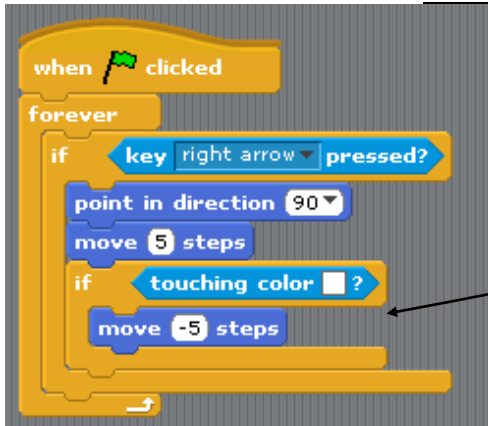
2. You now need to choose the colour of the walls.
3. Click on the colour to get a dropper icon and select the colour of your walls.
4. The colour changes to the colour of your walls:



5. Now **Duplicate** this block **THREE TIMES**



6. You now need to add each block to **EACH** of your directions:

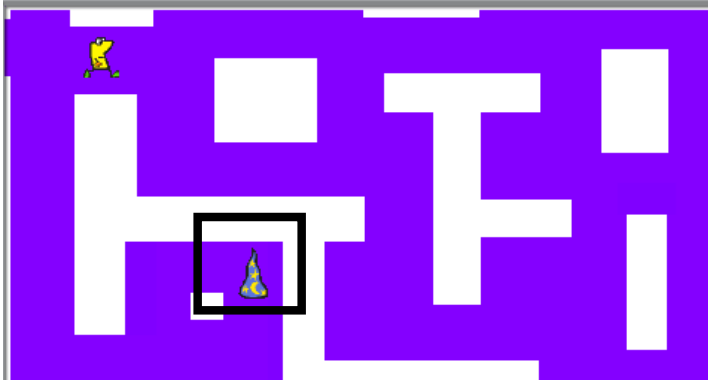


7. Test it out to see if it works.

Maze Game: Adding a Prize and Score

You are now going to get points for collecting other sprites. You need to make other sprites and put them around the maze

1. Add in a new sprite and drag it to a place in your maze:



2. Rename the sprite to make it easier to remember:

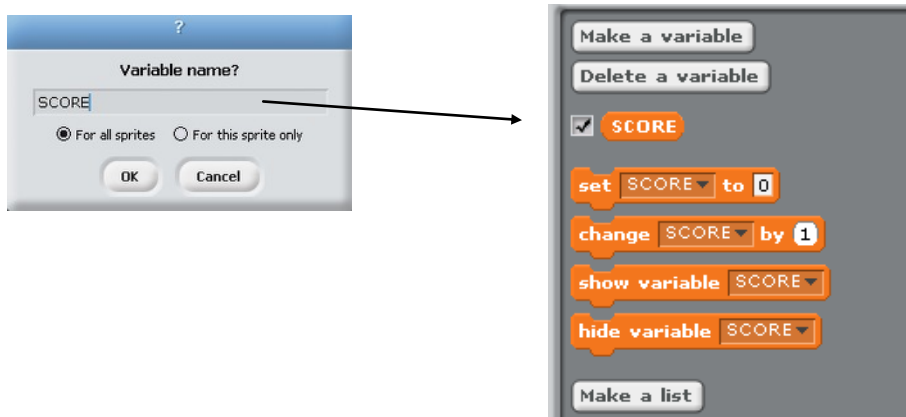


3. Now write a script that HIDES the hat when the man touches it:



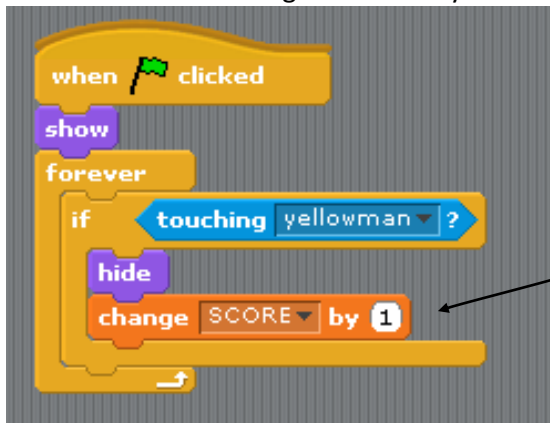
4. Now you need to add in a score

5. Click on **Variables** and make one called **SCORE**:



6. Now you need to change the score when your sprite touches a prize.

7. I have made mine change the score by 1:

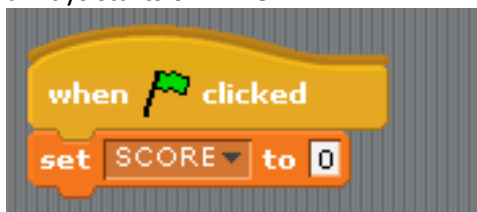


8. You can choose what score to have – you could even make the score MINUS! To take away points?

9. Now make up other prizes and put them around the maze:



10. Finally go to your own sprite and make sure you add this command so the score always starts on ZERO



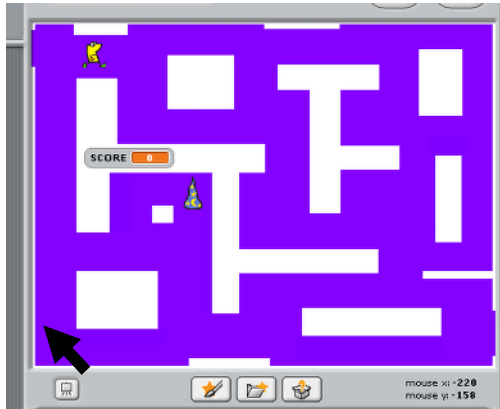
GOING FURTHER

Make the prizes disappear and reappear in a different place

Maze Game: Making the Prize Re-Appear

You could create a game where the sprite comes back again at a different place after a certain amount of time

1. Move the mouse to a different part of the maze and write down the **co-ordinates**:

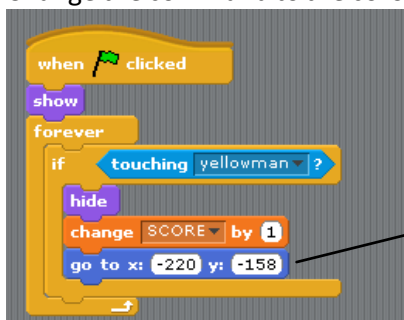


mouse x: -220
mouse y: -158

2. Now go to the Motion command and add in the **go to** command:

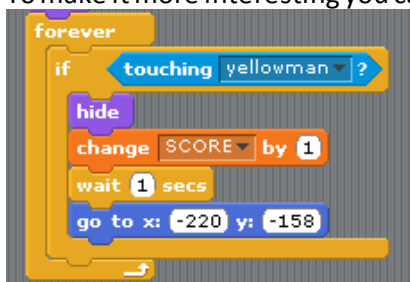


3. Change the command to the co-ordinates you wrote down before:



mouse x: -220
mouse y: -158

4. The hat will move automatically to the new place.
5. To make it more interesting you can put in a wait command to delay it:



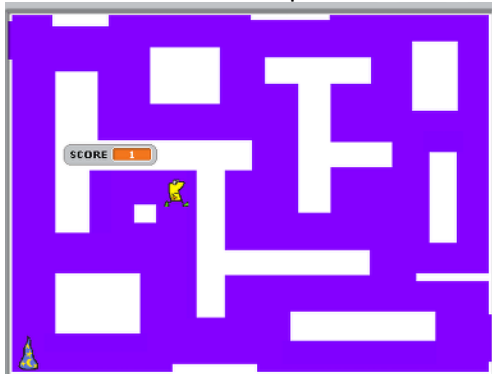
6. To make it MORE INTERESTING you can put in a **RANDOM** command to change the time it waits:



7. Now you need to make the hat show by adding in a **SHOW** command:



8. Here is the hat in a new place:



GOING FURTHER

Have the prize appear in lots of different places

Use a RANDOM command in the x and y co-ordinates to make it appear automatically in different places eg

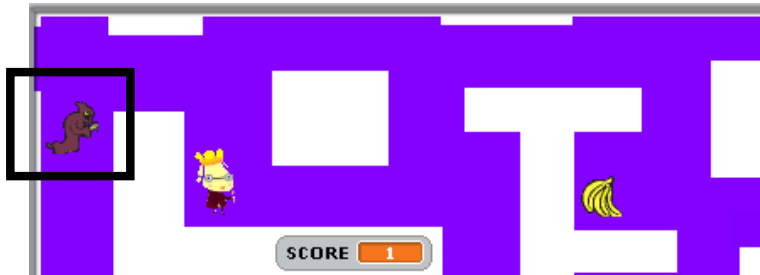


Maze Game: Adding in Enemies

To make the game more interesting you want to have some sprites that will cost you a life.

You cannot get sprites to follow you in a game so here is a different way with sprites moving backwards and forwards in the maze

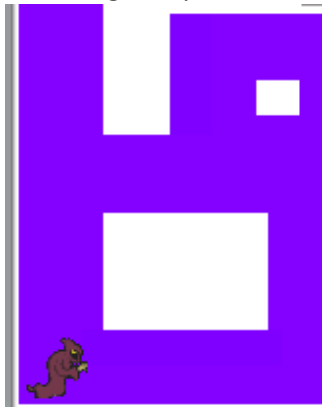
1. First you need to make an ENEMY SPRITE and place it on the maze – I have used a Ghost



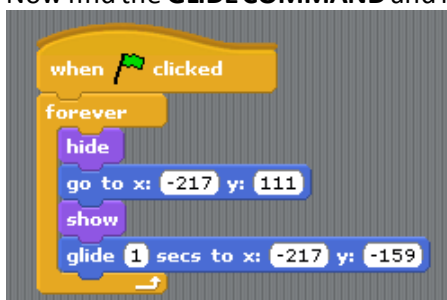
2. Next you need to move the sprite around the maze
3. Start by adding these commands to make the sprite appear:



4. Now drag the sprite down to where you want it to go:



5. Now find the **GLIDE COMMAND** and insert it into the script:



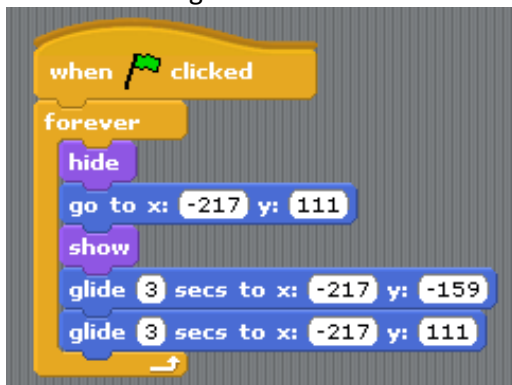
6. Next change the **glide time** to something slower eg 3s



IMPORTANT

If the ghost is moving UP OR DOWN make the x value the same If the ghost is moving LEFT OR RIGHT make the y value the same

7. This will make the ghost move down the way, you now need to make it glide back up
8. Add in another glide command to make it move back to its start point:



9. The ghost moves backwards and forwards automatically.

GOING FURTHER

Why not make the sprite move all the way around the maze?

Why not change the glide time to different speeds using RANDOM?

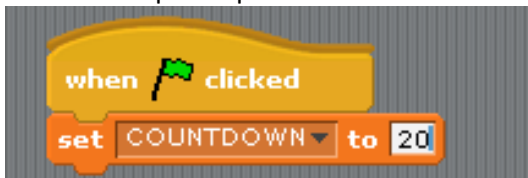
Maze Game: Adding a Countdown Timer

To make the game more interesting you want to add in a Countdown Timer so you have to get the prizes in a certain time!

1. First you need to make a variable in the VARIABLES section – call it COUNTDOWN



2. Now make up a script to set the Time to the value you want eg 20



3. Next add in a Forever loop so the countdown keeps changing

4. Then add in a Wait 1 second command – this gives you your timing! (IF YOU SAID WAIT 2 SECS then the countdown from 20 would take 40 seconds!)

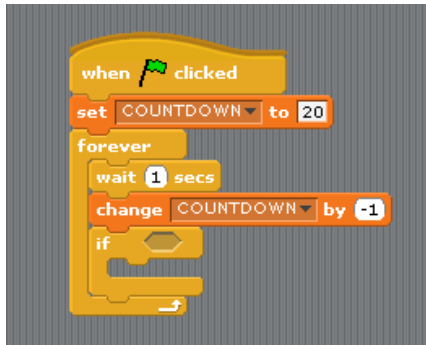


5. Now you need to change the COUNTDOWN by 1 so use the CHANGE command and set it to -1 so it goes BACKWARDS (clever!)

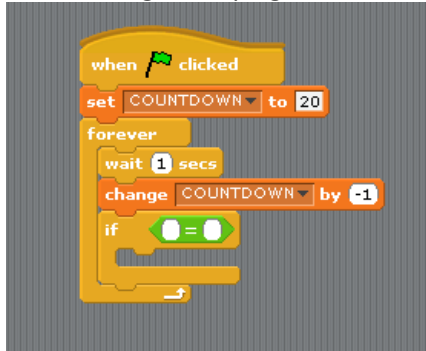


6. This now counts down but you need to do something when the COUNTDOWN reaches 0!

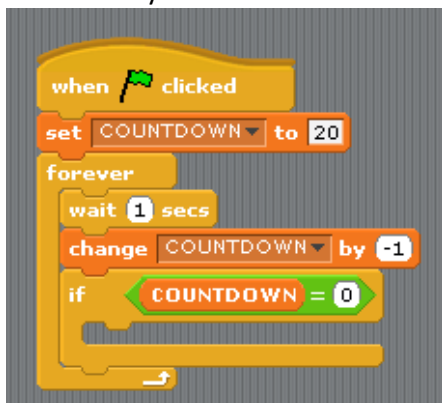
7. Add in an IF function



8. In the hexagon shape go to the NUMBER block and find the EQUALS



9. Now add in your variable COUNTDOWN and make it equal to 0



10. Now you need to put what you want to happen inside the IF bit and then stop the command



GOING FURTHER

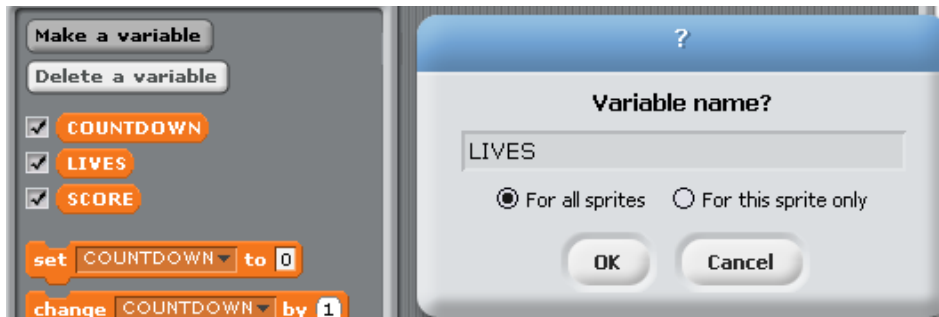
Why not add in a sound at the end of the countdown?

Why not add in a SPEECH BUBBLE THAT SAYS YOU HAVE 10s LEFT?

Maze Game: Losing a Life

You have added in your enemies – now you need to lose a life if you are touched by them

1.



2. Now you need to add the script to the sprite you are moving.

3. Now choose the **Set LIVES to** option:

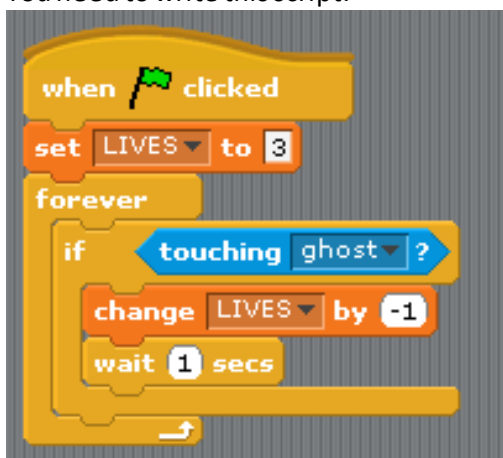


4. Make it equal to the number of lives you want to start with eg 3



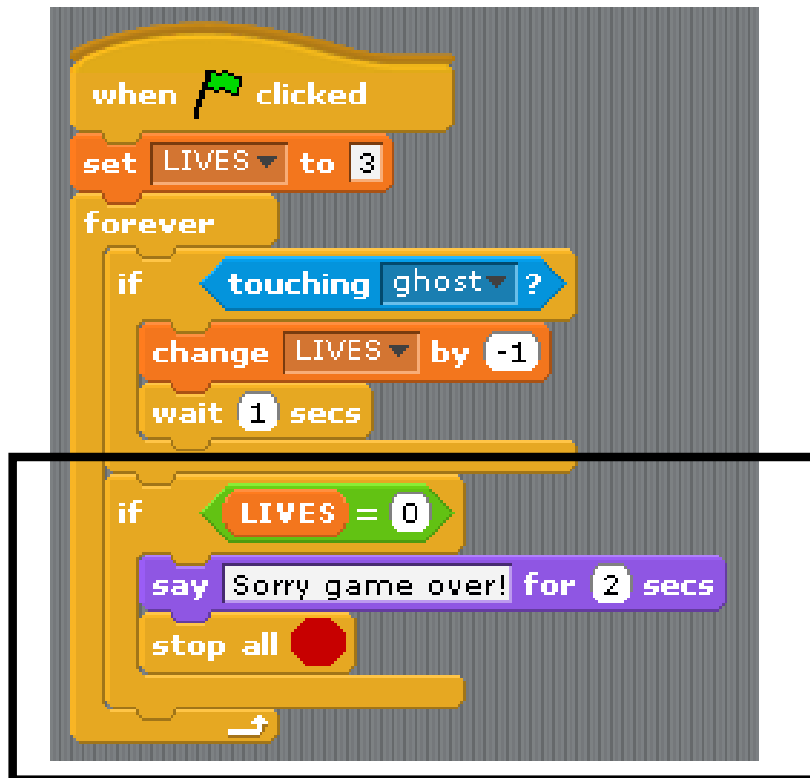
5. Now you need to take away a life if your sprite touches an enemy.

6. You need to write this script:



7. You add in the WAIT command to stop you losing lots of lives when it touches – you may want to change the time to less if it is too long!

8. Now you need to stop the game when you have 0 LIVES left.
9. Here is the command that looks like the COUNTDOWN command:



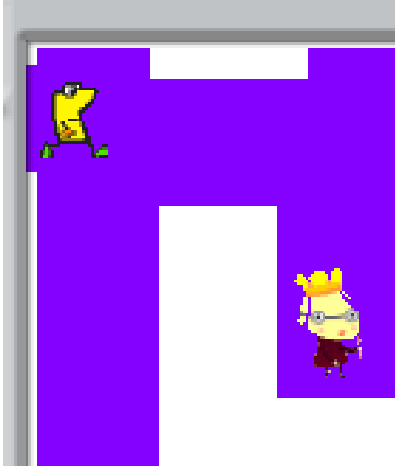
GOING FURTHER

You could add in some music that plays when you are caught You could have your sprite go back to the

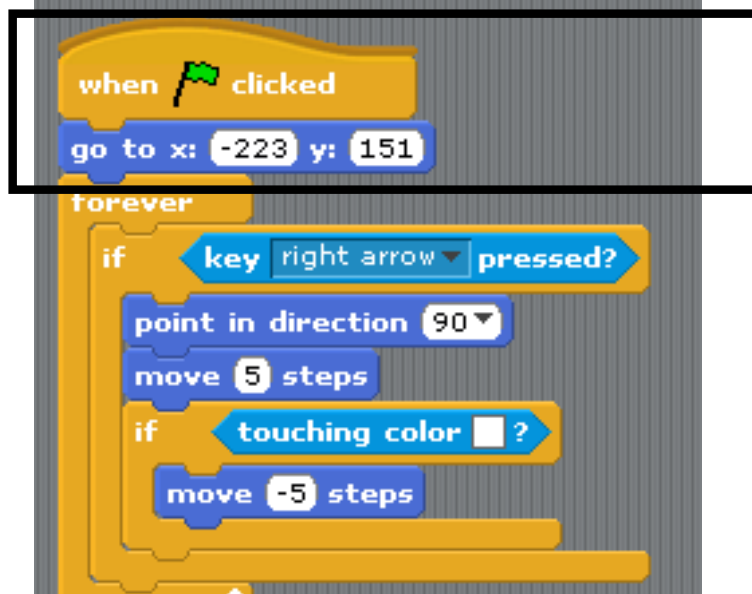
Maze Game: Starting Off

To start off you need to have your sprite at the start of the maze

1. Move your sprite to the START point in the maze:



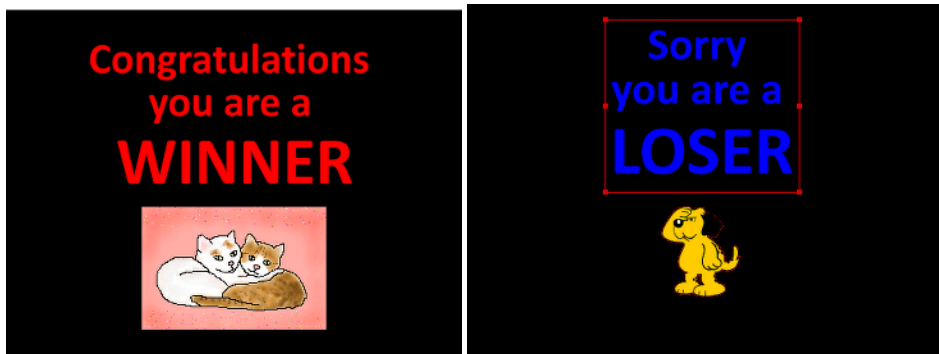
2. Go to the Sprite commands and add in the **go to** command at the start of any move script



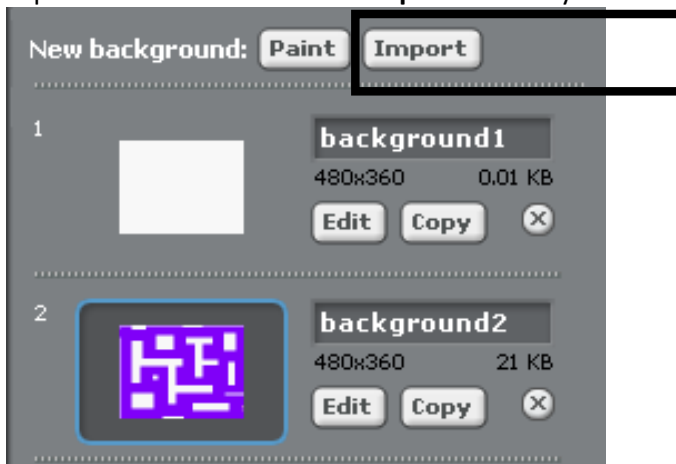
Maze Game: Making a Separate End Screen

An End Game screen makes your game very professional. Here is how to do it for a game where you have to collect objects

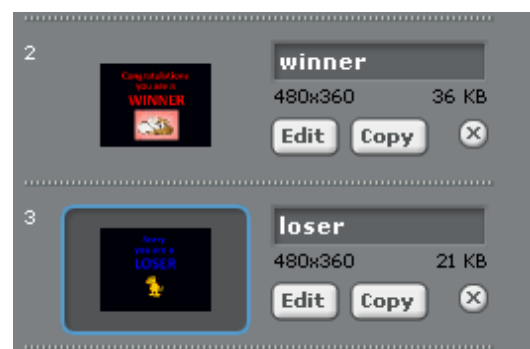
1. The first step is to make an End Game screen. I
2. You could have **TWO** – one for winning and one for losing the game!
3. I will make mine in Adobe Fireworks – remember the screen must be 480x360
4. Here are two SIMPLE examples I have made earlier:




5. I save them as winner and loser. I now need to IMPORT them into Scratch.
6. I open Scratch and click on the **Import** button by the **BACKGROUNDS**:



7. I find the images and press **OK** to import them to the Stage:



8. Now to add in the commands for the Loser screen. Go to the Scripts part of the Loser screen:



The image shows two Scratch scripts for the Loser screen. The first script is triggered by a 'when green flag clicked' event and contains a 'forever if' loop with the condition 'LIVES = 0'. Inside the loop, there is a 'broadcast hide' block followed by a 'switch to background loser' block. The second script is also triggered by a 'when green flag clicked' event and contains a 'forever if' loop with the condition 'COUNTDOWN = 0'. Inside this loop, there is a 'broadcast hide' block followed by a 'switch to background loser' block.

You make sure you start on the MAZE background

Here the number of **Lives = 0** so the game is over

You need to make a new broadcast called HIDE

Here the COUNTDOWN timer has run out and = 0 so the game is over

7. This will end the game and take you to the Loser screen but ALL sprites are still showing.

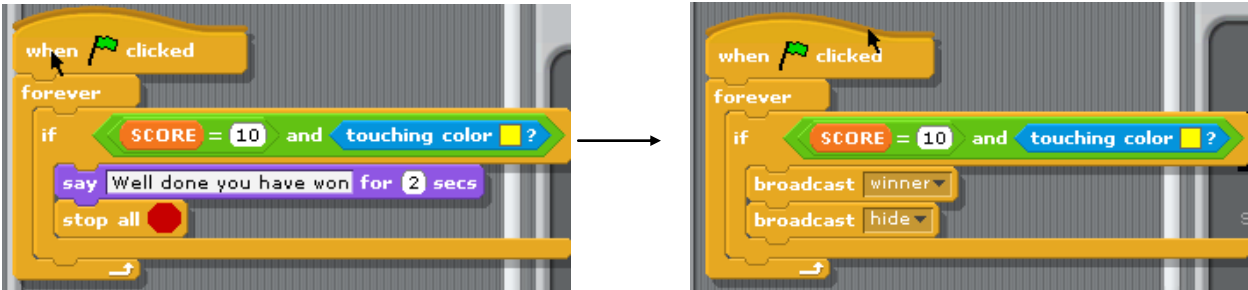
8. So you need to add this command for **EACH** sprite:



The image shows the 'Scripts' tab of a sprite's command palette. A 'when I receive' block is selected with 'hide' as the message. Below it, a 'hide' block is attached.


9. Now to add in the commands if you have won!

10. You need to alter the winning commands from this to this



The image shows a comparison between two Scratch scripts for a winning condition. The left script is triggered by a 'when green flag clicked' event and contains a 'forever' loop with an 'if' condition 'SCORE = 10 and touching color yellow?'. Inside the 'if' block, there is a 'say Well done you have won for 2 secs' block followed by a 'stop all' block. The right script is also triggered by a 'when green flag clicked' event and contains a 'forever' loop with the same 'if' condition. Inside the 'if' block, there are two 'broadcast' blocks: 'winner' and 'hide'.

11. You then need to add this to the winner background command:

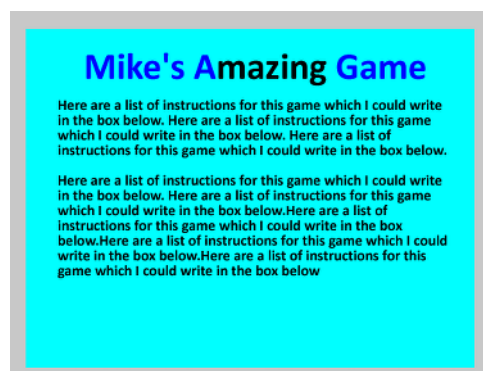



The image shows a Scratch script for the winner background. It is triggered by a 'when I receive' block with 'winner' as the message. Below it, there is a 'switch to background winner' block.

Maze Game: Making a Start Menu....

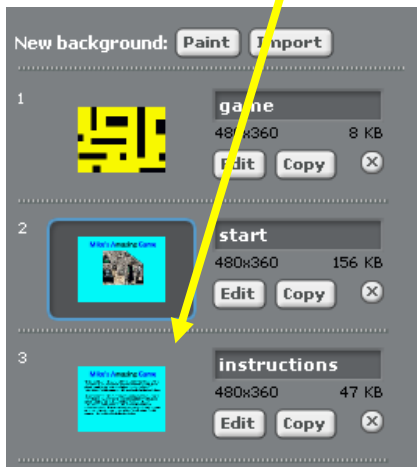
A start menu with instructions makes a very professional introduction to your game. It is best to design this at the start of your game but can be done at any time (with a few changes!). Here is how to do it

1. First of all you need to make a Start menu screen in Macromedia Fireworks.
2. Set the Screen size to 480 x 360
3. On the screen you will need to have the following:
 - ✓ A title
 - ✓ Background
 - ✓ Instructions
 - ✓ Picture (optional)
 - ✓ Button(s)
4. Here is my design – I have decided to have two screens with instructions on a separate page – notice how I have left space for the buttons



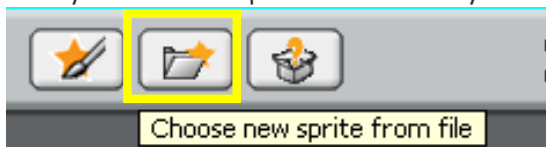
5. Save the images with suitable names eg **start.png** and **instructions.png**
6. Next you need to make up suitable buttons on Fireworks which will be made into avatars.eg

7. Save these with suitable names too

8. Now go into your Scratch game and add the backgrounds by pressing the **Import** button:



9. Make sure you give them suitable names

10. Now you need to import the buttons by clicking on **Choose new sprite from file:**

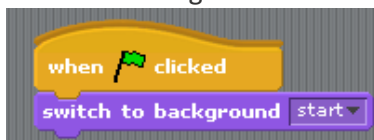


11. Make sure you rename them and then move them to the starting place

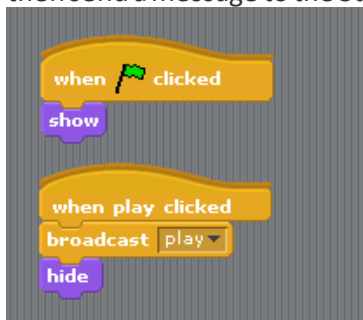


12. Now to add in the commands

13. Click on the Stage and add this command so the game ALWAYS starts on the start screen:



14. Click on the **Play** button. You need to write a command to tell the computer to show it at the start and then send a message to the Stage to change when the Play button is pressed:



15. I have called the broadcast “play”
16. Now do the same thing for the **Instructions** button:



17. You will need to include an extra command so the instruction button hides when the game plays.
18. Once you have made the broadcast you need to go back to the Stage and tell it what to do when it gets these messages:



19. Now your game will start on the **Start** page and when you press the **Play** and **Instructions** buttons it will move to those backgrounds too.



Problems with having a Start Menu

1. Start menus are great but the last thing you want is to have a menu that looks like this:



2. You need to start by hiding all these elements at the start and only show them when you "Play"
3. In the picture above I have the mouse and wool balls that it needs to catch. I also have a scoreboard.
4. Starting with the Mouse I write these instructions:



It starts off hiding and then only appears when the Play button is pressed

5. You then need to copy these commands to all the items in the maze so that you start with them all hidden:



6. Finally you need to hide the Score at the start. Go to the Stage and add this line to the



7. You then need to show the score variable once the game starts. Add this to the stage



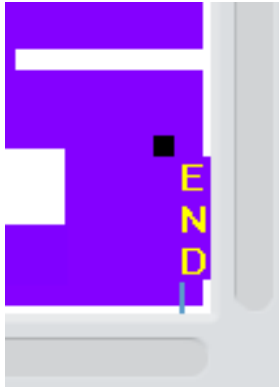
Maze Game: Winning the Game

In my game you win you have to get to end of the maze AND score at least 10 points

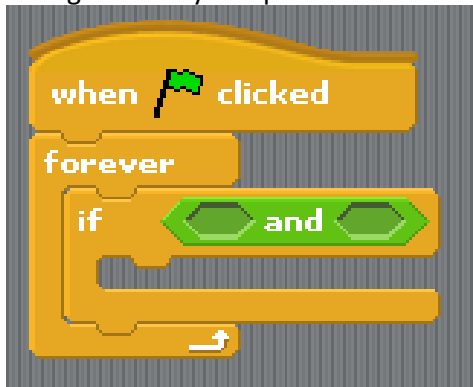
1. First you need to make an END Point in your game
2. Go to your Maze background and write END in a small font
3. Make sure it is **DIFFERENT** from the other colours in your game:



4. Now drag it to the end point in your maze and it will change direction:



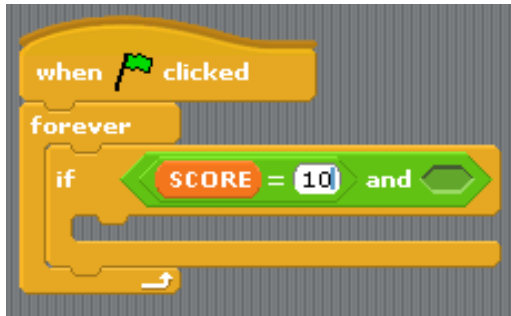
5. Now go back to your sprite and add this in:



6. Now add in the = shapes to the first hexagons:



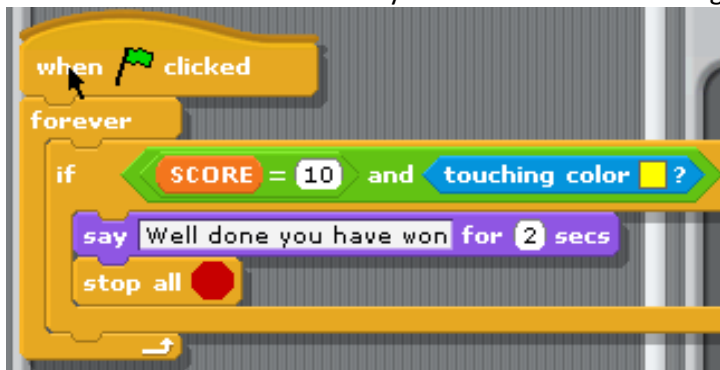
7. Now add in the SCORE variable to the first hexagon and make it equal to 10:



8. Now add in the **Touching colour** command and set it to the colour of your END sign:

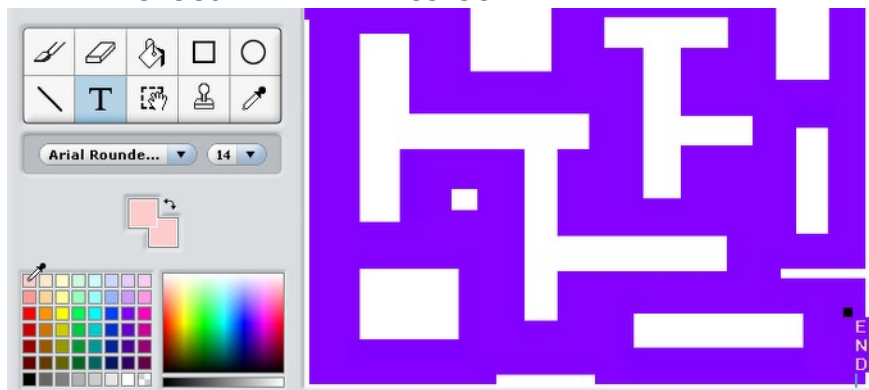


9. Now add in a comment to show you have won and end the game after a while:



10. Practice to see if this works

IF THE COLOUR IS TOO SIMILAR IT IS EASY TO CHANGE IT IN THE BACKGROUND – JUST CLICK ON TEXT AND CHOOSE A DIFFERENT COLOUR



GOING FURTHER

Why not make a different screen for WINNING and LOSING!