

Getting Started with Scratch

a guide to designing introductory Scratch workshops
draft version, september 2009

Overview

There's no one way to host a Scratch workshop.

Workshops can take on a variety of forms – different audiences, different lengths, different themes.

But we've found that workshop participants frequently have meaningful learning experiences when workshops are designed with certain key principles in mind. Participants should have opportunities to:

- + engage in design activities
- + pursue personal interests
- + interact through creative collaborations
- + reflect on experiences

Elements

This section describes elements that could be part of an introductory Scratch workshop.

Setting goals

Meeting one another

Introducing Scratch

Creating projects

Sharing experiences

Preparing for next steps

Setting goals

What do you want participants to get out of your workshop?

Setting goals is good for the organizer, as it helps guide planning of the workshop activities. Sharing those goals at the beginning of the workshop session is also good for the participants, as it helps participants feel prepared for the experience.

At the beginning of the workshop, discuss the **goals** (*what* we want to achieve, the attitudes, knowledge, and skills to be developed in the session) and **agenda** (*how* we will achieve it, the plan for the session) with workshop participants.

The goals and agenda - as well as how explicitly you discuss them - will vary with your audience.

Meeting one another

Whether the workshop participants are strangers or friends, it's important to create a space for people to feel comfortable with others they'll be working with. There are lots of different ways to help people get to know each other better. Here are a few suggestions for icebreaker activities.

Name game

Go around the entire group with each person introducing her/himself, such as sharing name, motivation for attending, hopes for the workshop session. For an additional challenge, the current person could also introduce every previous person.

Colorful introductions

Create a bowl that contains a bunch of colorful objects, like a collection of red, blue, and yellow LEGO bricks. Each color represents different categories of facts. Each person takes a handful of the objects and then shares information about him/herself based on the colors s/he selected. For the workshop, the questions could have a Scratch flavor.

+ For Scratchers who are just starting

Red: Something you notice about the user interface

Blue: Your favorite character in the sprite library

Yellow: Something you hope to create with Scratch

+ For Scratchers with some experience

Red: Your favorite Scratch project

Blue: Explanation of a feature you've used in Scratch

Yellow: Something you would change about Scratch

Find someone who

Make a bingo card sheet with each block containing an attribute, like:

Find someone who has at least 4 Scratch projects posted online.

Find someone who knows who Gobo is.

Find someone who has used the broadcast block.

Find someone who helps people learn Scratch.

Find someone who has been Scratching for more than a year.

Find someone who posts to the Scratch forums.

Participants get to know other Scratchers by finding a different person to sign each block on their sheet. (See appendix for handout.)

Personal flag

Each participant constructs a flag using craft materials that contains his/her name and represents her/his interests. People can then introduce their flags or post them on a shared surface.

Getting to know you

On large sheets of chart paper, write survey questions, like:

If you could have an endless supply of any food, what would you get?

If you were an animal, what would you be?

What's your favorite thing to do in the summer?

If you could visit any place in the world, where would you choose to go?

Are you a morning or a night person?

What are your favorite hobbies?

What's the weirdest thing you've ever eaten?

What three words would you choose to describe yourself?

Have participants write their answers on post-it notes that they can cluster on the chart paper to identify similarities and differences.

Introducing Scratch

Before getting into the heart of a Scratch workshop, it's important to introduce some of the basics of Scratch - as a tool, as an activity. There are many different ways to introduce Scratch.

Demo

It's often useful to start by showing participants how to build up a project. Just open up Scratch and create a simple project, like making the cat dance back and forth to a beat. How much you show at once in a demo depends on numerous factors (overall workshop length, facilitator/participant ratio, etc.), but some basic tasks that are useful to demo include:

- + how to snap blocks together
- + how to make a sprite move and say something
- + how to add another character
- + how to change the background image

Sample projects

In addition to showing how easy it is to create a project by snapping blocks together, it's also good to show participants a range of things that have been created with Scratch. Visit the Scratch website to find projects that will inspire your participants.

Other resources

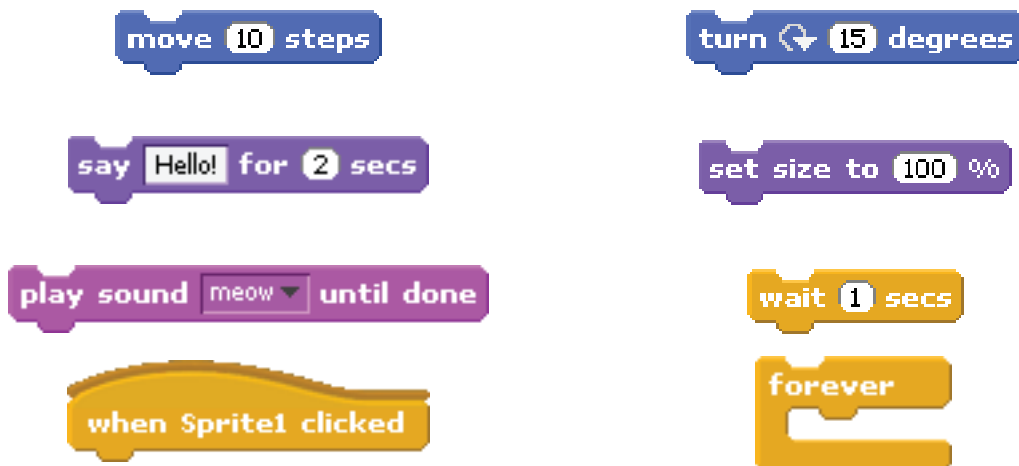
Some workshops are facilitated in a less centralized fashion - leaving the participants to explore the fundamentals of Scratch through resources rather than through demonstration. The support page on the Scratch site links to videos, a step-by-step guide to creating a first Scratch project, and a set of cards to explore various code excerpts. Of course, these approaches aren't exclusive. The facilitator can lead with a brief demo, while making these other resources available to accommodate different learning styles.

Creating projects

After introducing Scratch, it's time to engage in Scratch design activities. Depending on the length of the workshop, several cycles of introducing-creating-sharing may be planned and a variety of activities may be included. Activities may explore different themes, genres, or constraints. A short project-creating activity could be followed by a longer activity, or a series of shorter activities could be planned. Here are a few suggestions for projects.

8 blocks

Getting started with all 100+ blocks in Scratch can be overwhelming. In this activity, participants create a project using eight pre-specified blocks. (See appendix for handout.)



Monkey business

Participants start with a new project. The challenge? Create a project in which something surprising happens to a monkey.

Interactive us

Participants incorporate their voices and images into a project, creating something that helps others learn about themselves and the people, issues, and things they care about. (See appendix for handout.)

Pass it on

What happens when you share a story? In this activity, participants each begin a story and have a few minutes to elaborate on it however they choose. When the time is up, they pass the computer to another participant, who continues the story. After one or two more passes, the story is finished.

Interactive postcard

Are the workshop participants in a location that's new to them? Where in the world do participants wish they were? Participants collect and create audio and visual representations of a location and create a project that documents the place. The postcard could take numerous forms, such as an interactive map or a photo gallery.

Let's play

A game has a goal, rules, and an outcome. In this activity, participants create a game with Scratch. It can be completely new or a re-creation of an old favorite. (See appendix for handout.)

Sharing experiences

While participants will likely be sharing and collaborating throughout the design process, it is important to dedicate time to sharing and reflection, so that both participants and facilitators can discuss what happened and share reflections on or analysis of the activities. Some strategies for sharing and reflection include:

Show and tell

Each participant (or team of participants) has an opportunity to demonstrate what was created and discuss design experiences, either with the entire group or in smaller groups. It's useful to provide some concrete questions for participants to think about and respond to. What did you find surprising? What was challenging? What motivated or influenced your project decisions?

Galleries

In addition to sharing with the other participants, the Scratch online community can be used to share projects developed in the workshop. Create a gallery and encourage participants to post their projects (with project notes describing how to interact with the project and about the process of creating the project).

Lessons learned

Reflecting on their processes, participants can create a guide of lessons learned for future Scratchers. What approaches, techniques, or tips would they recommend? Create a mind map or "Top 10" list of the ideas and suggestions.

Preparing for next steps

So the participants have had a great workshop experience.

But what happens after the workshop? There are numerous forms of support available that can be shared as resources to conclude the workshop.

Scratch online community

The Scratch online community is a venue for people to share their Scratch projects and get feedback through comments. The Scratch site also offers resource materials (such as videos and guides). The Scratch forums can be used to ask questions about a wide variety of Scratch topics and to share ideas.

ScratchEd

For educator workshops, ScratchEd is a new support structure. ScratchEd is a companion site to the main Scratch site, designed especially for educators, where they can share stories, exchange resources, ask questions, and find others.

Events

While online communities enable a large number of people with a diverse set of experiences to connect, gathering people in a physical space offers numerous benefits, such as responsiveness and real-time collaboration. The Scratch conference at MIT and annual Scratch Day events around the world provide opportunities for people to connect in-person on a large scale, in addition to the numerous global Scratch workshops being organized.

Further explorations

Workshop participants may be interested in extending their Scratch experiences. Scratch can be used in a variety of ways, and participants can be encouraged to explore different genres and forms of expression. Participants may be interested in Scratch's capacities for extending to the physical world through the Scratch sensor board and the LEGO WeDo robotics kit.

Sample agendas

These six workshop elements (*setting goals, meeting one another, introducing Scratch, creating projects, sharing experiences, preparing for next steps*) can be combined in a wide variety of ways. Feel free to (re)mix and match as appropriate for participants' backgrounds and interests, as well as workshop size and duration. Here are two examples of possible agendas:

1 hour workshop for small group of Scratch beginners

Welcome and goal setting (5 minutes)

Meeting one another: Name Game (10 minutes)
Going around the room, participants introduce themselves.

Introducing Scratch (5 minutes)

In preparation for the hands-on activity, facilitator demonstrates:

- how to snap blocks together
- how to make a sprite move and say something
- how to add another character

Creating projects: Collaborative story (25 minutes)

Each participant spends 10 minutes starting a story in Scratch, passing the story off to another participant at the end of the time block. The next participant has 10 minutes, then the final person has 5 minutes to finish the story.

Sharing experiences: Show and tell (10 minutes)

Participants review their own and their neighbors' stories and share their observations about Scratch.

Preparing for next steps (5 minutes)

Facilitator introduces the Scratch online community, shows some sample projects, and closes by answering questions.

2.5 hour workshop for beginner Scratch educators

Welcome and goal setting (5 minutes)

Meeting one another: Find someone who (15 minutes)

Using the sheet, participants find others to sign their grid's blocks.

Introducing Scratch (5 minutes)

Facilitator demonstrates the fundamentals of Scratch by showing how to snap blocks together.

Creating projects: 8 blocks (20 minutes)

In pairs, participants create a project using only eight pre-specified blocks.

Sharing experiences: Show and tell (15 minutes)

Participants review their own and their neighbors' projects, and share their observations about Scratch.

Introducing Scratch (20 minutes)

Facilitator introduces the Scratch online community, showing a collection of sample projects to demonstrate the variety of projects that can be created with Scratch. Then in preparation for the next hands-on activity, facilitator demonstrates how to use Scratch to create an interactive postcard.

Creating projects: Interactive postcard (40 minutes)

In pairs or individually, participants create an interactive postcard for a place they've been or would like to go.

Sharing experiences: Lessons learned (20 minutes)

Participants review their own and their neighbors' projects, and share their observations about Scratch to generate a list of suggestions for other educators.

Preparing for next steps (10 minutes)

Facilitator introduces the ScratchEd online community, shows the different areas (stories, resources, discussions, members), and closes by answering questions.

Appendix

The appendix includes several resources mentioned in this guide.

- + *Find someone who* icebreaker activity
- + *8 blocks* project handout
- + *Interactive us* project handout
- + *Let's play!* project handout (4 pages)
- + *Scratch cards*

FIND SOMEONE WHO

Get to know other participants by finding a different person to sign each block on your page.



came to the
workshop by
car

is completely
new to
Scratch

owns a pet

speaks
another
language

has lived in
two other
cities

draws or
paints as a
hobby

loves to play
board games
with friends

has taught
someone how
to ride a
bicycle

has met
someone
famous

loves hot
weather

has taught
someone else
to use
Scratch

teaches high
school
students

has recently
been on
vacation

has been to
the workshop
venue before

has used a
Scratch
sensor board

is currently
reading a
novel

What can you build with these 8 blocks?

move 10 steps

turn ↻ 15 degrees

think Hmm... for 2 secs

set size to 100 %

say Hello! for 2 secs

play sound meow ▾ until done

when Sprite1 clicked

wait 1 secs

What can you build with these 8 blocks?

move 10 steps

turn ↻ 15 degrees

think Hmm... for 2 secs

set size to 100 %

say Hello! for 2 secs

play sound meow ▾ until done

when Sprite1 clicked

wait 1 secs

Interactive Us

Create a project that helps others learn about you and the people, issues, and things you care about.

move 10 steps

turn 15 degrees

say Hello! for 2 secs

set size to 100 %

play sound meow until done

wait 1 secs

when Sprite1 clicked

repeat 10



LET'S PLAY!

Games provide numerous opportunities to explore a variety of computational concepts and skills. Here are some blocks that are frequently useful in games.

TOUCHING

See if two sprites are touching or if a sprite is touching a color



VISIBILITY

Make a sprite appear or disappear



RANDOM

Get a computer-generated number from within a specified range



TIMING

Have the computer keep track of time for you



STRINGS

Test, access, and change words and sentences



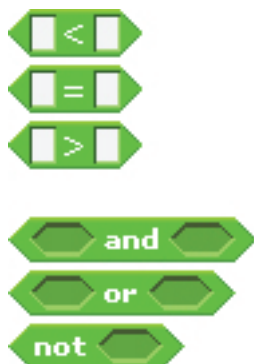
VARIABLES

Store a number or string in a container to access later



COMPARE

Compare values to help make decisions within your game

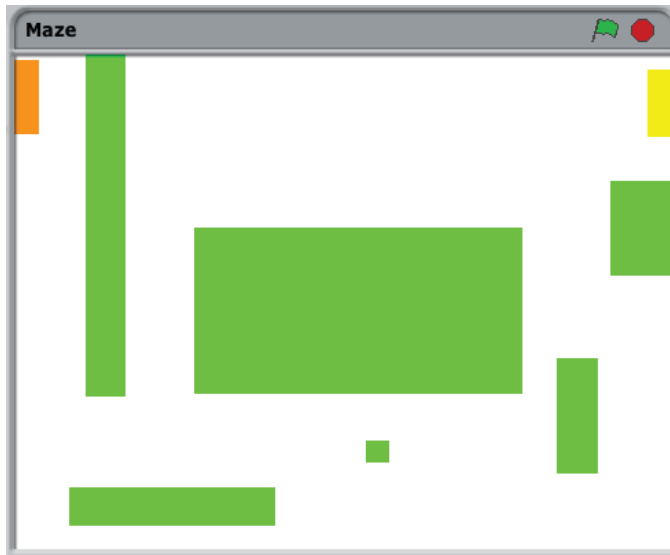


KEY PRESS

Make a sprite respond when different keys are pressed



MAZE



GOAL

Get from the start of the maze to the end

RULES

Don't touch the green walls

OUTCOME

Win when the yellow marker is reached



7 scripts

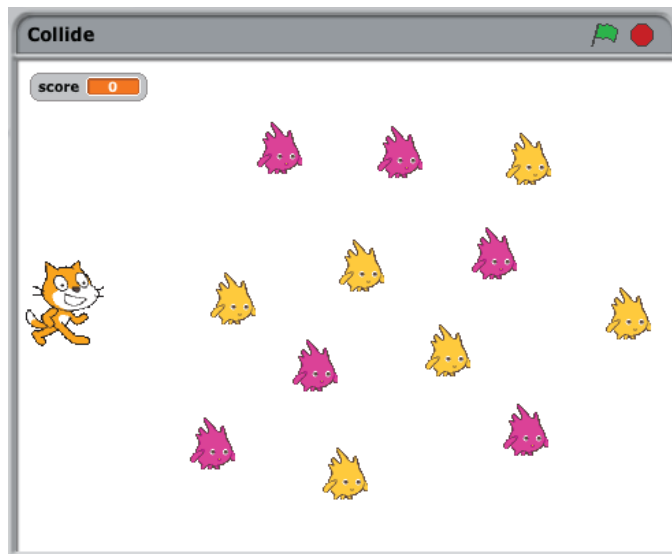
move the sprite around



players wins when sprite reaches the yellow end marker

no scripts,
draw a maze-like
background with
colored walls and
a differently colored
end marker

COLLIDE



GOAL

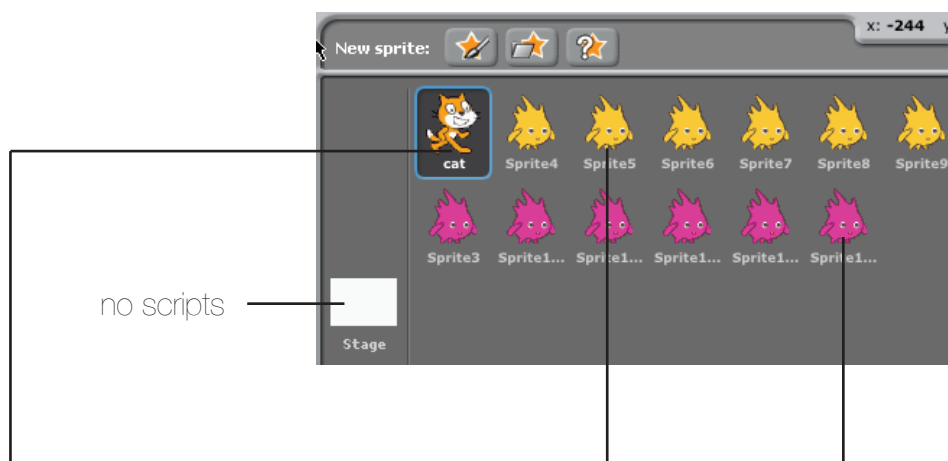
Help the cat navigate a gobo minefield

RULES

Collect yellow gobos to earn points,
avoid pink gobos to avoid losing points

OUTCOME

Maximize your score



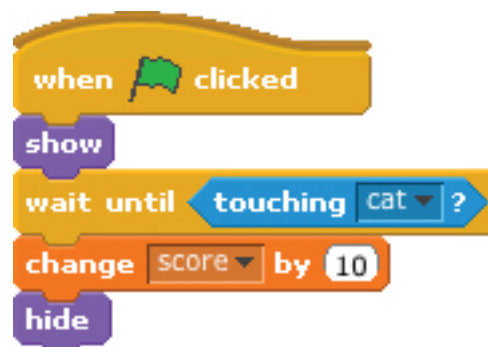
no scripts

reset the cat's position
and the score

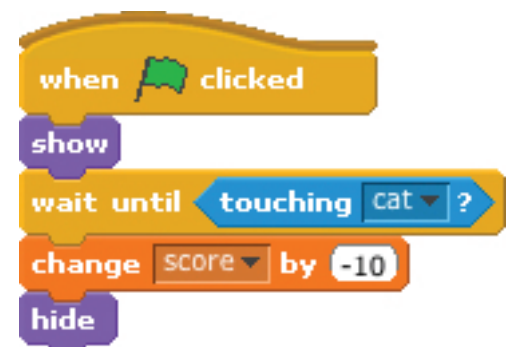


have the cat follow the
mouse cursor

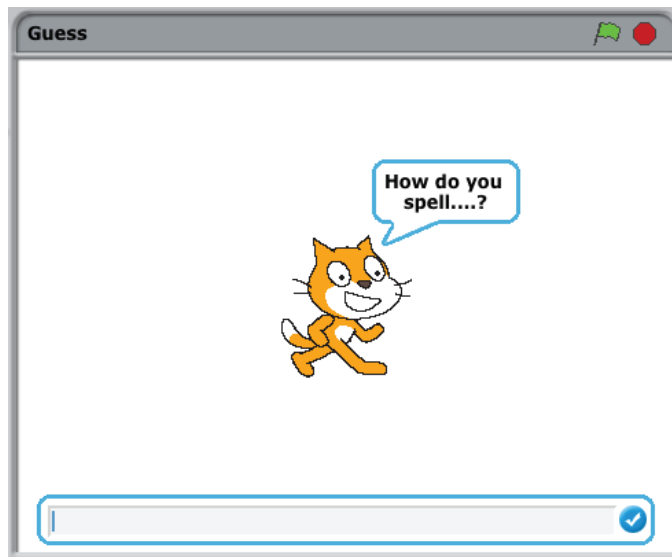
when the cat collides with a
yellow gobo, the gobo disappears
and the score increases by 10



when the cat collides with a
pink gobo, the gobo disappears
and the score decreases by 10



GUESS



GOAL

Test your spelling abilities

RULES

Type the words spoken by the cat

OUTCOME

Learn whether you spelled each word correctly

create a list of words and audio-record their pronunciations

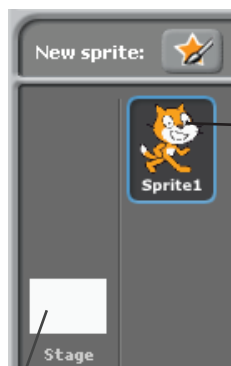


Make a list

Delete a list

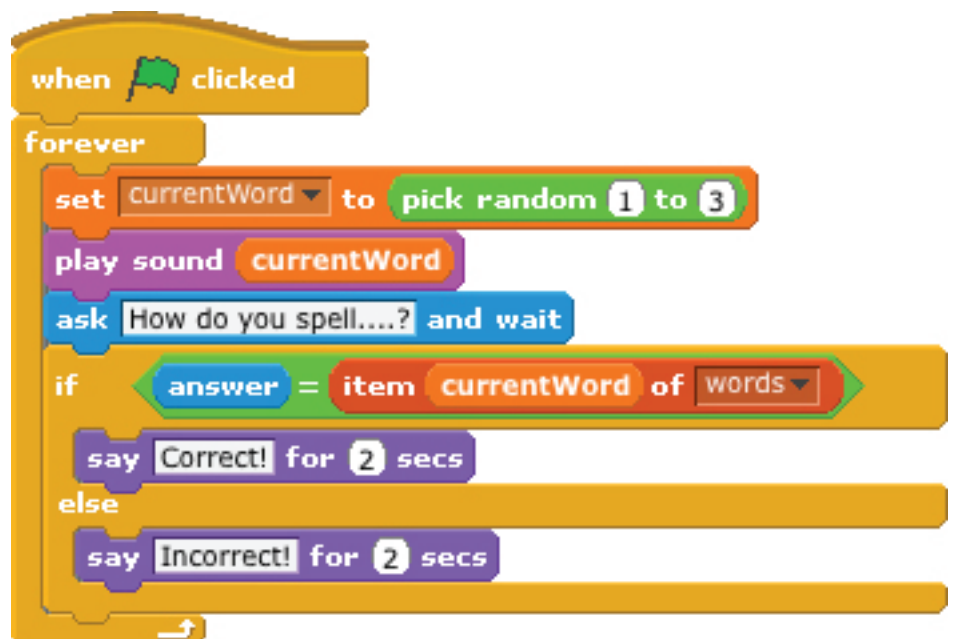
☒ words

add thing to words



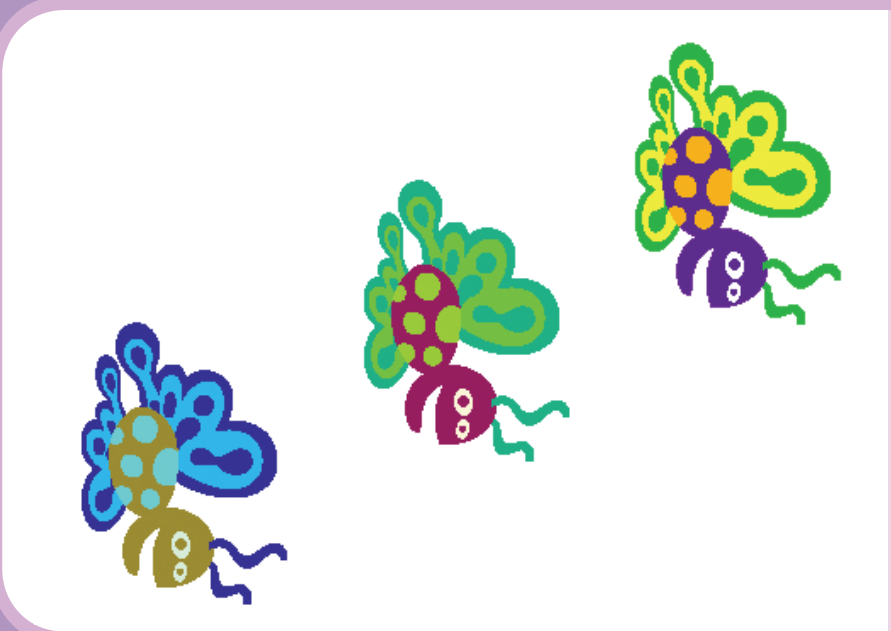
1 script

no scripts



Change Color

Press a key to change the color of a sprite.



<http://scratch.mit.edu>

1

SCRATCH



GET READY



Paint a new sprite. Or, choose one from a folder.

TRY THIS CODE



DO IT!



Press the space bar to change colors.

EXTRA TIP



The more colors in the sprite, the more changes you will see. (If the sprite is all black, the color change will be subtle.)

Make A Card



1. Fold the card in half.



2. Put glue on the back.



3. Cut along the dashed line.

Move to a Beat

Start dancing to a drum beat.



<http://scratch.mit.edu>

2

SCRATCH

Move to a Beat



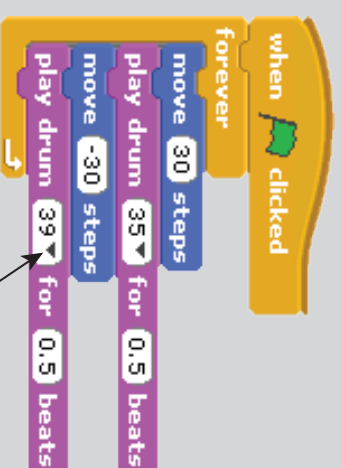
GET READY

New sprite:



Choose a dancer or other image.

TRY THIS CODE



Click to choose a drum sound.

DO IT!

Click the green flag to start.

Make A Card



1. Fold the card in half.



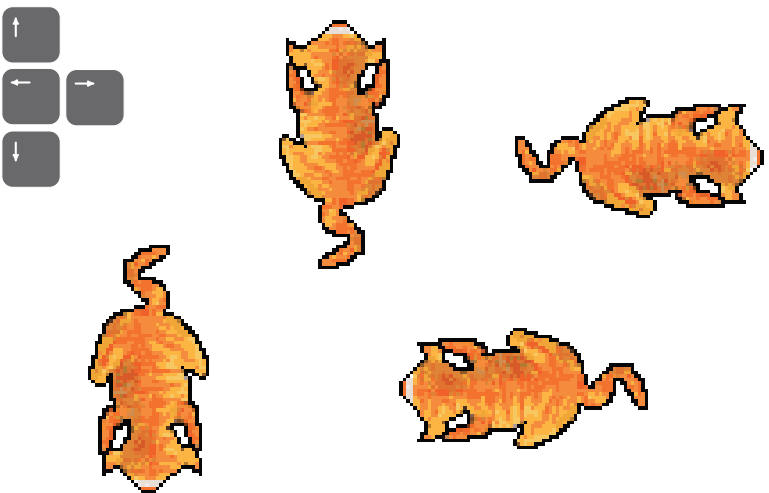
2. Put glue on the back.



3. Cut along the dashed line.

Key Moves

Use the arrow keys to move your sprite.



<http://scratch.mit.edu>

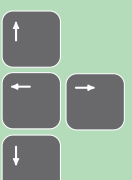
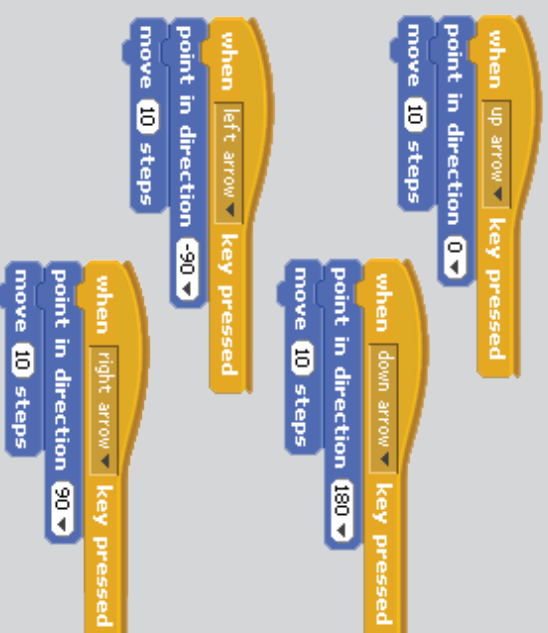
3

SCRATCH

Key Moves



TRY THIS CODE



Press the arrow keys to move!

DO IT!



rotate all around



just flip left-right

Does your sprite look upside-down? You can change its rotation style.

EXTRA TIP

Make A Card



1. Fold the card in half.



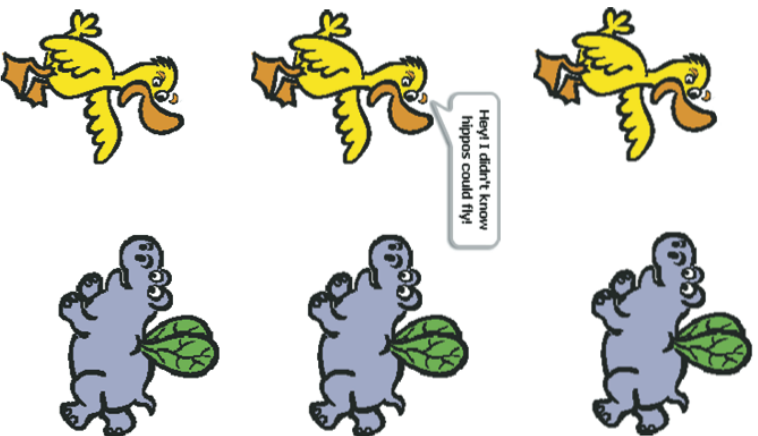
2. Put glue on the back.



3. Cut along the dashed line.

Say something

What do you want your sprite to say?



<http://scratch.mit.edu>

4

SCRATCH

Say something

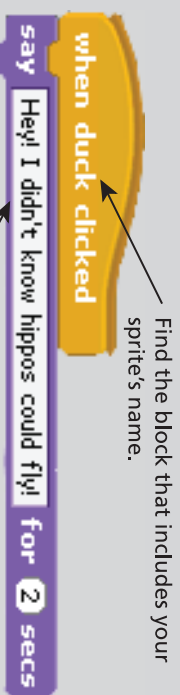


GET READY



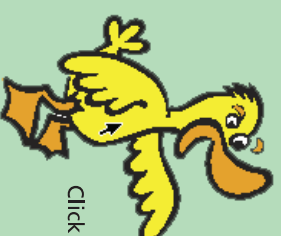
Select a sprite.
Type in a name for your sprite.

TRY THIS CODE



Find the block that includes your
sprite's name.
Type in any words.

DO IT!



Click on the sprite to start.

Make A Card



1. Fold the card in half.



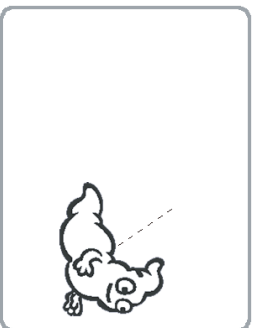
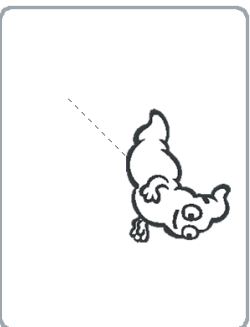
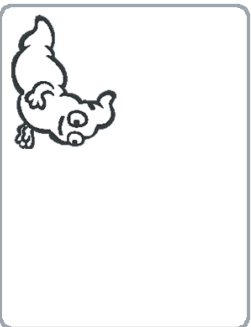
2. Put glue on the back.



3. Cut along the dashed line.

Glide

Move smoothly from one point to another.



<http://scratch.mit.edu>

5

SCRATCH

Glide



GET READY



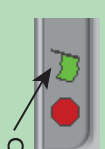
Import a costume.
Or, paint your own.

TRY THIS CODE



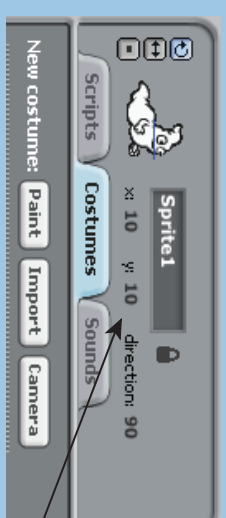
Try different numbers.

DO IT!



Click the green flag to start.

EXTRA TIP



Look here to find a
sprite's x and y position.

Make A Card



1. Fold the card in half.



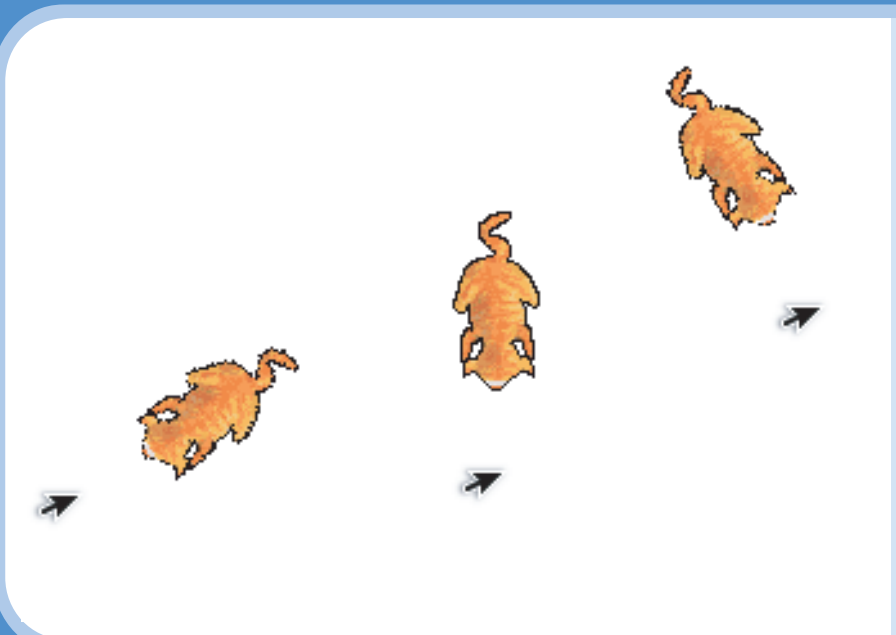
2. Put glue on the back.



3. Cut along the dashed line.

Follow the Mouse

Follow the mouse pointer.



<http://scratch.mit.edu>

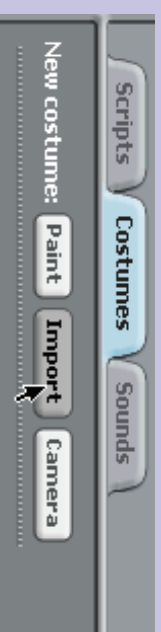
6

SCRATCH

Follow the Mouse



GET READY



Choose the cat or another costume.

TRY THIS CODE



DO IT!



Click the green flag to start.

Make A Card



1. Fold the card in half.



2. Put glue on the back.



3. Cut along the dashed line.

Dance Twist



Play a sound clip and do a body twist.



<http://scratch.mit.edu>

7

SCRATCH

Dance Twist



GET READY

New sprite:



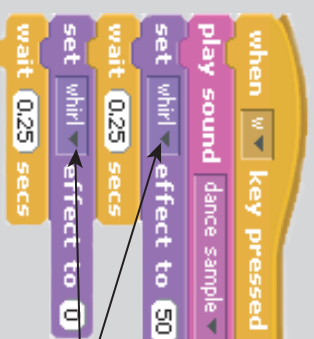
Choose an image of a person ready to dance.

Scripts Costumes Sounds

New sound: Record Import

Record or import a sound clip.
Keep it short!

TRY THIS CODE



Choose whirl from the menu.

W

Press the key to start.

DO IT!

Make A Card



1. Fold the card in half.



2. Put glue on the back.



3. Cut along the dashed line.

Interactive Whirl

Whirl a photo by moving the mouse.



<http://scratch.mit.edu>

8

SCRATCH

Interactive Whirl



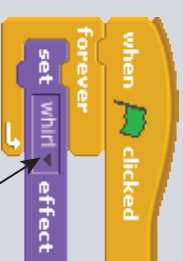
GET READY

New sprite:



Choose the squirrel or other photo to whirl.

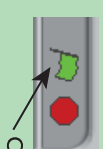
TRY THIS CODE



Insert **MOUSE X** block here.

Choose whirl from the menu.

DO IT!



Click the green flag to start.

EXTRA TIP

Notice how the numbers change as you move the mouse.

X: 178 Y: -149

Make A Card



1. Fold the card in half.



2. Put glue on the back.



3. Cut along the dashed line.

Animate It

Make a simple animation.



<http://scratch.mit.edu>

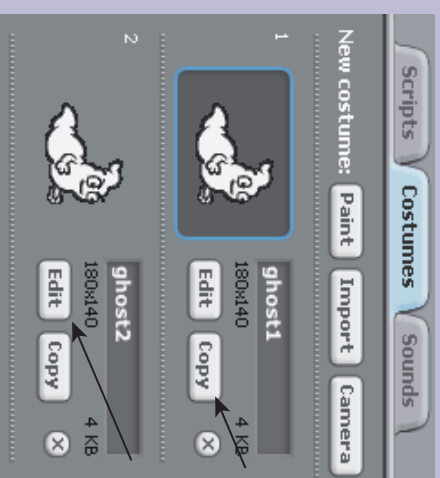
9

SCRATCH

Animate It

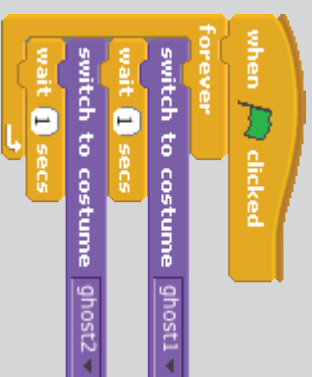


GET READY



Copy a costume.

Edit the new costume (in the paint editor) to make it look different.



TRY THIS CODE



Click the green flag to start.

DO IT!

Make A Card



1. Fold the card in half.



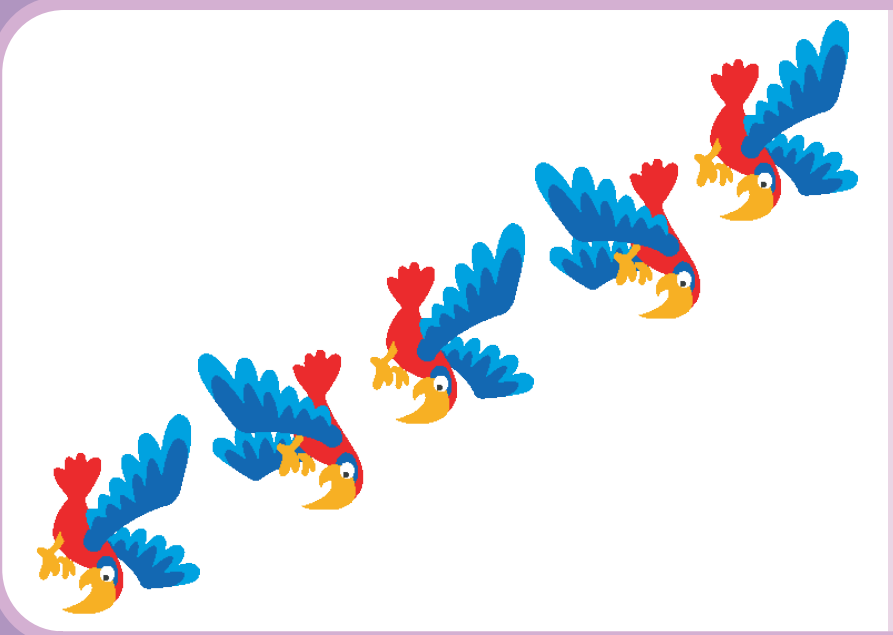
2. Put glue on the back.



3. Cut along the dashed line.

Moving Animation

Animate a character as it moves.



<http://scratch.mit.edu>

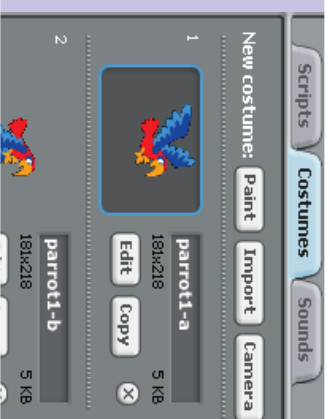
10

SCRATCH

Moving Animation

GET READY

Import a pair of costumes to animate.



TRY THIS CODE



EXTRA TIP

Does your sprite look upside-down? You can change its rotation style.



Make A Card



1. Fold the card in half.



2. Put glue on the back.



3. Cut along the dashed line.

Surprise Button

Make your own button.



<http://scratch.mit.edu>

11

SCRATCH

Surprise Button



GET READY

New sprite:



Choose "drum1" from the "Things" folder.



You can change the name of your sprite.

TRY THIS CODE



Find the block that includes your sprite's name.

Insert the **PICK RANDOM** block.

DO IT!



Click to see (and hear) what it does.

Make A Card



1. Fold the card in half.



2. Put glue on the back.



3. Cut along the dashed line.

Keep Score

Add a scoreboard to your game.

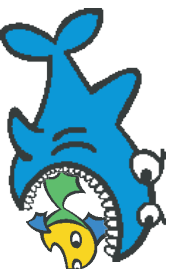
score 0



score 0



score 1



<http://scratch.mit.edu>

12

SCRATCH

Keep Score

score 1



GET READY

- Motion
- Looks
- Sound
- Pen
- Control
- Sensing
- Operators
- Variables

Make a variable

Go to Variables
Click **Make a variable**

Type "score" for the variable name and then click OK.

TRY THIS CODE

```

when clicked
  set score to 0
  forever
    turn pick random -30 to 30 degrees
    move 5 steps
    if touching small fish
      change score by 1
      play sound chomp until done
      move -100 steps
  
```

Use the pull-down menu to select the sprite you're chasing.
Increases the score by 1.

DO IT!

Click the green flag to start.

Make A Card

1. Fold the card in half.

2. Put glue on the back.

3. Cut along the dashed line.