Optional Pre-Unit Lesson

3rd/4th Grade
Preparing for Coding in Scratch

3rd & 4th Grade

Award #1837380

Lesson created by the GMU-ODU CSforAll Team. For more information about this lesson and our CSforAll initiative, contact Dr. Amy Hutchison at ahutchi9@gmu.edu

SUMMARY AND STANDARDS

Summary:

In this lesson, students will explore what Computer Science is and the basics of Scratch.

ELA Standards:

The student will read and demonstrate comprehension of nonfiction texts.
The student will write in a variety of forms to include narrative, descriptive, opinion, and expository.
a)Engage in writing as a process.
c) Use a variety of prewriting strategies.
d) Use organizational strategies to structure writing according to type
g)Use transition words to vary sentence structure

CS Standards:

The student will construct sets of step-by-step instructions (algorithms), both independently and collaboratively
a) using sequencing;
b) using events.

Optional: Introduce lesson, learning goals, and resources (Slides # 2-4)

MATERIALS AND RESOURCES NEEDED FOR THIS LESSON:

- Chromebook/Laptop
- Internet Access
- Link to Scratch tutorial
- Student Unit 1 slide deck

Optional: Introduce lesson, learning goals, and resources (Slides # 2-4)

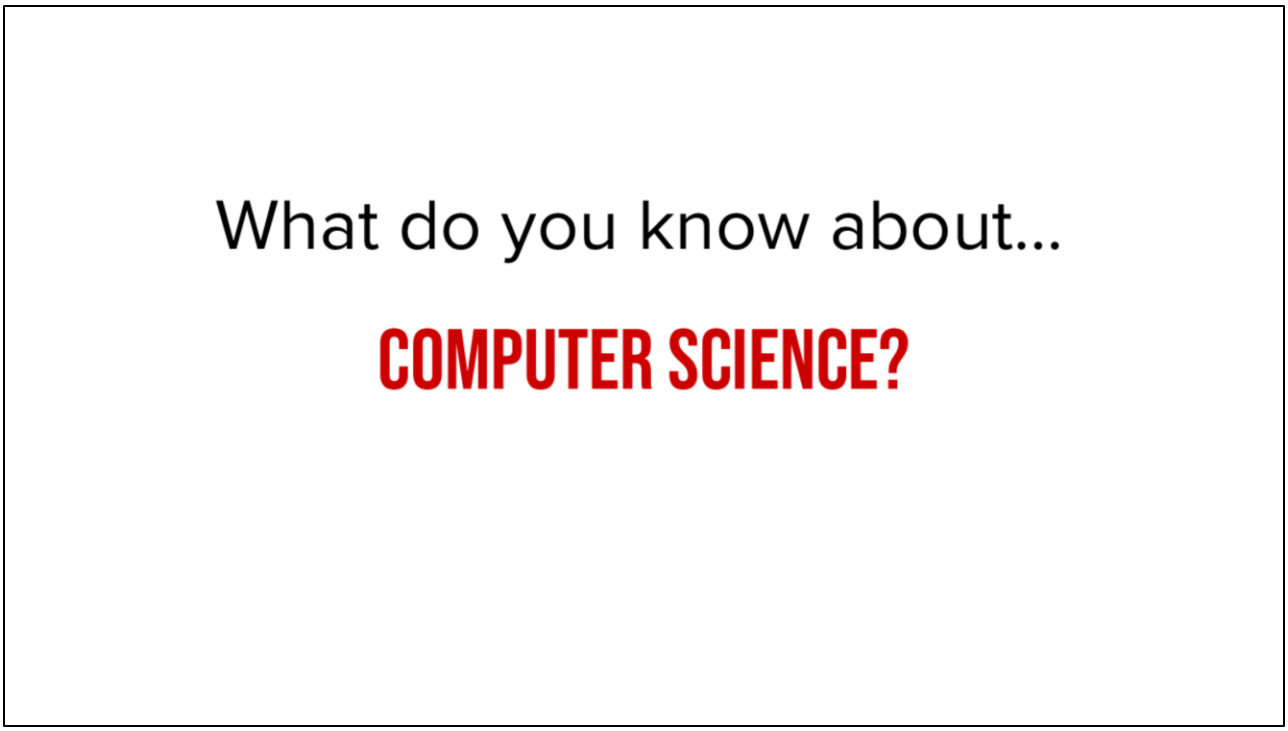
LESSON OBJECTIVES: I CAN...

- ❑ Identify objects in Scratch (add Sprites, add backdrops)
- ❑ Recognize that commands in Scratch are represented by blocks
- ❑ Describe characteristics of Computer Science (CS)
- ❑ Explore Scratch
- ❑ Log into Scratch and practice adding a project to a teacher's studio

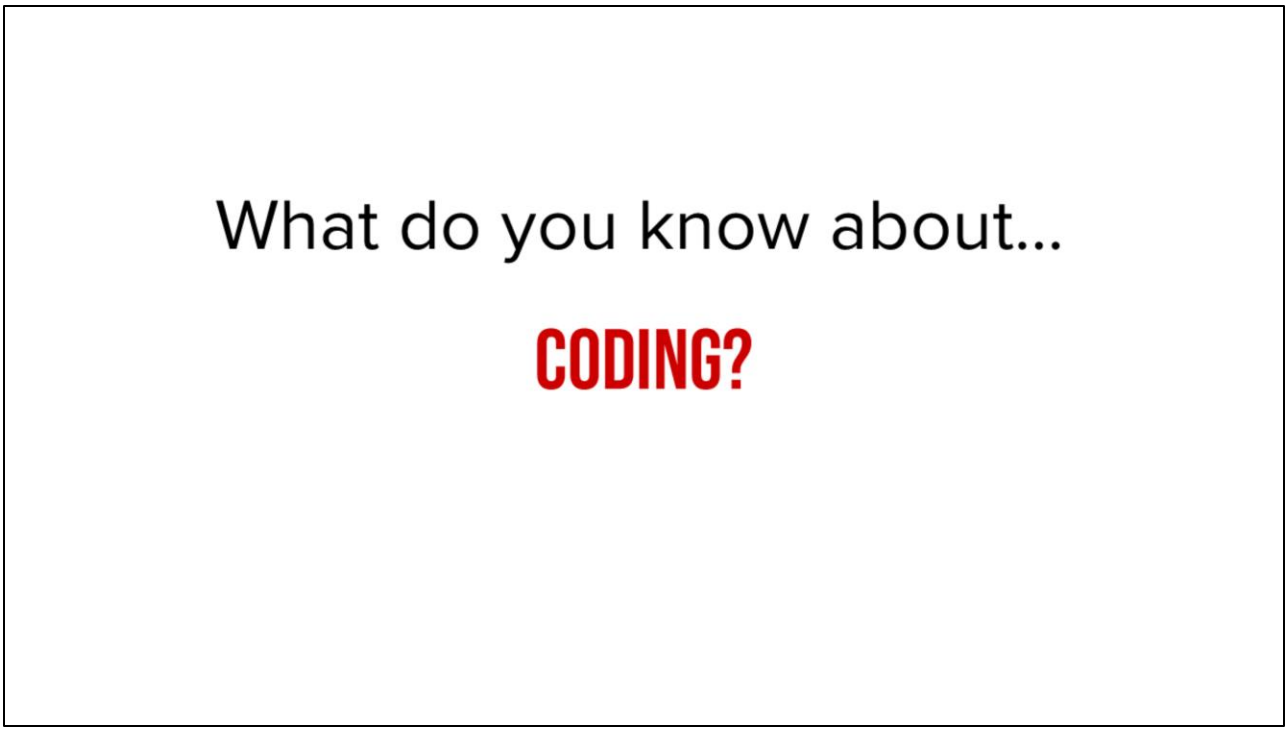
Optional: Introduce lesson, learning goals, and resources (Slides # 2-4)

VOCABULARY

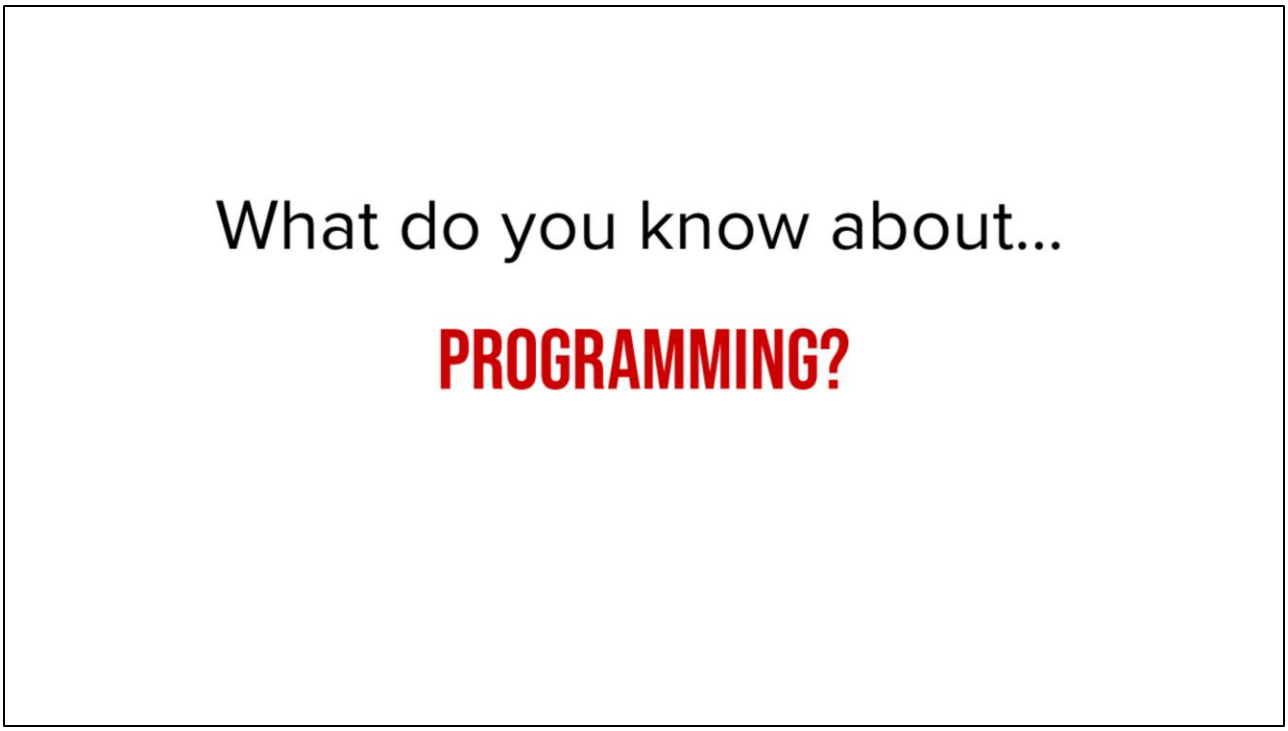
- ★ Commands
- ★ Code
- ★ Computer Science
- ★ Sprite
- ★ Backdrop



Ask students to share what they know about the following words: Computer Science



Ask students to share what they know about the following words: Coding



Ask students to share what they know about the following words: Programming

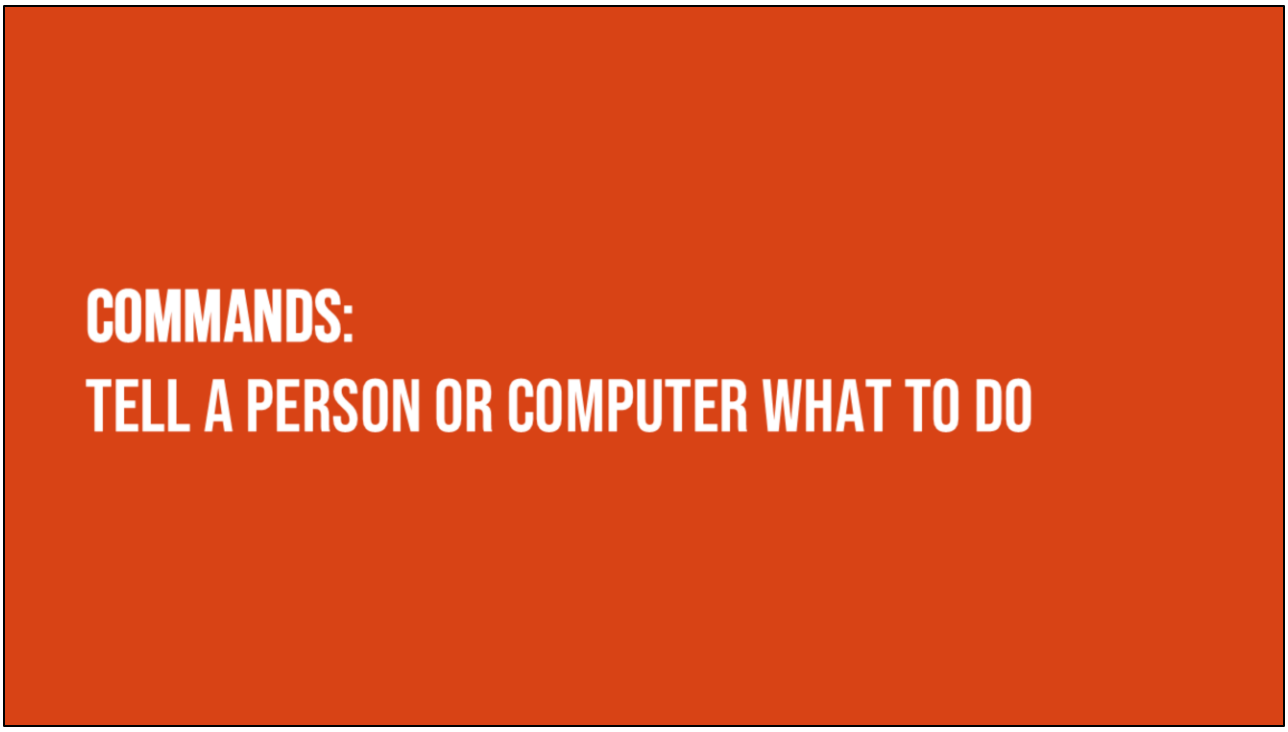
WE ARE GOING TO LEARN MORE ABOUT COMPUTER SCIENCE!

Next, explain that we are going to be learning more about Computer Science and share the video (Watch until 1:09) (slide #9)

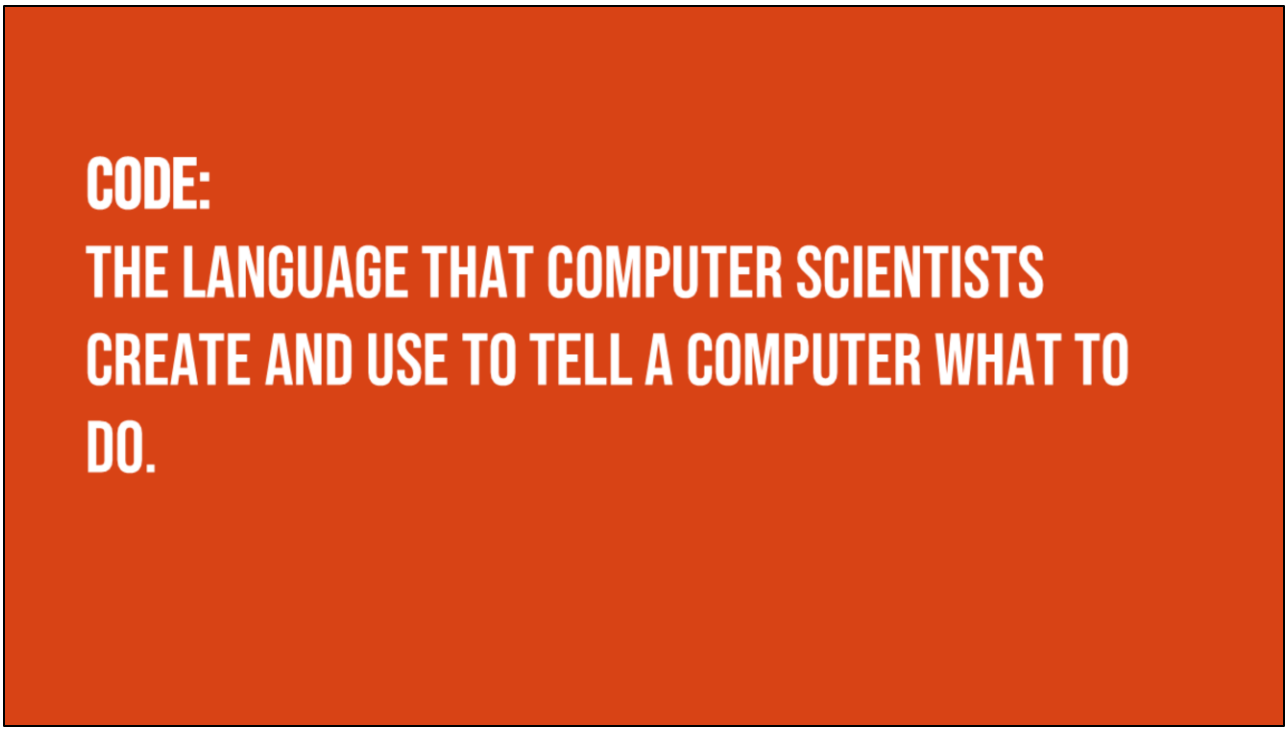
COMPUTER SCIENTISTS

Computer scientist (n): a person who studies computers and how they can be used to solve problems.

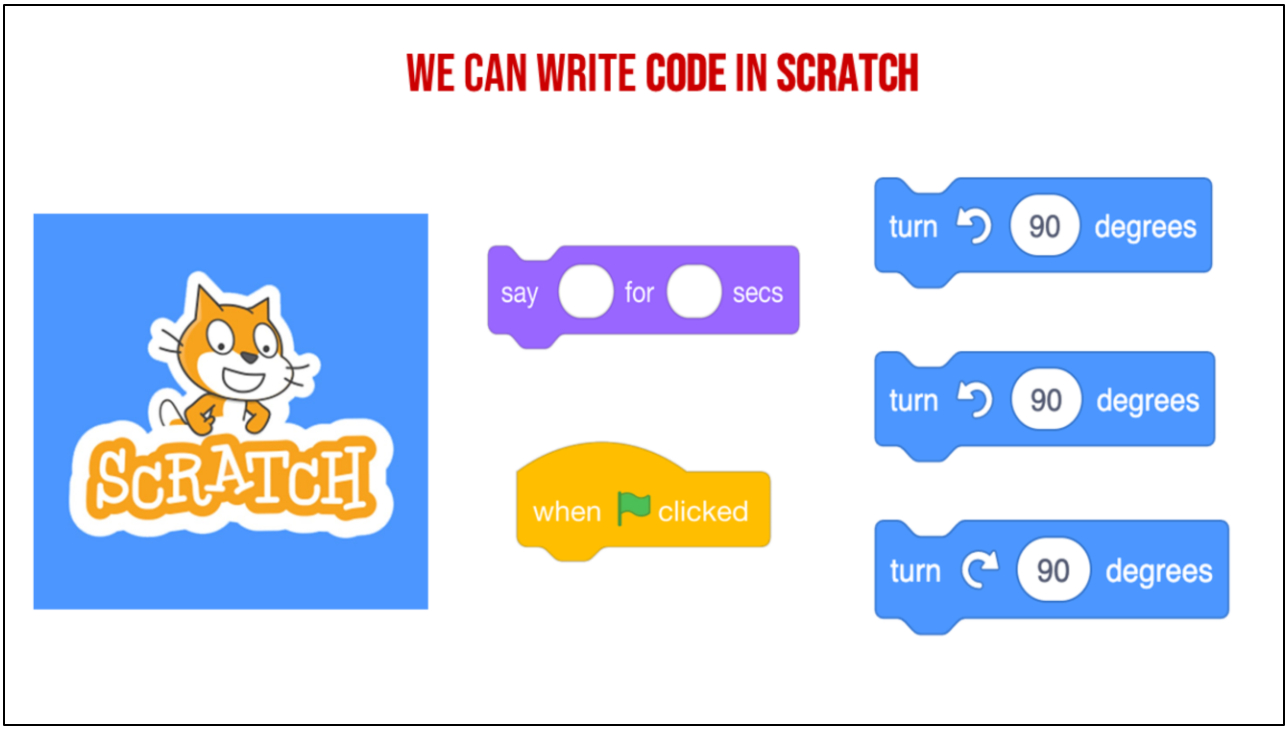
Introduce what a computer scientist does (slide 10)



Introduce vocabulary slides: Commands



Introduce vocabulary slides: Code



Introduce Scratch - Explain that Scratch is a program that you can use to code and create interactive stories, games, and animations.

CLICK HERE FOR AN OPTIONAL VIDEO ABOUT SCRATCH (MUST HAVE ACCESS TO SCRATCH).

Pause here.

First, let's learn a little more about Scratch

Scratch - Imagine, Program, Share

GUIDED PRACTICE

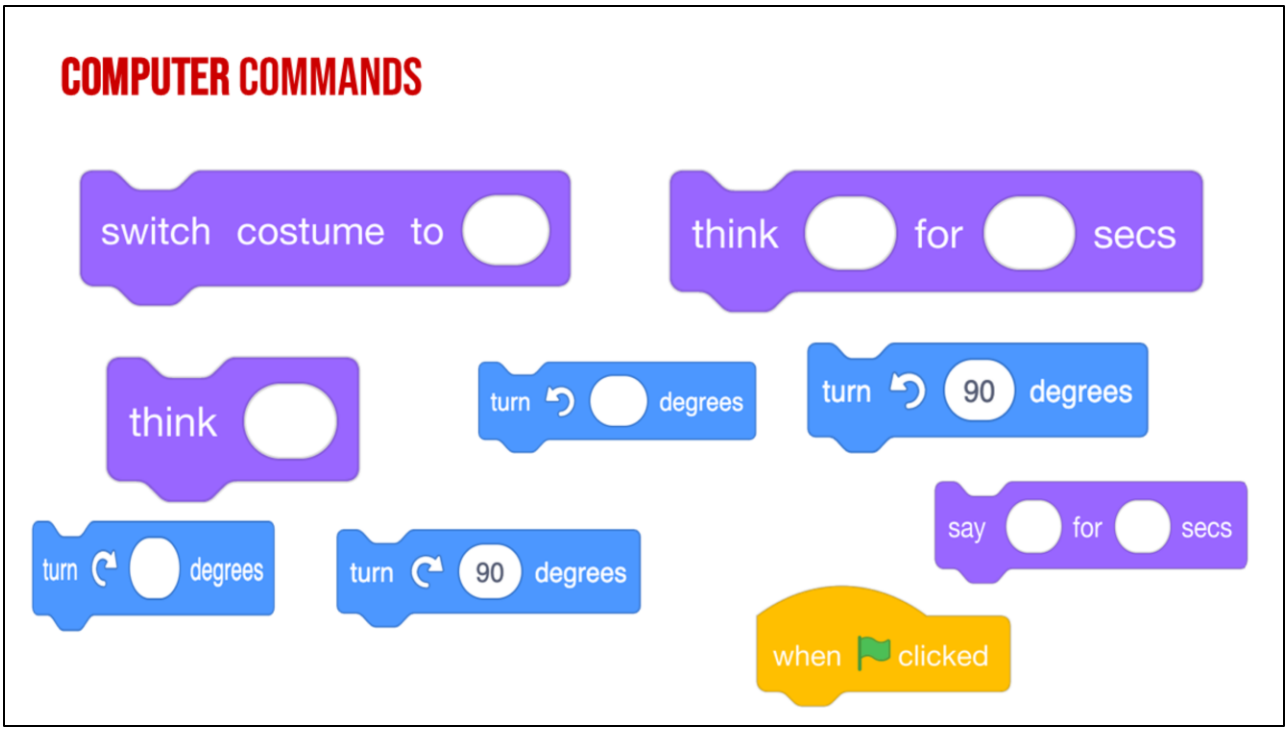
Coding in Scratch

TERMS USED IN SCRATCH

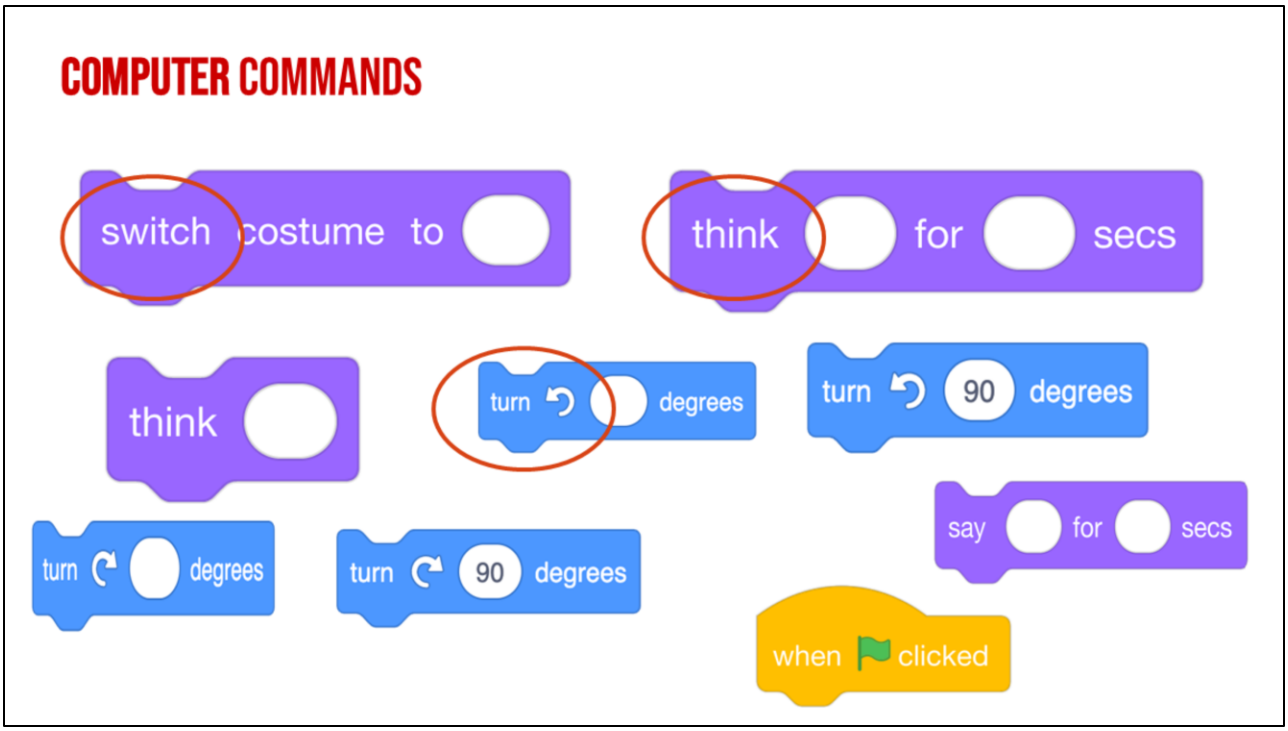
Block(s): commands in Scratch

Sprite: characters in Scratch

Backdrop: background



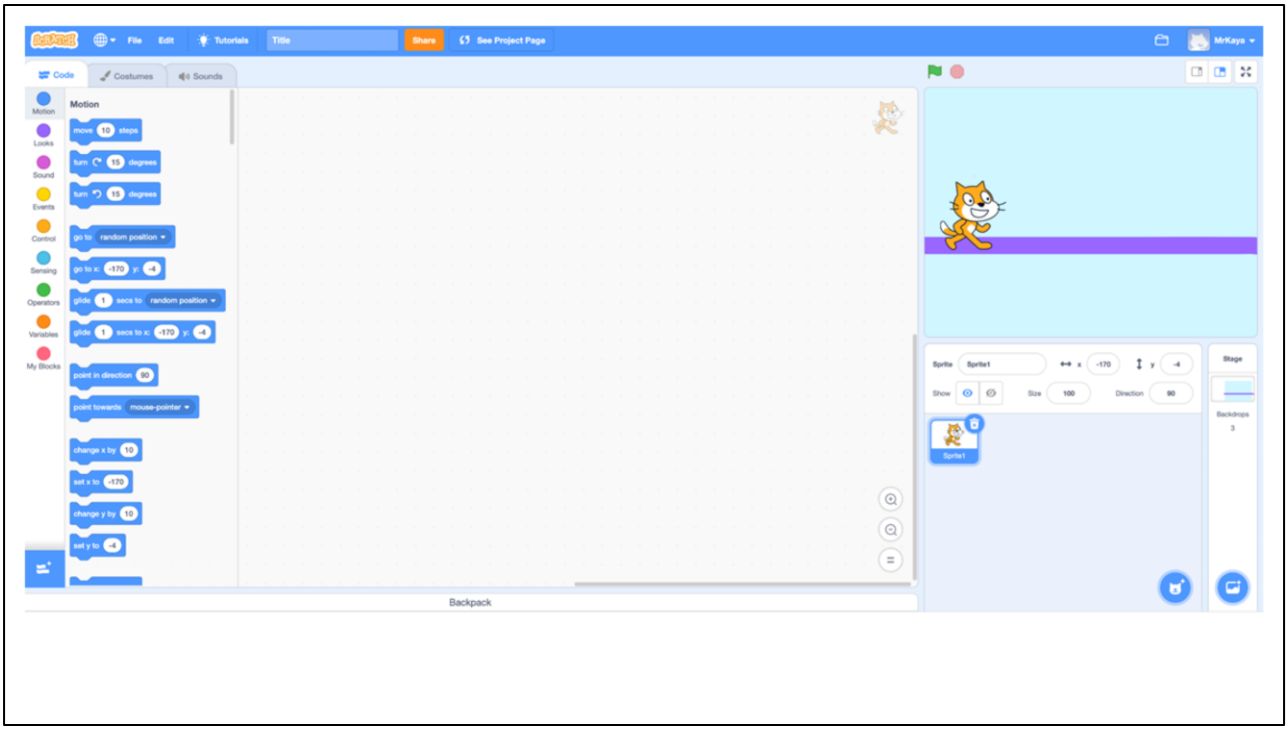
"*Has anyone seen these types of pieces anywhere before? (from warm up) These pieces are actually computer "commands." **Command**s tell a person or a computer what to do.*



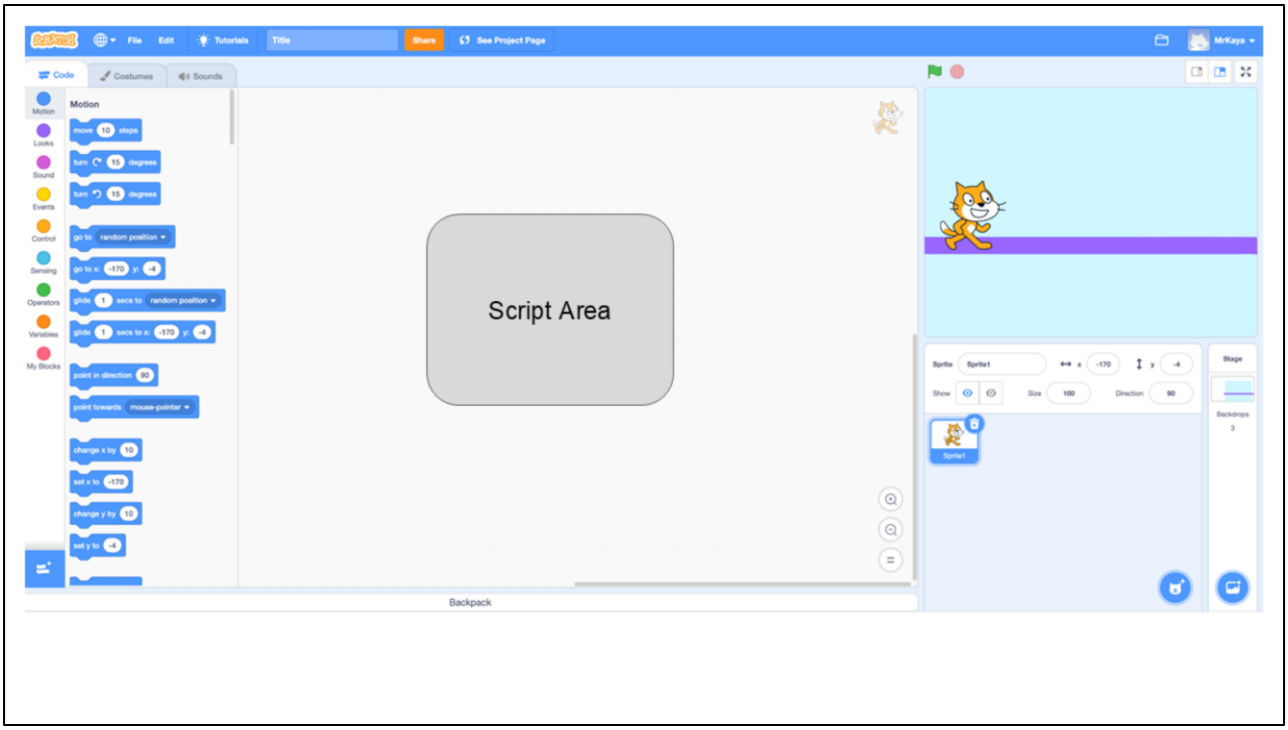
Lets look closely at these blocks again and what they say-
Click "switch,
Click “think,
Click “turn
“these are commands" written in Scratch code, which is the kind we will be working with.
We put these commands together in Scratch by snapping the together the blocks so they hook onto each other like puzzle pieces. This allows us to code multiple commands in a single set of instructions.

COMPUTER COMMANDS

For example, these Scratch commands have been put in the correct order from top to bottom you have created a sequence of instructions. This would tell the computer to say Hi for 2 seconds then turn right 90 degrees.

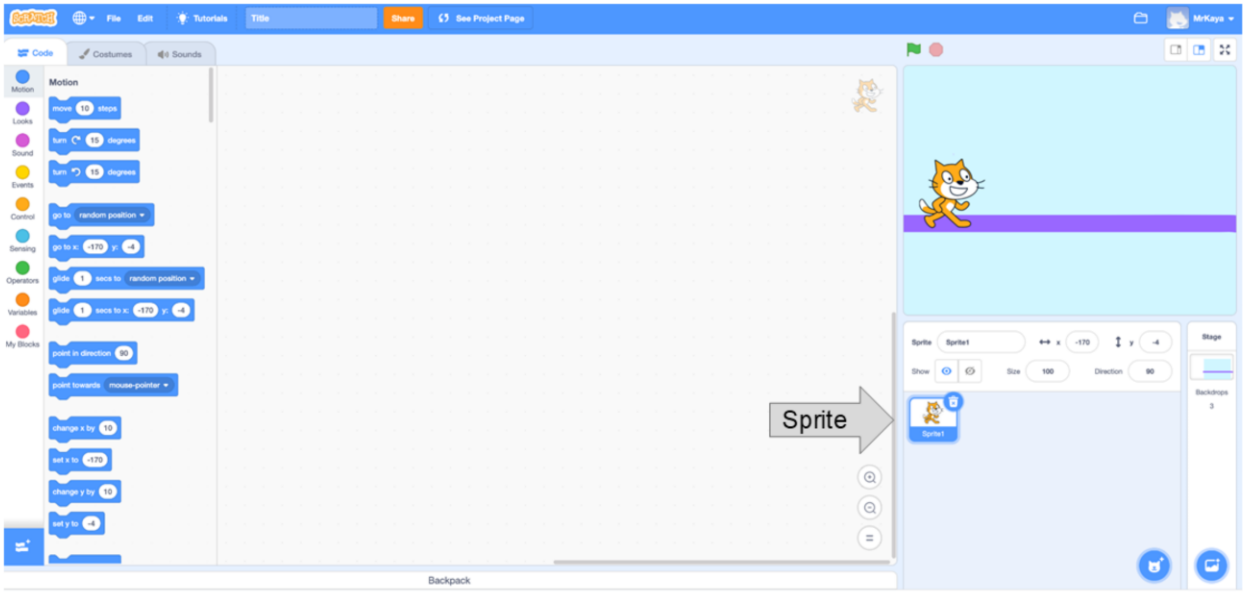


Guide Students through the main areas of the Scratch page
“When you open Scratch, your screen should look like this.”



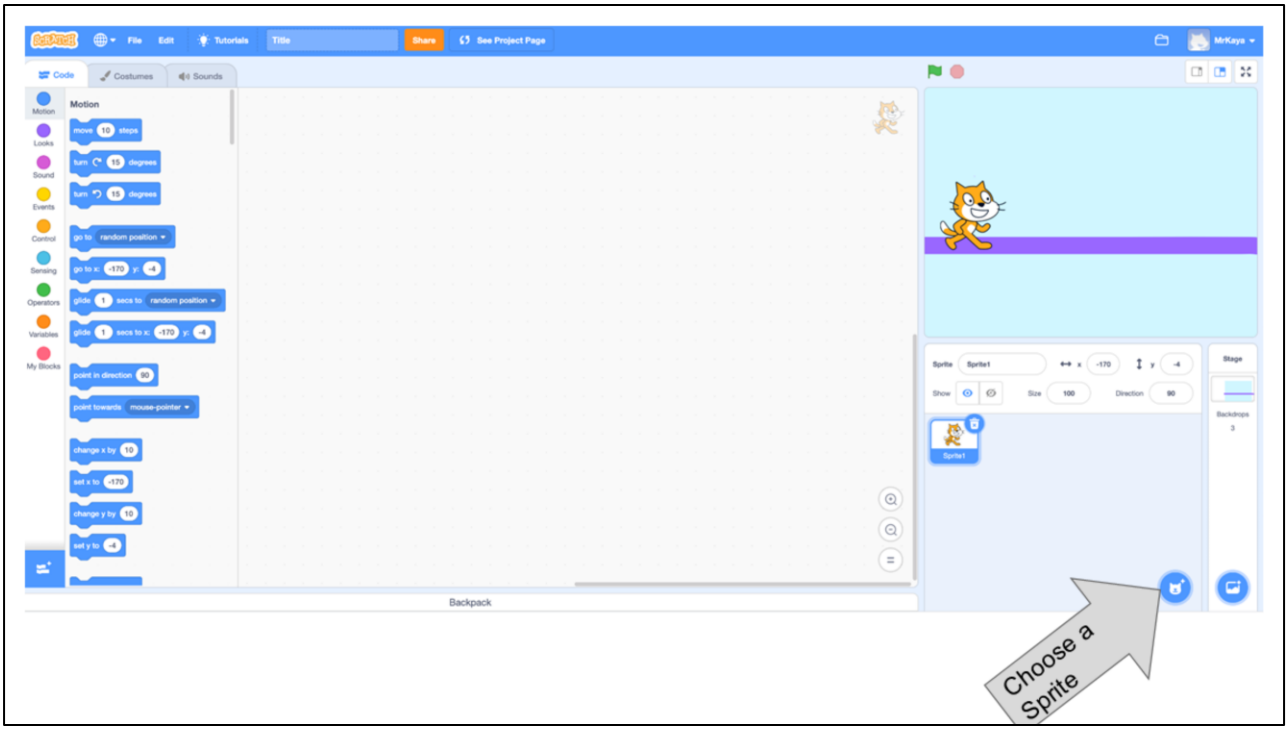
Guide Students through the main areas of the Scratch page

“This main area in the center of your screen is the script area. This is where you drag you command block and join them to build your algorithm. You will find your command blocks on the left side of the screen and drag them to the center. If you decide that you do not want a certain block, drag it back to the left. We will learn more about this in a moment.”



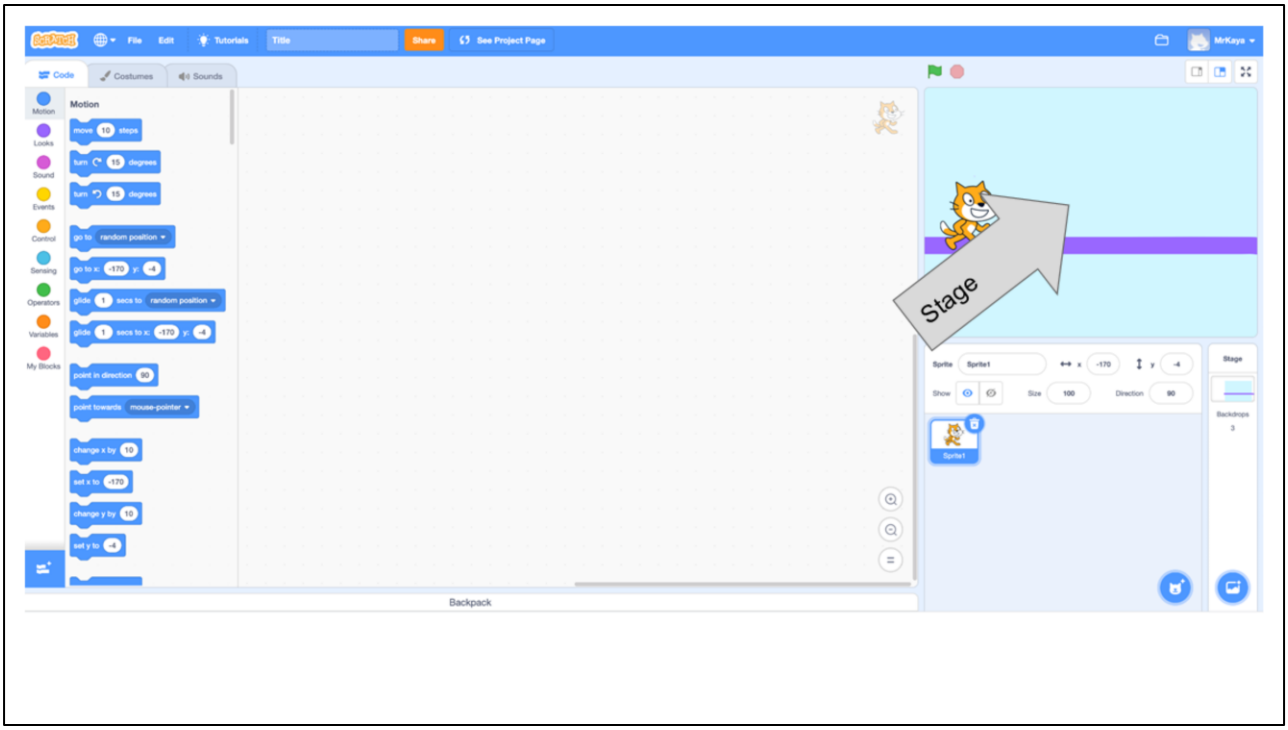
Introduce and explain to create/add Sprites and Backdrops

“In SCRATCH, an object, author, or character in a story is called a **Sprite.** The sprite you can see right now is Scratch the cat. The box here is blue because this is the sprite that is currently being coded. If this box is not blue, you will not be able to add any command blocks for your sprite.”



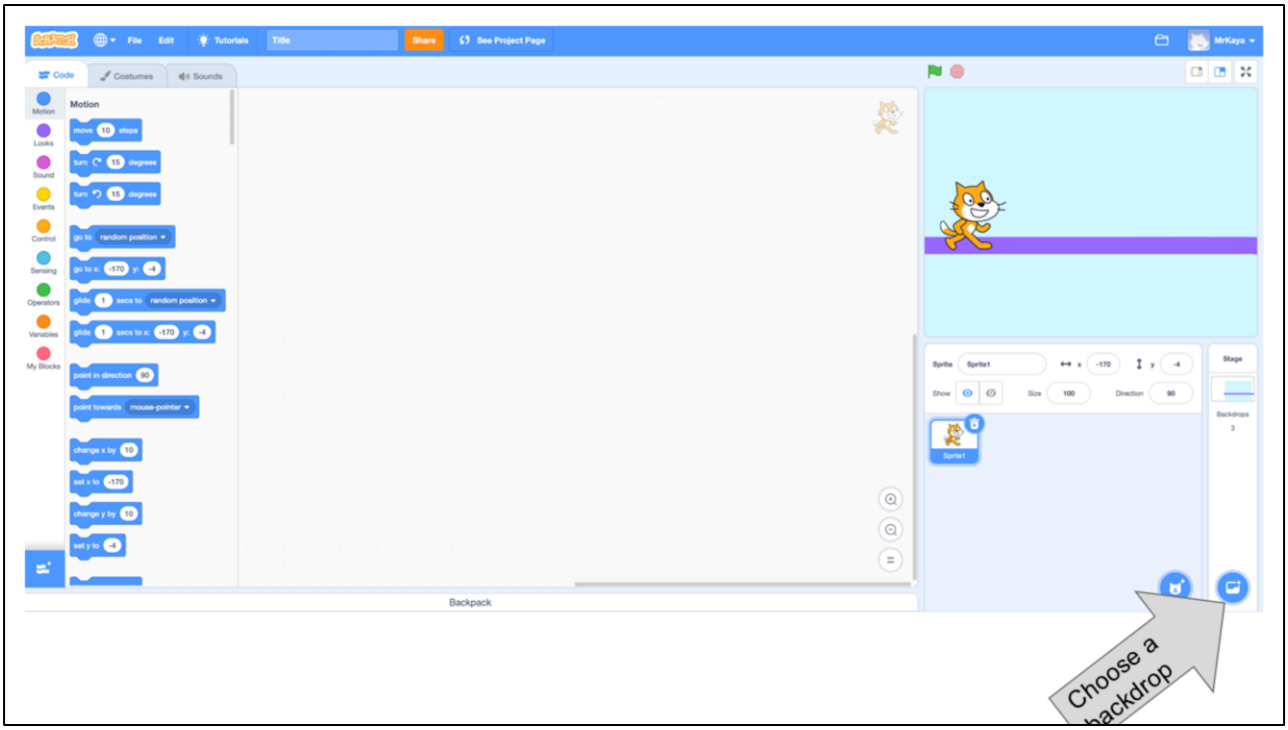
Introduce and explain to create/add Sprites and Backdrops

“If you want to add another sprite or change sprites, you can click here, the small circle with the cat image and plus sign. The new sprites you add will appear in this box. But you can only add code for the sprite that is selected and is in the blue box.”



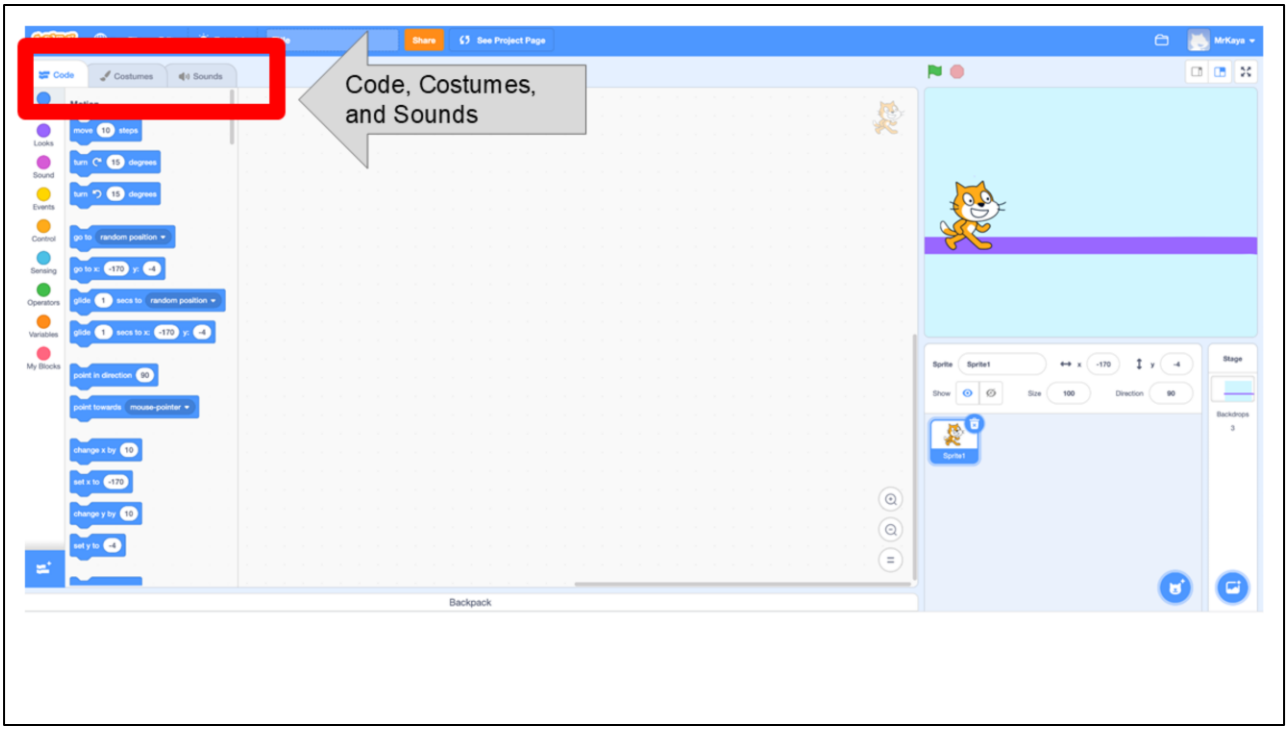
Introduce and explain to create/add Sprites and Backdrops

“You can see scratch the cat here on the stage. When you run your code, this is where you can see the action.”

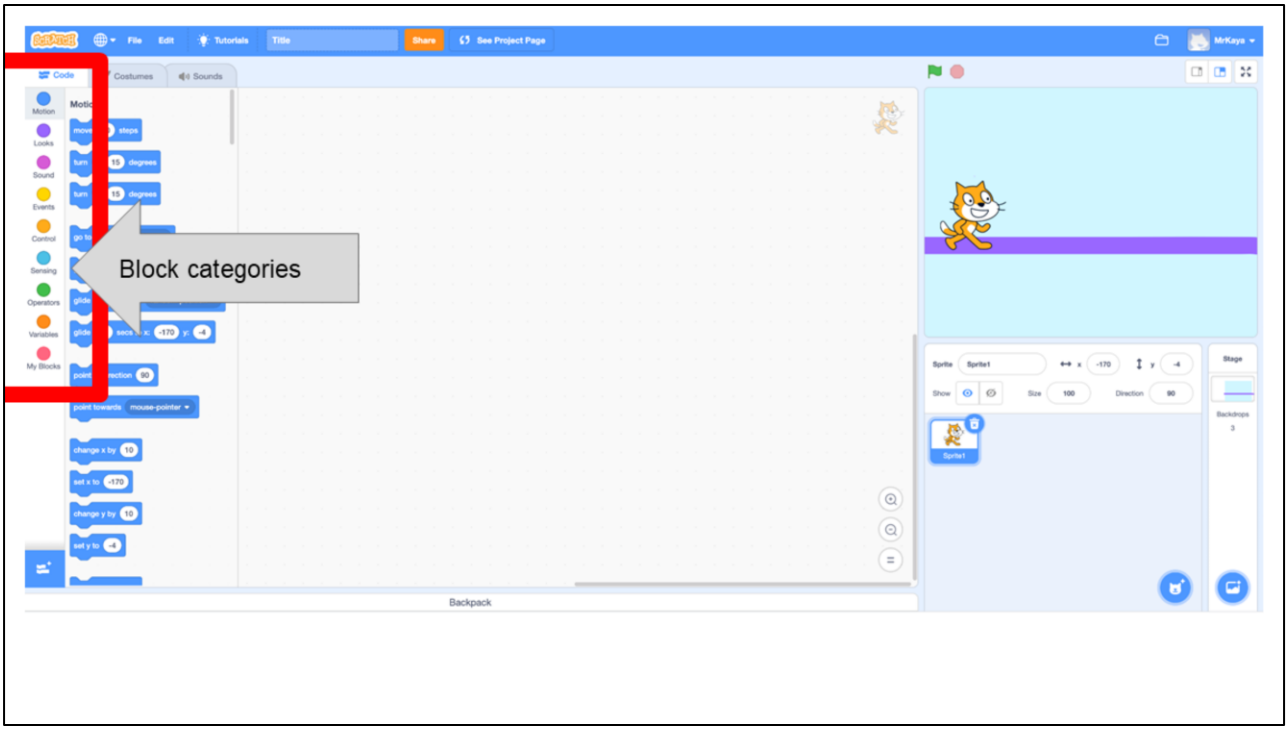


Introduce and explain to create/add Sprites and Backdrops

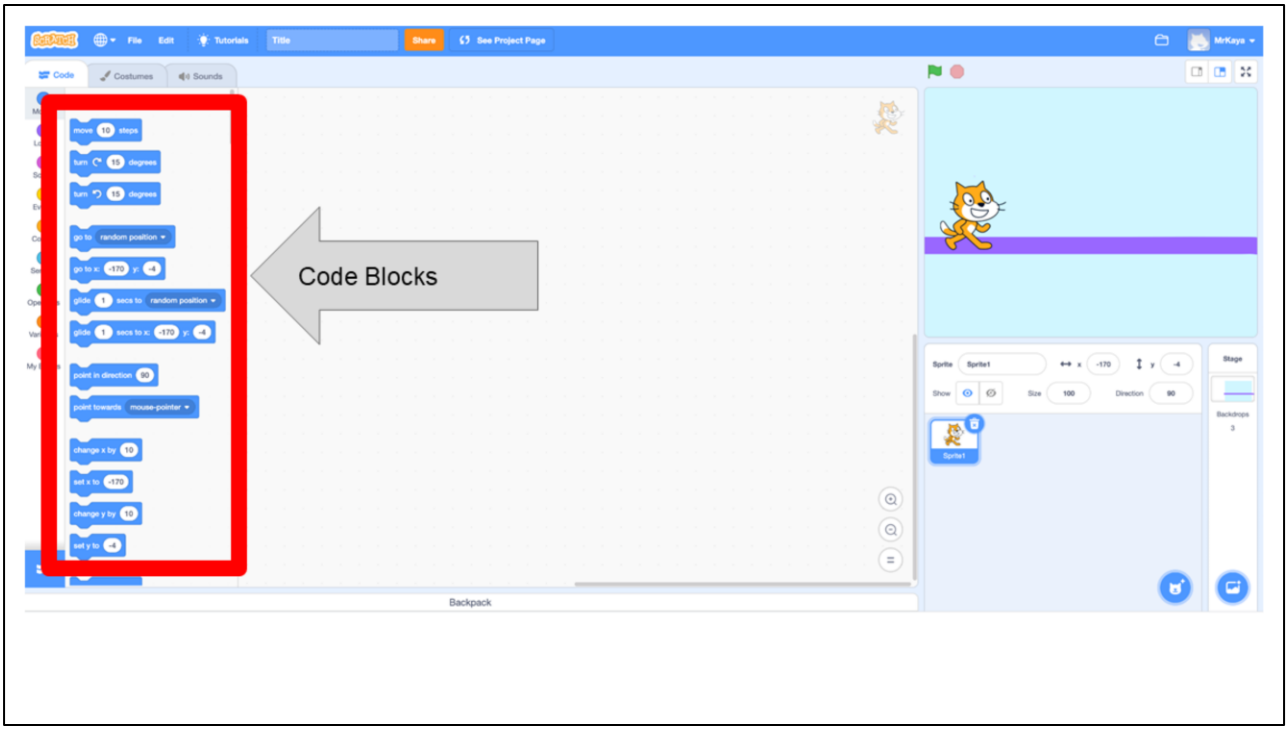
“If you want to change your background or your backdrop, as it is called in scratch, you can click here. It looks like a small picture with a plus sign.”



Guide Students through the main areas of the Scratch page
“In the upper left, you can see three different tabs. Code, Costumes, Sounds. Choose the code tab to build code from command blocks. Choose the costumes tab to change how your sprite looks. Or you can add new sounds to sprites here.”

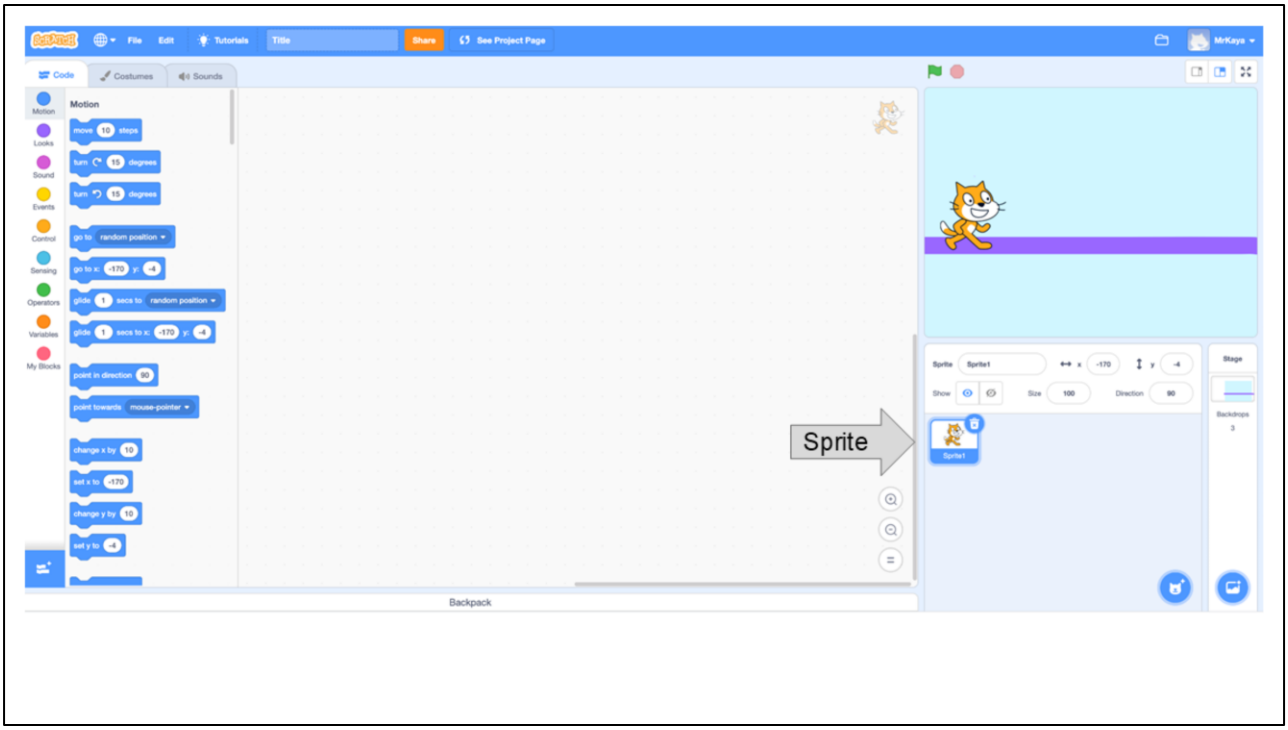


Guide Students through the main areas of the Scratch page
“Let’s look closer at the code blocks. On the far left you can see several colored dots (some also call it categories palette). These are the different types of code you might want. You can choose motion, looks, sound, events..they are all different colors to help you. You can choose just one block category.”

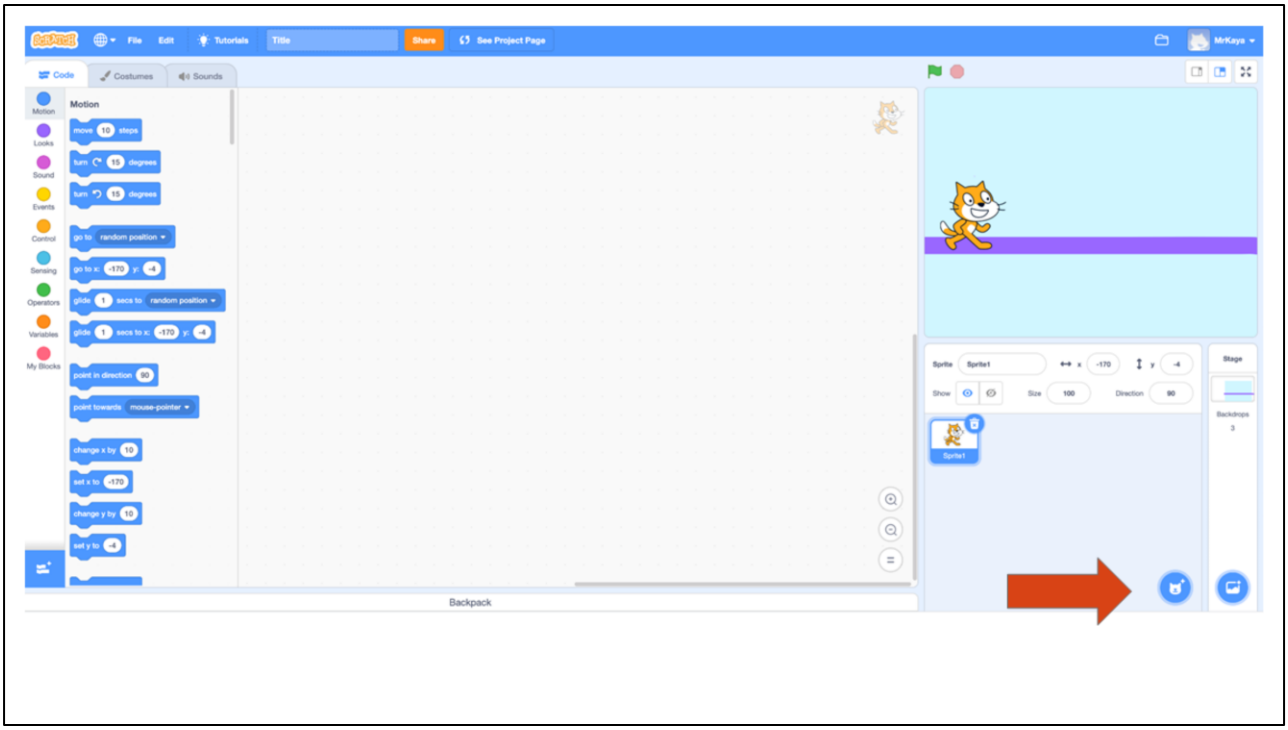


Guide Students through the main areas of the Scratch page
“Once you choose your category, the code blocks will appear here and you can find the specific command that you would like to give your sprite. Once you drag your code to the stage and click them together, you are ready to try it out.”

CHANGING SPRITES & BACKDROPS

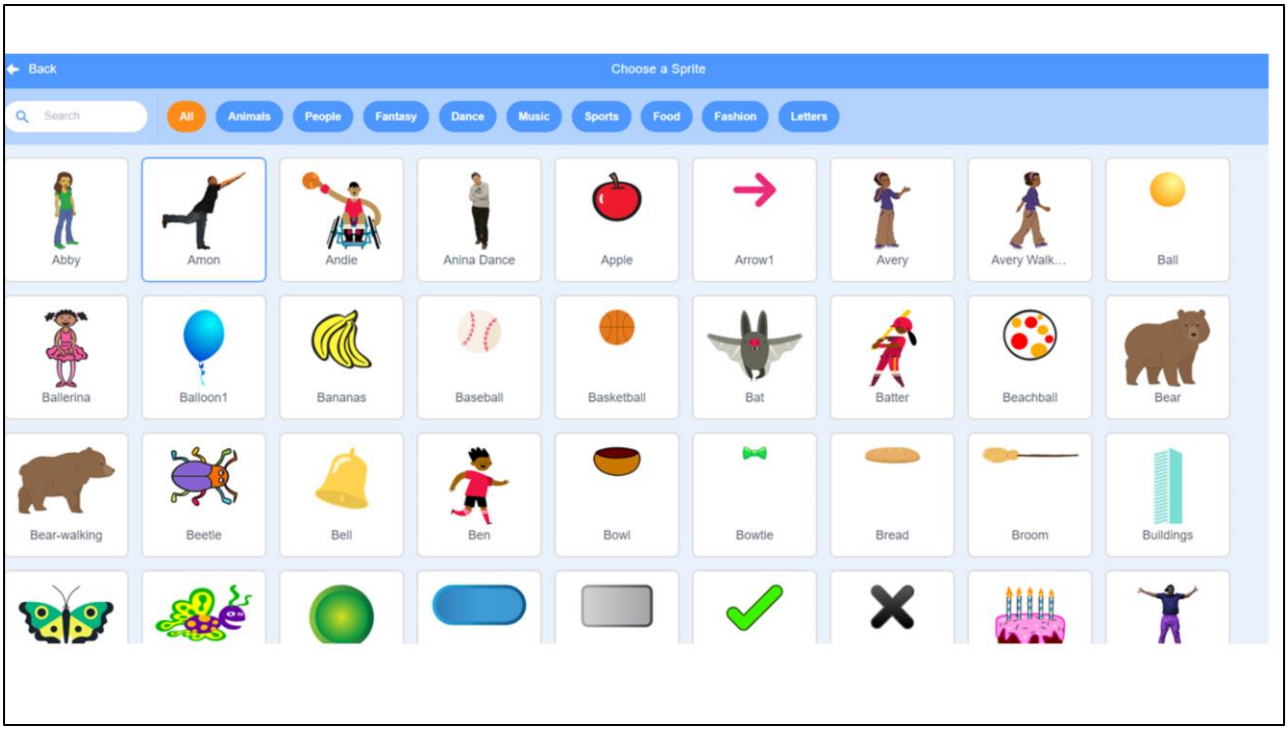


Okay, remember that in SCRATCH, an object, author, or character in a story is called a **Sprite.** The sprite you can see right now is Scratch the cat. What if we wanted to change our sprite to another animal?

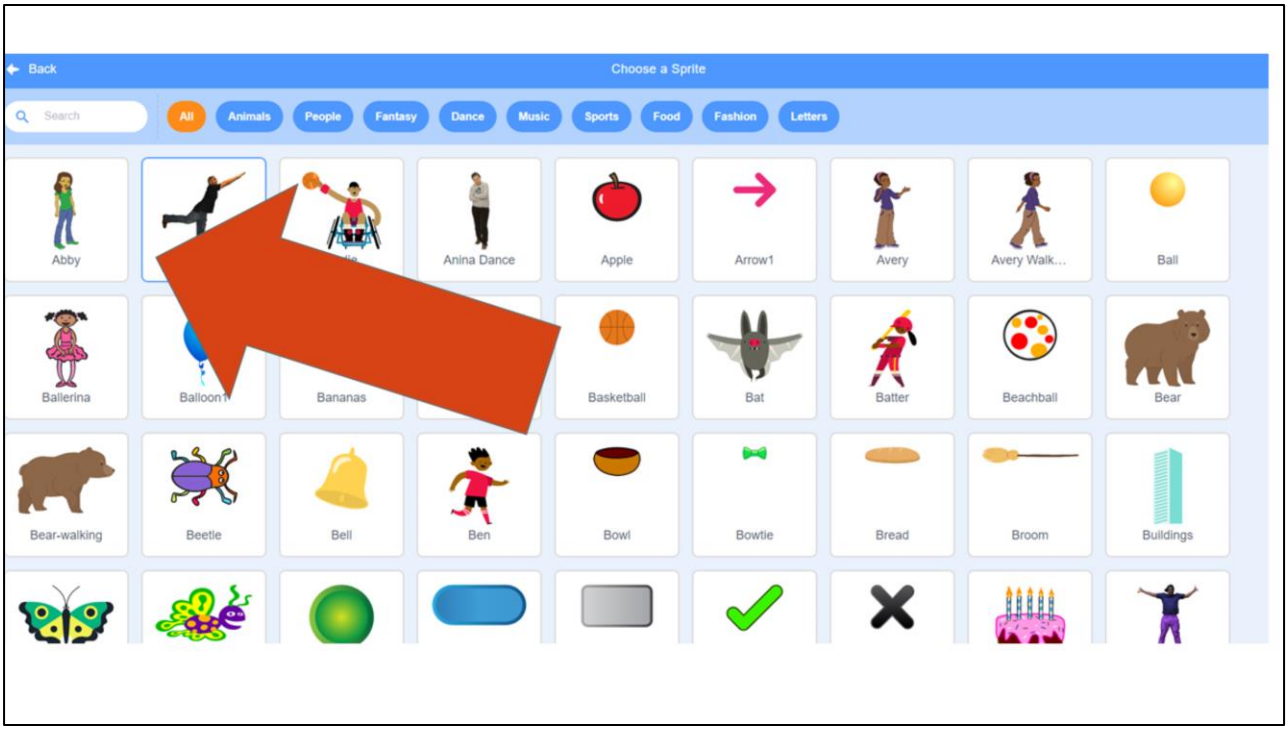


Okay, remember that in SCRATCH, an object, author, or character in a story is called a **Sprite.** The sprite you can see right now is Scratch the cat. What if we wanted to change our sprite to another animal?

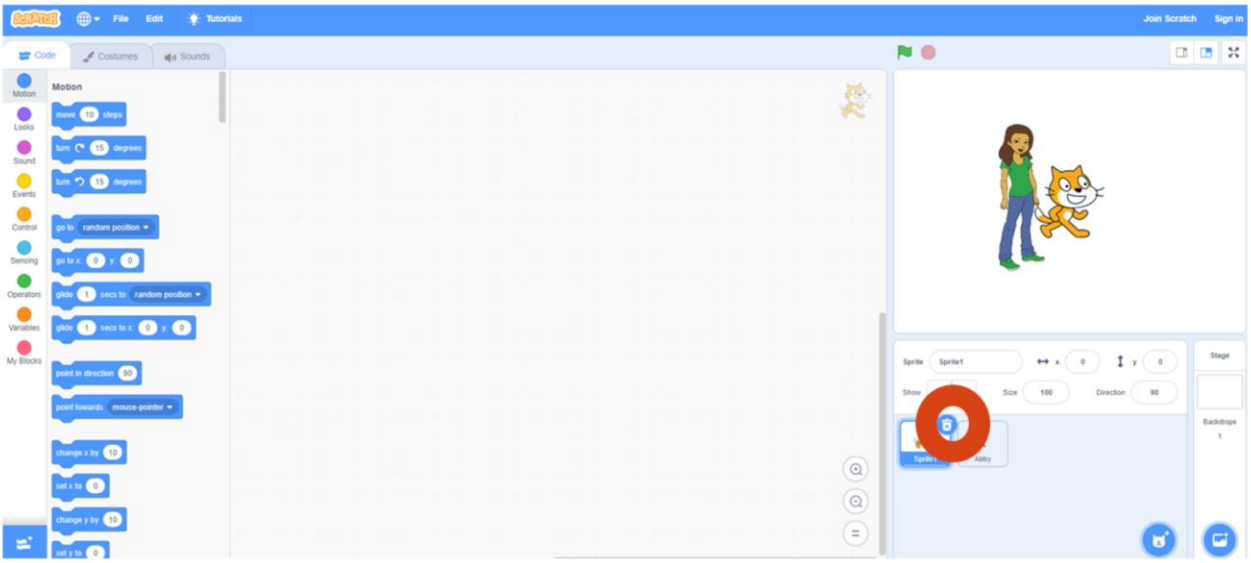
First, we would click on the sprite icon.



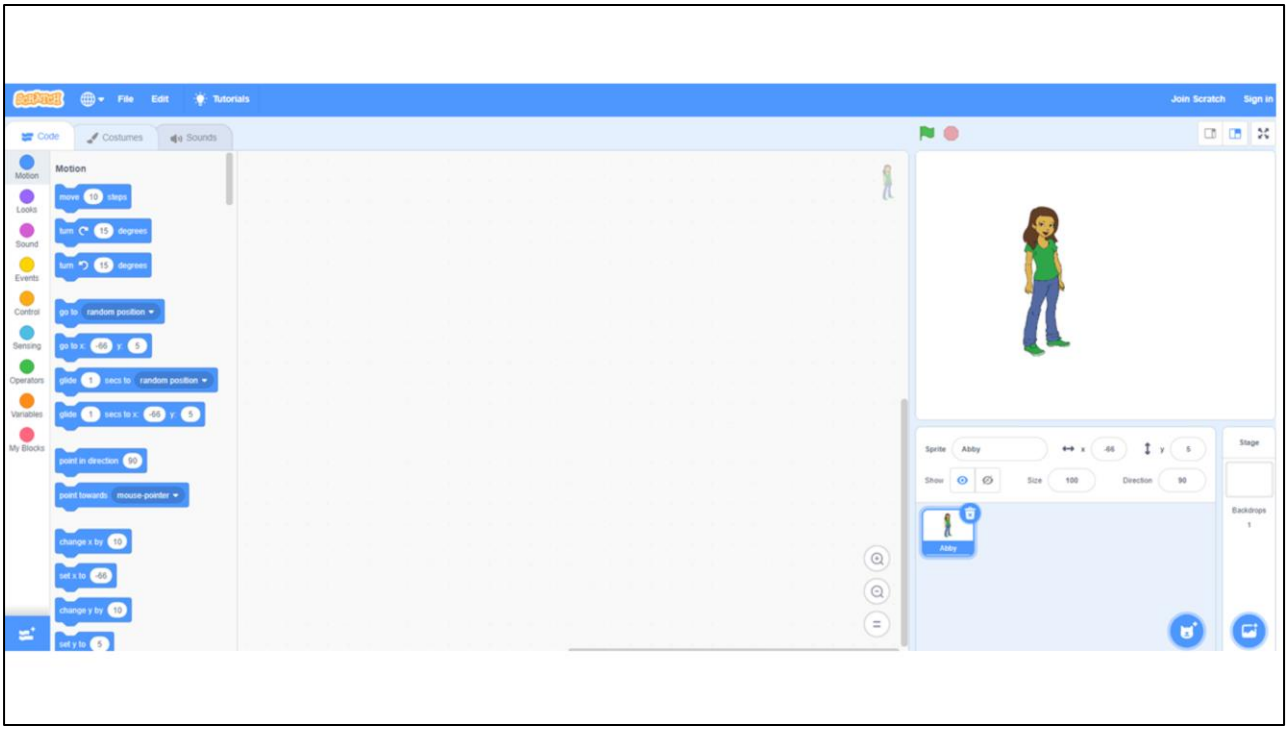
Then, we would have ALL these sprites to choose from.



We change our sprite by clicking the one we want.



But don’t forget to delete the other sprite! So you have only the one you want.



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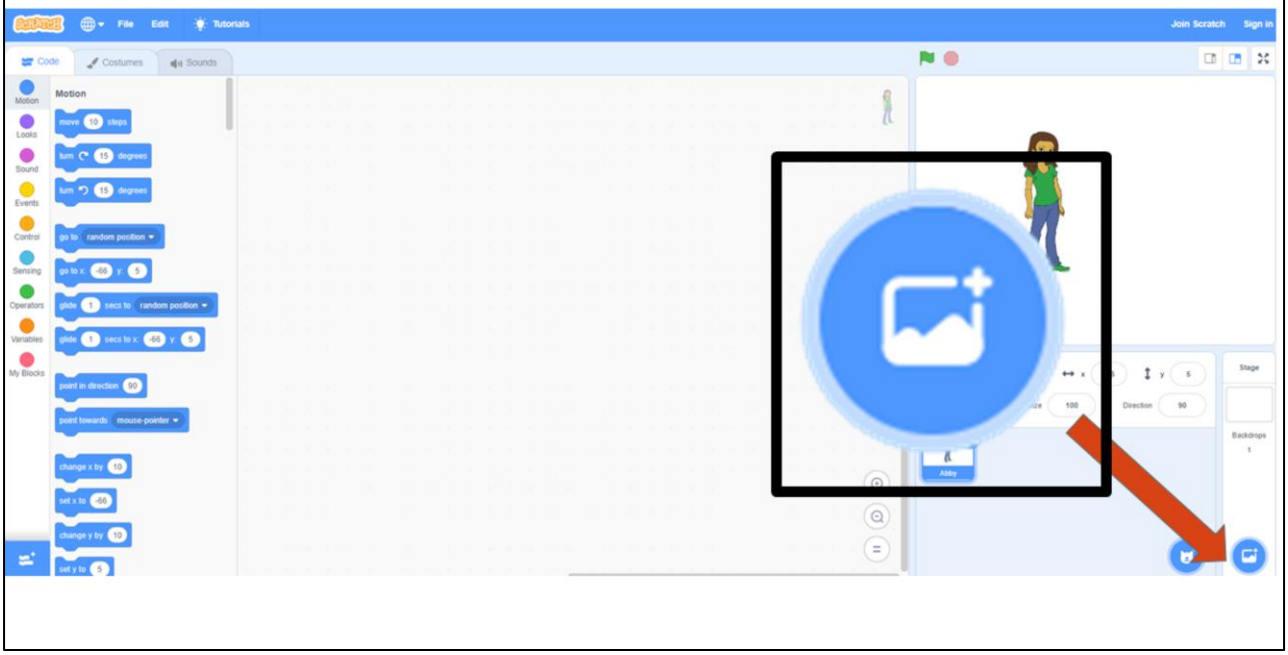
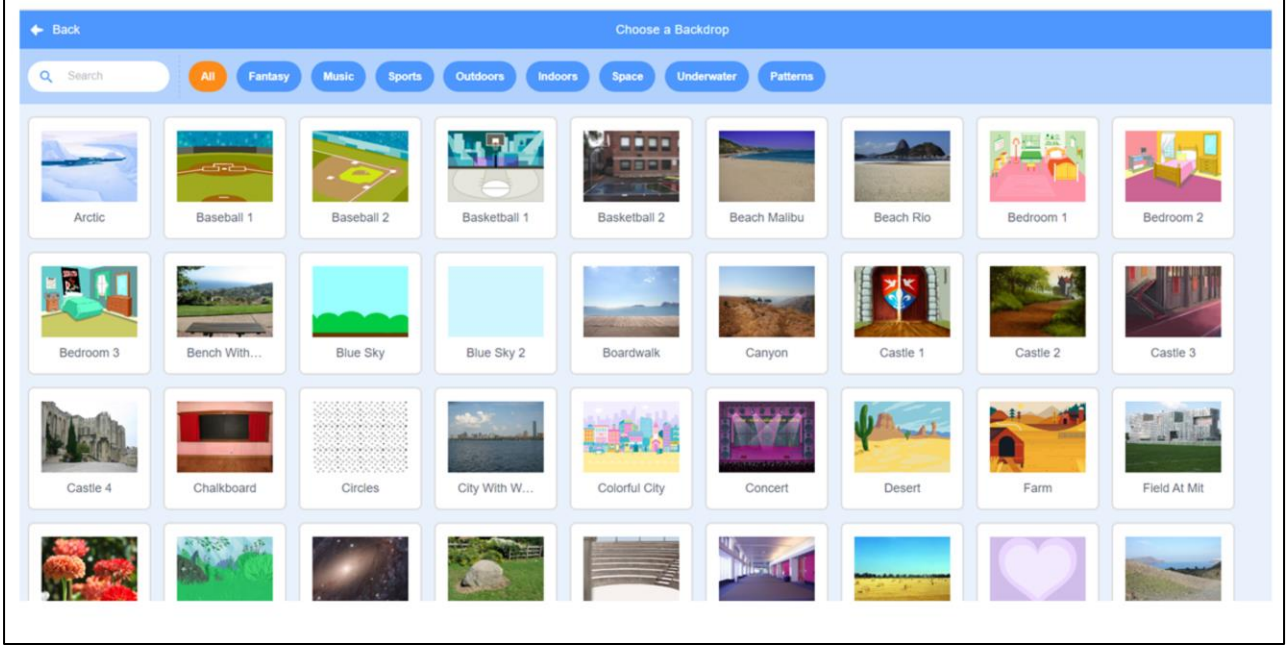


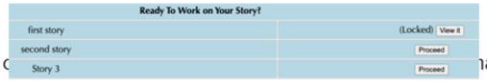
To add your own backdrop, follow the same steps but click this icon instead. You'll see lots of options to choose from appear.



To add your own backdrop, follow the same steps but click this icon instead. You'll see lots of options to choose from appear.

SHARING YOUR .SB3 FILE FROM CS FIRST TO COCO

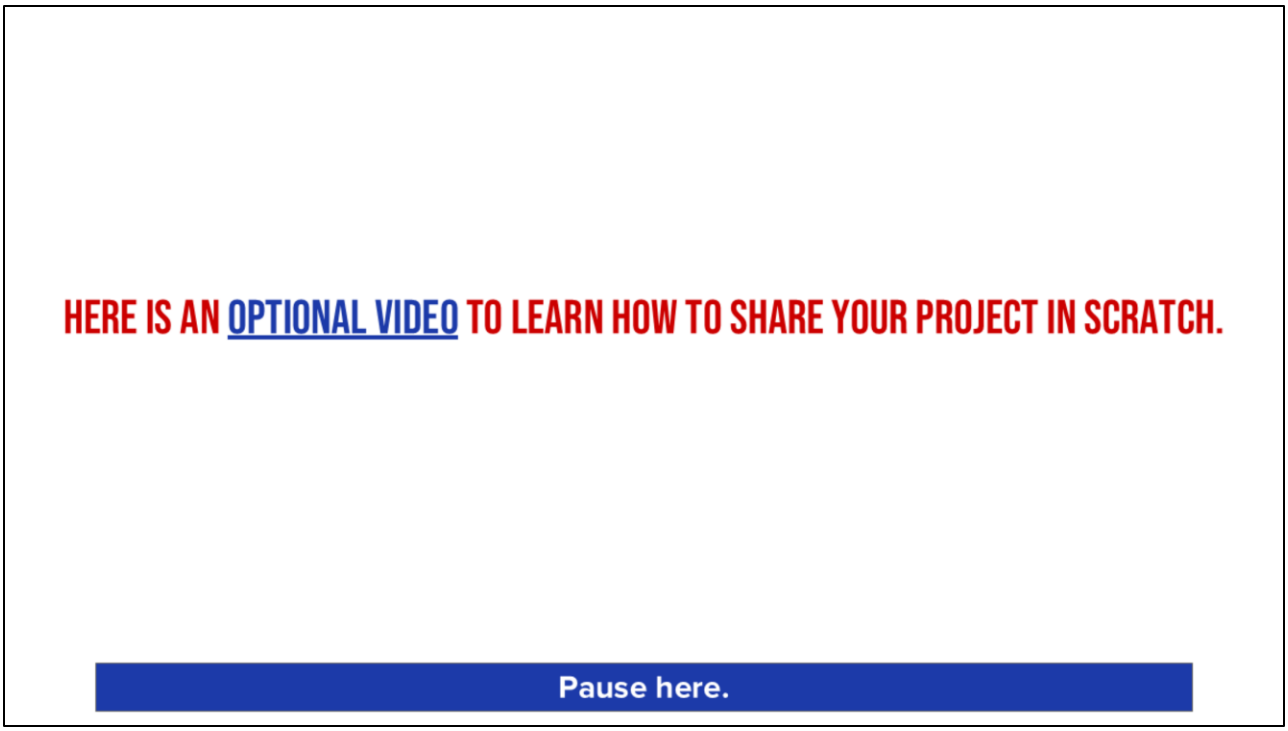
1. Create the file in CS First
2. In the Scratch editor, find the word “File” in the top-left corner.
3. Click on “File” menu and you’ll see some choices pop down.
1. Choose “Save to your computer.” This will download your Scratch project.
1. Look in your “Downloads” folder. That’s where your saved project might be.
1. Go to the CoCo website and log in to your account. https://wego.gmu.edu/scratchgo/login.php
1. Click proceed on the correct story in CoCo.



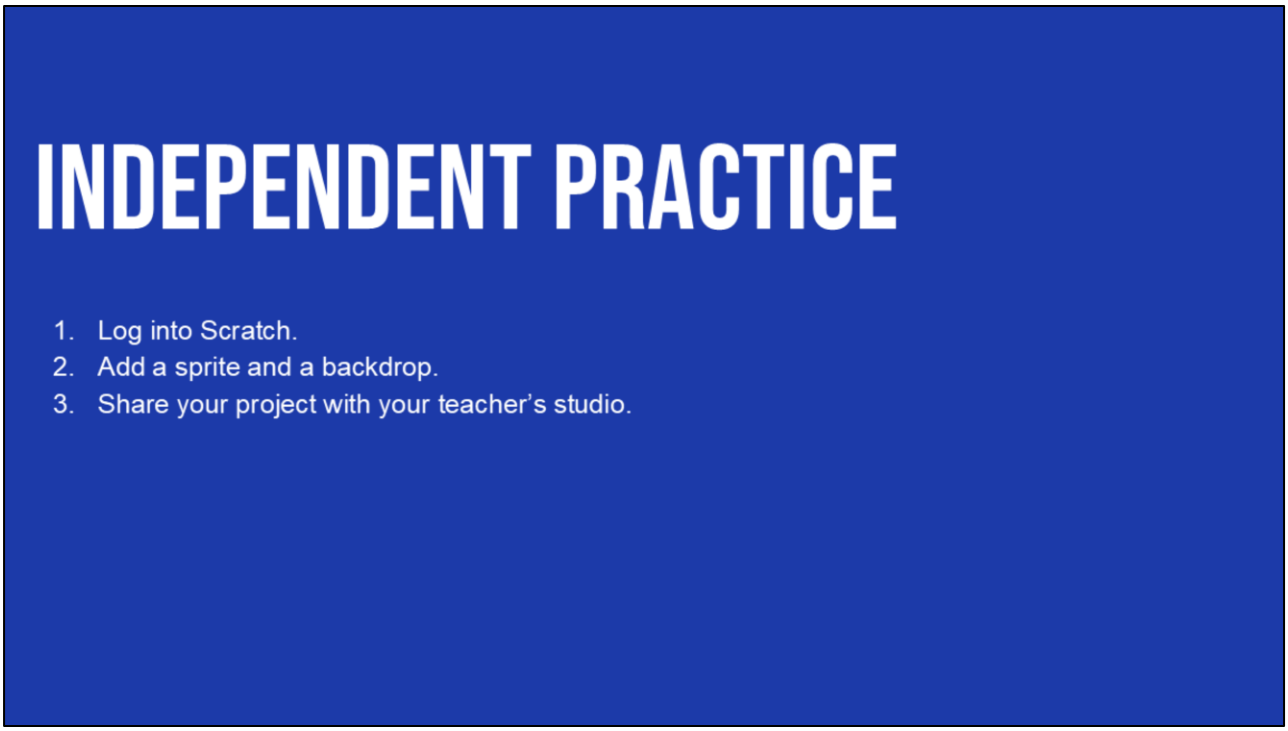
1. Navigate to the section of CoCo where you c ax).

1. Click “Save”.

Model how students can share Scratch creations to their teacher’s studio



Video modeling how students can share Scratch creations to their teacher's studio
https://www.dropbox.com/scl/fi/sfh3ok242fwhbvscjpzf4/Student-How-To-Add-A-Project-To-A-Studio-In-Scratch.mp4?rlkey=g88zpml2sg0bbnz7upkysopfd&st=0lg4mz6x&dl=0



1. Students will practice logging into Scratch and adding a Sprite and Backdrop
2. Students should also practice sharing their Scratch project with their teacher's studio

Teacher should monitor and check for correct sequencing during the independent practice activity.

ANYONE CAN BE A COMPUTER SCIENTIST!

Share the “Careers in Tech” Video and remind students that anyone can be a computer scientist!