

Level One: Fundamentals

Student Notebook



Discovering Computer Science & Programming through Scratch

Student Notebook

Updated for Scratch 3.0



Discovering Computer Science: *Fundamentals (Level One)*

Student Notebook

This notebook provides a place to record and share your thinking and problem-solving as you explore, test, and evaluate computer programming with Scratch.

Use this notebook with the 4-H curriculum manual, ***Discovering Computer Science & Programming through Scratch Level One: Fundamentals***. Make it a reference for yourself and use it to show others what you have learned!

Authors:

Lenny Pitt, Professor of Computer Science, University of Illinois

Judy Rocke, Curriculum Development Specialist, Office for Mathematics, Science, and Technology Education (MSTE), University of Illinois

Jana Sebestik, Assistant Director STEM Curriculum Design, MSTE, University of Illinois

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Layout and Design:

Christina Tran, Graphic Designer, MSTE, University of Illinois, iamchristinatan.com

Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab (scratch.mit.edu). Images of the Scratch cat are used with permission. All other screenshots and images used in this guide are licensed under the Creative Commons Attribution-ShareAlike License.

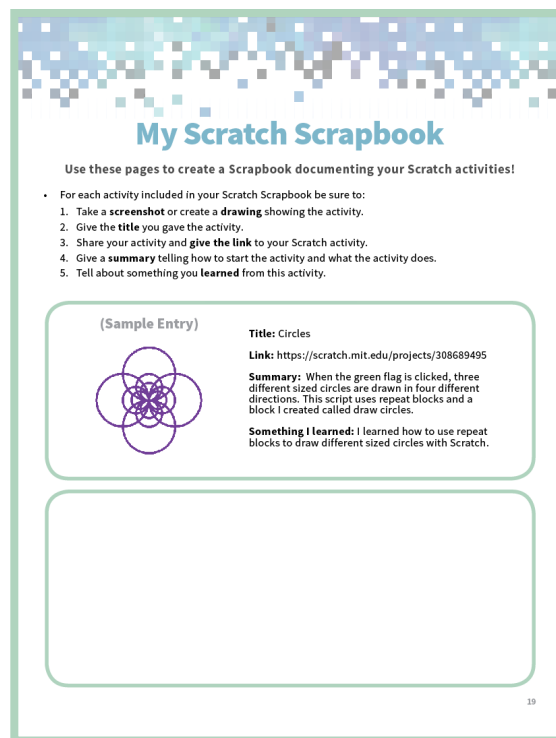
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This curriculum is available for purchase from the National 4-H Supply Service, the e-commerce and mail order catalog unit of National 4-H Council. Visit shop4-h.org or call (301) 961-2934.

Your Scratch Scrapbook

As you complete Scratch activities, document each in your Scratch Scrapbook.

The Scrapbook begins on **page 19** of this book. Directions for completing the Scrapbook are also on **page 19**.





Using this Notebook

How to Follow Along

Page numbers throughout this book, shown like the example to the right, refer to the page numbers in the *Discovering Computer Science & Programming through Scratch Level One: Fundamentals* book.



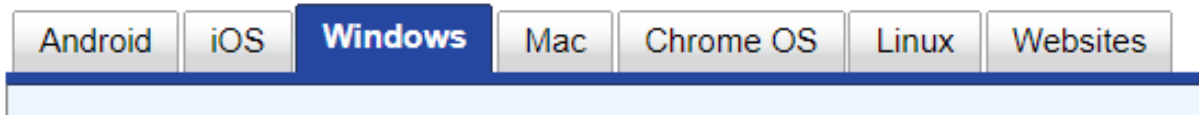
▶ page #

How to Take a Screenshot

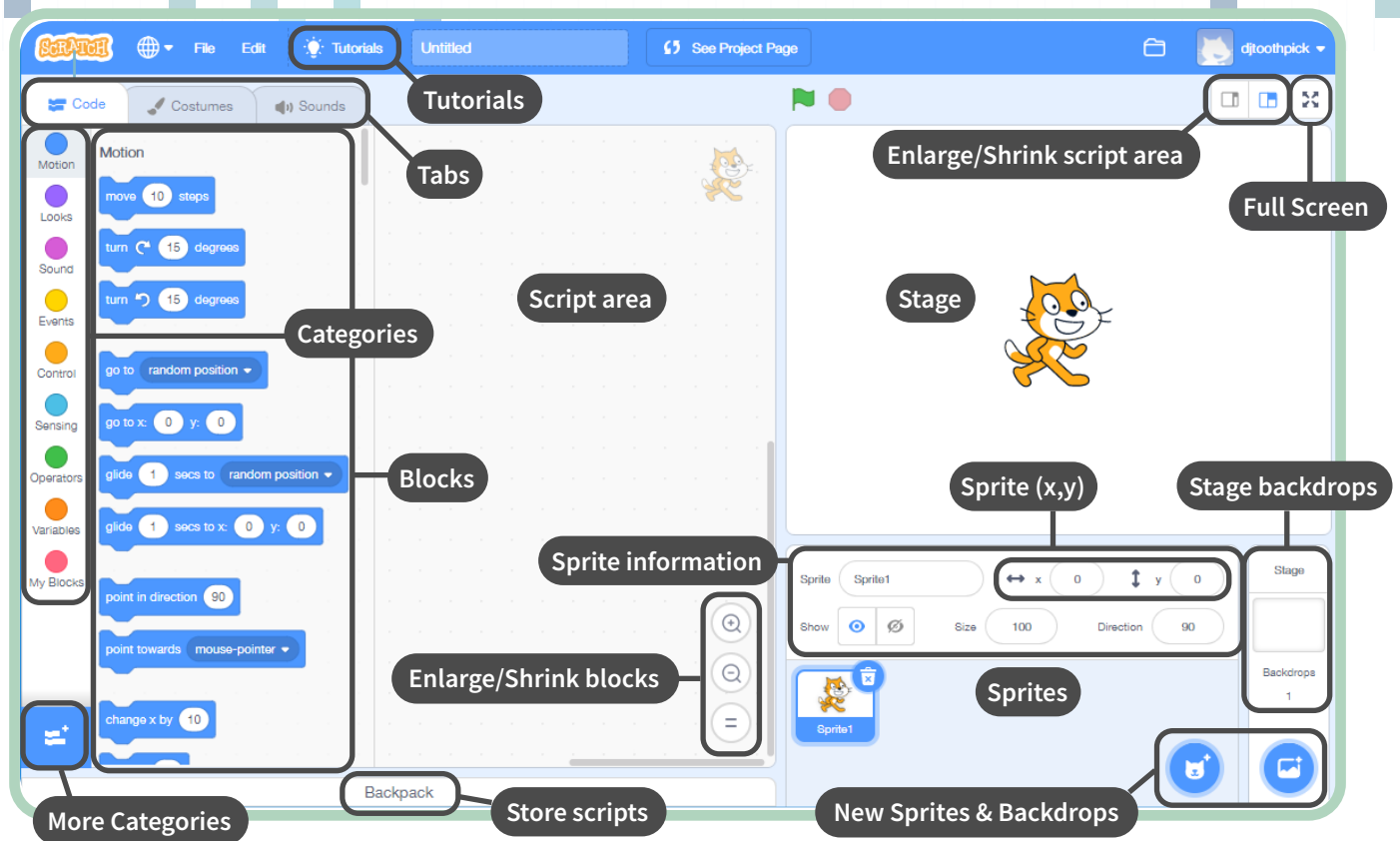
Throughout this notebook, you will be asked to take a screenshot of a script or activity you created to print and attach for others to see. If you are unsure how to take a screenshot on your computer, there are directions at:

www.take-a-screenshot.org

At this address you can click on directions for all of these operating systems:



- **Windows:** Use a built-in screenshot tool called **Snipping Tool**. Watch this YouTube video called, “How to Use Snipping Tool Beginners Guide” for instructions. www.youtube.com/watch?v=2O932t8-k2A
- **Mac:** Follow these instructions found at this address from Apple support: support.apple.com/en-us/HT201361



Scratch Environment

Stage: The area where the Sprites appear

Sprites: Objects that move about the stage

Sprite information: Shows sprite's name, location, visibility, size and directions it is pointing

Sprite (x,y): Shows the (x,y) coordinates of the selected Sprite on the stage

New Sprites & Backdrops: Used to add or create new sprites and backdrops

Blocks: Items or tiles used to command your Sprite to perform an action

Enlarge/Shrink blocks: Enlarge (+) or shrink (-) size of blocks to make them fit easier in Script area

Script area: Area to place blocks or scripts—Right click the background of the Script Area to Undo, Redo, Clean up Blocks, Add Comment, Delete

Tabs: Switch between Scripts, Costumes, and Sound

Categories: Click each to show blocks in that category—Blocks are color coded in each category

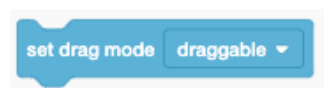
More Categories: Click to show categories that are not listed until you add them to the category list

Stage backdrops: Used to change the background of the stage

Tutorials: Shows helpful tips, frequently asked questions, and activity suggestions

Backpack: Store a script or Sprite here so it can be used in other Scratch projects

Full-Screen: Show only the stage area on the screen—To drag a Sprite around the stage in full-screen, use this block from the **SENSING** category



Getting Started with Scratch

▶ page 5

Getting Started with Scratch

Explore Scratch. Spend time clicking and dragging blocks around. Snap blocks together to create a script.

- Write or draw something here to share what you discover.

▶ page 6

Sometimes the cat moves too quickly to see. Find the **wait__sec** and **glide__sec to x:__ y:__** blocks in the **MOTION** and **CONTROL** categories. Add them to your script to make the cat follow the list of instructions below.

- Draw a line from each instruction listed below to the block in your script that completes that instruction.

Instructions:

1. Glide across the stage
2. Wait one second
3. Change color
4. Wait a second
5. Change size
6. Create a text bubble
7. Glide back across the stage

Include this activity in your Scratch Scrapbook!

Take a screenshot of your script, print it, and attach it here.

Starting and Stopping Scripts

- How did you start your script? Write or draw about other ways to start a script.
- How did you stop your script? Write or draw about other ways to stop a script.
- What does the **forever** block do?

New Sprites

- Choose a new sprite.
- Create a script that makes your sprite repeatedly follow the instructions below.
- Draw a line from each instruction listed below to the block in your script that completes that instruction.
- Circle the block you used to make the cat repeatedly follow the instructions.

Instructions:

1. Appear on the stage
2. Disappear
3. Move to a random location
4. Reappear
5. Change color
6. Say or think something

Include this activity in your Scratch Scrapbook!

Take a screenshot of your script, print it, and attach it here.



I pledge my head to clearer thinking,

my heart to greater loyalty,

my hands to larger service, and

my health to better living,

**for my club, my community,
my country and my world.**

