

# SCRATCH

Document contains sections and information from the Scratch 1.4 Reference Guide  
<http://scratch.mit.edu>

## INTRODUCTION

Scratch is a new programming language that makes it easy to create interactive stories, games, and animations – and share your creations with others on the web.

## BASIC INGREDIENTS OF A SCRATCH PROJECT

Scratch projects are made up of objects called **sprites**. You can give instructions to a sprite, telling it to move or play music or react to other sprites. To tell a sprite what to do, you snap together graphic **blocks** into stacks, called **scripts**. When you click on a script, Scratch runs the blocks from the top of the script to the bottom.

## SCRATCH INTERFACE



## STAGE

The **Stage** is where you see your stories, games, and animations come to life. Sprites move and interact with one another on the Stage.

## NEW SPRITES

When you start a new Scratch project, it begins with a single cat sprite. To create new sprites, click on these buttons:



Paint your own costume for a new sprite using the Paint Editor.



Select a costume for a new sprite – or import an entire sprite.



Get a surprise sprite.

## SPRITE LIST

The **Sprite List** displays thumbnails for all sprites in a project. The name of each sprite appears below its thumbnail.



## COSTUMES

Click the **Costumes** tab to see and edit the sprite's costumes.



## SOUNDS

Click the **Sounds** tab to see the sprite's sounds. You can record new sounds or import sound files. Scratch can read MP3 files and uncompressed WAV, AIF, and AU files.



## CURRENT SPRITE INFO

**Current Sprite Info** shows a sprite's name, x-y position, direction, lock state, and pen state. The sprite's direction indicates which direction the sprite will move when it runs a move block (0=up, 90=right, 180=down, -90=left). The blue line on the thumbnail shows the sprite's direction. You can drag this line to change the sprite's direction. Double-click on the thumbnail to set the direction back to its original state (direction=90).



## ROTATION STYLE

Click the **Rotation Style** buttons to control how the costume appears as the sprite changes its direction. The costume can rotate with the sprite, flip left to right, or not rotate at all.

## TOOLBAR

Click on the **Toolbar** to select a tool, then click on other objects to perform an action.



**Duplicate:** Duplicate sprites, costumes, sounds, blocks, or scripts. (Shift+click for multiple.)

**Delete:** Delete sprites, costumes, sounds, blocks, and scripts. (Shift+click for multiple.)

**Grow:** Make sprites bigger. (Shift+click for larger size steps.)

**Shrink:** Make sprites smaller. (Shift+click for larger size steps.)

## GREEN FLAG

The **Green Flag** provides a convenient way to start many scripts at the same time. Click the Green Flag  (at the top-right corner of the stage) to start all scripts that have  at the top.

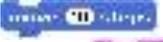
The Green Flag remains highlighted while scripts are running.

## BLOCKS PALETTE AND SCRIPTS AREA

To program a sprite, drag blocks from the **Blocks Palette** to the **Scripts Area**. To run a block, click on it.

Create scripts (programs) by snapping blocks together into stacks. Click anywhere on the stack to run the whole script, from top to bottom.

## TYPES OF BLOCKS

**Stack Blocks:** These blocks have bumps on the bottom and/or notches on the top, such as . You can snap these blocks together into stacks. Some stack blocks have an input area inside them, where you can type a number (such as *10* in the  block) or choose an item from a pull-down menu (such as *pop* in the  block). Some stack blocks, such as , have a C-shaped “mouth” where you can insert other stack blocks.

**Hats:** These blocks have rounded tops, such as . These blocks are placed at the tops of stacks. They wait for an event to happen, such as a key being pressed, then run the blocks underneath them.

**Reporters:** These blocks, such as  and , are designed to fit in the input area of other blocks. Reporters with rounded ends (such as  or ) report *numbers* or *strings*, and fit in blocks with rounded or rectangular holes (such as  or ). Reporters with pointed ends (such as ) report *boolean values* (*true* or *false*) and fit inside blocks with pointed or rectangular holes (such as  or ).

## BLOCK DESCRIPTIONS

The Scratch blocks are organized into eight color-coded categories: Motion, Looks, Sound, Pen, Control, Sensing, Operators, and Variables.

- Motion: Program movement of sprite
- Looks: Program sprite and stage appearance, sprite's thoughts
- Sound: Program audio
- Pen: Program sprite's pen
- Control: Program script features
- Sensing: Program sensing activities
- Operators: Program functions
- Variables: Program variables

## RESOURCES

KPBSD Ed Tech Resources Web site: District Website>Employees Tab>Ed Tech Resources>Web 2.0

<http://scratch.mit.edu/> - Scratch Main Site. Download Scratch, view, share, and download projects.

<http://scratched.media.mit.edu/> - An online community where Scratch educators share stories, exchange resources, ask questions, and find people. Set up a free account.