Don't fall in!

Introduction

This Design project guides you to use your new skills and encourages you to make design choices based on your interests.

What you will make

You will create a top-down parkour game where your character navigates obstacles or platforms. The goal is to jump, glide, bounce, or fly to reach moving platforms and make it to the finish.

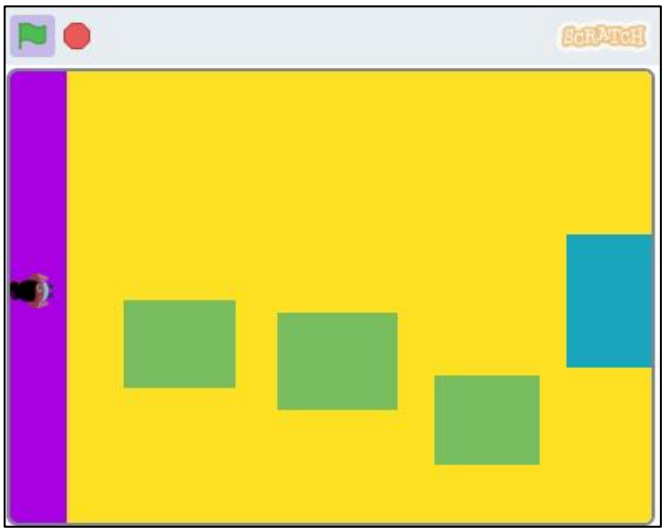
Top-down, or bird's-eye view, games are designed so the player looks down on the game from above. In some games, this view is used throughout, while in others, it appears only in specific modes, such as a design or strategy mode. Can you think of any games you've played that use a top-down view?

Play

To play the game, click the spacebar or tap the Stage to jump to the next platform. Time your jumps so you don't fall in the custard.

Open the URL (rpf.io/cc-dfi) in your browser to play the game and try to find out the answers for the questions given below.

- How does the game create a top-down view?
- How does the character's size change when it flies?
- What happens if you don't land on a platform? (Go on, do fall in the custard!)

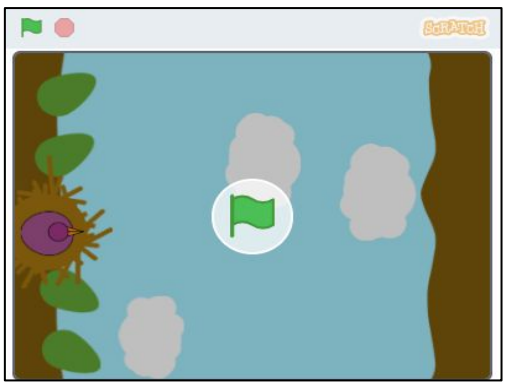


Get ideas

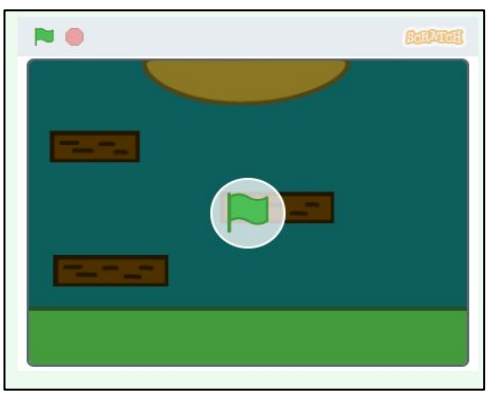
You are going to make some design decisions to make a top-down platform game of your own. You'll choose the theme, colours, character, number of platforms, and the difficulty level.

Explore these example projects to get more ideas:

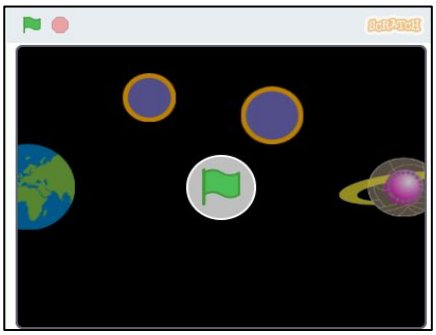
Baby bird: To explore the project more, open the URL (rpf.io/cc-bb) in your browser.



Log hopper: To explore the project more, open the URL (rpf.io/cc-lh) in your browser.

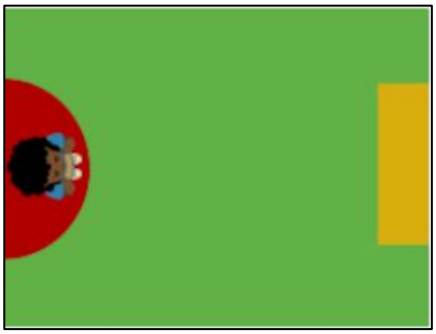


Planet bounce: To explore the project more, type the URL (rpf.io/cc-pb) into your browser



Choose your theme

In this step, you will add a character and backdrop, and create start and end platforms**.**



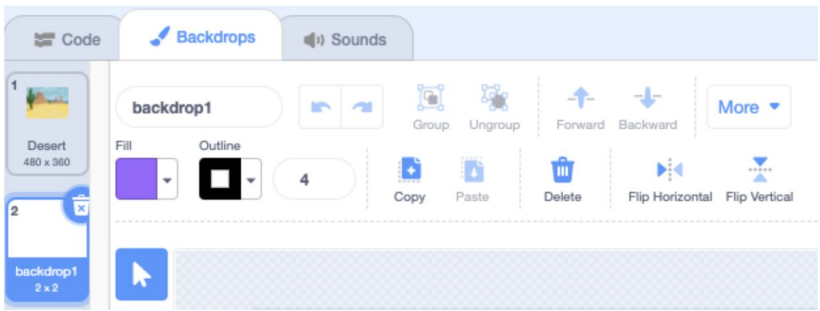
Open the URL (rpf.io/scratch-new) in your browser to open a new Scratch project. Delete the cat sprite.

Create a solid colour backdrop.

Paint a single colour backdrop

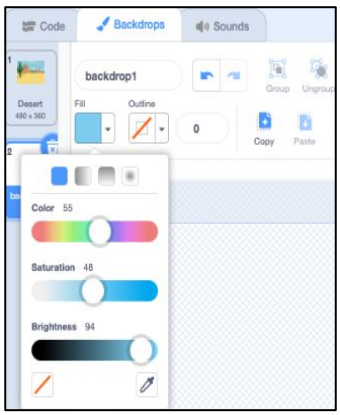
Click the **Choose a Backdrop** menu and select **Paint**.

You will be taken to the Scratch Paint editor with the new backdrop highlighted. If you have other backdrops in your project, you will also see them in the list:

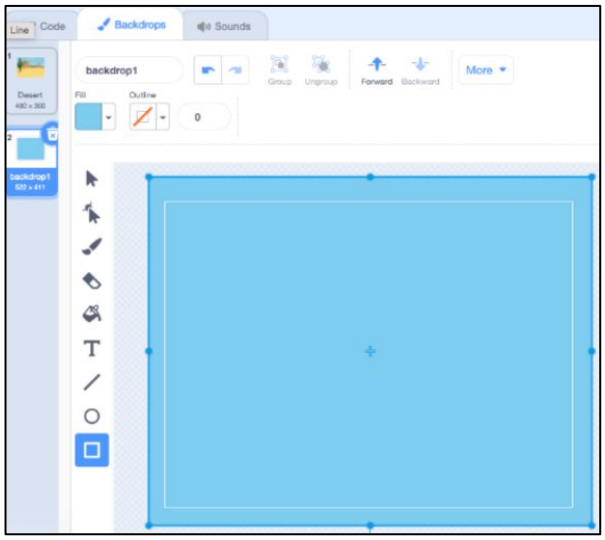


Make sure you can see the full backdrop canvas, you might need to use the **Zoom out** tool:

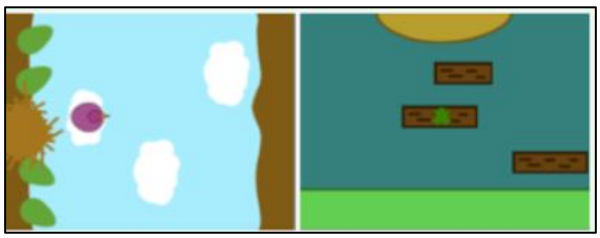
To set the main colour of the backdrop, click on the **Rectangle** tool then use the **Fill** colour chooser to select a colour:



Drag the shape over the full backdrop canvas:



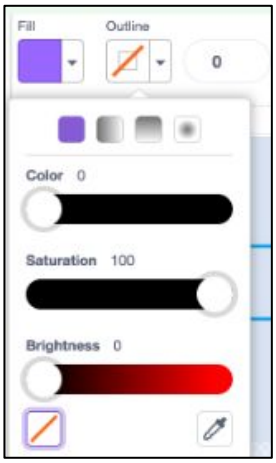
Choose: Will your character move from left to right, or bottom to top?



Paint a new **Start** platform sprite.

Start with a simple single coloured shape. You can turn the outline off by choosing the red diagonal line.

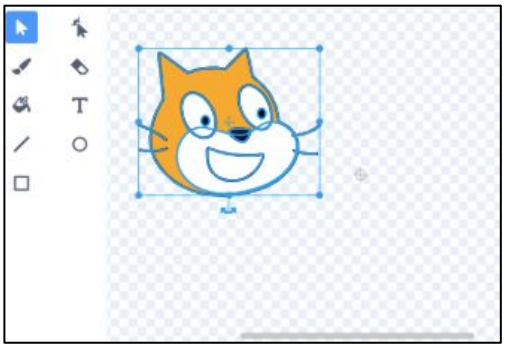
You can add more detail later.



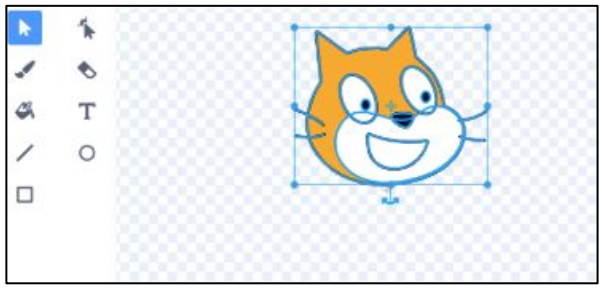
Centre your costume in the Paint editor.

Centre your costumes

- Sprites rotate around their centre. You can see if your sprite is centred by looking at the small grey crosshair shown in the Paint editor:
- If the crosshair is not at the centre of your costume, you can use the **Select** tool to highlight the full costume. A cross will then show in the centre of your highlighted costume:
- You can drag the highlighted costume so that the cross in the costume aligns with the crosshair:



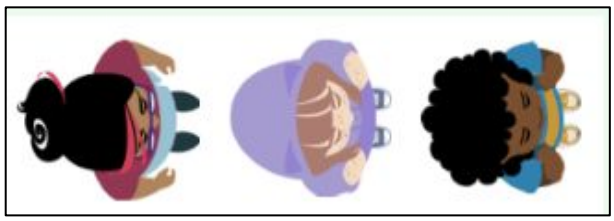
Occasionally, you might want to choose a point to rotate around that is not the centre of the costume. In that case, you can align your chosen costume rotation point with the crosshair in the Paint editor:



Position your **Start** platform sprite where you want your character to start the game.

Create a simple **End** platform sprite. You can add more detail later.
Centre your costume in the Paint editor.
Position your **End** sprite on the Stage where you want your character to finish the game.

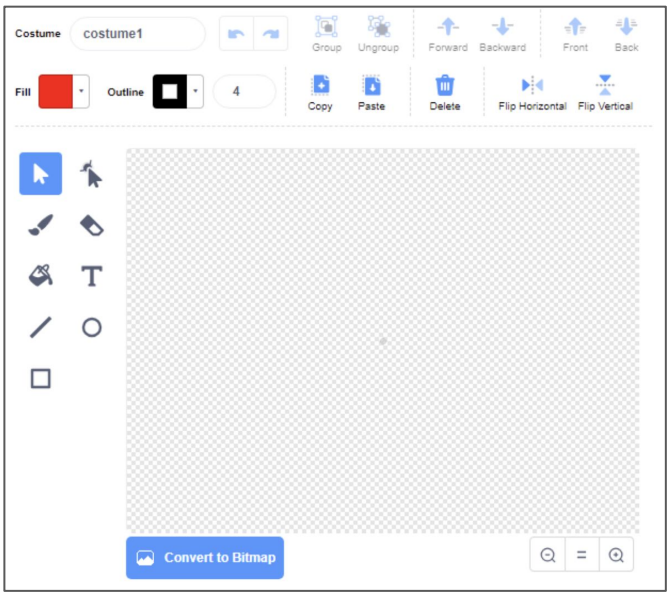
Create a **character** sprite.
Choose: Do you want to add or paint a character sprite?
You might want to add a top-down **character** sprite such as **Tatiana**, **Taylor**, or **Trisha**.
Or, paint your own **character** sprite. Start with simple shapes and add details later. Centre your costume in the Paint editor. Steps to paint your own character sprite is given below.



Drawing sprites

- Click **Paint** on the **Choose a Sprite** menu to **Paint new sprite.**

- Use the drawing tool in the Costumes tab to paint your new sprite.



- When you are finished, don't forget to give your new sprite a sensible name.

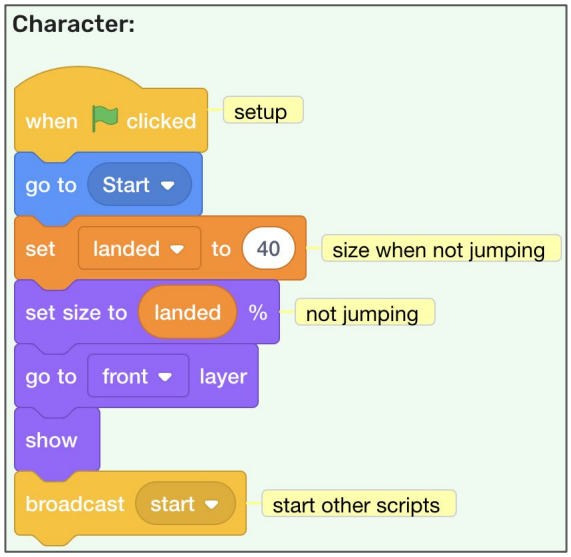
Your character sprite needs a start script to get everything set up for the beginning of the game.

Make a variable called landed, and set it to the size your sprite should be when it has landed and is not jumping.

Get your character to go to the Start when flag clicked.
Add a go to front layer block, so your character is on top of the platforms.

Tip: Uncheck the landed variable in the Variables Blocks menu so that it doesn't show on the Stage. The user doesn't need to see this variable.

Tip: It's a good idea to broadcast a start message at the end of your setup script to let other scripts know when to start, otherwise they might start before everything is ready.

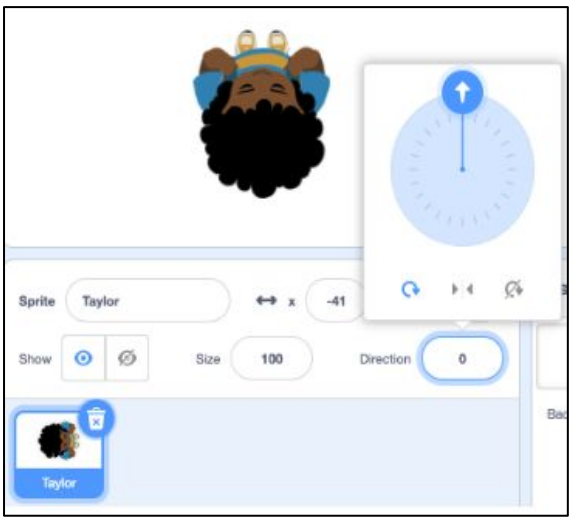


Debug:

My sprite is pointing in the wrong direction

The Direction property in the Sprite pane can be used to control the direction the sprite is pointing in. Turn the wheel to make a sprite point in the direction you need.

Give your project a title that describes your game.



Note: Remember to save your project.

Jump, hop, bounce, or glide!

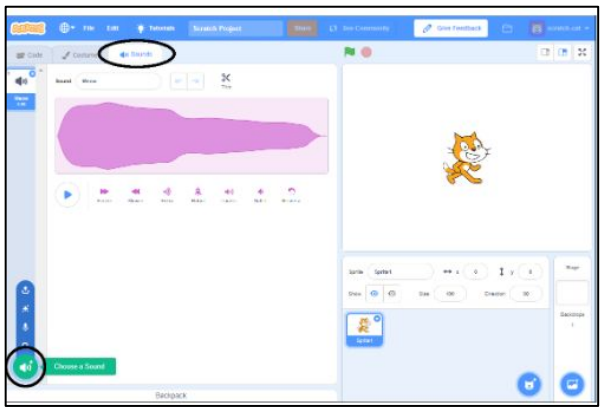
In this step, you will code your character to jump from start to end platforms.

You are going to make your character jump across the Stage. Don't worry about falling in yet

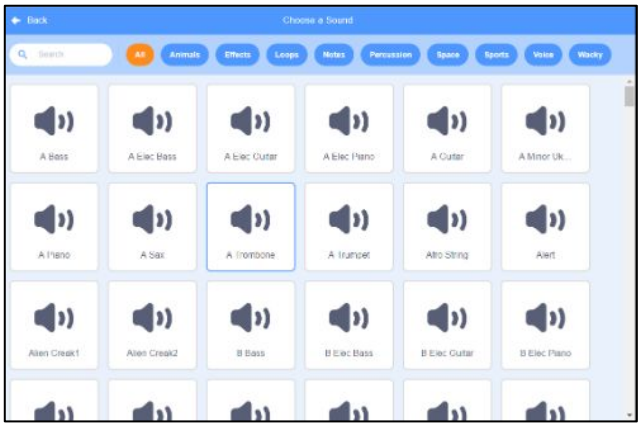
Choose: Add a jumping sound that suits your character.

Adding a sound from the library

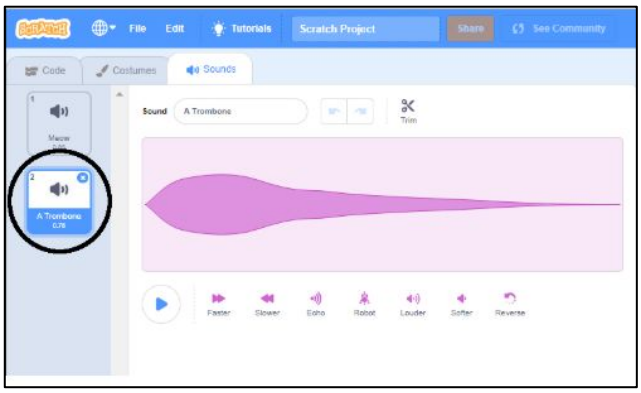
- Select the sprite you want to add the sound to:
- Click the **Sounds** tab, and click **Choose a Sound**:



- Sounds are organised by category, and you can hover over the icon to hear a sound. Choose a suitable sound.



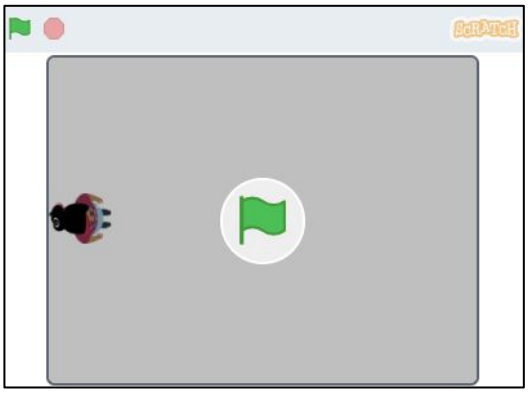
- You should then see that your sprite has your chosen sound.



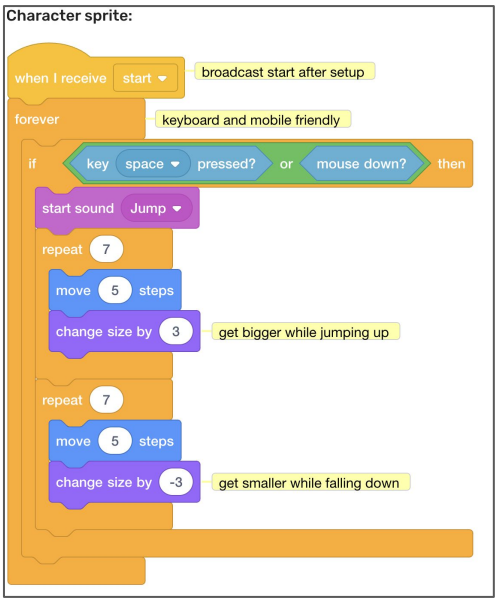
Now make your character jump across the Stage by pressing the spacebar on a keyboard or tapping the Stage on a tablet.

Top-down jumping

To explore the project further, open the URL (rpf.io/cc-tdj) in your browser.



This code works on a computer with a keyboard and a mobile device with a touchscreen.



Test: Tap the spacebar or Stage to make your character jump across the Stage to the **End** platform.

Adjust your code until the character jumps across the Stage in three or four jumps.

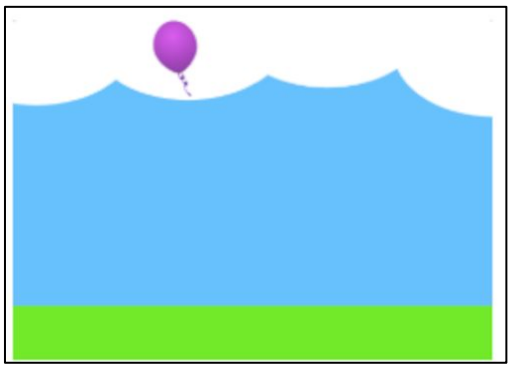
Tip: It's really common for games to have a forever block with if statements inside it to do something when important conditions become true.

Note: Remember to save your project.

Winner

In this step, you will detect the player reaching the **End** platform to win the game.

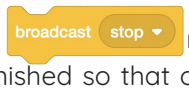
You're going to add a forever loop that checks if your character is at platform level, and if so, if it has reached the **End** platform.



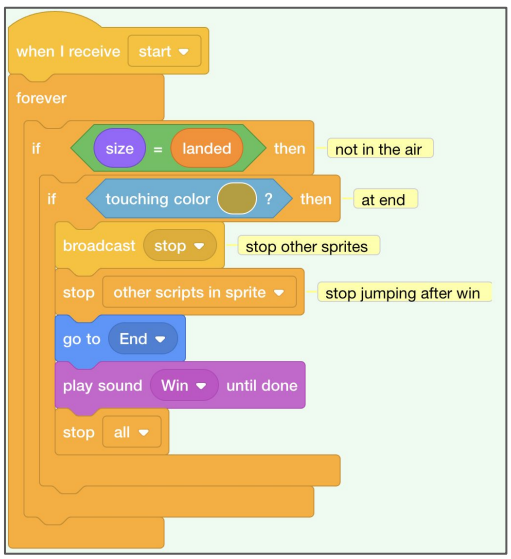
Choose: Add a winning sound to your character.

Use a touching color block to detect when your character sprite reaches the **End** platform.

The stop other scripts in sprite block stops the loop that makes the character jump.

A 

message is used when your game is finished so that other sprites can stop, but this sprite can do something such as playing a sound before it stops



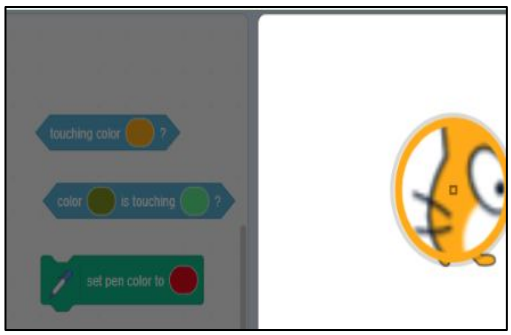
Use the eyedropper to pick the colour of your **End** platform

Click on the colour input to open the colour picker and then click on the eyedropper at the bottom.

Move the mouse pointer over to the End platform on the Stage and click to select the colour.

The colour in the block input will change to match the colour you chose. Click in the Code area to close the colour picker.

Test: Click the green flag and then jump your character across the Stage. Make sure you hear the winning sound when you reach the End platform.

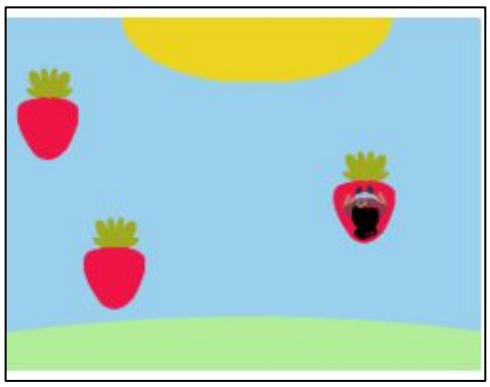


Tip: It's really important that you test your project before moving to the next step and adding more code. It's harder to find and fix bugs when you have added more code.

Ride on platforms

Well that's too easy!

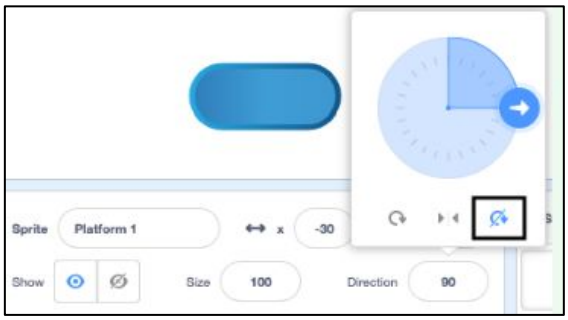
In this step, you will add platforms to land on.
Jumping on them will stop your sprite falling in.



Create a Platform 1 sprite to land on.

Paint a costume for your Platform 1 sprite.

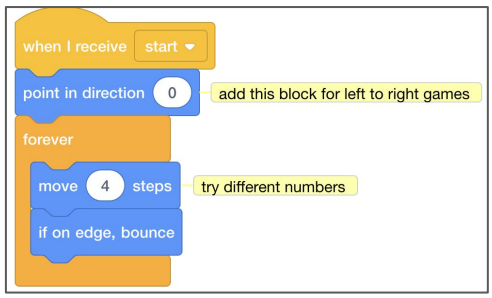
Tip: If you want your sprite to bounce without the costume appearing to change direction, you will need a costume that is symmetrical, or set the rotation style to **Don't rotate.**



Add code to your **Platform 1** sprite to get it moving.

You may need your **Platform 1** sprite to point in direction 0 to move up and down the screen.

Make your platform move

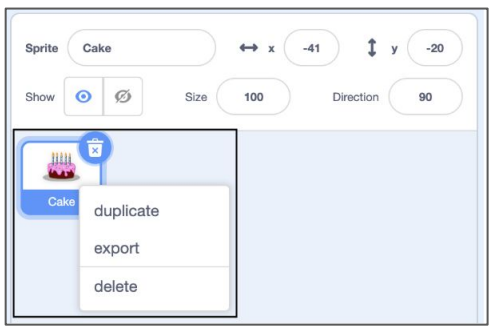


Test: Click the green flag and make sure your platform moves correctly.
Duplicate your **Platform 1** sprite and name it **Platform 2 .**

Choose: If you want to have 3 platforms, duplicate the **Platform 1** sprite again and name it **Platform 3.**

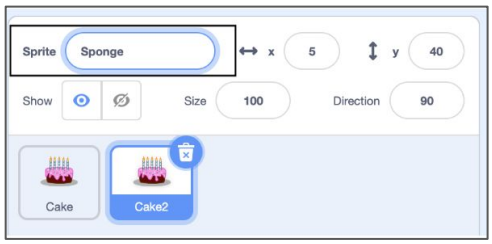
Duplicate a sprite

Right-click (or on a tablet, tap and hold) on your first sprite in the Sprite list below the Stage:



Select **duplicate**. This will create a copy of your first sprite, with the suffix "2":

Rename your sprite to Sponge.



Your sprite's name will change in the Sprite list:

Your second sprite has exactly the same code as your first sprite. Do not run the program until you have started to change the second sprite's code — you might not see the second sprite because it might be positioned underneath the first sprite.

Experiment with the number of steps and the sprite size to make each platforms easier or harder to jump on.

Detect if your character sprite has landed on a platform sprite and is safe, else your character sprite has fallen in!

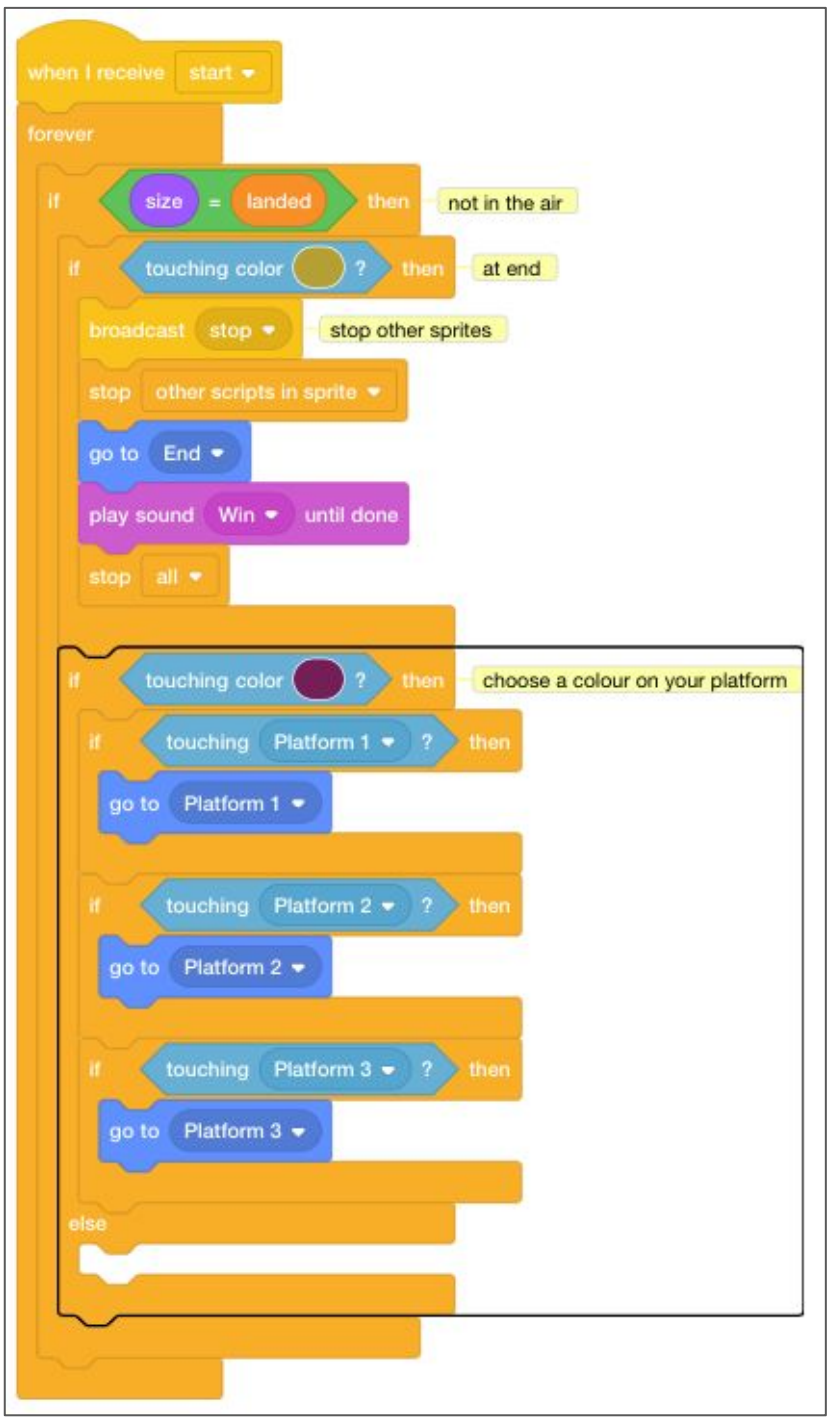
Add code to your **character** sprite to sense if touching a colour on the platform sprites.

Choose: If your platform has multiple colours, choose which colour your character needs to land on. You might want them to fall in if they are only on the edge!

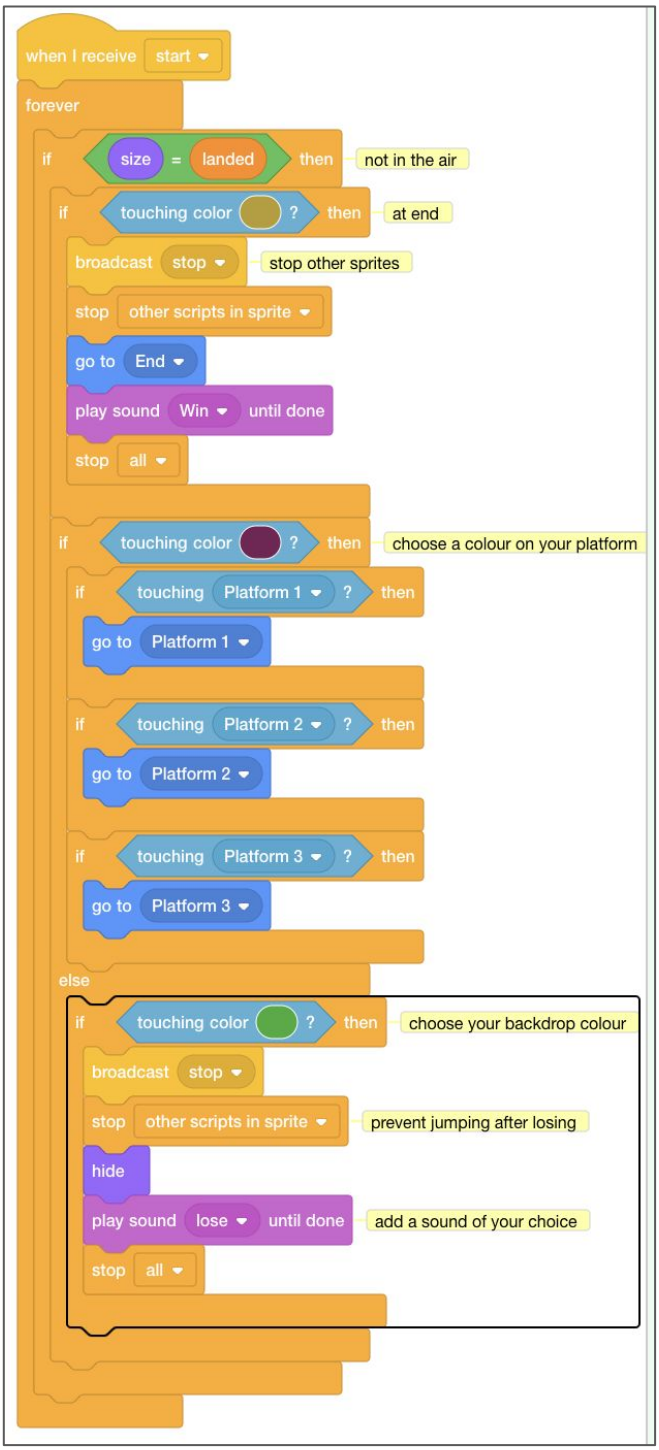
If touching platform

Test: Click the green flag and make sure your sprite can ride on the platforms.

Add code to your character sprite to sense if touching the backdrop colour, then end the game.

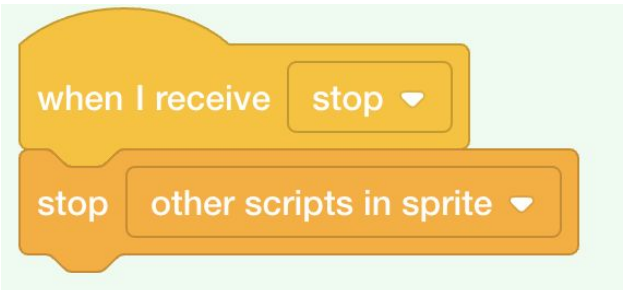


Else touching backdrop



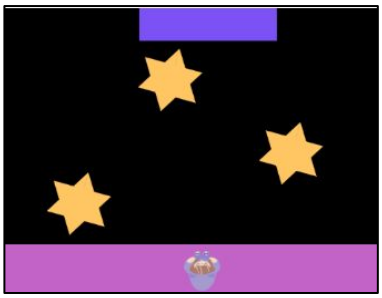
Test: Play your game and try missing a platform. Make sure you hear the lose sound.

Add code to your **platform** sprites to stop them moving when the **character** sprite reaches the **End** platform — or falls in!



Test: Play again and make sure the platforms stop when the game ends. The game ends when you reach the End platform, or when you fall in.

Note: Remember to save your project.



Adjust the difficulty

Is your game too hard or too easy? In this step, adjust the difficulty to get the gameplay just right.

Here are some things you can try to experiment with the difficulty:

- Change the size of the platforms or character
- Change the speed that the platforms move at
- Change how long it takes the character to jump to make the timing harder

Play: Playing your game is part of testing that your game works properly. It's also useful and fun!

Note: Remember to save your project.