

# Broadcasting spells

## Introduction

In this project, you will, create an app where you use a magic wand to turn sprites into frogs and change their size. Open the URL ([rpf.io/cc-bsp](http://rpf.io/cc-bsp)) in your browser . Click on the **green flag** to experience the project. Use the magic wand to click on the buttons and cast spells. Observe what does each spell do to the characters?



## Choose your wand

In this step, you will create the background, choose your wand and create your own computer-generated magic.

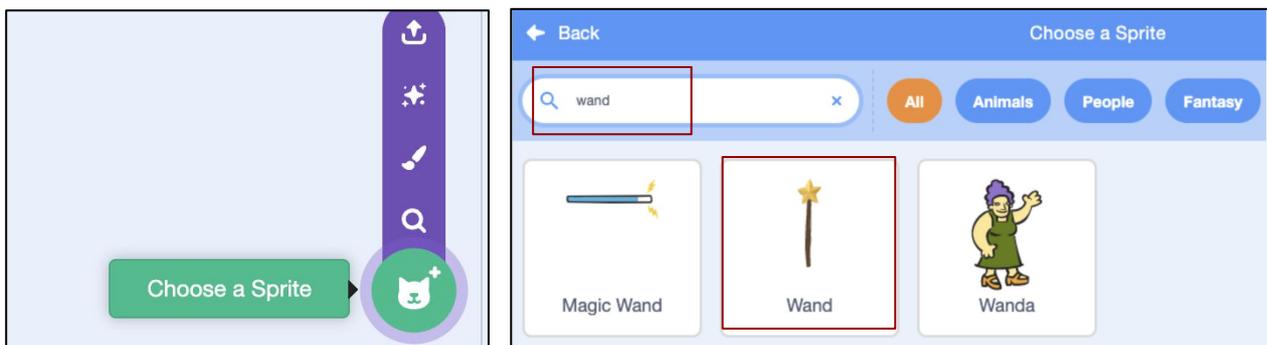
Open the URL ([rpf.io/cc-bs](http://rpf.io/cc-bs)) in your browser. Scratch will open in another browser tab.

You should see a fairy in a woodland.

You need a wand to cast a spell.



To do this, click **Choose a Sprite** and type **wand** into the search box

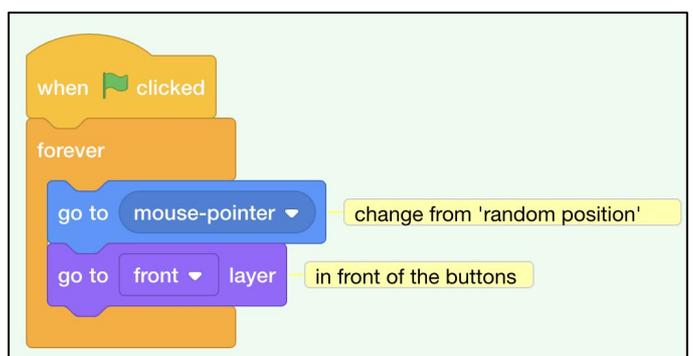


**Choose:** Add your favorite wand to the project..

Add code to make the **Wand** sprite follow the **mouse pointer** and stay in **front** of the buttons.



**Test:** Click on the green flag to run your project. The wand will follow your mouse pointer.



Make the wand bigger and tilted, like you are really using it.

Go to the Sprite pane and change the **Size** property to **200** to make the wand bigger.

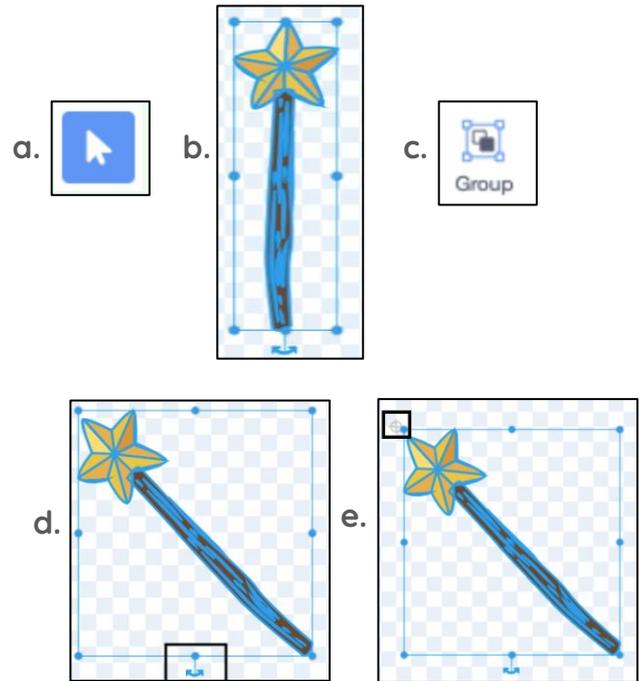
Click on the **Costumes** tab to open the Wand costume in the Paint editor.

- Click on the **Select** (Arrow) tool
- Draw a rectangle around the whole wand to select all of the parts of the costume.
- Click on the **Group** icon to combine the wand parts.
- Use the **Rotate** tool on the wand to position the wand at an angle.

**Tip:** If you can't see the **Rotate** tool, click the **Zoom out** (-) tool at the bottom of the Paint editor to zoom out.

The **wand** costume blocks the mouse cursor, making it hard to click the buttons.

- Move the wand so its tip is just outside the center crosshair.

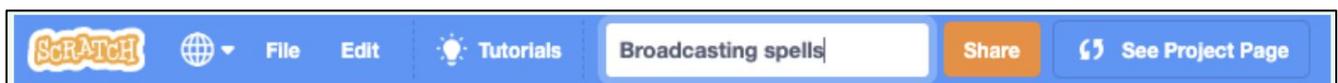


**Test:** Click the green flag and move the mouse around the Stage. The wand should follow.

If you are signed in to your Scratch account, click on the green Remix button. This will save a copy of the project to your Scratch account.



You can change the title of your project.



**Tip:** Give your projects helpful names so that you can easily find them when you have lots of projects.

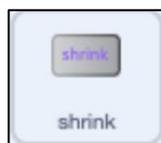
If you do not have a Scratch account, you can click on **File** then **Save to your computer** to save a copy of the project.

**Note:** Remember to save your project.

## The shrink spell

Now you will get the Fairy to shrink when you click on the shrink button.

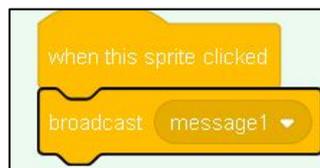
Click on the **shrink** sprite in the Sprite list below the Stage.



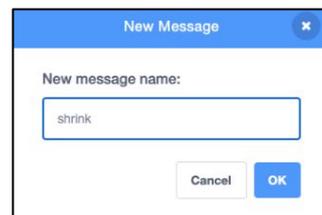
- a. Add a **when this sprite clicked** block:

The shrink sprite needs to **broadcast** a **message** so that the **Fairy** sprite knows that the shrink spell has been cast.

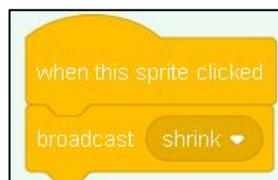
- b. Click on **message1** and choose 'New message'. Name the new message **shrink**.
- c. Join the blocks as shown here.



d.



b.



c.



d.

Now when you click on the shrink button, Scratch will **broadcast** the **shrink** message, but nothing will happen yet.

- d. Click on the **Fairy** sprite in the Sprite list below the Stage.
- e. Add code to the Fairy sprite to shrink when it receives a **shrink** message.



e.

**Test:** Click on the **shrink** button to shrink the **Fairy** sprite. Do this as many times as you like.

**Debug:** If your **Fairy** sprite grows instead of shrinks, add a minus **-** before the number **10** to make a negative number **-10**.

Add a script to set the Fairy sprite to normal size **when the green flag** is clicked.

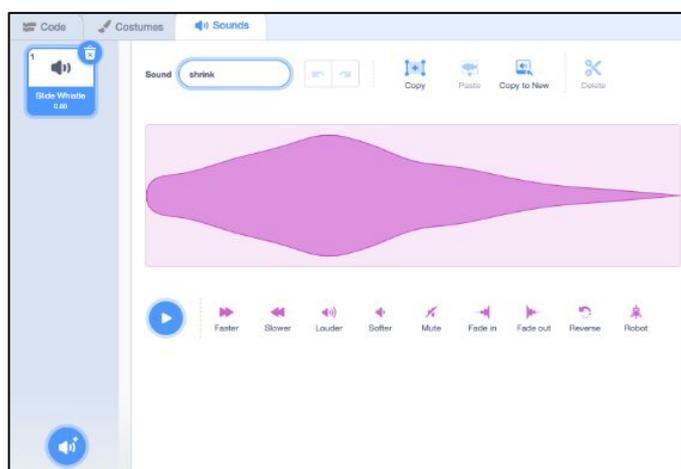
When messages are **broadcast** they can be received by all sprites. When the Wand **receives** the **shrink** message it should **play a sound**.

- a. Click on the **Wand** sprite.
- b. Click the **Sounds** tab.
- c. Delete the Magic Spell sound.
- d. Add the **Slide Whistle** sound and rename it to **shrink**. Refer to image d.
- e. Add this script to play the sound:

a.



e.



d.

**Test:** Click on the green flag to run your project. Click on the **shrink** button to hear the sound and see the **Fairy** shrink.

The shrink button **broadcasts** a **shrink** message. Both the Fairy and the Wand sprite **received** the message and responded.

## The grow spell

You also need a grow spell to return the **Fairy** sprite to normal size or to make a massive fairy!

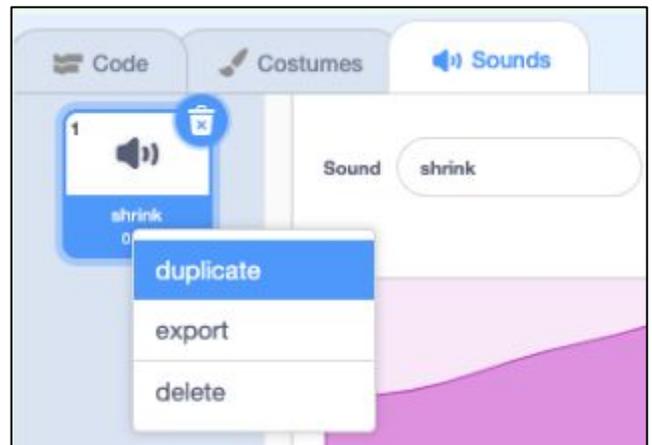
**Tip:** In this step, you will add code to three different sprites. Make sure you select the correct sprite from the Sprite list below the Stage and click on the **Code** tab.

Add a script to the **grow** button sprite to **broadcast** a **grow** message:

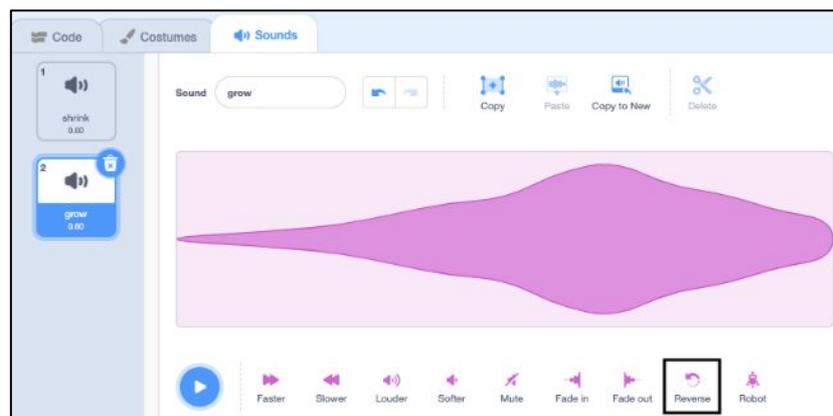


You can reverse the 'shrink' sound to make a 'grow' sound! To do this:

- Select the Wand sprite.
- Click on the Sounds tab.
- Right-click (or tap and hold) the **shrink** sound and choose **duplicate**.
- Name the copy **grow**.



Click on the **Reverse** icon to make the sound play backwards.



Add a script to the Wand sprite to play the **grow** sound when the **grow** message is received:

**Test:** Click on the shrink and grow spell buttons to cast the spells as many times as you like.



**Note:** Remember to save your project.

## Toad transformation

Now, cast a spell to turn the Fairy sprite into a toad by sending a 'toad' message!

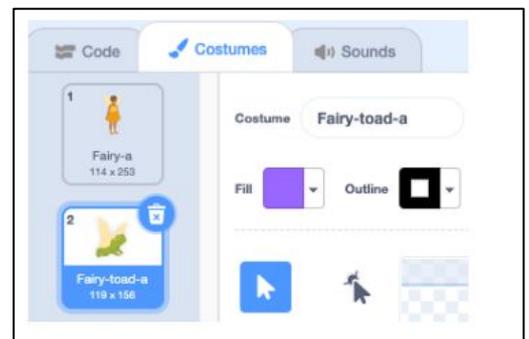
Add a script to the **toad** button sprite to broadcast the 'toad' message:



Select the **Fairy** sprite and click on the **Costumes** tab.



To transform the Fairy sprite into a toad you will use the **Fairy-a** and **Fairy-toad-a** costumes.



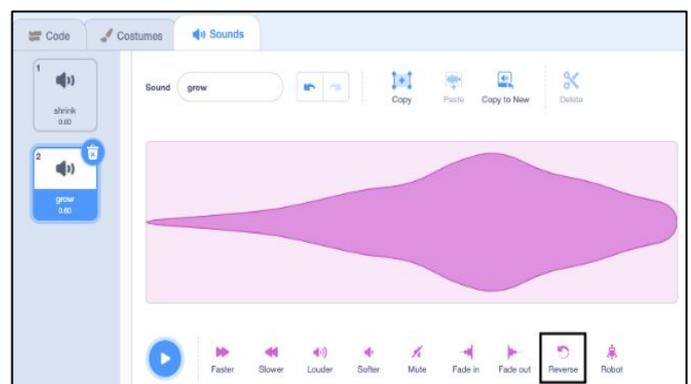
Click on the **Code** tab and add a **switch costume to** block to the end of your existing **when flag clicked** script so the Fairy is in human form when you run your project.



Click on the Code tab and add a **switch costume to** block to the end of your existing **when flag clicked** script so the Fairy is in human form when you run your project:



- Select the Wand sprite.
- Add the **Croak** sound to the **Wand** sprite.
- Rename the sound to **toad**:



Add a script to the **Wand** sprite to play the **toad** sound when the toad spell is cast:



**Test:** Test that you can turn the **Fairy** into a toad, with a sound effect, when you click the **toad** button. Click on the green flag again to turn the **Fairy** sprite back into a human.



The opposite of a 'toad' spell is an 'untoad' spell.

- Select the **untoad** button sprite.
- Add a script to **broadcast** the 'untoad' message:
- Add a new script to **untoad** the **Fairy** sprite:



a.



b.

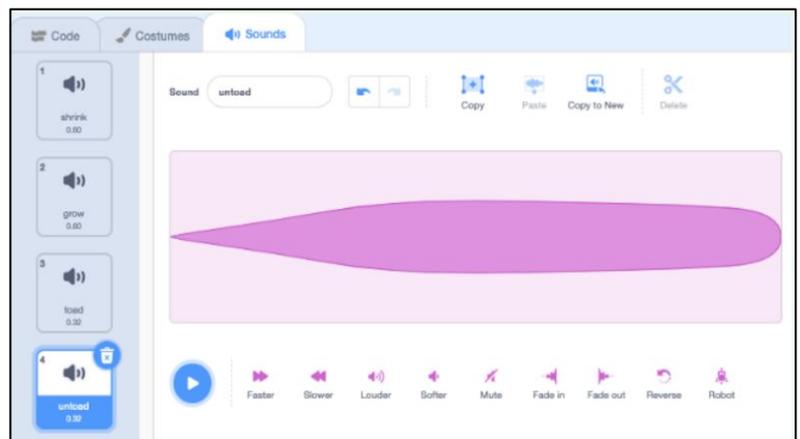


c.



d.

- Select the **Wand** sprite.
- Switch to the Sounds tab and duplicate the toad sound. Rename it to **untoad**.
- Click on the **Reverse** icon so that the **untoad** sound plays backwards.



Add a script to the Wand sprite to play the **untoad** sound:

**Test:** Try the **toad** and **untoad** spells, and try **shrink** and **grow** when the **Fairy** is in toad form.



**Note:** Remember to save your project.

## Add another character

Get a sprite of your choice to respond to the spells. You will need to create a toad costume 'mash-up' for the sprite, and add code so the costume changes when the spell messages are broadcast.



- Duplicate the **Fairy** sprite.
- Delete the **Fairy-a** and **Fairy-toad-a** costumes. You will be left with a **toad** costume.
- Add a costume of your choice to the **new sprite**.
- We chose the **Batter**:

You might want to change the direction the sprite is pointing in.

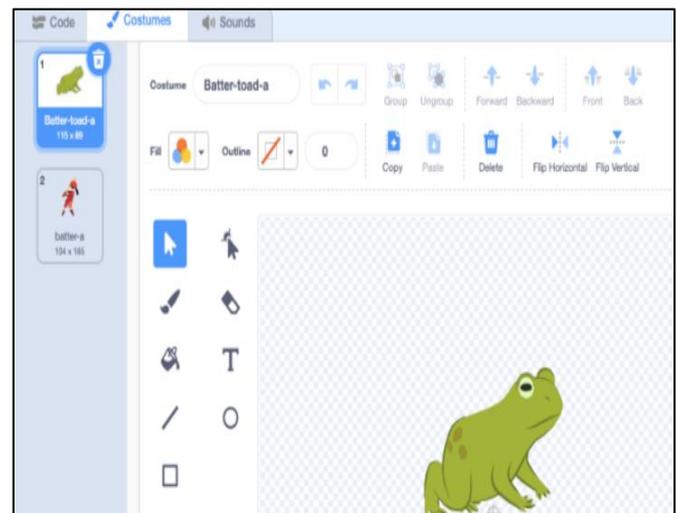
**Tip:** If your sprite goes upside down you can change its **rotation-style** to **left-right** in the Sprite properties pane or using a code block.

When you grow or shrink a sprite, you want the feet to stay in the same place.

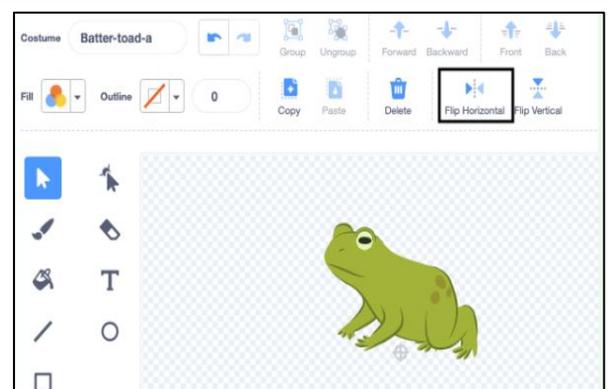
First use the Select (arrow) tool to draw a rectangle around the costume and then Group it. Then drag your character above the crosshair.



Click on the toad costume.  
Rename the costume to match your sprite, we used **Batter-toad-a**.



If the toad costume is facing the opposite way to the main costume you can use **Flip Horizontal**.



Now you need to make the toad look like the character. Combining two costumes in this way is called a 'mash-up'.

You can use the Paint editor to add a small detail, like a splash of colour, or a hat!

**Tip:** You can add any costume to your character sprite. Use the **Select** (arrow) tool then click on **Copy** or **Paste**.



**Tip:** You can group all the objects in a costume. Select them (with the **Select** tool or Ctrl-a) and then click **Group**.

Our Batter toad looks like this:



Switch to the Code tab for your new sprite.

Change all of the **switch costume** blocks to use the correct costumes for your new sprite.

You might also want to change the start **size** of the sprite **when green flag clicked**.

**Test:** Click on the spell buttons – both characters should respond to the spell broadcasts.

**Debug:** Check that you have changed the costumes in the **switch costume** blocks for your new sprite.



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