

Scratch Program

Puff Collector



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Step 1. Rename our Sprite

At first, our Cat is called 'Sprite1' - Change his name to 'Cat'.



This will stop you getting mixed up once we start using other Sprites.

Step 2. Shrink the Cat

Our Cat is way too big, but we can make him smaller.

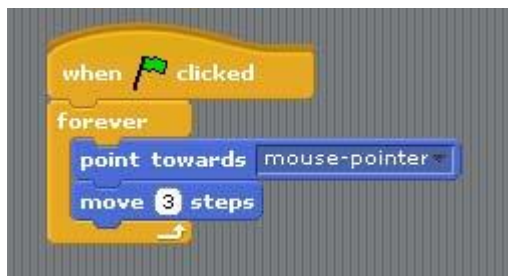


Select the 'Shrink Sprite' tool

Now click the Cat a few times – you will see him get smaller with each click.

Step 3. Controlling the Cat

In this game, we control the Cat with the mouse. We must tell the Cat to follow the mouse, so we must give it instructions to do so.



Construct the following module:

The instruction blocks are colour coded – yellow blocks are under the 'Control' tab and blue blocks are under the 'Motion' tab.

It is very important to make sure the instruction blocks go in the **correct order**.

This tells the Cat that: "When the green flag is clicked (i.e the game starts), point towards the mouse pointer and move 3 steps)

The '**Forever**' instruction tells the cat to **repeat** these actions forever.

Try it! Click the green flag and watch as the Cat follows your mouse movements!

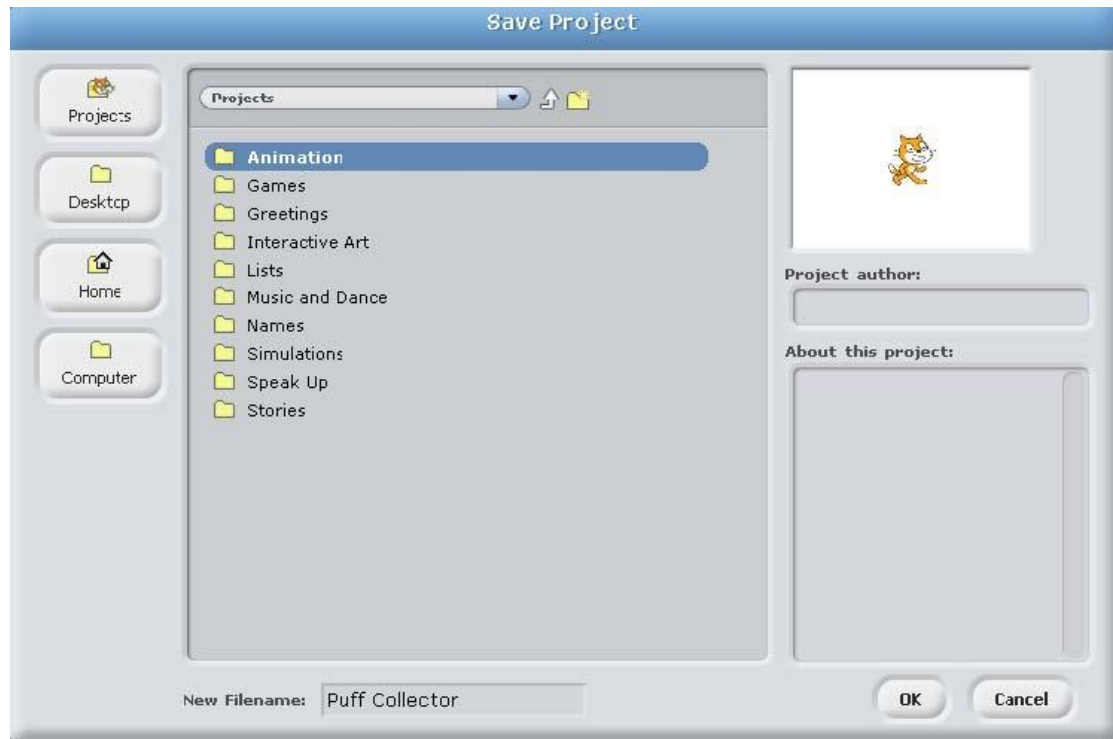
Step 4. Saving your work

Now is a good time to save your work.

Select from the Menu at the top.



The following dialog box appears:



Call your file 'Puff Collector' but **DO NOT CLICK OK.**

Note: It is VERY important to save your file to the correct location – otherwise you won't find it next time.

Your teacher will show you where to Save your file. (Usually in your 'My Documents' folder)

Next time, to open your file, simply load scratch and click

A similar dialog box will appear – you can use this to find your file (remember where you saved it) and load it.



Step 5. Stopping the Cat going upside down

You may have noticed that when the Cat follows your mouse movements, it sometimes turns upside down.

Click this button



This will make sure the Cat only faces left and right.

Step 6. Adding a Baddie

Click the 'Choose New Sprite' button:



The following window appears:



Double Click the 'Fantasy'



Choose the first Sprite then

Folder.

click **OK**.

Step 7. Rename and Shrink the Baddie

Just the way we did with the Cat, rename this Sprite 'Baddie', and shrink him down to the same size as the cat.

(Look at **Steps 1 and 2** if you get stuck)

Step 8. Programming the Baddie

The Baddie's job is to chase the Cat.

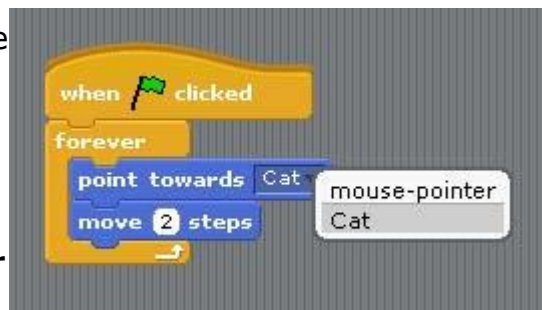
We must give him instructions to do this.

Construct the following module for the Baddie:

This tells the baddie towards the Cat steps – forever.

Note – It is that slower

will always catch the Cat!!



to point and move 2

important the Baddie is than the Cat – otherwise he

Step 9. Test

Click the green flag to start the game – you should see that the Baddie chases the Cat, and we now have the basis for our computer game.

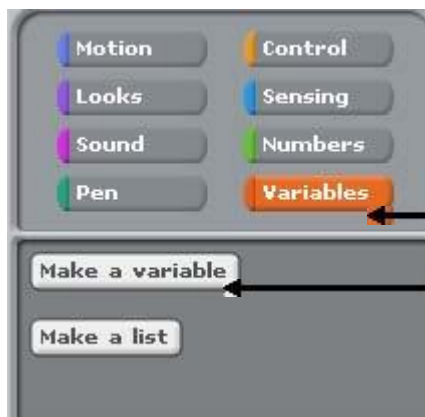
Step 10. Creating Lives

At the moment, if the Baddie touches the Cat, nothing happens.

To make the game interesting, the Cat should lose a life if he gets caught by the Baddie.

To do this, we need to create a **Variable** called Lives. A Variable is something which holds information that can change, like 'number of lives'

Click the Variables Tab, then 'Make a Variable'



The following box appears – type in 'Lives', then click OK

You will see the 'Lives' Displayed: -

Step 11. Setting the number of Lives

At the moment, the number of Lives is set to 0.

We must give our each time the (i.e the green flag



Cat 3 Lives game starts is clicked).

Double click the Baddie and add the following module:

Make sure you change this to '3'.

This makes sure that every time the game starts, 'Lives' is set to 3.



Step 12. Losing Lives

Every time the Baddie touches the Cat, two things should happen:

1. The Cat should lose a life
2. The Baddie should go back to the corner of the screen.

We will use a 'FOREVER IF' statement.

Add these instructions to the module so it looks like this:



You will find the 'touching' block under the 'sensing' tab.

This tells the Baddie: If touching the Cat, change lives by -1 (take away 1 life) and go to the corner of the screen. (x = -195, y = 111 are the co-ordinates of the top left corner of the screen)

TRY IT!

Click the green flag and watch what happens to the number of lives when the Baddie touches the Cat.

Step 13. Losing the Game

At the moment, if the Cat loses all 3 lives, the game continues – the lives will just decrease, showing -1, -2, -3 etc.

We want the game to stop if Lives = 0.

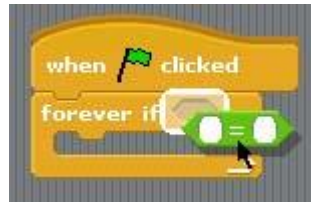
From the Control tab, drag in:



Now connect a Forever IF:



From the Numbers tab, drag in The 'equals' condition and drop it next to the 'IF'



From the Variables tab, drag In 'Lives' and drop it into the 'equals' condition



Now type in 0, so we have 'FOREVER IF Lives = 0'



From the Control tab, drag in 'Stop All' – this ends the game.



We have just told the computer: "If Lives is ever equal to 0, stop the game."

Step 14. Collecting Cheesy Puffs

We will now give our Cat something to 'collect' while he avoids the Baddie. He likes Cheesy Puffs, so we will add this Sprite to our game:

Click the 'Add New Sprite' Button (Look at Step 5 if you forgot)

From the 'Things' folder, choose 'Cheesy Puffs', then 'OK'.

You will see a very large bowl

Rename this sprite 'Puffs',
it is very small. (smaller than



of cheesy puffs appear.

then shrink it down until
the Cat)

Step 15. Hiding the Puffs

Every time the Cat touches the Puffs, they should 'Hide' or go invisible.

We must give them instructions to do this.

Create the following module for the Puffs.

This tells the Puffs to 'Hide' every time they are touched by the Cat.

Note: To make sure the puffs re-appear at the start of the game, we must add the following module:



Step 16. Getting Points for Puffs

Every time the Cat collects Puffs, he should get a point. In order to do this, we have to create a Variable called 'Points'.

Click the 'Variables' tab and select 'Make a Variable'.

Call it 'Points':

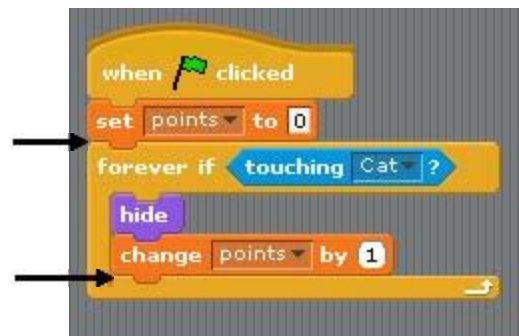
Double click the
looks like this:



'Puffs' Sprite.
Change the
module so it

This sets the points to 0 at the start

This adds 1 to 'Points' each time the Puffs touch the Cat



Step 17. Lots of Puffs

Now that we have created one 'working' bowl of puffs, we want to make lots of copies of this Sprite.

In the Sprite List window, right click the 'Puffs' and select 'Duplicate':



Note: The new bowl of puffs might appear *on top* of the first bowl – separate them with the mouse.

**Repeat this until you have 16 bowls of cheesy puffs in total.
(You don't have to rename each one)**

Space them out evenly.

You should also note that when you duplicate a Sprite, it's Scripts are also duplicated – so each bowl of Puffs has the same instructions as the first one.

Step 18. Winning the Game

When the Cat collects all the Puffs, he wins the game. We want him to say 'Yipee I Win!' when this happens.

Double click the Cat and add the following module:
(Look at Step 13 if you forgot how to put this together)



As there are 16 bowls when the Cat gets 16

of Puffs available, points, he wins the

game.

Step 19. Stopping the Baddie

When the game is won (ie the Cat has 16 points), the Baddie should stop chasing.

To do this, we have to change the module that we created for the Baddie in Step 8.

Double click the Baddie Sprite.

We want to tell the Baddie:

'REPEAT chasing the Cat **UNTIL** he has 16 points"

For this, we need to use a "Repeat Until" Loop.

This is a special type of Loop. It is called a **Conditional Loop**.

This means that the instructions inside this loop are repeated over and over again **UNTIL A CONDITION IS MET**.

In this case, the condition is:



Change the module as shown:

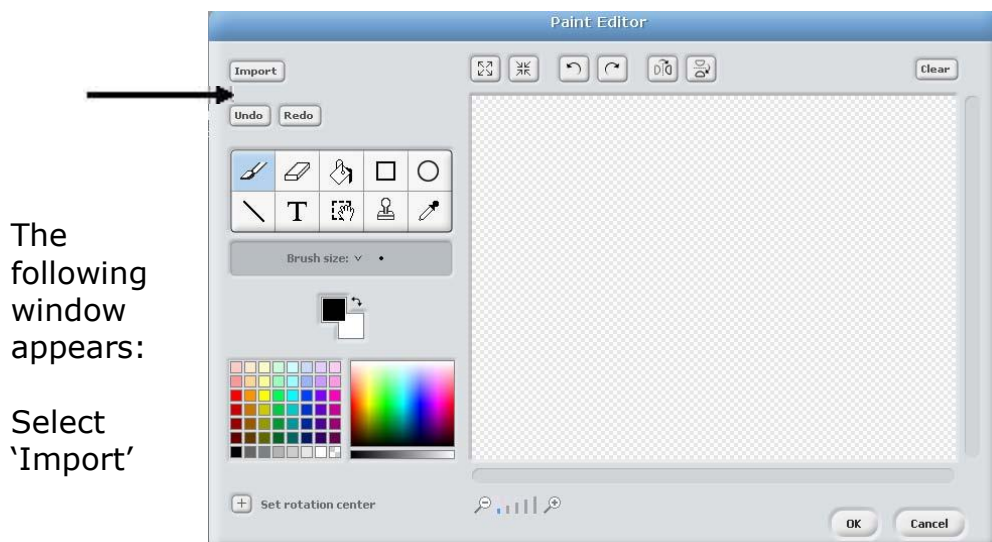
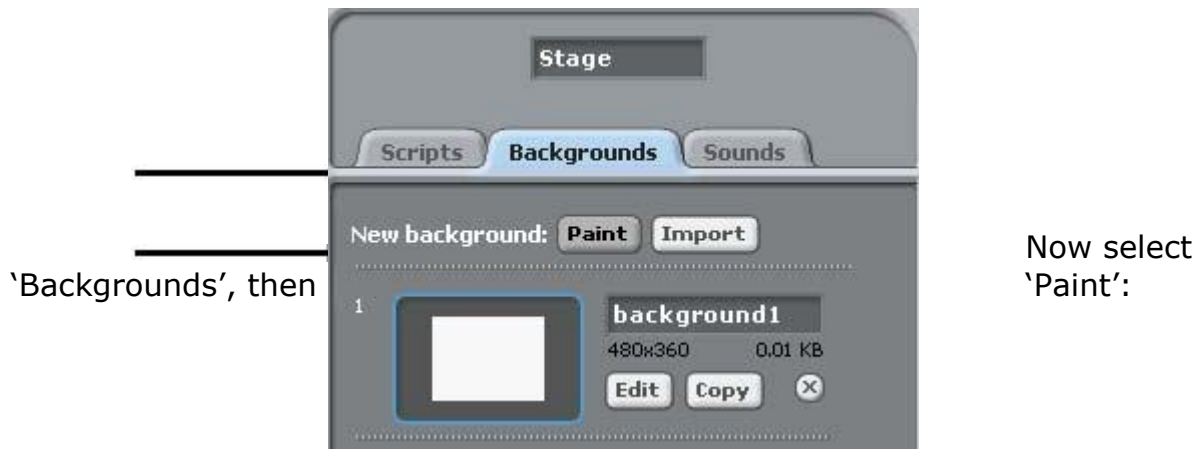
Change to



Now the Baddie will stop chasing the Cat when points = 16.

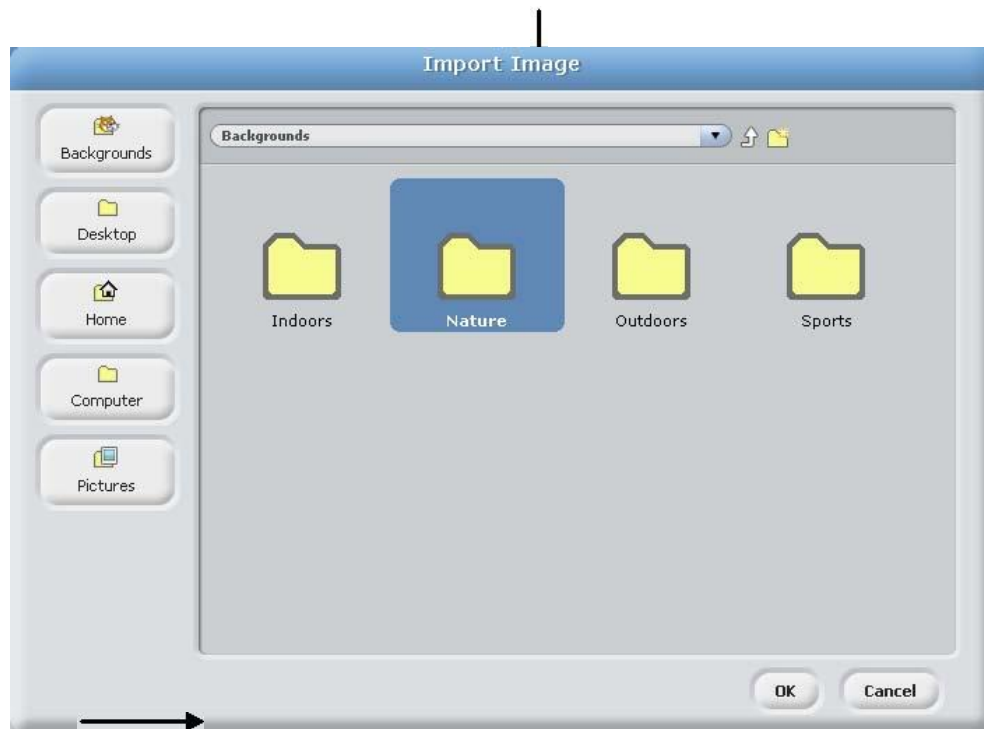
Step 20. Adding a Background

In the Sprite Manager window, select the 'Stage':



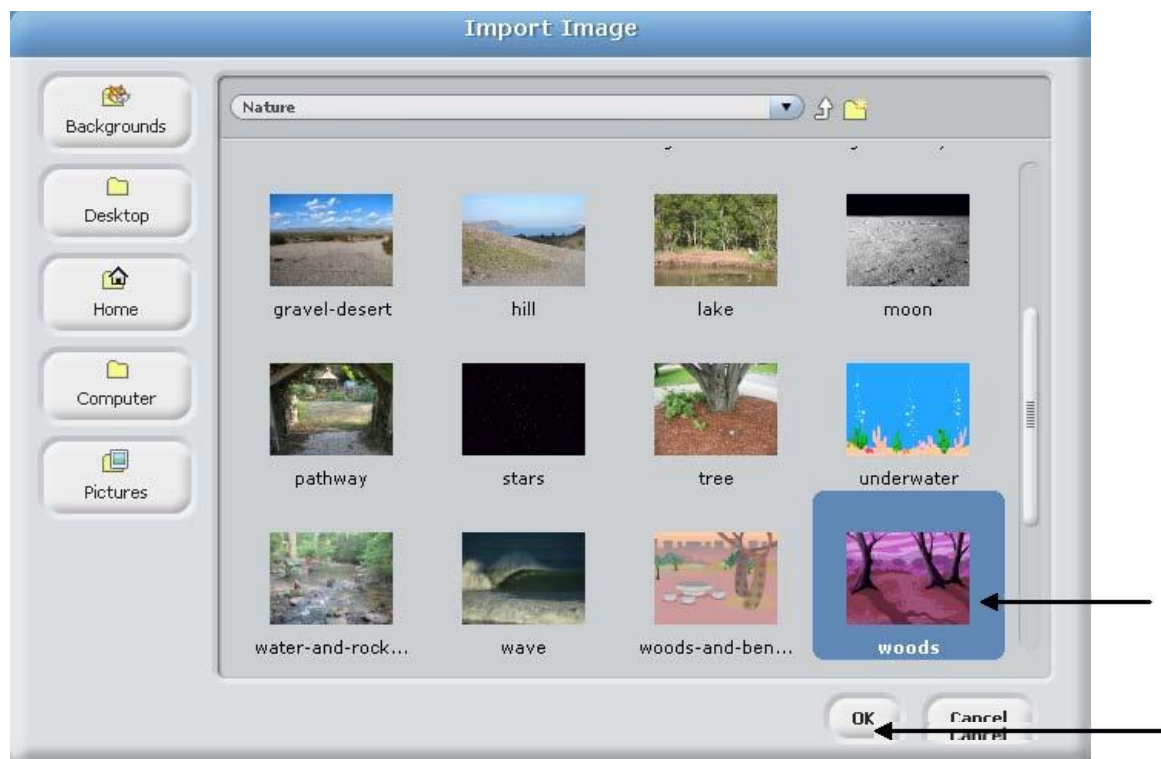
The following window appears.

Double click the 'nature' folder.



Now select the 'Woods' background and click OK.

Your game should now have a 'gloomy woods' background'.



Step 21. Play the game!!

Your game should now be working.

Click the green flag to start the game – see how many puffs you can collect before losing your 3 lives!

Extension Exercise (Ask your teacher if you should do this exercise)

Step 22. Time Limit

It might make the game more interesting if there was a time limit of around 30 seconds to collect all the puffs.

We need to make a variable called 'Time'.

Select the Stage from the Sprite Manager window.

From the Variables tab, click 'Make a Variable'.

Name the variable
'OK'.



"Time", then click



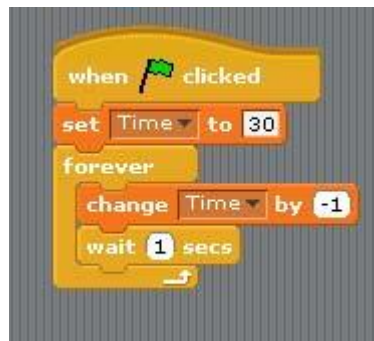
Construct the following module



This sets the time to '30'

when the game starts.

We want the time to decrease by one every second. Add the following instructions so your module looks like this:



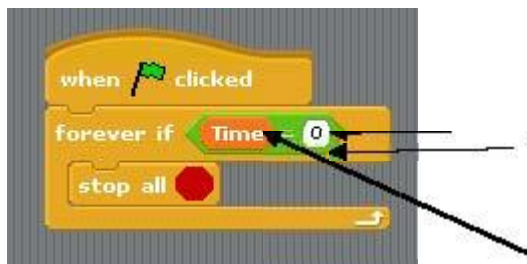
This tells the program to every second.

take 1 from 'Time'

Note: At this point, the game will not stop when time runs out – it will simply continue decreasing using negative numbers.

We want the game to stop when time = 0.

To do this, construct the following module:



This comes from the 'numbers' tab

This comes from 'Variables'

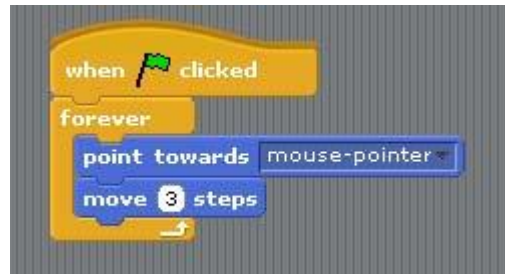
Try it! Run your game and watch what happens when time runs out.

Well done! You have just created your own Computer Game!

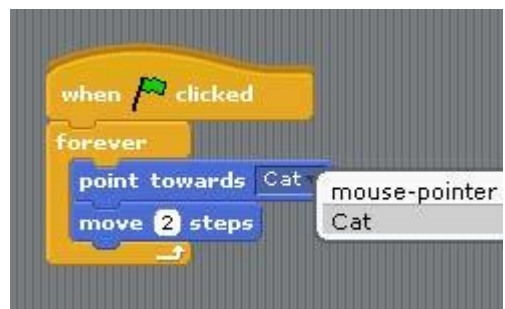
Module Library

Here you will find all the modules we used and what they do.

Get a Sprite to follow your mouse movements



Get a Sprite to chase another Sprite



Losing Lives when touched by another Sprite

(This then moves the Sprite to the top left corner of the screen)



Ending the game when the Lives run out



Cheesy Puffs

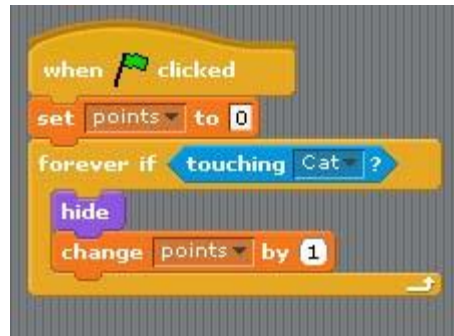
This makes the puffs vanish when 'eaten' by the Cat



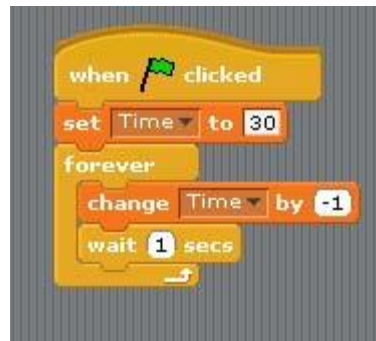
This makes sure the Puffs re-appear at the start of the next game



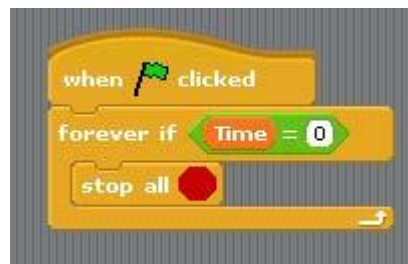
Gaining Points when the Puffs are collected



Setting a Time Limit



Ending the game when time runs out.



Get the Baddie to stop chasing when the points = 16 (The game is Won)



TASK

You should now use what you have learned to create your very own computer game, similar to 'Puff Collector'.

It should have the following features:

The main character should:

- Be controlled by the mouse
- Be chased by a baddie
- Collect items and gain points
- Have 3 Lives at the start of each game
- Lose a life when he is caught by the baddie

The game should end when the lives run out.

Use "Game Assessment Checklist 1" to make sure your game meets all the requirements. (Your teacher will give this to you)

You can use any Sprites you wish.

Good Luck!

Show your teacher when you are finished.