Build the Change

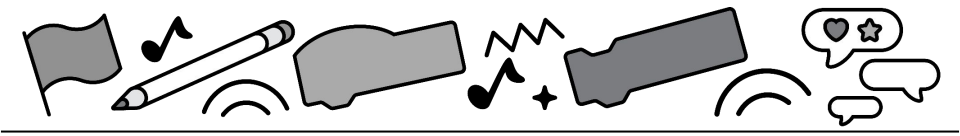
in partnership with SCRATCH



Creating Sustainable Futures

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Set of 10 cards



Cards in This Pack

- Imagine & Create Sustainable Buildings
- Create Your Sprites
- Remove Image Backgrounds
- Using the Paint Editor
- Code Your Project: Explainer Sprites
- Code Your Project: Informational Slideshow
- Code Your Project: Add Digital Elements
- Code Your Project: Animate Photo Elements
- Interactive Prototype with Makey Makey
- Collaborate: Export or Backpack / Collaborate: Remix

Imagine and Create Sustainable Buildings





Buildings can tell a lot about a community and the people who created it, such as what technology was available to help, what skills were needed to build it, and what materials were available and necessary for construction.

As time goes on, however, buildings can fall apart or need significant repair if they cannot withstand the environmental conditions and aren't sustainable.

What design features are important to consider if you are creating a building that is good for the well-being of the environment and people in the community?

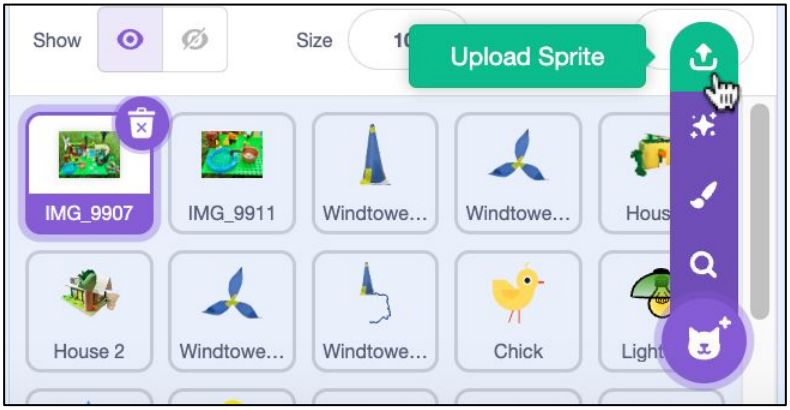


Use materials you have around you to imagine, design, and build the change you want to see! Construct the building, community space, and surrounding areas you imagined using recyclable and craft materials and LEGOs.

As you make design choices, consider what can make your building or space more:

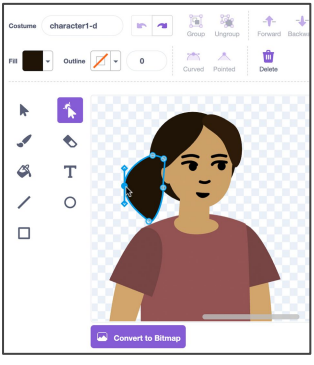
- accessible for all
- energy efficient
- nature friendly and less harmful to the environment around it (such as building materials, layout, add-ons)

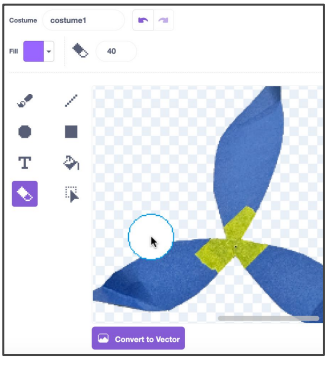
Create Your Sprites



Options to Create Sprites:

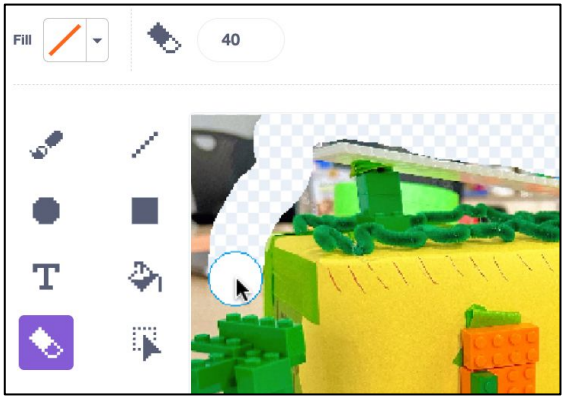
- **Upload a picture(s)**: Take a picture of your physical prototype and upload it into Scratch as a sprite. You may want to take pictures of individual pieces to animate seperately.
- Use or remix **sprites from the library.**
- **Create a new digital sprite using the Scratch Paint Editor tools.**





- There are two modes for using the Paint Editor in Scratch:
  - **Vector-mode** allows you to create and edit shapes (Scratch default)
  - **Bitmap-mode** allows you to edit photos and paint with pixels (default for uploaded photos)
- To upload a photo as a sprite, hover over the sprite menu in the lower-right corner of the sprite area and choose “Upload.” Then, select a file.
- Your photo will appear on the costume tab as bitmap. You can choose to convert it to vector using the “Convert to vector” button to more easily rotate or resize, if desired.

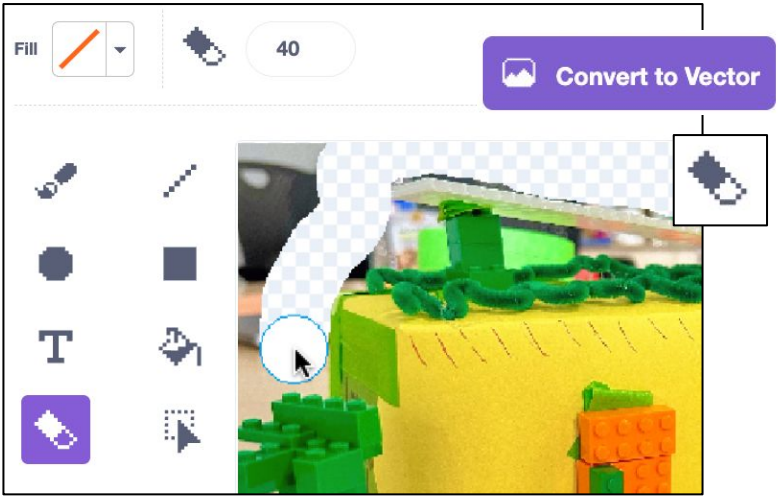
Remove Image Backgrounds



If you'd like to animate individual pieces of your build, you'll want your sprite to have a transparent background.

Options to Remove the Background:

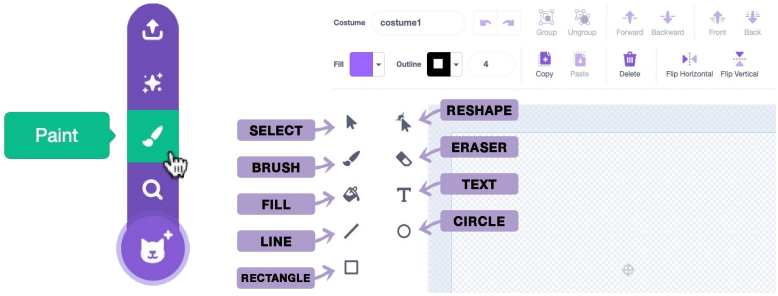
- Use the **tools in the Scratch Paint Editor** after a file has been uploaded
- Before you upload the file, use **online tools or software**



- In the Scratch Paint Editor in bitmap-mode, use the eraser tool to remove the image background or other pieces you don't want from your image.
- You'll know you are in bitmap-mode when you see the "Convert to Vector" button at the bottom of the screen.
- You can choose to convert it to vector when done using the "Convert to vector" button to more easily rotate or resize, if desired.

Using the Paint Editor

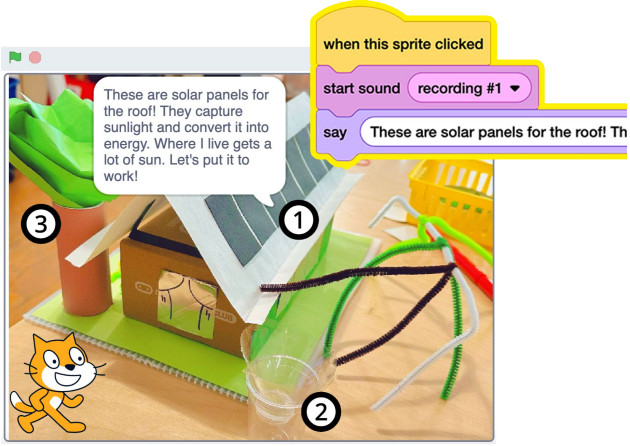
VECTOR TOOLS TO TRY



	Click and drag with the Line, Circle, or Rectangle tools to **create a shape**. Hold down the Shift key while dragging to create equal sides, or 45 and 90 degree angles with lines.
	Using the Select tool, select a shape and click and drag one of the corner points to **resize** it.
	To **rotate** a shape once you've made it, use the Select tool to grab the anchor under the shape and drag it. Hold down the Shift key while dragging to rotate at 45 degree angles.
	Using the Reshape tool, click on one of the points of a shape and **move the point** around to alter the shape. Click + Shift key to select and move multiple points at once.
	Using the Reshape tool, click on a part of the shape that doesn't have a point to **add a new point**, or click on a point and press "Delete" to **remove a point**.

 Curved	Using the Reshape tool, click on a point and choose whether it is **curved or pointed**. Click on a point and drag rotate the handles attached to the point to **alter the shape of a curve**.
 Copy	Using the Select tool, select a shape and click the buttons on the top menu to **copy and paste** a duplicate.
 Flip Vertica	Using the Select tool, select a shape and click the flip horizontal or flip vertical buttons on the top menu to **flip** a shape.
 Forward	Using the Select tool, select a shape and click the Forward, Backward, Front, or Back buttons to change the **layer order.**
 	Select the fill from the dropdown and use the fill (paint bucket) tool to adjust a shape's color. Or using the Select tool, select a shape and then use the Fill and Outline dropdowns to adjust the **color, saturation, brightness, and outline**. You can also choose to use a **gradient**. Use the eyedropper to select a color from another shape. Use the red strikethrough to fill with no color.
 Group	Using the select tool and holding down the "Shift" key, select multiple shapes to **group** them (helpful to move several shapes together).
	Use the brush tool for **freehand line drawing**. The example to the right shows hand drawn whiskers.
	Use the **eraser** tool to remove parts of the drawing from *all* shapes and layers it comes into contact with when clicking and dragging. You can use the reshape tool to then adjust the new points created.
	The **text** tool comes with a dropdown list of font options to choose from, and Fill and Outline dropdowns to change text color and outline.

Code Your Project: Explainer Sprites



- Upload a photo of your build as a backdrop (no need to remove the background).
- **Add clickable "explainer" sprites** that provide more information about your design choices.
- Code your project so when users click on each sprite, something happens. For instance:
  - play a recording
  - display text on the screen to describe your scene

Code Your Project: Explainer Sprites

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GET READY

Choose or create a sprite.

1

Sprite 1

Upload a photo as your backdrop.

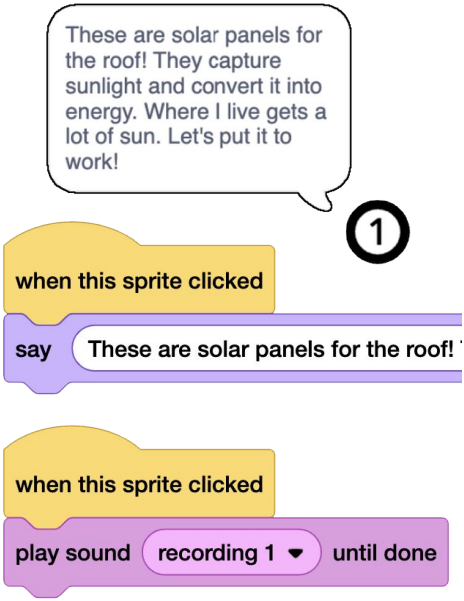


Photo

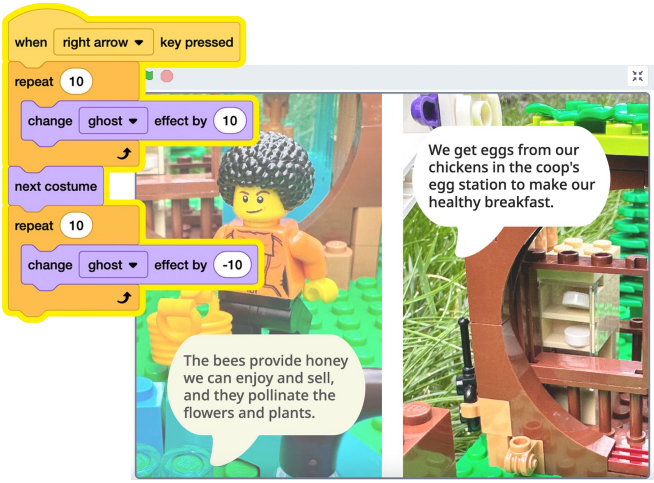
ADD CODE

Explain the design choices you made and make your project interactive. Try:

1. Use a “say” or “think” block to display text on the screen when a sprite is clicked.
2. Record your explanation and use a “play sound” or “start sound” block to hear it when a sprite is clicked.
3. Or try to use both the “say” and “start sound” blocks!



Code Your Project: Informational Slideshow



- **Create an informational slideshow**! Upload a series of photos of your build. Photos could include closeups of individual items, different views of the build, etc.
- You could add text on top of your images using the Paint Editor tools, or code your project so a recording plays as each slide costume shows, or… What will you add?

Code Your Project: Informational Slideshow

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GET READY



Upload multiple photos as sprite costumes.



Costume 1



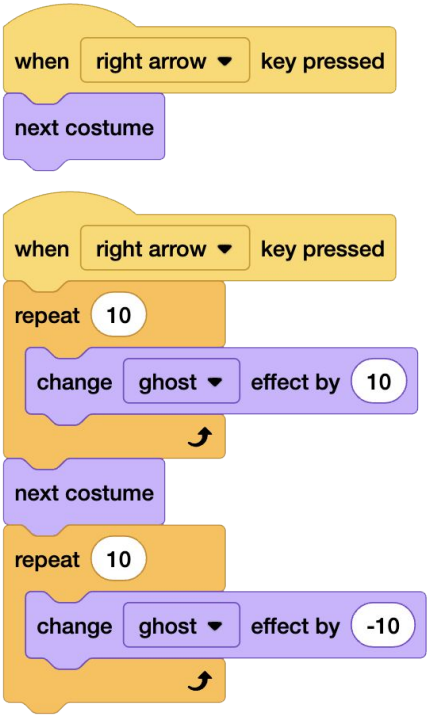
Costume 2



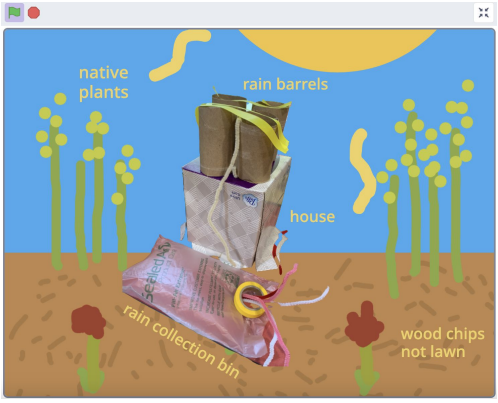
Costume 3

ADD CODE

1. Make your project interactive by choosing a keyboard key to press to switch to the “next costume.”
2. *Optional:* Add code to make slide transitions more animated. For instance, use a ghost effect to fade images in and out.
3. Add text on top of your images using the Paint Editor tools to explain your design choices.



Code Your Project: Add Digital Elements

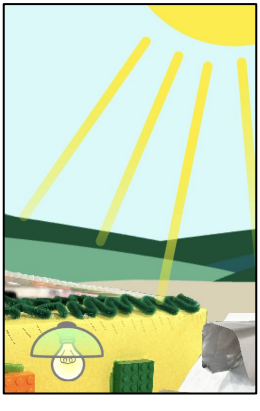


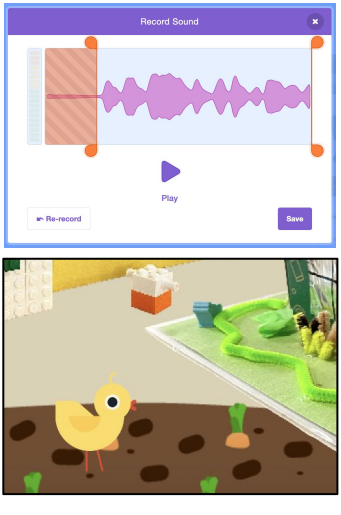
- **Create additional sprites using the Scratch Paint Editor** that, when triggered, animate an element and/or provide additional context about the design choices you made.
- Create a background (or two!) to represent how your prototype would fare in different seasons.
- What additional elements did you want to represent (like animals or plants) that you could add and animate digitally?

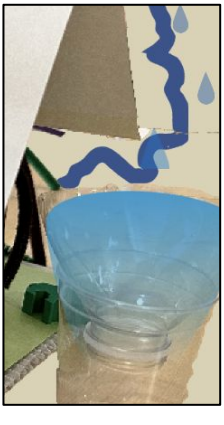
Code Your Project: Add Digital Elements

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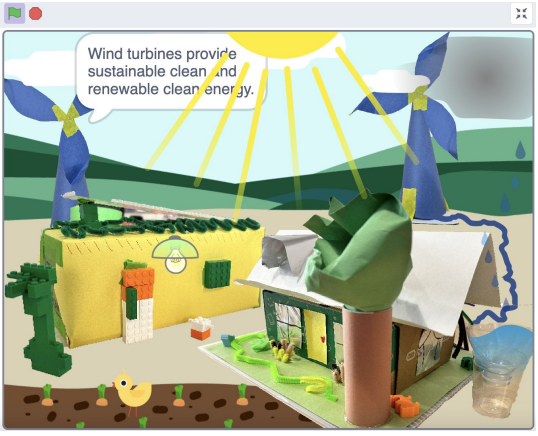
- What environmental sounds could you add or create that represent the area where your prototype resides? (Birds or other animals, water, electricity…)
- Have others created relevant sprites that you can remix and use in your project to add additional elements? (Just make sure to give credit to the original creator on your project page.)







Code Your Project: Animate Photo Elements



- **Animate individual elements with code.** Take individual pictures of different elements of your build, remove the background, then animate with code blocks to turn or change color, etc.
- Or alternatively, you can animate items on your build using **stop motion** techniques. Upload a series of photos of your build, moving pieces a bit at a time.

Code Your Project: Animate Photo Elements

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GET READY

Upload photos as sprites. Be sure the background is removed.

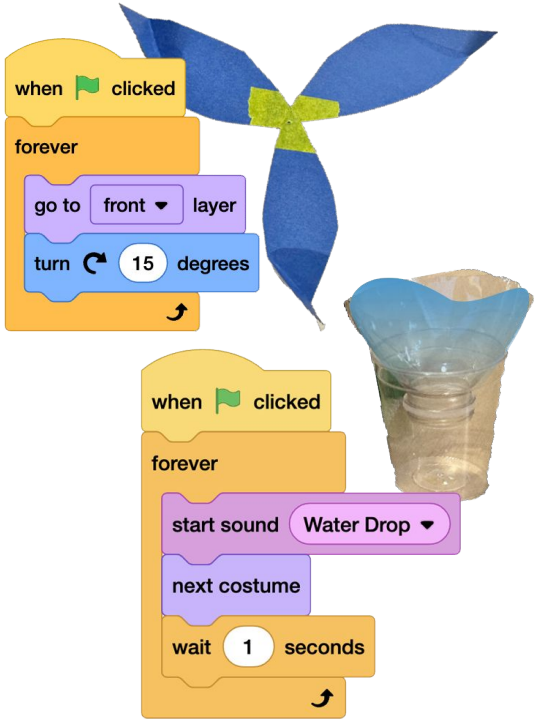




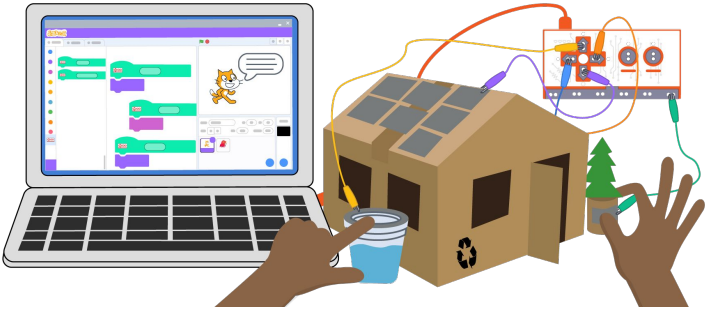


ADD CODE

1. Add animations, like turning or moving or color changes.
2. Combine photos and vector shapes to create multiple costume changes.
3. Add sounds or voice recordings.
4. Make sprites interactive by coding animations when clicked or a keyboard key is pressed.



Interactive Prototype with Makey Makey



1. Plug the Makey Makey Board into a computer using the provided cable.

2. Add conductive materials (conductive paint or tape, foil, Play-doh, scrap metal, etc.) to points on your prototype, and attach alligator clips connected to keyboard inputs on the Makey Makey.

3. Open Scratch. Create a new project where sprites provide additional information or are animated when participants interact with your work.

Interactive Prototype

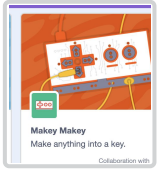
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GET READY

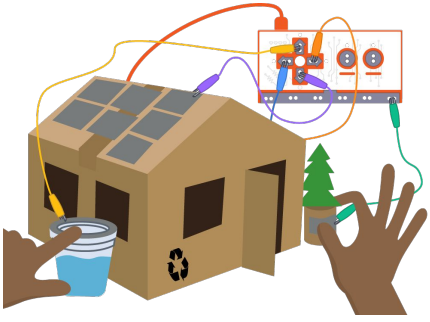
Choose your sprite.



Add the Makey Makey extension.



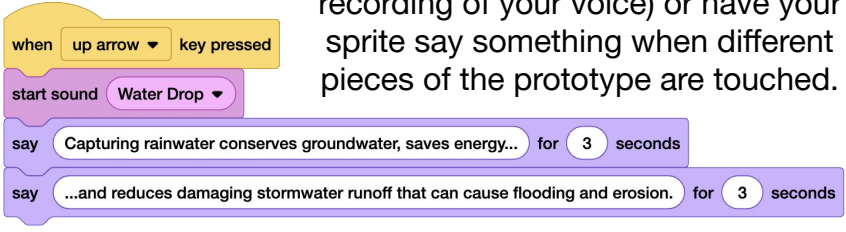
ADD CODE AND TEST



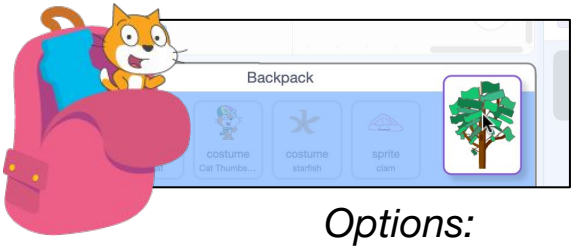
Connect the conductive points on your prototype to alligator clips. Don't forget to establish EARTH.

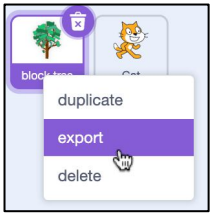
Close the circuit to register each keyboard press by touching EARTH and each conductive point on the prototype.

Add code to play a sound (like a recording of your voice) or have your sprite say something when different pieces of the prototype are touched.



Collaborate: Export or Backpack

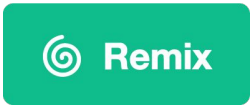




Options:

- **Export a sprite, costume, or sound:** Right-click the asset. Choose “export.” To add the asset to a project, choose the **upload** option in the sprite, costume, or sound menu to upload from your files.
- **Backpack a sprite, costume, or sound:** You must be logged in to access the backpack at the bottom of the editor screen. Click it to open the backpack and drag-and-drop a sprite, costume, or sound inside. To add the asset to a different project, open the backpack and drag-and-drop the asset into the sprite, costume, or sound area.

Collaborate: Remix



Scratch embraces remix culture. Remixing is when you build upon someone else's projects, code, ideas, images, or anything else shared on Scratch to make your own unique creation.

When remixing an asset, **make changes** like:

- adding code to animate the asset
- placing it in a new scene with other assets or add related sounds
- using the tools in the paint or sound editor to make adjustments to it
- adding additional elements you felt were missing

Just make sure that you **give credit** to whomever created the original asset in the Notes and Credits section.