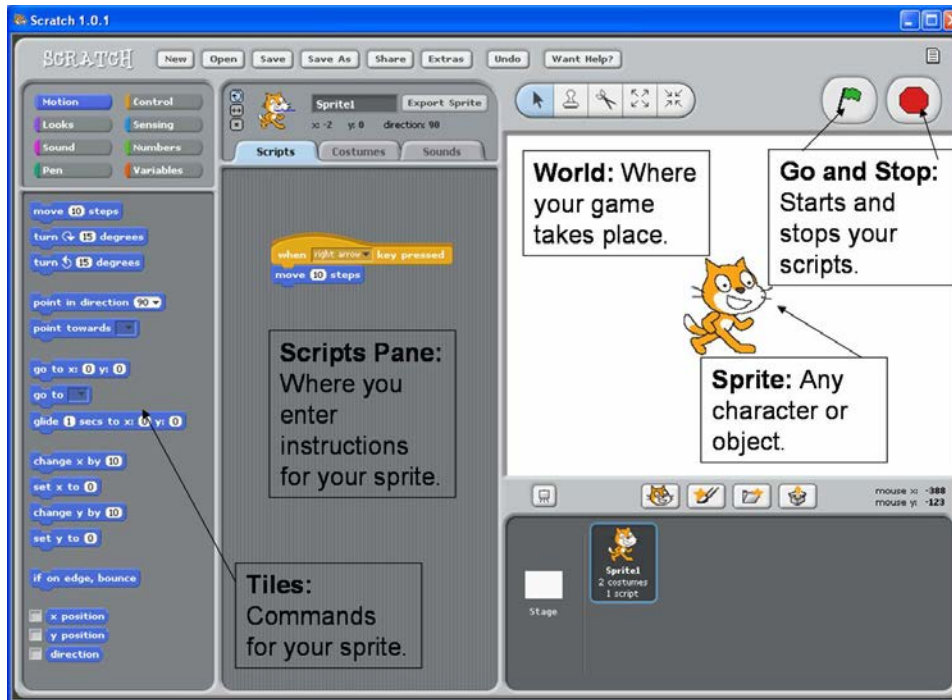
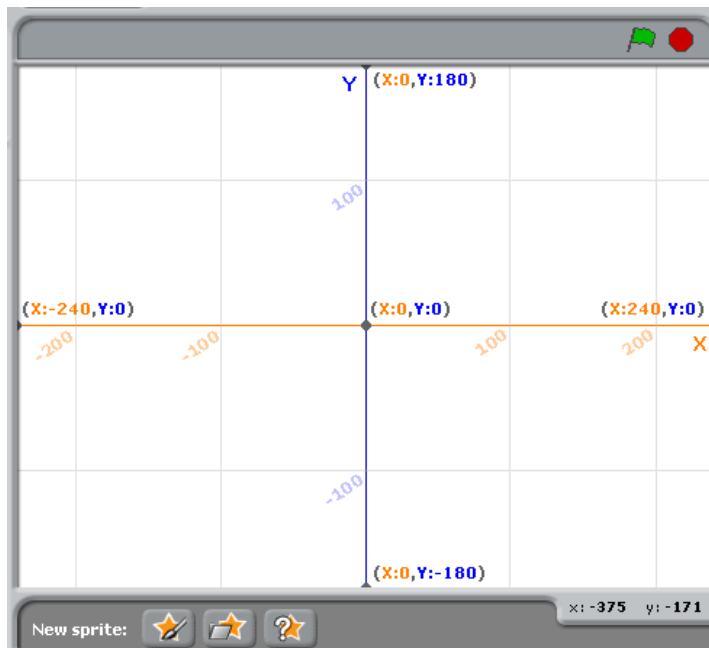


## Scratch Quick Overview

1. Created by MIT Media Lab: <http://scratch.mit.edu>
2. Components:



3. Stage: X and Y grid with dimensions of X: [-240, 240] and Y: [-180, 180]



4. Each Character in Game is Called a "Sprite" Sprites Have the Following Properties:

- a. Name
- b. Costumes
- c. Rotation Type
- d. Sounds
- e. X Position
- f. Y Position
- g. Direction
- h. Size
- i. Graphic Effects
- j. Pen Size and Color

\*\*\*A Sprite is like a Layer in Photoshop. These layers hold the images that become the animations and characters.\*\*\*



5. Scripts Direct the Action for Sprites.

- a. Scripts Change the Properties Over time
- b. Scripts can run simultaneously (Called Threads)
- c. The "When Green Flag Clicked" Block starts the action Threads
- d. There are 8 categories of Scripts



**Motion** Blocks control the Sprite's animation, position, orientation on the stage

**Looks** Blocks Control the Sprite properties of Size, Costume, and Graphic Effects

**Sound** Blocks control sound types and properties

**Pen** Blocks control the size, color, and state of the "Pen"

**Control** Blocks control the flow of execution, listening for Events and Controlling Loops and Conditionals

**Sensing** Blocks Provide feedback to the Sprite on the properties of other Sprites

**Operators** Control Logic, Math, and String Functions

**Variables** Allow for the programmer to store, manipulate, and retrieve data in the forms of numbers and strings. Also gives access to List data structure.

Motion Control  
Looks Sensing  
Sound Operators  
Pen Variables

move 10 steps  
turn 15 degrees  
turn 15 degrees  
point in direction 90  
point towards  
go to x: 0 y: 0  
go to  
glide 1 secs to x: 0 y: 0  
change x by 10  
set x to 0  
change y by 10  
set y to 0  
if on edge, bounce

Motion Control  
Looks Sensing  
Sound Operators  
Pen Variables

switch to costume cat1-a  
next costume  
 costume #  
say Hello! for 2 secs  
say Hello!  
think Hmm... for 2 secs  
think Hmm...  
change color effect by 25  
set color effect to 0  
clear graphic effects  
change size by 10  
set size to 100 %  
 size  
show  
hide

Motion Control  
Looks Sensing  
Sound Operators  
Pen Variables

play sound  
play sound until done  
stop all sounds  
play drum 48 for 0.2 beats  
rest for 0.2 beats  
play note 60 for 0.5 beats  
set instrument to 1  
change volume by -10  
set volume to 100 %  
 volume  
change tempo by 20  
set tempo to 60 bpm  
 tempo

Motion Control  
 Looks Sensing  
 Sound Operators  
 Pen Variables

clear  
 pen down  
 pen up  
 set pen color to ■  
 change pen color by 10  
 set pen color to 0  
 change pen shade by 10  
 set pen shade to 50  
 change pen size by 1  
 set pen size to 1  
 stamp

Motion Control  
 Looks Sensing  
 Sound Operators  
 Pen Variables

when  clicked  
 when space key pressed  
 when Sprite 1 clicked  
 wait 1 secs  
 forever  
 repeat 10  
 broadcast  
 broadcast and wait  
 when I receive  
 forever if

Motion Control  
 Looks Sensing  
 Sound Operators  
 Pen Variables

touching ?  
 touching color ?  
 color is touching ?  
 ask "What's your name?" and wait  
 answer  
 mouse x  
 mouse y  
 mouse down?  
 key space pressed?  
 distance to  
 reset timer  
 timer  
 x position of Sprite1  
 loudness  
 loud?

Motion Control  
Looks Sensing  
Sound Operators  
Pen Variables

+  
-  
\*  
/

pick random 1 to 10

<  
=  
>

and  
or  
not

join hello world  
letter 1 of world  
length of world

mod  
round

sqrt of 10

Motion Control  
Looks Sensing  
Sound Operators  
Pen Variables

Make a variable  
Delete a variable

Tempo

set Tempo to 0  
change Tempo by 1  
show variable Tempo  
hide variable Tempo

Make a list