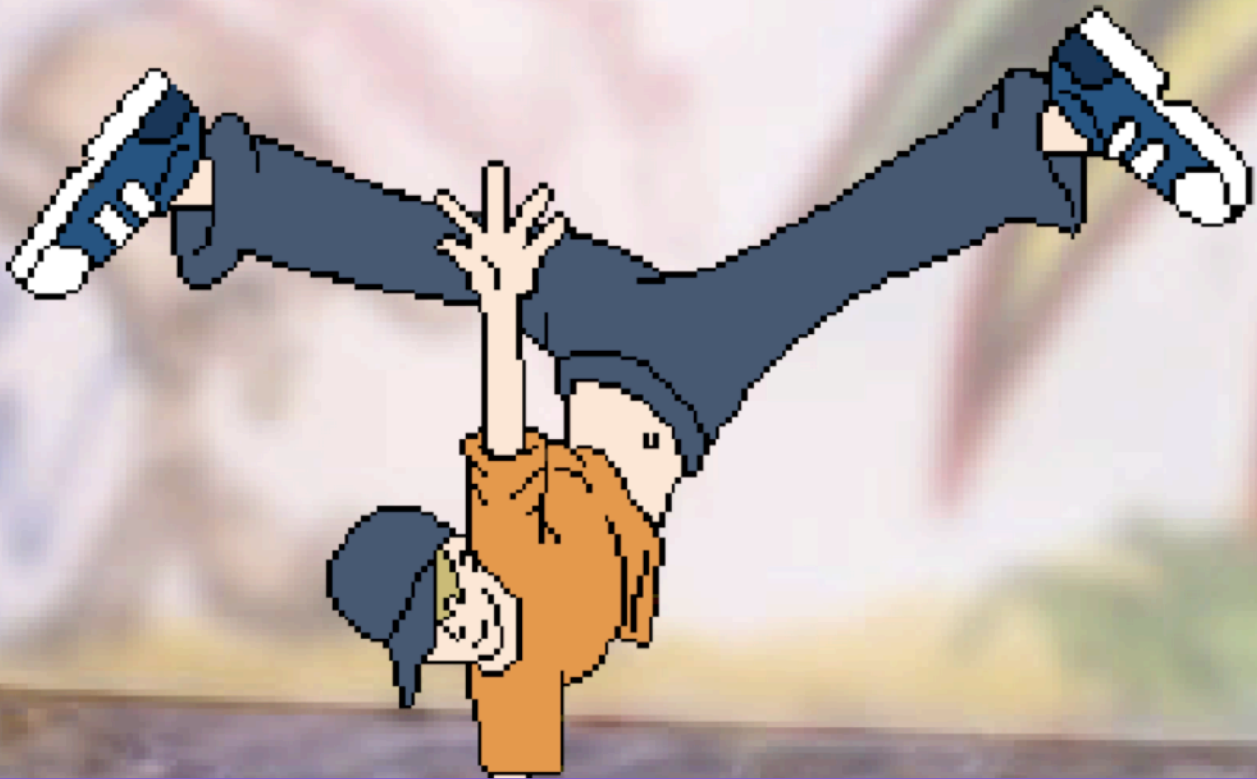


# UNIT 2

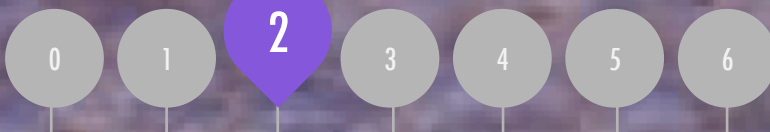
## ANIMATIONS

Turn up the music!



YOU ARE HERE

WHAT'S INCLUDED



PERFORMING SCRIPTS  
BUILD-A-BAND  
ORANGE SQUARE, PURPLE CIRCLE  
IT'S ALIVE!  
DEBUG IT!  
MUSIC VIDEO

SCRATCH'S  
CENTRAL  
THEATRICAL  
METAPHOR

SPRITE



SCRATCH

COSTUME

STAR

The image shows a dark wooden chalkboard with various elements:

- Several colorful sticky notes (yellow, pink, blue, orange) are scattered across the board, mostly in the upper and middle sections.
- Chalk drawings include a character sketch, a box containing the word "SCRATCH", and the words "COSTUME" and "STAR".
- Handwritten text in white chalk includes "SCRATCH'S CENTRAL THEATRICAL METAPHOR" and "SPRITE".
- A small wooden box with a pink object inside is attached to the right side of the board.
- Two electrical outlets are visible at the bottom center of the board.

# PERFORMING SCRIPTS REFLECTIONS

NAME:

RESPOND TO THE FOLLOWING REFLECTION  
PROMPTS USING THE SPACE PROVIDED  
BELOW OR IN YOUR DESIGN JOURNAL.

+ What are the different ways that actions were triggered?

---

+ What are the mechanisms for events in Scratch?

---

+ What were the different ways in which things were happening at the same time?

---

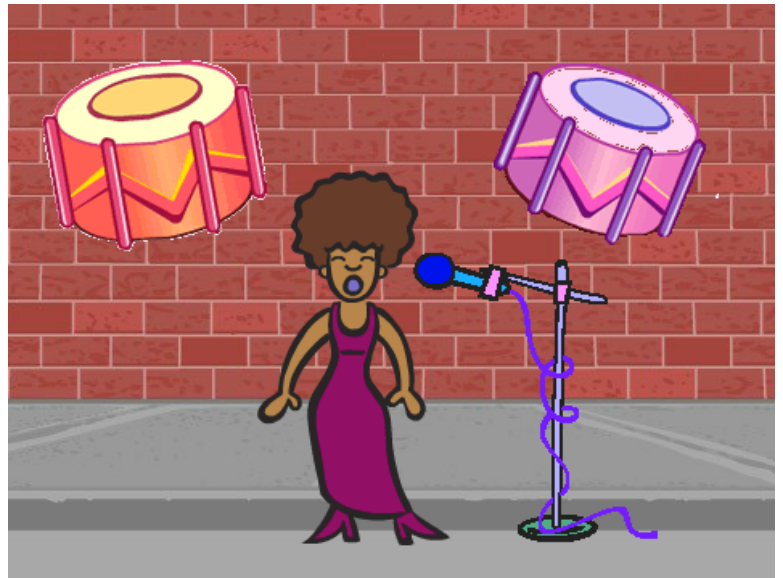
+ What are the mechanisms that enable parallelism in Scratch?

---

# BUILD-A-BAND

HOW CAN YOU UTILIZE SCRATCH TO CREATE SOUNDS, INSTRUMENTS, BANDS, OR STYLES OF MUSIC THAT REPRESENT THE MUSIC YOU LOVE MOST?

In this activity, you will build your own music-inspired Scratch project by pairing sprites with sounds to design interactive instruments.



## START HERE

- Create a sprite.
- Add sound blocks.
- Experiment with ways to make your instruments interactive.



Choose instruments from the sprite library or create your own.

```
when this sprite clicked
repeat 10
  play drum 6 for .2 beats
  rest for 0.2 beats
```

```
when this sprite clicked
repeat 8
  play drum 8 for .2 beats
  wait 1 secs
```

```
when this sprite clicked
repeat 10
  play drum 2 for .5 beats
  play drum 1 for .5 beats
```

## THINGS TO TRY

- Use repeat blocks to make a sound play more than once.
- Import or record your own sounds or experiment with the Sounds editor.
- Try playing with the tempo blocks to speed up or slow down the rhythm.

## FINISHED?

- + Add your project to the Build-A-Band Studio: <http://scratch.mit.edu/studios/475523>
- + Challenge yourself to do more! Invent a new instrument or record your own sounds.
- + Help a neighbor!

# BUILD-A-BAND REFLECTIONS

NAME:

RESPOND TO THE FOLLOWING REFLECTION  
PROMPTS USING THE SPACE PROVIDED  
BELOW OR IN YOUR DESIGN JOURNAL.

+ What did you do first?

---

+ What did you do next?

---

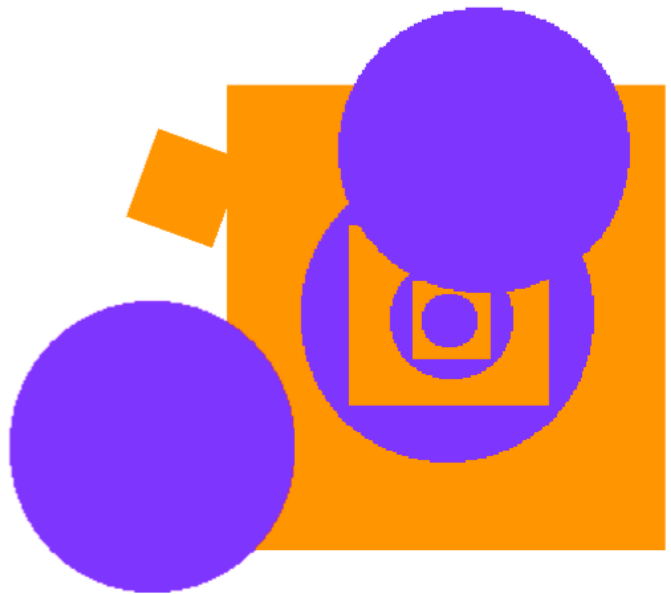
+ What did you do last?

---

# ORANGE SQUARE, PURPLE CIRCLE

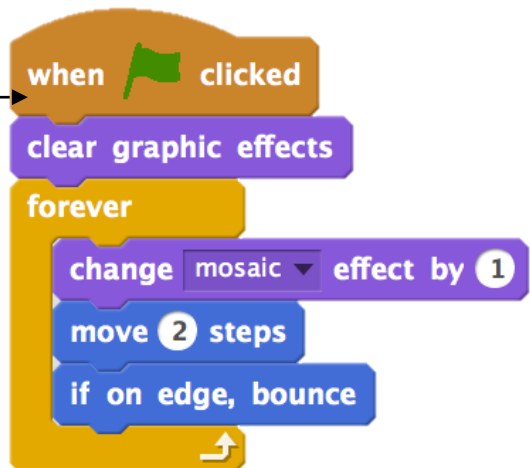
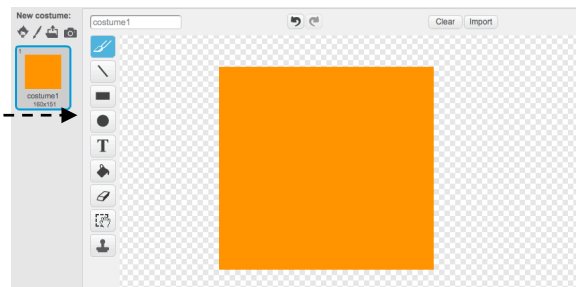
WHAT PROJECT CAN YOU CREATE THAT INCLUDES AN ORANGE SQUARE AND A PURPLE CIRCLE?

In this challenge, you'll create a project that includes an orange square and a purple circle. What will you create?



## START HERE

- Draw your sprites using the Paint Editor.
- Add different Looks and Motion blocks to bring your sprites to life.
- Repeat!



FEELING  
STUCK?

THAT'S OKAY! TRY THESE THINGS...

FINISHED?

- Try brainstorming with a neighbor!
- Create a list of things you would like to try before you start building your project in Scratch!
- Explore other projects to see what others are doing in Scratch - this can be a great way to find inspiration!

- + Add your project to the Orange Square, Purple Circle Studio: <http://scratch.mit.edu/studios/475527>
- + Explore the difference between bitmap mode and vector mode, located at the bottom of the paint editor.
- + Challenge yourself to do more! Add another shape and color.
- + Swap projects with a partner and remix each other's creations.
- + Help a neighbor!

# ORANGE SQUARE, PURPLE CIRCLE REFLECTIONS

NAME:

RESPOND TO THE FOLLOWING REFLECTION  
PROMPTS USING THE SPACE PROVIDED  
BELOW OR IN YOUR DESIGN JOURNAL.

+ How did you incorporate an orange square and a purple circle into your project?  
Where did this idea come from?

---

+ What was challenging about this activity?

---

+ What was surprising about this activity?

---

# IT'S ALIVE!

HOW CAN YOU TAKE AN IMAGE OR A PHOTO AND MAKE IT COME ALIVE?

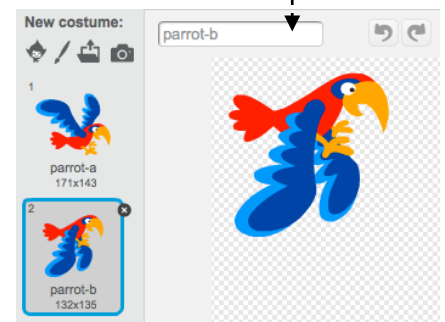
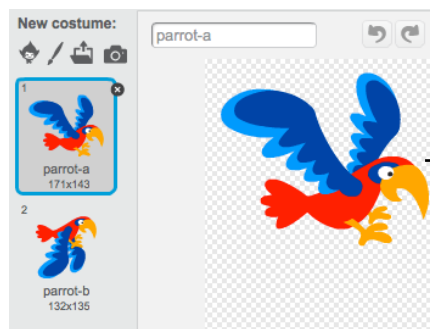
In this activity, you will explore ways of bringing sprites, images, and ideas to life as an animation by programming a series of costume changes.



## START HERE

- Choose a sprite.
- Add a different costume.
- Add blocks to make the image come alive.
- Repeat!

```
when this sprite clicked
repeat 10
  wait .1 secs
  move 10 steps
  next costume
```



## THINGS TO TRY

- Try sketching your animation ideas on paper first - like a flipbook.
- Experiment with different blocks and costumes until you find something you enjoy.
- Need some inspiration? Find projects in the Animation section of the Explore page.

## FINISHED?

- + Add your project to the It's Alive studio: <http://scratch.mit.edu/studios/475529>
- + Challenge yourself to do more! Add more features to your project to make your animations look even more lifelike.
- + Help a neighbor!
- + Share your project with a partner and walk them through your design process.
- + Find an animated project you're inspired by and remix it!



# IT'S ALIVE! REFLECTIONS

NAME:

RESPOND TO THE FOLLOWING REFLECTION PROMPTS USING THE SPACE PROVIDED BELOW OR IN YOUR DESIGN JOURNAL.

+ What is the difference between a sprite and a costume?

---

+ What is an animation?

---

+ List three ways you experience loops in real life (e.g., going to sleep every night).

---

# DEBUG IT!

HELP! CAN YOU DEBUG THESE FIVE SCRATCH PROGRAMS?

In this activity, you will investigate what is going awry and find a solution for each of the five Debug It! challenges.

## START HERE

- ❑ Go to the Unit 2 Debug It! Studio:  
<http://scratch.mit.edu/studios/475539>
- ❑ Test and debug each of the five debugging challenges in the studio.
- ❑ Write down your solution or remix the buggy program with your solution.

FEELING  
STUCK?

THAT'S OKAY! TRY THESE THINGS...

- ❑ Make a list of possible bugs in the program.
- ❑ Keep track of your work! This can be a useful reminder of what you have already tried and point you toward what to try next.
- ❑ Share and compare your problem finding and problem solving approaches with a neighbor until you find something that works for you!

### ❑ **DEBUG IT! 2.1** <http://scratch.mit.edu/projects/23266426>

In this project, Scratch Cat wants to show you a dance. When you click on him, he should do a dance while a drum beat plays along with him. However, as soon as he starts to dance he stops but the drumming continues without him! How do we fix this program?

### ❑ **DEBUG IT! 2.2** <http://scratch.mit.edu/projects/24268476>

In this project, when the green flag is clicked Pico should move towards Nano. When Pico reaches Nano, Pico should say "Tag, you're it!" and Nano says "My turn!" But something is wrong! Pico doesn't say anything to Nano. How do we fix the program?

### ❑ **DEBUG IT! 2.3** <http://scratch.mit.edu/projects/24268506>

This project is programmed to draw a happy face but something is not quite right! The pen continues to draw from one of the eyes to the smile when it should not be doing so. How do we fix the program?

### ❑ **DEBUG IT! 2.4** <http://scratch.mit.edu/projects/23267140>

In this project, when the green flag is clicked an animation of a flower growing begins and stops once it has fully bloomed. But something is not quite right! Instead of stopping when all the petals have bloomed, the animation starts all over. How do we fix this program?

### ❑ **DEBUG IT! 2.5** <http://scratch.mit.edu/projects/23267245>

In this project, the Happy Birthday song starts playing when the green flag is clicked. Once the song finishes, instructions should appear telling us to "click on me to blow out the candles!" But something is not working! The instructions to blow out the candles are shown while the birthday song is playing rather than after it finishes. How do we fix this program?

## FINISHED?

- + Add code commentary by right clicking on blocks in your scripts. This can help others understand different parts of your program!
- + Discuss your testing and debugging practices with a partner – make notes of the similarities and differences in your strategies.
- + Help a neighbor!

# DEBUG IT! REFLECTIONS

NAME:

RESPOND TO THE FOLLOWING REFLECTION PROMPTS USING THE SPACE PROVIDED BELOW OR IN YOUR DESIGN JOURNAL.

+ What was the problem?

---

+ How did you identify the problem?

---

+ How did you fix the problem?

---

+ Did others have alternative approaches to fixing the problem?

---

# MUSIC VIDEO

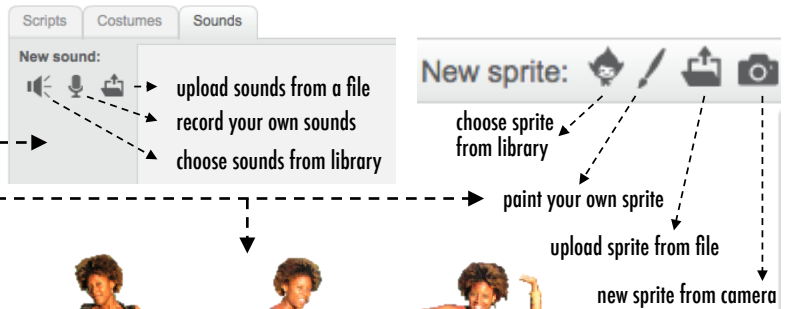
HOW CAN YOU COMBINE ANIMATION WITH MUSIC TO CREATE YOUR OWN SCRATCH-INSPIRED MUSIC VIDEO?

In this project, you will explore ideas related to theatre, song, dance, music, drawing, illustration, photography, and animation to create a personalized music video!



## START HERE

- Add sound.
- Create and animate a sprite.
- Make them interact together!



```

when this sprite clicked
  change whirl effect by -50
  play drum 2 for .5 beats
  change whirl effect by 50
  play drum 8 for .5 beats
  switch costume to cassy-dancing-1
  play drum 2 for 0.125 beats
  turn 15 degrees
  play drum 6 for 0.25 beats
  turn 15 degrees
  play drum 2 for .25 beats
  switch costume to cassy-dancing-2
  play drum 8 for .5 beats
  
```



## THINGS TO TRY

- Use costumes to help bring your animations to life!
- Make your sprite interactive by adding scripts that have the sprite respond to clicks, key presses, and more.
- Add instructions on the project page to explain how people can interact with your program.

## BLOCKS TO PLAY WITH

when clicked	turn 15 degrees	switch costume to costume1	wait 1 secs
when this sprite clicked	turn 15 degrees	next costume costume #	repeat 10
when space key pressed	if on edge, bounce	switch backdrop to backdrop1	forever
	rest for 0.25 beats	play drum 1 for 0.25 beats	

## FINISHED?

- + Add your project to the Music Video studio: <http://scratch.mit.edu/studios/475517>
- + Be sure to give credit to any music, code, or other work used in your project.
- + Challenge yourself to do more! Create your own sprites, sounds, or costumes!

# MUSIC VIDEO REFLECTIONS

NAME:

RESPOND TO THE FOLLOWING REFLECTION PROMPTS USING THE SPACE PROVIDED BELOW OR IN YOUR DESIGN JOURNAL.

+ What was a challenge you overcame? How did you overcome it?

---

+ What is something you still want to figure out?

---

+ How did you give credit for ideas, music, or code that you borrowed to use in your project?

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