

Scratch Workshop Playbook

Part 1 Logo with a Cat

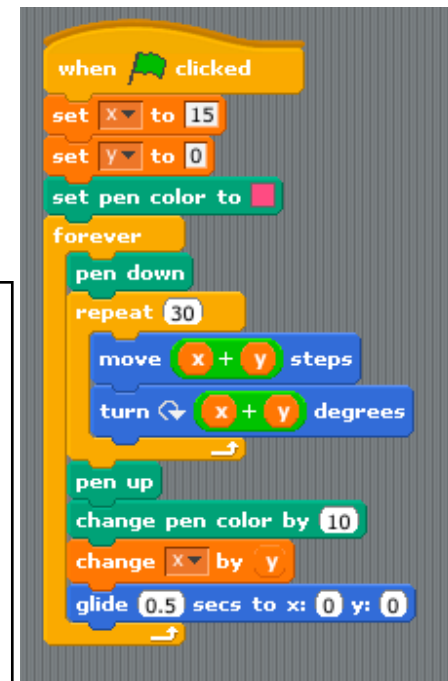
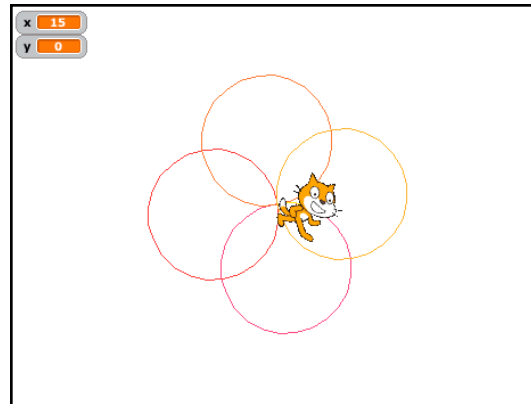
Scratch is written in a language called Squeak which has a history coming from Smalltalk, developed at the Xerox PARC research center in the 1970s. While Squeak by itself is another similar design environment like Scratch for use with kids, you'll find the basics of Scratch are borrowed from Logo.

You can build Logo-style artwork with our cat.

- ✓ Create a new project; explain the U.I.
- ✓ Program the cat, as seen below, to create designs.

Students can change the variables and predict what will happen at the next iteration. Interactive controls can be introduced to clear the stage or change the rate by which the cat travels. Furthermore, we could animate the cat by switching costumes in a loop.

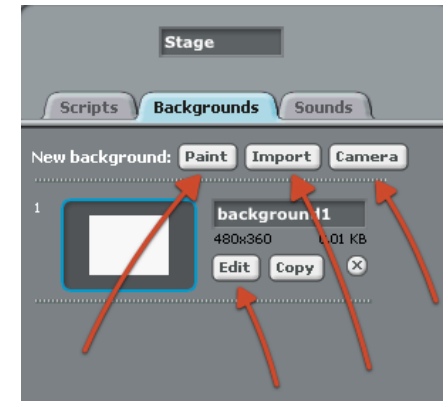
- ✓ Introduce how to animate the cat by switching costumes in a loop.



Part 2 Telling Stories

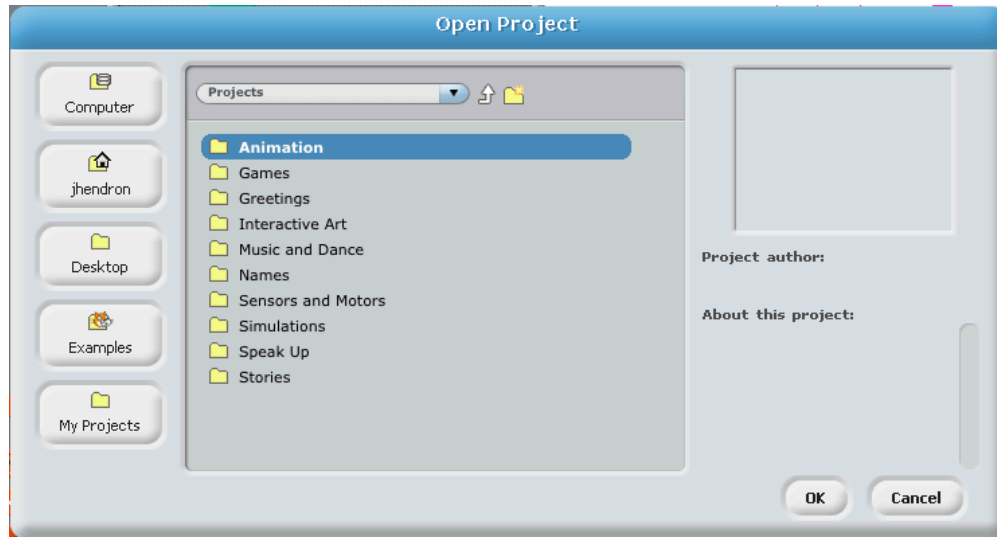
Scratch can be used as a media tool to allow sprites operate as characters that can tell a story. With stage background changes, students can provide an endless number of backdrops for each scene of the story. Complex stories may involve input from the user to take students along customized plot paths. The key for longer stories is how to switch back and forth between the action: here, broadcast calls save the day.

- Create a new project.
- Create a new background for the stage.
- Introduce 2 random sprites, give each one a unique name.
- Develop a dialog between the two characters.
- Use broadcast and “When I receive” commands to toggle between speakers in the dialog.
- Use speech bubbles to carry main conversation.
- Use audio record tool to record sound effects “hmm.., ah!”

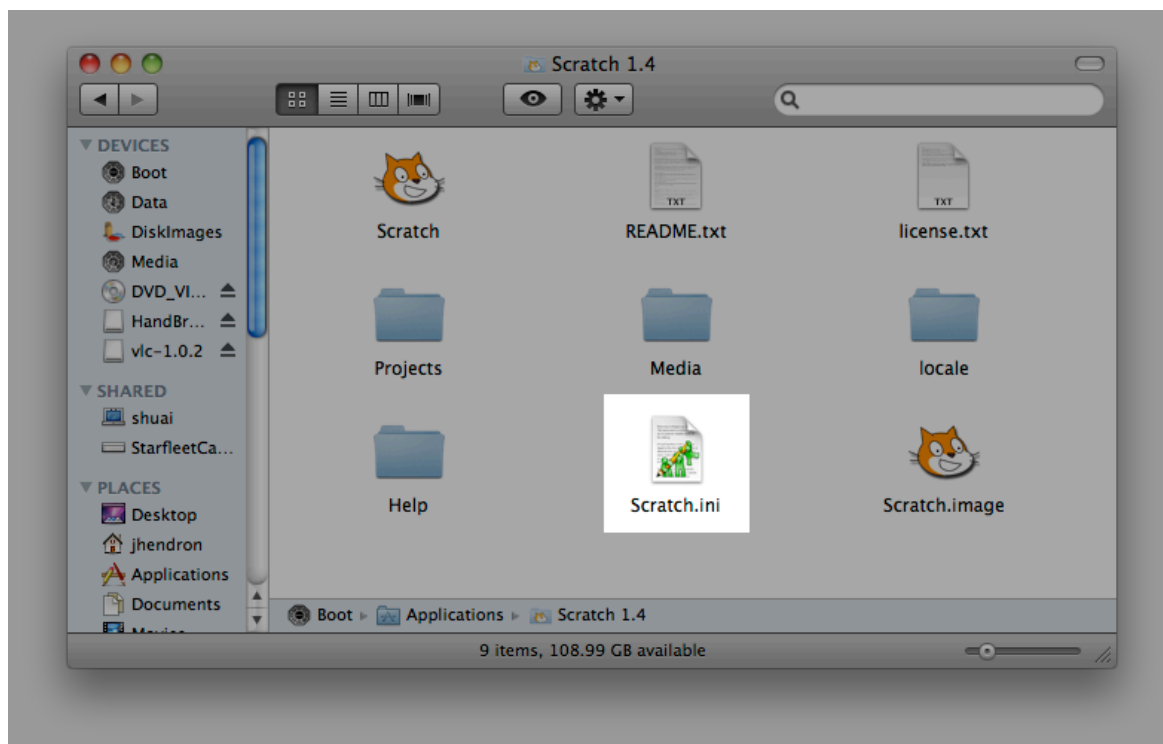


Part 3 Re-Mix

Part of the fun of Scratch is the ability to change other people's projects along the popular phenomenon known as *remixing*. The best way to get started—even without an Internet connection—is to look at the included projects that come with Scratch 1.4.



- ✓ Explore some of the projects that come pre-loaded in Scratch. I like the one demonstrating visual effects in “Interactive Art.”
- ✓ Search *Scratch website* for a project and download it; make changes to the project. Example URL: *http://scratch.mit.edu/projects/PeterC/8444*
- ✓ Look first at changes to make to backgrounds; then look at possible changes to code.
- ✓ Point out the built-in share features.
- ✓ Mention preference file that blocks project submissions to the Scratch website.



A number of secret settings can be set by editing *Scratch.ini*, located in the application's folder, in a text editor.

Part 4 Extend Scratch with PicoBoards and Lego WeDo

Adding USB sensors and motors can extend the Scratch interface into the real world. Control "devices" students create using these sensors and motors with 3rd party add-ons.

- Plug-in PicoBoard and demonstrate live sensor output.*
- Show 2 demos of Picoboards in the samples for Scratch 1.4; de-construct code.*
- Share PicoBoard website: <http://www.picocricket.com/picoboard.html>*

Part 5 Variables and Arrays within Scratch

Scratch can do various types of logic and math, including basic operations, boolean logic, greater than/less than, random number selection, the joining of two strings, rounding, and advanced math such as square roots, sin, absolute value, log, and exponents. Check out the *Operators* commands group.

Under the *Variables* commands group you can create variables to hold values on a per-sprite basis, or for the entire project. You can also create arrays, called lists in Scratch. In fact, you can create your arrays in text files then import the strings into Scratch.

