



# Projects

## Scratch 3.0 phrasebook

Translate useful phrases into different languages with an interactive phrasebook



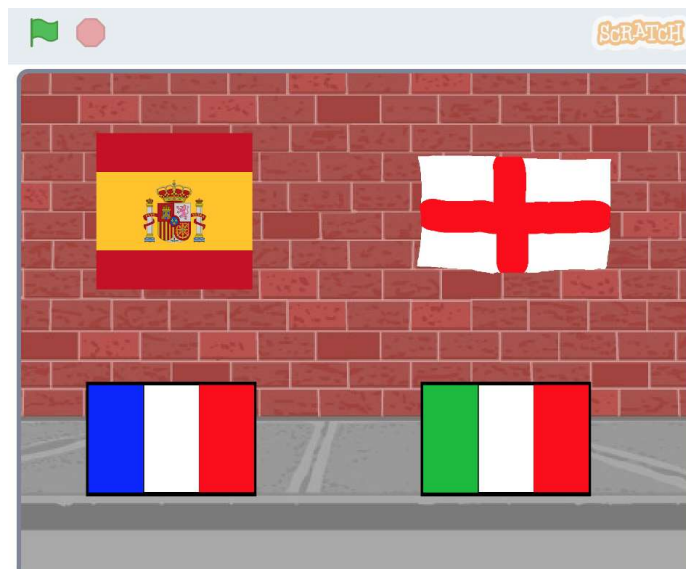
### Step

#### 1 Introduction

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In this project, you will create an interactive phrasebook that translates useful phrases into different languages.

#### What you will make





## What you will need

### Hardware

A computer capable of running Scratch 3.0, with loudspeakers

### Software

Scratch 3.0 (either **online** (<http://rpf.io/scratchon>) or **offline** (<http://rpf.io/scratchoff>))



## What you will learn

- How to draw sprites and backdrops
- How to switch between two backdrops
- How to use the Google Translate extension
- How to use the Text to Speech extension



## Additional information for educators

If you need to print this project, please use the **printer-friendly version** (<https://projects.raspberrypi.org/en/projects/scratch-3-phrasbook/print>).

Here is a link to the resources for this project (<https://rpf.io/phrasbook-resources>).

## Step

### 2 Draw sprites and a backdrop

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In this project, I will be translating from English, my first language, into other languages, so I will be using the English flag. If your first language is available in both the Translate and Text to Speech extensions, you can choose to use this language instead.

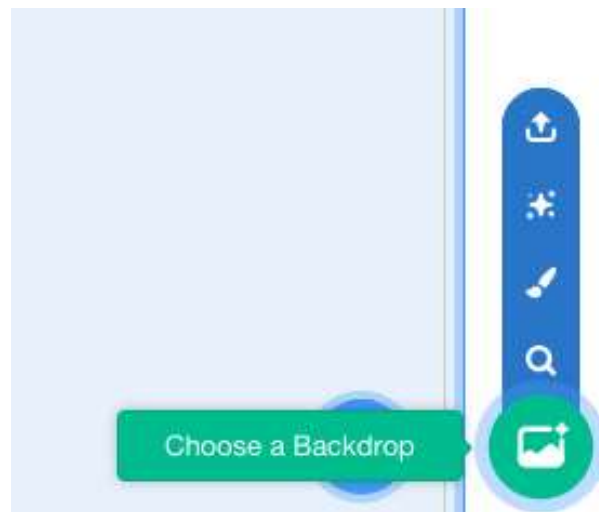
To start, open the starter project **online** (<https://scratch.mit.edu/projects/282154211/>) or download the **offline version** (<https://projects-static.raspberrypi.org/projects/scratch-3-phras ebook/42af2dc2016865f9a6da5f98990da2d86410bee7/en/resources/PhrasebookStarter.sb 3>).



Next, create the main backdrop. The first backdrop should contain flags to represent the languages in the phrasebook.



Click on the button in the bottom right-hand corner to open the backdrops library.



Choose a backdrop from the library, or if you want to, you can create your own. I chose Wall 1.

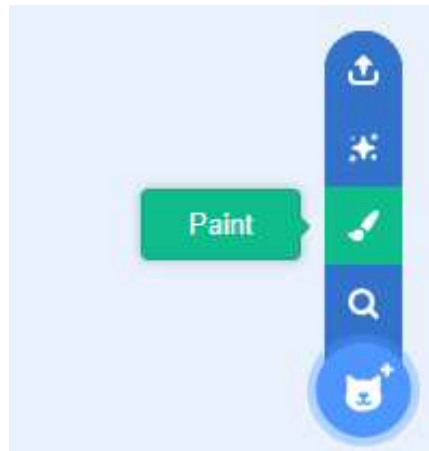
Next, add a flag sprite. A sprite looking like the Spanish flag is already included in the starter project. Now draw the England flag, or the flag of the country you live in.



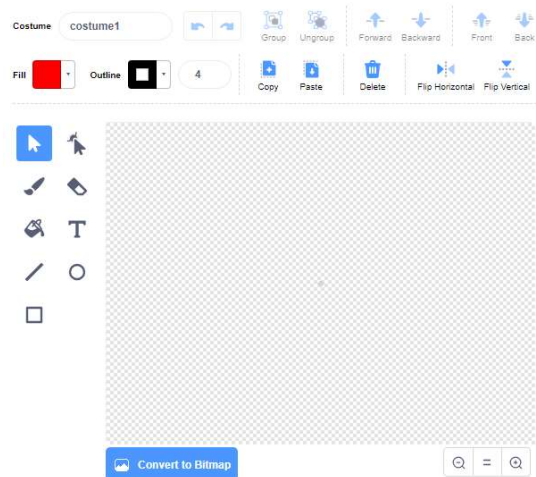
The English flag is white with a red cross in the centre, like this one drawn by me:

## Drawing sprites

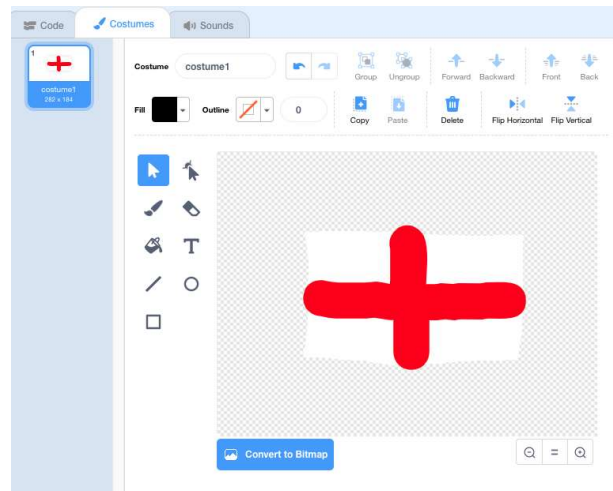
- Click **Paint** on the **Choose a Sprite** menu to **Paint new sprite**.



- 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.



In the sprite information panel below the Stage, rename your sprite 'england' (or give it your country's name instead).

Next, we will look at some of the new features of Scratch 3.0!

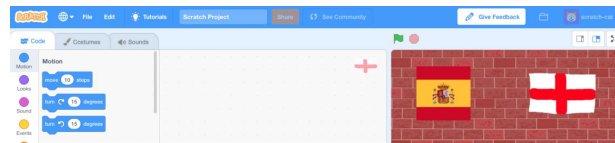
## Step

### 3 Google Translate

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Scratch 3.0 has a Google Translate tool. You can find the tool in the Extensions menu.

Click on the **Add extension** button in the bottom left-hand corner of the window.

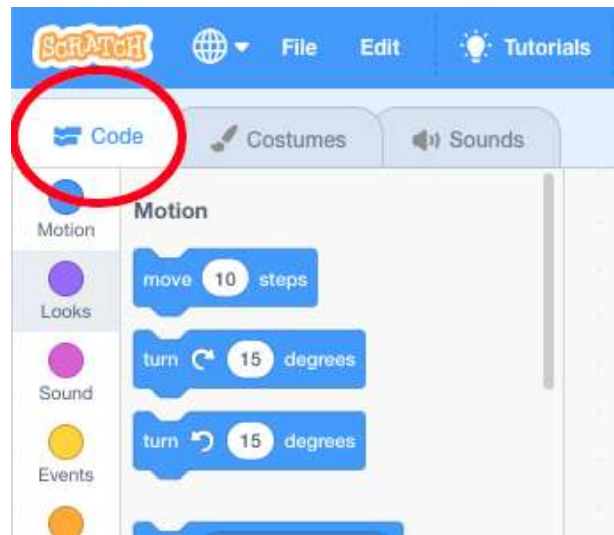
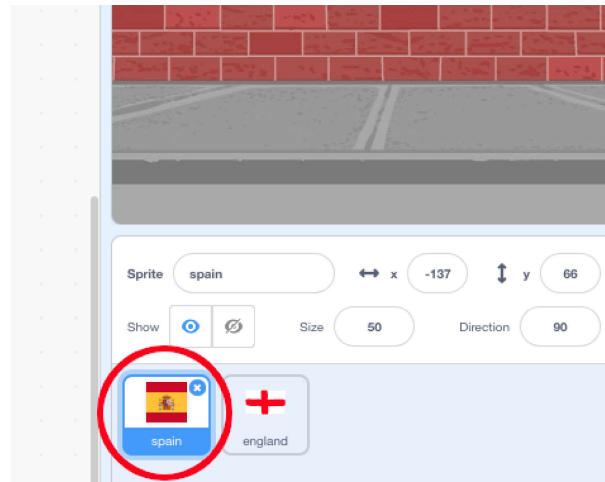


Then click on **Translate**.



Now make your flags say "hello" in their languages.

Click on the Spanish flag sprite to select it, and then click on the Code tab.



Create a variable called **language**. Make the variable available for all sprites.

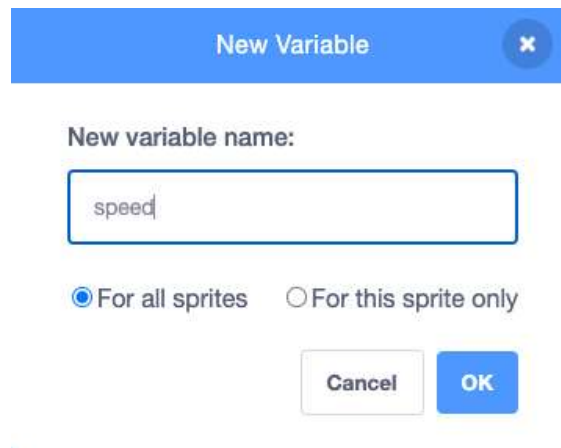


### Add a variable in Scratch

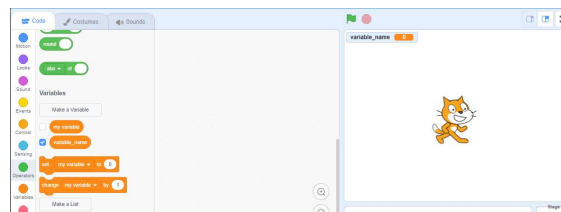
- Click on **Variables** in the Code tab, then click on **Make a Variable**.



- Type in the name of your variable. You can choose whether you would like your variable to be available to all sprites, or to only this sprite. Press **OK**.



- Once you have created the variable, it will be displayed on the Stage, or you can untick the variable in the Scripts tab to hide it.



Add code to the Spanish flag sprite so that, when the sprite is clicked:

1. **language** is set to 'Spanish'
2. "Hello" is **translated** into the language stored in the **language** variable so the sprite can **say** the translated word





when this sprite clicked

set language to Spanish

say translate Hello to language for 2 seconds

Test your code by clicking the Spanish flag on the Stage.

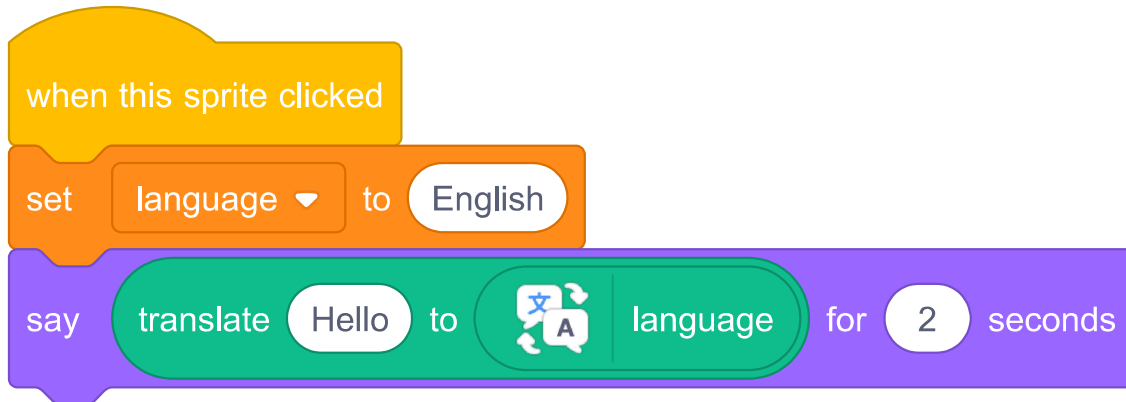


Now do the same for the England flag sprite (or whichever flag you've added).



### I need a hint

Here's what your code should look like for the England flag sprite:



## Step

### 4 Switch the backdrop

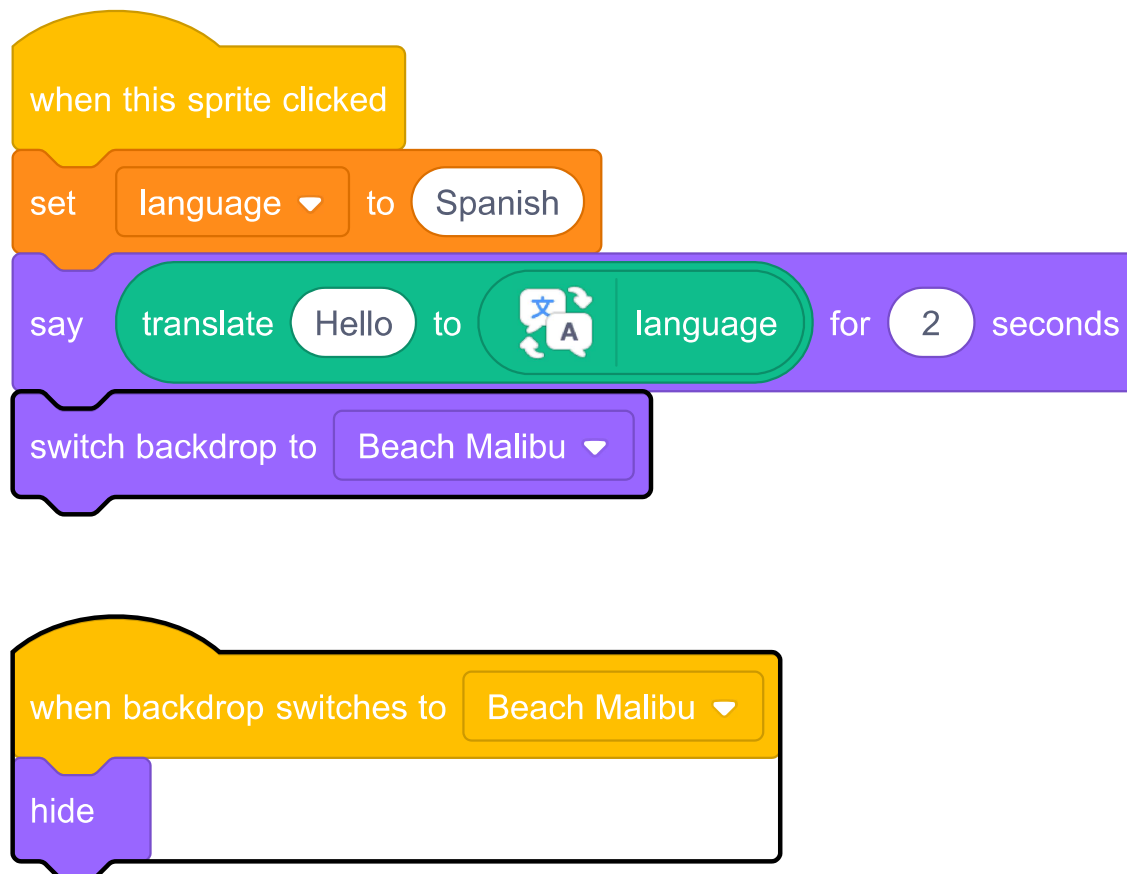
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The backdrop is becoming crowded by the flags, so create a second backdrop on which to place your phrase sprites. When a flag sprite is clicked, the second background should appear and the flag sprites should hide.

Add a new backdrop by clicking the **Choose a backdrop** button, or draw a new backdrop if you want to. You could use the 'Beach Malibu' backdrop that you can see in this guide.



Add the following code to the Spanish flag sprite:



Test the new code. When you clicking on the Spanish flag sprite, the sprite should hide and the new backdrop should appear.

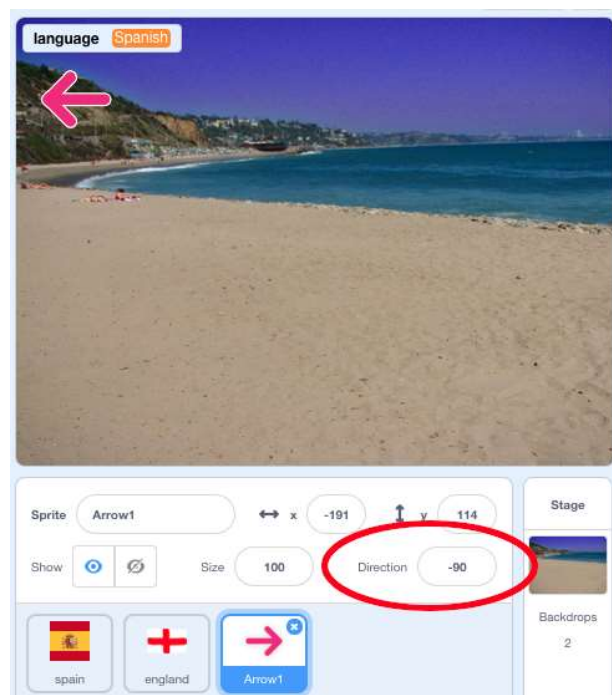


Now, create a way to swap back to the first backdrop.

First, go to the sprites library and add the sprite called 'Arrow1'.



Change the direction of the arrow to **-90** in the sprite information panel below the Stage.



Then drag the arrow into the top left-hand corner of the Stage.

Add the following code to the arrow sprite:



when this sprite clicked

switch backdrop to Wall 1 ▼

when backdrop switches to Wall 1 ▼

hide

when backdrop switches to Beach Malibu ▼

show

When you click on the arrow sprite now, your Scratch project goes back to the first backdrop.

However, you can see that the Spanish flag sprite is not visible!

Add the following code to the Spanish flag sprite to fix this problem.



when backdrop switches to Wall 1 ▼

show

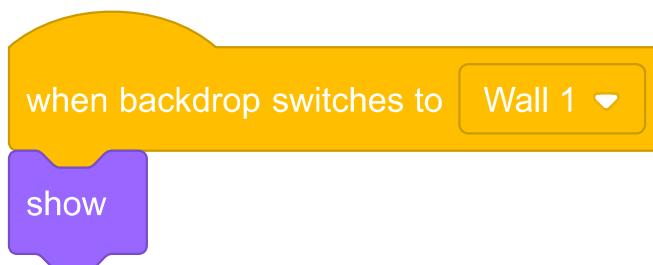
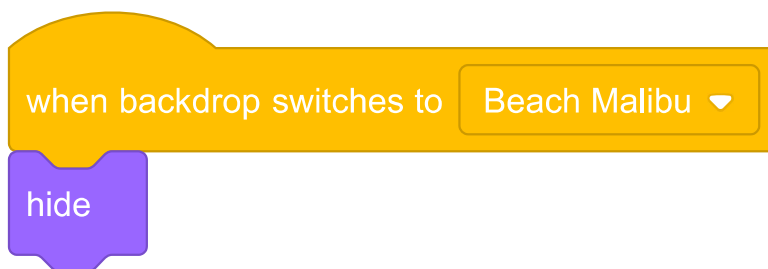
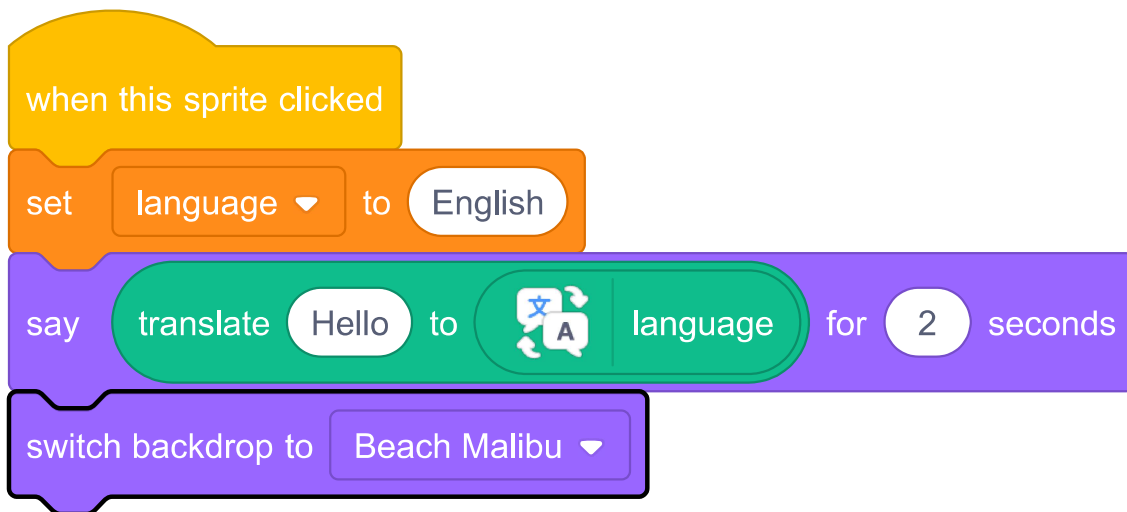
Now you can switch between the two backdrops by clicking on the Spanish flag and on the arrow.



Can you add code so that, when you click on the England flag, the Scratch program also switches to the second backdrop?

### I need a hint

This is what your code should look like for the England flag sprite:

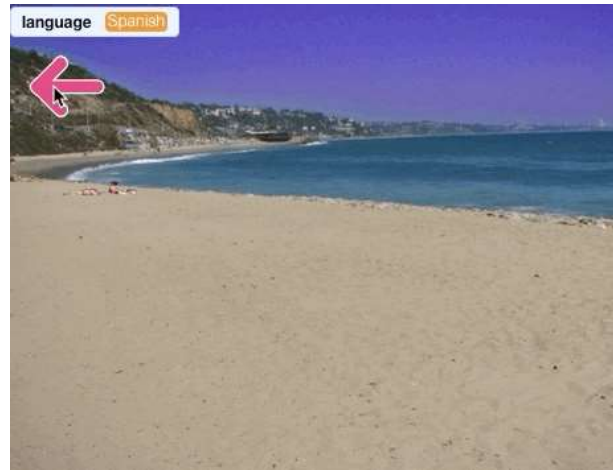


Test your code to ensure everything works correctly.



Can you switch between backdrops by clicking on the sprites?

Do the sprites appear and disappear when they should?





## Step

### 5 Text to Speech

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Now you'll use another new tool in Scratch 3.0: Text to Speech!



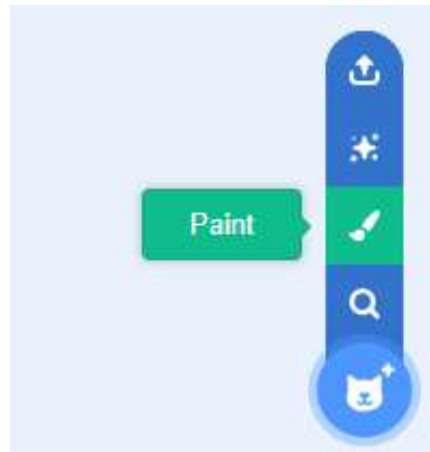
When you are in a country where people speak a different language to you, it is very useful to know the translation for the sentence “Where are the toilets?”. You will add a new sprite to trigger this phrase.

If you want to, you can create the new sprite by drawing a toilet.

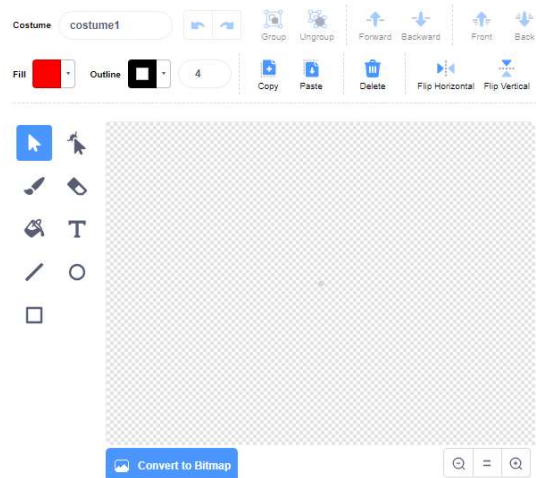


### Drawing sprites

- 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.

Or you can use the image in this project's **resources** (<https://rpf.io/phrasebook-resources>):



Add code to the toilet sprite to show or hide the sprite when the backdrop switches.



when backdrop switches to Wall 1 ▼

hide

when backdrop switches to Beach Malibu ▼

show

Now add some code to the same sprite to translate the question “Where are the toilets?” into the language that is stored in the **language** variable.



when this sprite clicked

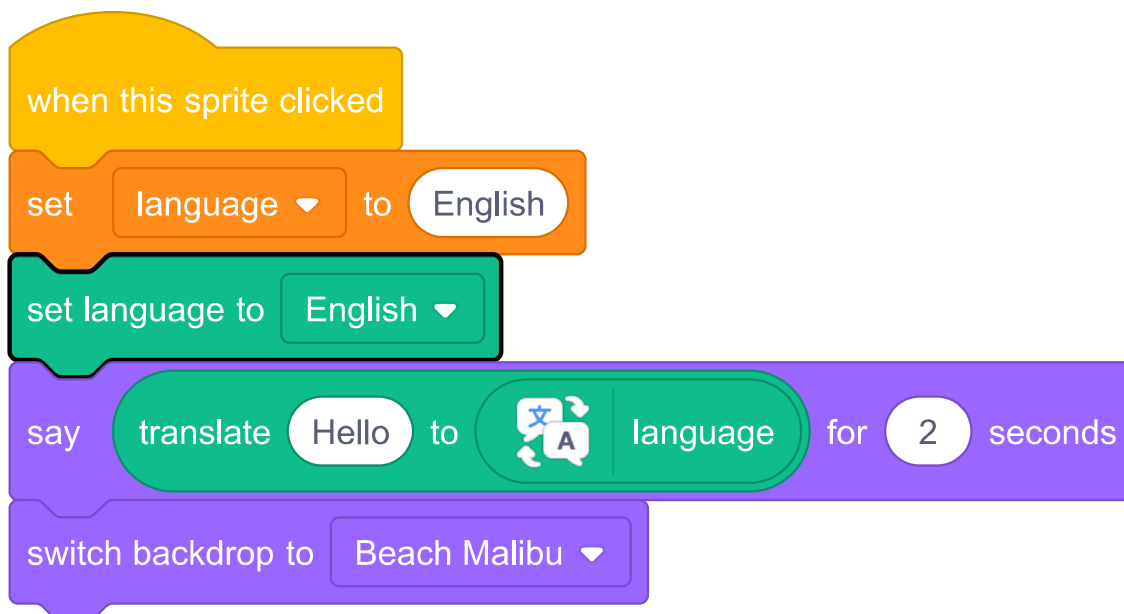
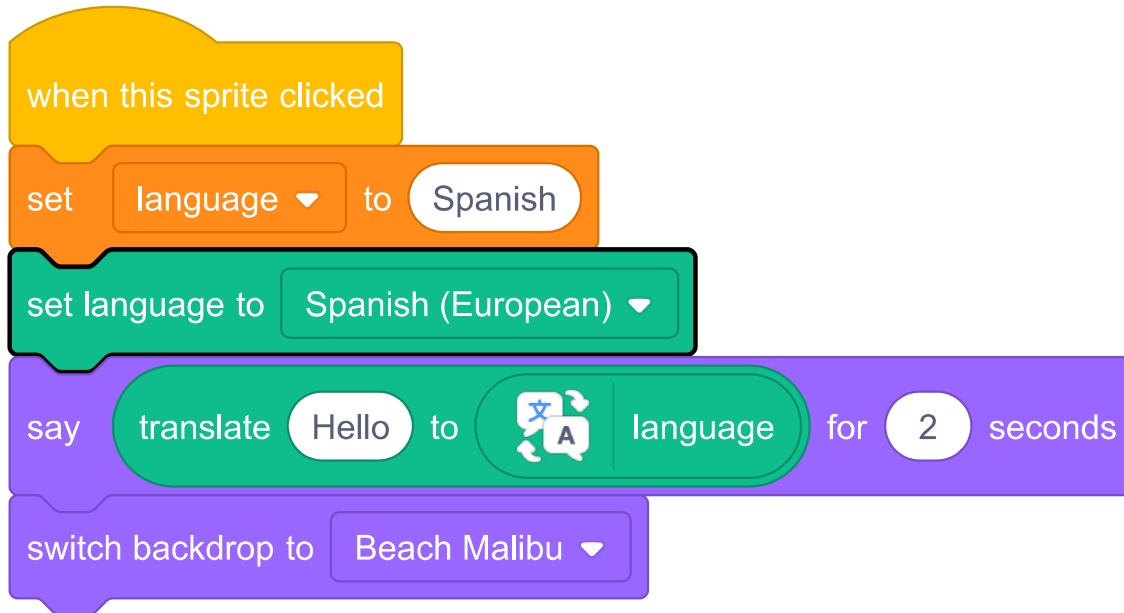
say translate Where are the toilets? to language for 2 seconds

Next, try out the new Text to Speech tool!

Add the Text to Speech extension in the same way as you added the Google Translate extension.



First, set the language on our Spanish and England flag sprites.



Then add this code to the toilet sprite:



when this sprite clicked

say translate "Where are the toilets?" to language



Now test your code.



You should be able to click the Spanish flag to set the language to Spanish, and then click the toilet to see **and hear** how "Where are the toilets?" is said in Spanish. It's "¿Dónde están los baños?"! The English flag should work for English too.



## Step

### 6 More phrases

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You have one phrase translated now – excellent! But that’s not enough for a phrasebook, so add some more phrases.

It’s easiest to duplicate the toilet sprite, because most of the code you need for other phrases is the same.



To duplicate the toilet sprite, right-click on it in the list of sprites below the Stage, and then click on **duplicate**.

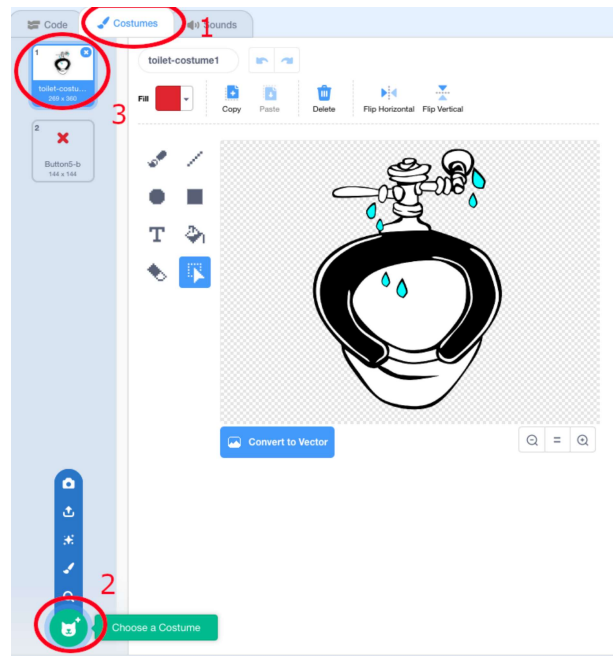


“Yes” and “no” are useful words to know in other languages.

To represent “No”, use the red cross costume from the costumes library.



Change the costume of the new sprite by clicking on the sprite, then clicking on the Costumes tab (1), and then clicking on the **Choose a Costume** button on the bottom left (2) and choosing Button5-b. Then delete the old costume by clicking its **x** (3).



Change the sprite's name to 'no' in the sprite information panel below the Stage.





Finally, in the 'no' sprite's **translate** code blocks, change "Where are the toilets?" to "No". See the changes below:



when this sprite clicked

~~say translate Where are the toilets? to language for 2 seconds~~

say translate No to language for 2 seconds

when this sprite clicked

~~speak translate Where are the toilets? to language~~

speak translate No to language

Add some more phrases to your phrasebook!



Start by adding "Yes".

**I need a hint**

The code for your new 'yes' sprite should look like this:



when backdrop switches to Wall 1 ▼

hide

when backdrop switches to Beach Malibu ▼

show

when this sprite clicked

say translate Yes to  language for 2 seconds

when this sprite clicked

speak translate Yes to  language



## Challenge!

### Challenge: how much does it cost?

Include the phrase "How much does it cost?" and use some coins as your sprite costume.

This image of coins can also be found in this project's **resources** (<https://rpf.io/phrasebook-resources>).



What other phrases do you think you would need in a country where people speak a different language?

## Step

### 7 More languages

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So far, you can use your phrasebook in countries where Spanish or English is spoken. Now add some more languages.

To see the list of languages that you can translate to, click on the little triangle in the **translate** code block.

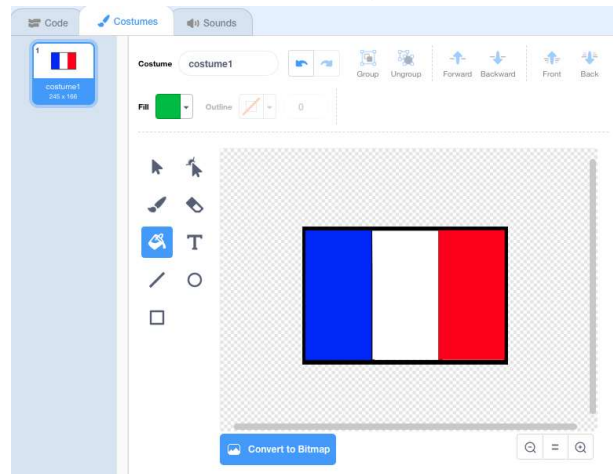
If you want to hear the translations with the correct pronunciation, also check whether the language is available in the Speech to Text extension.

I'm adding French, because the French flag is easy to draw and French is spoken in a lot of countries around the world.

First, duplicate the Spanish flag sprite so that you can reuse its code!



Next, choose or draw a new costume for the French flag sprite. It's easy to draw:

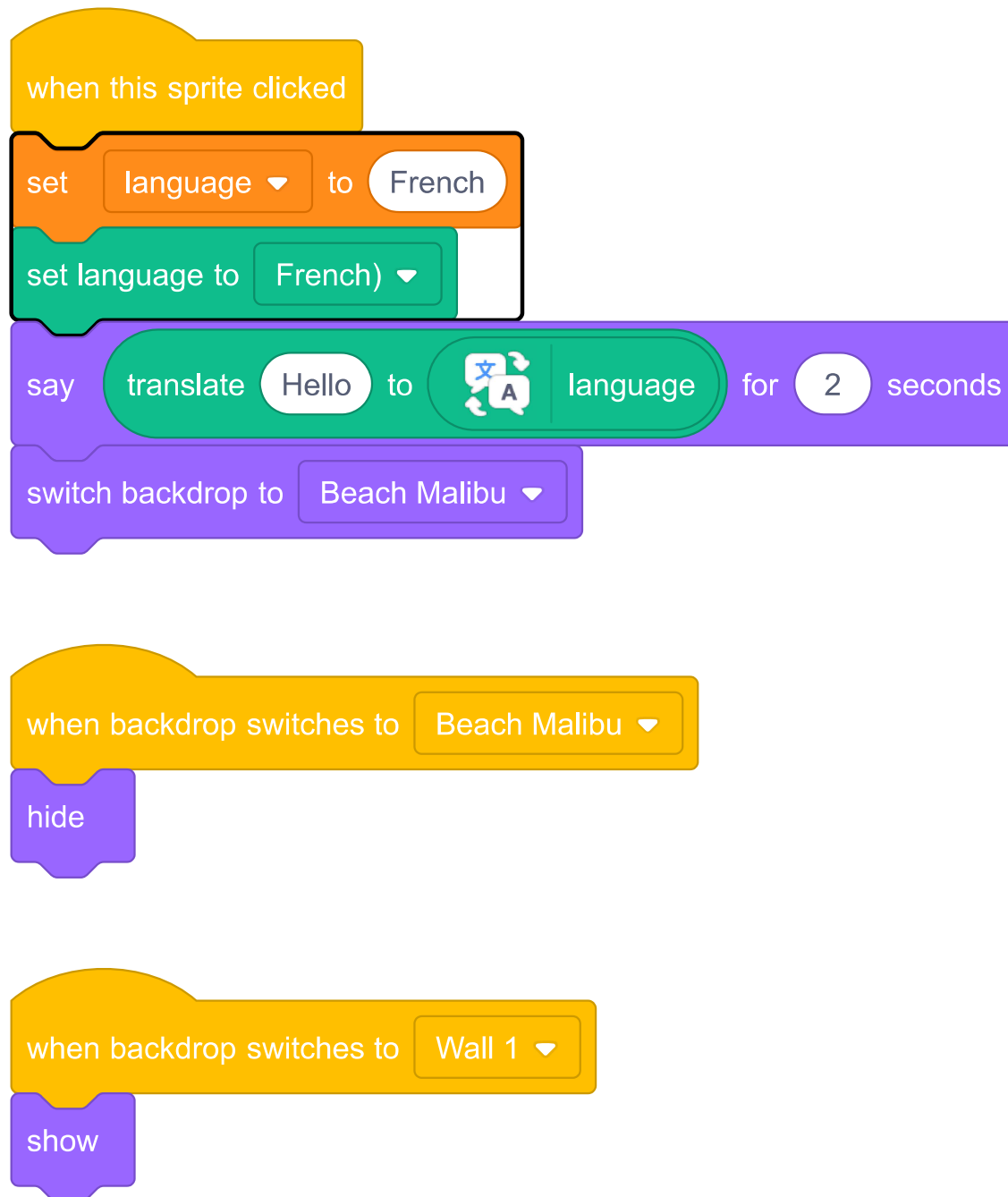
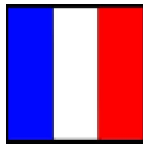


Then delete the old costume.

Finally, change the code so that clicking the sprite sets the **language** variable and the Text to Speech **set language to** code blocks to French instead of Spanish.



Your French flag sprite's code should now look like this:

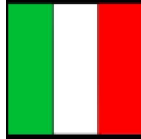


Add Italian to your phrasebook.




### I need a hint

The code for the new Italian flag sprite looks like this:



when this sprite clicked

- set language ▾ to Italian
- set language to Italian) ▾
- say translate Hello to  language for 2 seconds
- switch backdrop to Beach Malibu ▾

when backdrop switches to Beach Malibu ▾

- hide

when backdrop switches to Wall 1 ▾

- show



### Challenge!

#### **Challenge: use Scratch extensions in other projects**

Using Scratch extensions Translate or Text to Speech, can you upgrade any of your old Scratch projects?

Have you got any ideas for new projects that could use these extensions?

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View project & license on GitHub (<https://github.com/RaspberryPiLearning/scratch-3-phrasbook>).