CREATIVE COMPUTING

Harvard Graduate School of Education
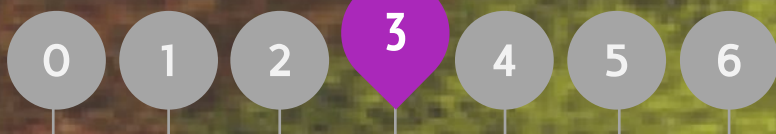
UNIT 3 STORIES

WHAT'S INCLUDED

CHARACTERS
CONVERSATIONS
SCENES
DEBUG IT!
CREATURE CONSTRUCTION
PASS IT ON

UNIT 3 OVERVIEW

THE "BIG IDEA"

In the introduction to his doctoral dissertation exploring remix culture, Andres Monroy-Hernandez (the lead designer of the initial version of the Scratch online community) included three quotes:
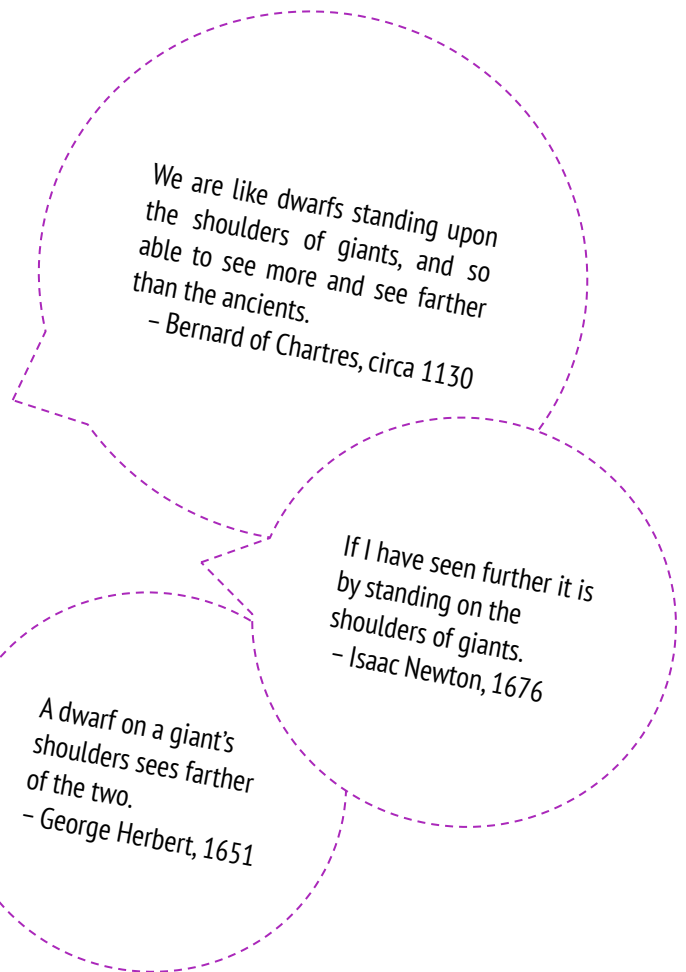
Building on other people's work has been a longstanding practice in programming, and has only been amplified by network technologies that provide access to a wide range of other people's work. An important goal of creative computing is to support connections between learners through reusing and remixing. The Scratch authoring environment and online community can support young designers in this key computational practice by helping them find ideas and code to build upon, enabling them to create more complex projects than they could have created on their own.

The activities in this unit offer initial ideas and strategies for cultivating a culture that supports reusing and remixing. How can you further support sharing and connecting?

We are like dwarfs standing upon the shoulders of giants, and so able to see more and see farther than the ancients.
– Bernard of Chartres, circa 1130

If I have seen further it is by standing on the shoulders of giants.
– Isaac Newton, 1676

A dwarf on a giant's shoulders sees farther of the two.
– George Herbert, 1651

LEARNING OBJECTIVES

Students will:
+ gain familiarity in and build understandings of the benefits of reusing and remixing while designing
+ develop greater fluency with computational concepts (events and parallelism) and practices (experimenting and iterating, testing and debugging, reusing and remixing)
+ explore computational creation within the genre of stories by designing collaborative narratives

KEY WORDS, CONCEPTS, & PRACTICES

+ reusing and remixing
+ make a block
+ backpack
+ stage
+ pass-it-on story
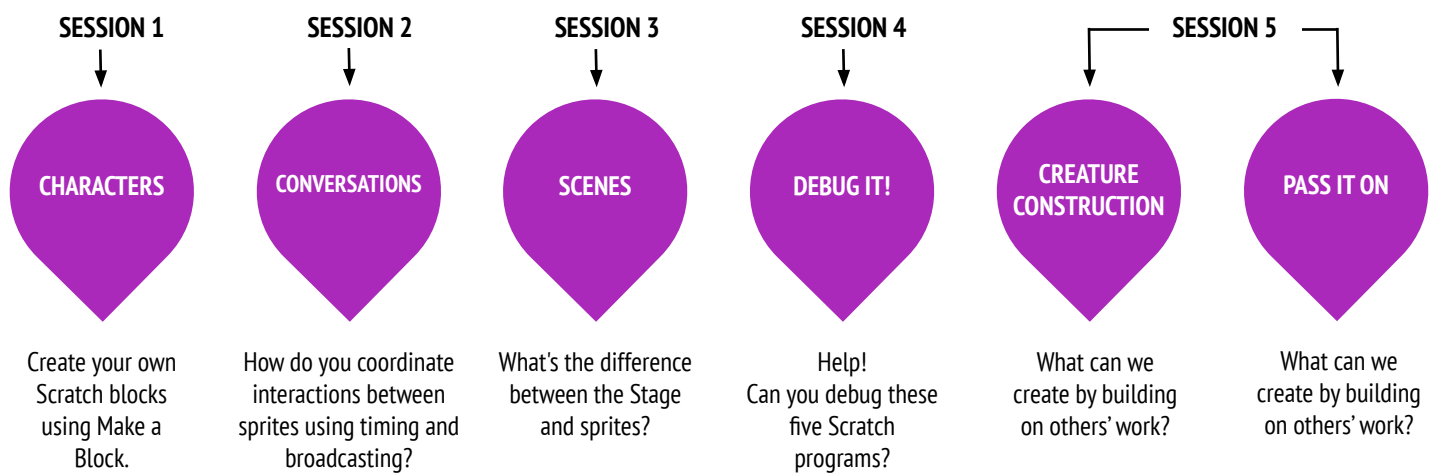+ pair programming
+ scratch screening
+ design demo

NOTES

+ Reusing and remixing support the development of critical code-reading capacities and provoke important questions about ownership and authorship. Consider different strategies for how you might facilitate, discuss, and assess cooperative and collaborative work.

CHOOSE YOUR OWN ADVENTURE

This unit focuses on helping students develop their storytelling and remixing abilities through a variety of hands-on and off-computer design activities, providing opportunities for students to work collaboratively and build on the creative work of others. Building on initial experiences from Unit 2, the activities in this unit are designed to help students develop deeper fluency in the computational concepts of events and parallelism and the computational practices of experimenting and iterating and reusing and remixing. Each capacity-building activity is designed to help students build up storytelling projects by discovering new blocks and methods for programming interactions between sprites and backdrops, culminating in a Pass It On project.

POSSIBLE PATH

SESSION 1	SESSION 2	SESSION 3	SESSION 4	SESSION 5	
CHARACTERS	**CONVERSATIONS**	**SCENES**	**DEBUG IT!**	**CREATURE CONSTRUCTION**	**PASS IT ON**
Create your own Scratch blocks using Make a Block.	How do you coordinate interactions between sprites using timing and broadcasting?	What's the difference between the Stage and sprites?	Help! Can you debug these five Scratch programs?	What can we create by building on others' work?	What can we create by building on others' work?

CHARACTERS

SUGGESTED TIME
30–45 MINUTES

OBJECTIVES
By completing this activity, students will:
+ experiment with defining behaviors for characters using Scratch's Make a Block feature
+ gain more familiarity with the computational concepts of events and parallelism and the practice of experimenting and iterating

ACTIVITY DESCRIPTION

❑ Optionally, show example projects from the Characters studio and have the Characters handout available to guide students.

❑ Give students time to create their own Scratch blocks using the Make a Block feature found in the More Blocks category. Help them design two sprites or "characters" that each have two behaviors. Optionally, conduct a walkthrough of the Make a Block feature together as a class.

❑ Allow students to share their characters and behaviors with one another. We suggest the design demo activity: invite a few students to present their work to the class and demonstrate how they implemented the Make a Block feature. Optionally, have students add their projects to the Characters studio or a separate class studio.

❑ Ask students to think back on the design process by responding to the reflection prompts in their design journals or in a group discussion.

RESOURCES

❑ Characters handout
❑ Characters studio
http://scratch.mit.edu/studios/475545

REFLECTION PROMPTS

+ How would you explain Make a Block to someone else?
+ When might you use Make a Block?

REVIEWING STUDENT WORK

+ Do projects include two sprites that each have two behaviors using the Make a Block feature?
+ Can students explain how to use the Make a Block feature to each other and to you?

NOTES

+ If students are struggling with figuring out how to use the Make a Block feature, invite them to explore how others implemented the feature by investigating the code of projects in the Characters studio.
+ Learn more about the Make a Block feature in this video tutorial: http://bit.ly/makeablock

NOTES TO SELF

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CHARACTERS

PRESS S FOR A SMALL JUMP
PRESS B FOR A BIG JUMP
PRESS A TO ASK HOW HIGH TO JUMP

> **DO YOU WANT TO CREATE YOUR OWN SCRATCH BLOCKS?**

Experiment with the Make a Block feature in Scratch! In this project, you will create your own blocks that define two behaviors for two different characters.

START HERE

- ❑ Choose from the library, paint, or upload two sprite characters.

- ❑ Click on the Make a Block button in the My Blocks category to create and name your block.

- ❑ Add blocks under the Define block to control what your custom block will do.

- ❑ Experiment with using your block to program your characters' behaviors.

- ❑ Repeat!
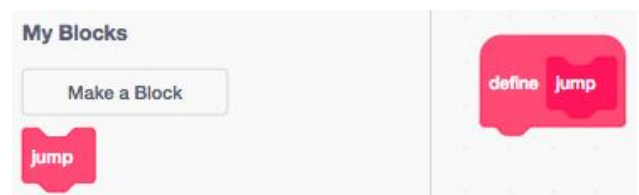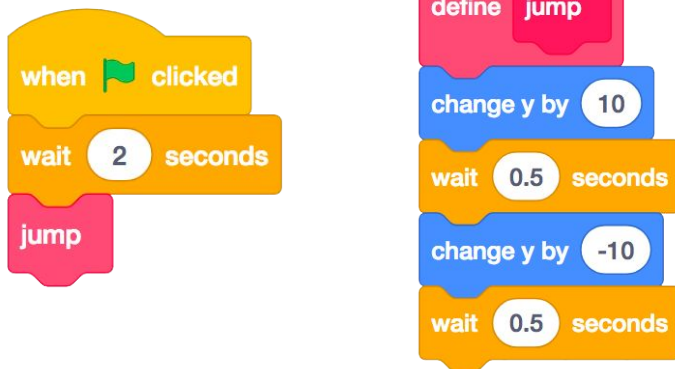
THINGS TO TRY

- ❑ Feeling stuck? That's okay! Check out this video to get started with the Make a Block feature: http://bit.ly/makeablock
- ❑ Explore other projects in the Characters Studio to see what new blocks others have created.
- ❑ Sometimes there can be more than one way of defining the same behavior. Experiment with different block combinations to try out multiple options and outcomes.

FINISHED?

- + Add your project to the Characters Studio: http://scratch.mit.edu/studios/475545
- + Challenge yourself to do more! Experiment with adding different characters and behaviors using the Make a Block feature.
- + Help a neighbor!

CONVERSATIONS

SUGGESTED TIME
30–45 MINUTES

OBJECTIVES

By completing this activity, students will:

+ explore two different strategies for synchronizing interactions between sprites (timing and broadcasting) by remixing a joke project
+ develop greater familiarity with the computational concept of events and parallelism and the practice of reusing and remixing

ACTIVITY DESCRIPTION

❑ Optionally, explore the Penguin Joke starter project as a group and have the Conversations handout available to guide students.

❑ Invite students to see inside the Penguin Joke starter project to observe how the conversation is animated using wait blocks. Have students use the remix function and redesign the Penguin Joke project to coordinate the conversation using the broadcast, broadcast and wait, and when I receive blocks.

❑ Encourage students to share their joke projects with one another. We suggest the design demo activity: invite a few students to present their work to the class and demonstrate how they implemented broadcast. Optionally, have students add their projects to the Conversations studio or a class studio.

❑ Ask students to think back on the design process by responding to the reflection prompts in their design journals or in a group discussion.

RESOURCES

❑ Conversations handout
❑ Penguin Joke starter project
http://scratch.mit.edu/projects/10015800
❑ Conversations studio
http://scratch.mit.edu/studios/475547

REFLECTION PROMPTS

+ How would you describe broadcast to someone else?
+ When would you use timing in a project? When would you use broadcasting?

REVIEWING STUDENT WORK

+ Do projects use the broadcast and when I receive blocks?
+ Can students explain how to use the broadcast, broadcast and wait, and when I receive blocks?

NOTES

+ If students are having trouble understanding how to use the broadcast and when I receive block pair, invite them to explore the code of example projects in the Broadcast Examples studio:
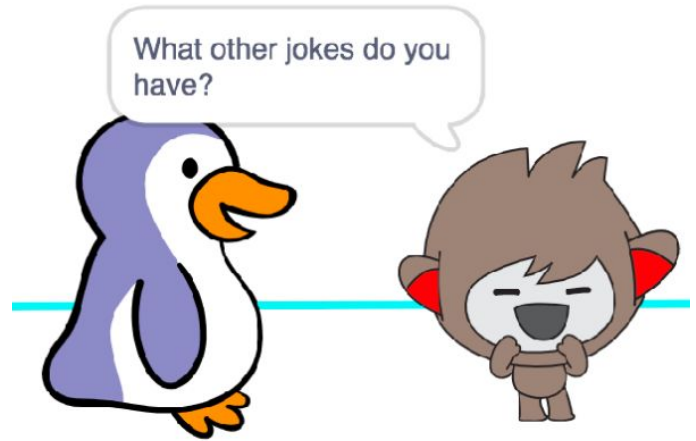http://scratch.mit.edu/studios/202853

NOTES TO SELF

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CONVERSATIONS

WHAT ARE DIFFERENT WAYS TO COORDINATE INTERACTIONS BETWEEN SPRITES?

In this activity, you'll explore different ways to program sprites to have conversations! Experiment with timing and explore using broadcast by remixing a joke project.

What other jokes do you have?

START HERE

❑ Look inside the Penguin Jokes project:
http://scratch.mit.edu/projects/10015800

❑ Investigate the code to see how the wait and say blocks are used to coordinate the conversation.

❑ Remix the project to use the broadcast and when I receive blocks instead of wait blocks.
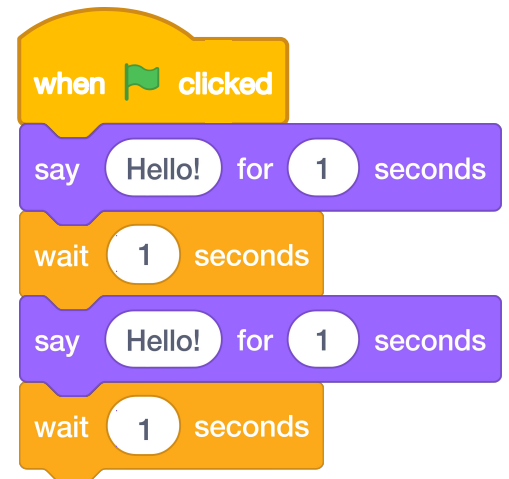
FEELING STUCK?

THAT'S OKAY! TRY THESE THINGS...

❑ Brainstorm ideas with a neighbor! Generate a list of possible solutions and test them out together.

❑ Try using the broadcast and when I receive blocks in different parts of your project.

❑ Explore projects in the Conversations studio to get inspiration for different ways to coordinate conversations between sprites.

FINISHED?

+ Add your project to the Conversations studio:
http://scratch.mit.edu/studios/475547

+ Challenge yourself to do more! Add other characters and conversations.

+ Share your project with a neighbor and walk them through your process of exploration and design.

+ Help a neighbor!

SCENES

SUGGESTED TIME
30–45 MINUTES

OBJECTIVES

By completing this activity, students will:

+ be able to create a project that experiments with changing backdrops, like a story with multiple scenes or a slideshow
+ gain more familiarity with the computational concepts of events and parallelism and the practice of experimenting and iterating

ACTIVITY DESCRIPTION

- ❑ Optionally, show example projects from the Scenes studio and have the Scenes handout available to guide students.

- ❑ Give students time to develop a project that includes multiple scene changes using different backdrops, such as in a slideshow. Challenge students to explore and manipulate scripts in the Stage to initiate backdrop changes.

- ❑ Allow students to share their projects with one another. We suggest the design demo activity: invite a few students to present their work to the class and demonstrate how they implemented switching backdrops. Optionally, have students add their projects to the Scenes studio or a class studio.

- ❑ Ask students to think back on the design process by responding to the reflection prompts in their design journals or in a group discussion.

RESOURCES

- ❑ Scenes handout
- ❑ Scenes studio
  http://scratch.mit.edu/studios/475550

REFLECTION PROMPTS

+ What does the Stage have in common with sprites?
+ How is the Stage different from sprites?
+ How do you initiate a sprite's actions in a scene?
+ What other types of projects (beyond animations) use scene changes?

REVIEWING STUDENT WORK

+ Do projects successfully coordinate multiple scenes using changing backdrops?

NOTES

+ If students are having trouble figuring out how to switch backdrops, encourage them to tinker with blocks under the Looks category, especially the switch backdrop to, switch backdrop to and wait, and next backdrop blocks.

## NOTES TO SELF

- ❑ _____
- ❑ _____
- ❑ _____
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SCENES

In this activity, you will create a project that experiments with backdrops, like a story with multiple scenes or a slideshow.

START HERE

- ❑ Choose from the library, paint, or upload multiple backdrops into your project.
- ❑ Experiment with blocks from the Looks and Events categories to initiate switching backdrops.
- ❑ Add scripts to the stage and sprites to coordinate what happens when the backdrop changes in your project!
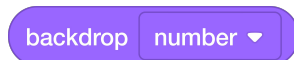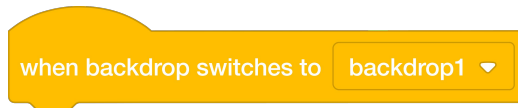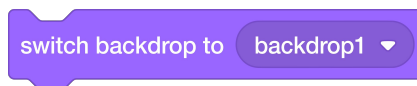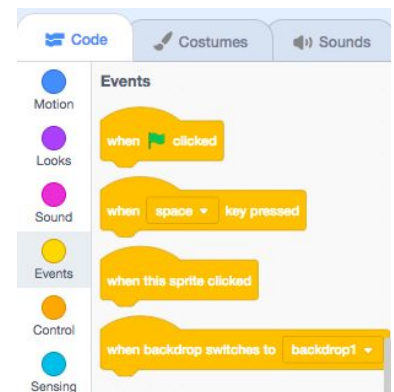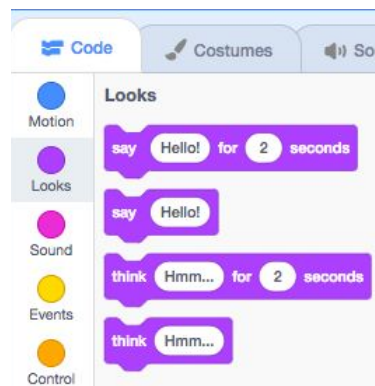
THINGS TO TRY

- ❑ Look for blocks under the sprites and the stage related to backdrop and test them out to see what they do!
- ❑ Need more inspiration? Explore the Scratch online community to discover projects that use multiple backdrops.

FINISHED?

- + Add your project to the Scenes Studio: http://scratch.mit.edu/studios/475550
- + Challenge yourself to do more! Add more backdrop changes to your project.
- + Help a neighbor!
- + Return to one of your previous projects or find a project you are inspired by and remix it by adding switching backdrops.