

# Charlie and the Chocolate Factory Maze

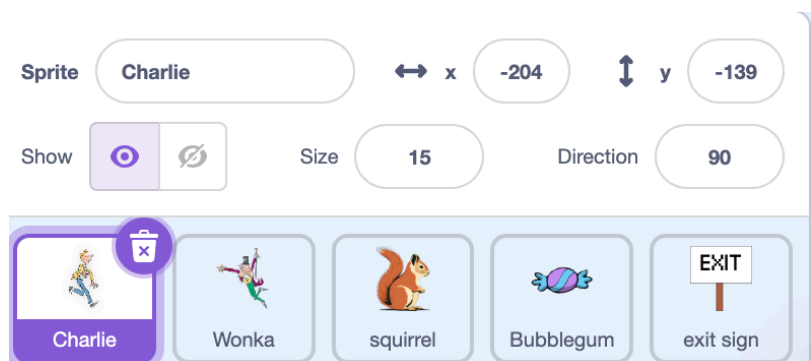
Help! Our developer hasn't finished the Charlie and the Chocolate Factory game that the Librarians asked for for today.

Can you add the missing code that will let Charlie move round the maze in Willy Wonka's factory, collecting all the golden tickets and avoiding the dangers? Click on this link to see it: <https://scratch.mit.edu/projects/1091760965/>

Start by clicking on the Green flag at the top left of the screen to start the game and see what's there just now...

## Issue 1: Charlie won't move

We want Charlie to move when the player presses the **arrow keys** on the keyboard. But he's just standing there.



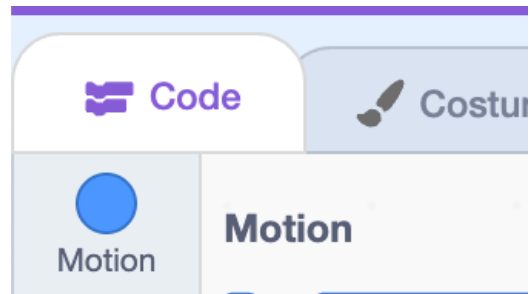
Click on the small square icon of Charlie in the at the bottom of the Scratch window.

In the middle of the screen should now see the **code** that belongs to Charlie. These coloured blocks tell the computer what the Charlie character should do.

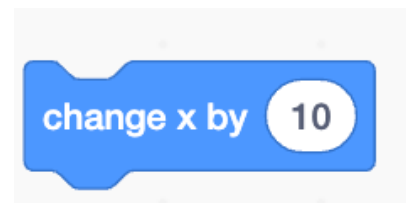
Start by finding this piece of code that should move Charlie to the right when you press the **right arrow key**.



Next, click on the blue circle on the very left of the screen that says Motion under it.



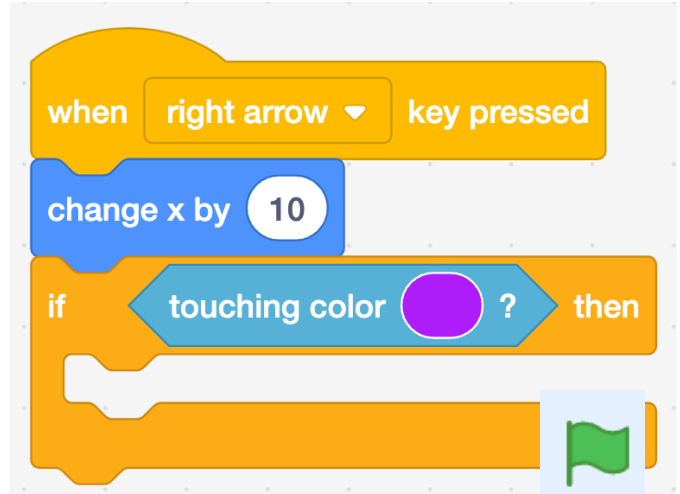
Scroll down through the blue blocks beside it until you find one that looks like this. Click on it and **drag it** into the middle of the screen until it's **just under the yellow block**.



A gap should open up and when you let go of the block it should click into place like this:

Scratch keeps track of a sprite's position going **across** the screen using a value called **x**.

The **change x by 10** block adds 10 to x and moves Charlie to the **right**.



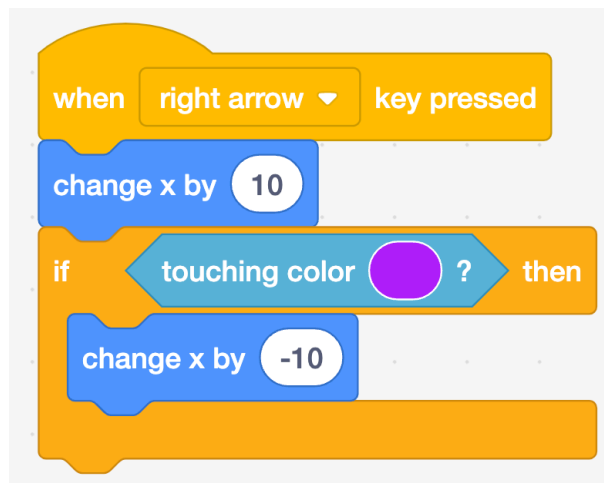
Now click on the **Green flag** to start the game again and press the right arrow to make Charlie move. **What happens when you reach one of the maze's purple walls?**

Charlie shouldn't be able to walk through the walls of the maze!

If adding 10 to x moves him so he touches a wall (coloured **purple**) we can “undo” that move by **taking 10 away** from the value of x for Charlie.

Drag another **change x by** block into the space inside the gold-coloured if then block.

Click inside the white oval with the number 10 in it and change it to **-10**.



```
when right arrow key pressed
  change x by 10
  if touching color purple ? then
    change x by -10
```

Now click on the **Green flag** and press the right arrow again and check that Charlie stops at the wall of the maze.



Now that we've got Charlie moving to the right, let's add some code to make him move left.

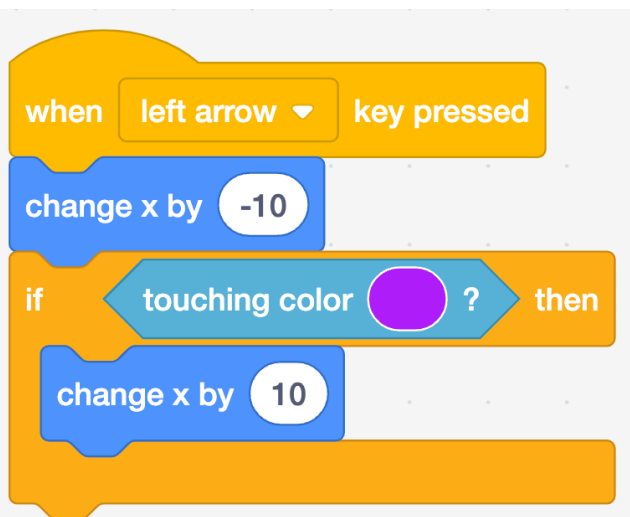
Find these blocks in Charlie's code:



```
when left arrow key pressed
  if touching color purple ? then
```

Now add two **change x by** blocks so that it looks like this:

Make sure you've added the **minus** (take-away) sign to the **first** change x by block, but not the second.



```
when left arrow key pressed
  change x by -10
  if touching color purple ? then
    change x by 10
```

Now click on the **Green flag** and press the left arrow key to check that's working.



Next, we want to make Charlie able to move up. Find these blocks in his code:

A Scratch code block starting with a yellow 'when up arrow key pressed' block. Below it is an orange 'if touching color (purple circle) ? then' block. The 'then' part of the block is currently empty.

You're going to add two blue **change by** blocks again, but this time they're **change y by** blocks.

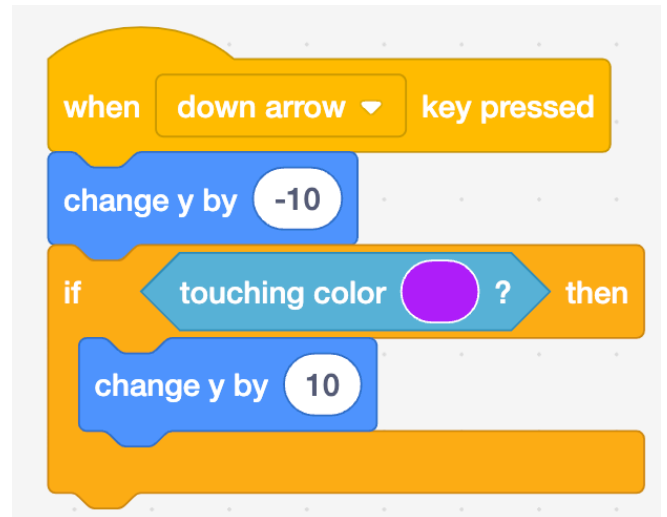
This is because **y** is the number Scratch uses to keep track of how far **up or down** the screen something is.

A Scratch code block starting with a yellow 'when up arrow key pressed' block. Below it is a blue 'change y by 10' block. Below that is an orange 'if touching color (purple circle) ? then' block. The 'then' part of the block contains a blue 'change y by -10' block.

Finally, find this piece of code

A Scratch code block starting with a yellow 'when down arrow key pressed' block. Below it is an orange 'if touching color (purple circle) ? then' block. The 'then' part of the block is currently empty.

And add two **change y by** blocks to make Charlie move down the screen when you press the down arrow key.



Now click on the **Green flag** and press the left arrow key to check that's working. Charlie should now be able to get round to collect the Golden Tickets!

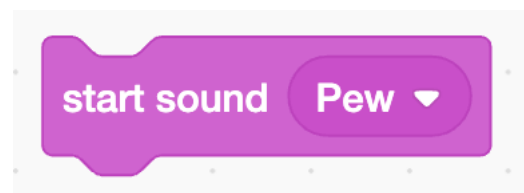
## Issue 2: Sound effects missing

Although the game is working now, it doesn't have many sound-effects. Let's add some to make it more interesting to play.

Click on the pink circle with Sound underneath it:

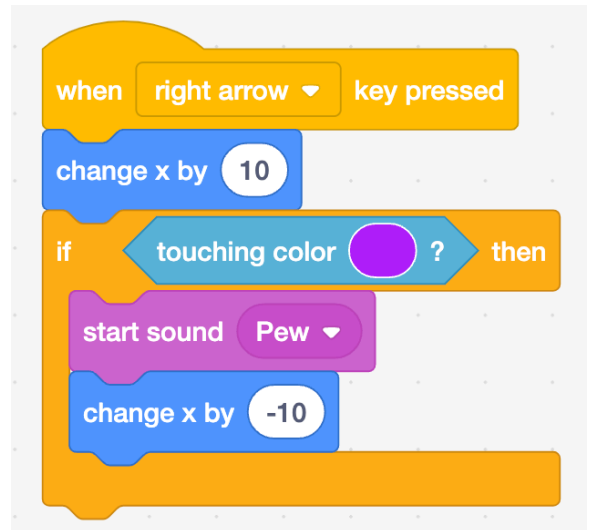


Now find this block:



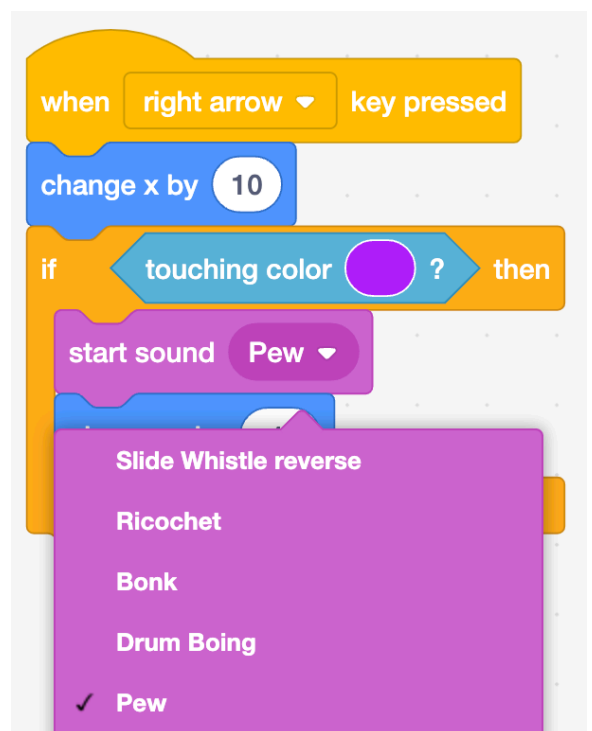
Drag it in under the gold **if touching colour** block like this:

Now when Charlie bumps into a wall when moving right you should hear a sound like a sci-fi space gun.

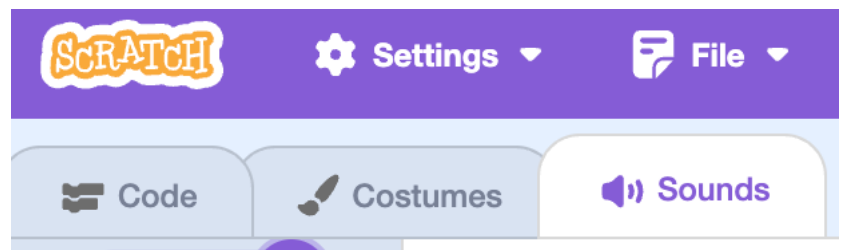


You can stick with this, or click on the white triangle on the block to get a **drop-down list** of other sounds.

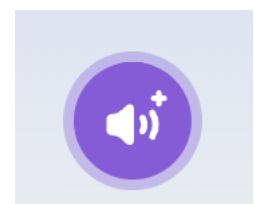
Try them out and see which one you think works best in the game.



You can find more sounds if you click on the Sounds tab at the top left of the screen



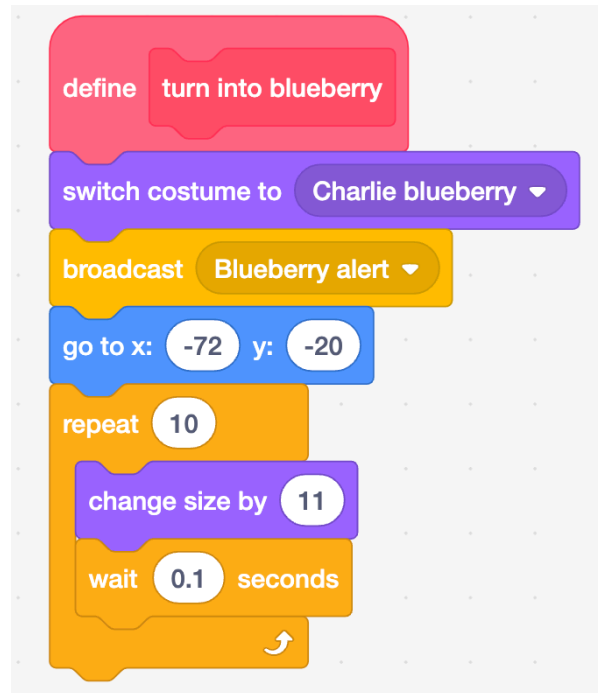
Then click on the loudspeaker symbol at the bottom left of the screen:



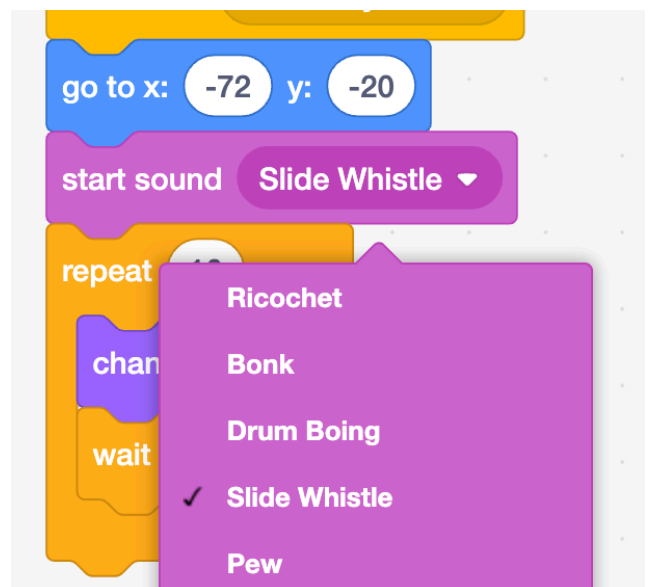
Any new sounds you add will appear in the drop-down menus of the pink Sounds blocks.

Finally, although there are sound effects if Charlie bumps into the **Squirrel** and gets tidied into the bin, there aren't any if he bumps into the **Bubblegum** and turns into a giant blueberry!

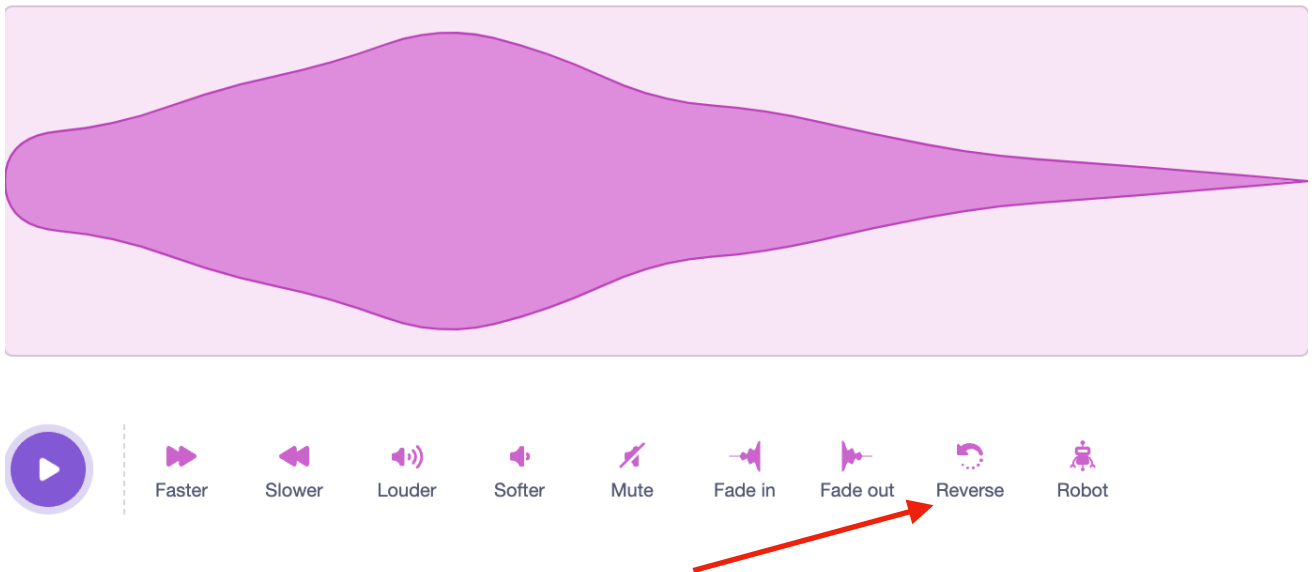
To fix this, look just under the blocks of code to make Charlie move down. You should see some that look like this:



Drag a pink **start sound** block in under the yellow broadcast Blueberry alert block. Click on the drop-down arrow and change the sound to **Slide Whistle**.



Scratch's built-in Slide Whistle sound actually starts as a high note and gets lower, which suggests something shrinking.



So that it **starts low** and gets **higher**, suggesting Charlie **growing** into a giant blueberry, click the **Reverse** symbol underneath the picture of the soundwave.

**WELL DONE!**

The game is now working properly and the Librarians will be delighted!