

Fort Edward School - Scratch Tech Day 2009

Process to Download Scratch

Go to the Scratch website <http://scratch.mit.edu/> and click Download



Process to Share Your Work

Create an account, Log In, Open the Scratch program and create a project. Click on the Share Button, type in your User Name and Password. File will automatically be uploaded.



Scratch

Scratch is a simple programming language used to create stories and games shown on the Scratch stage.

The Scratch stage can have multiple backgrounds that can be changed based on the programmer's scripts.

Sprites are objects that are placed on the stage.

Scripts are created for sprites and the stage to control how they appear and act.

Sprites

Sprites can be imported from the costumes folder in the Scratch program.

Multiple costumes can be used on a sprite to change its appearance or to give the impression that it can walk or dance.

Sprites can be imported from the Costumes folder in the Scratch program.

Sprites can be created or edited using the Paint option. In addition sprites can be created from any image you have on your computer. (See section - Creating a sprite from pictures you take using PhotoShop Elements.)

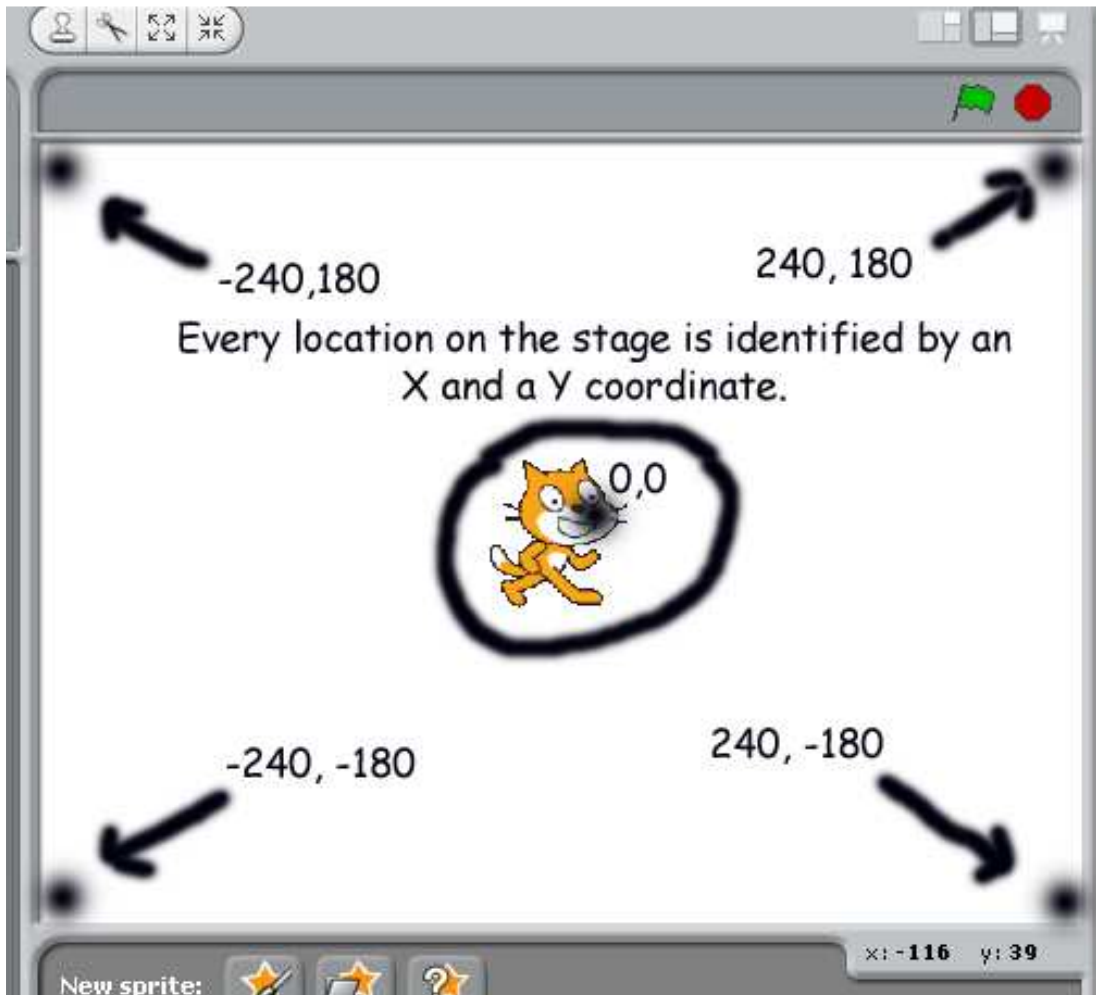
The Stage

The Scratch stage is 480 pixels wide and 360 pixels tall.

Each location on the Stage is identified by an X and a Y number.

The X number is the first number listed for a location. It is used to describe the location a sprite is at from left to right on the stage.

The Y number is the second number listed for a location. It is used to describe the location a sprite is at from top to bottom on the stage.



Script

Goto X: 0, Y: 0 - describes the cat starting at the center location on the screen.

Glide 1 secs to X: 240, Y:180 - will cause the cat when the script is executed to go to the top right corner of the screen from the middle of the screen in 1 second.

Scratch Scripts

Scratch commands are grouped in 8 categories

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

When you click on a group name at the top left of the Scratch program you see a list of the commands that are related to that group name.

Some Common commands under Group name

Looks

Hide, Show, Set size to 100%, Change size by 10%

Control

Repeat, Forever, If Then, Wait

Motion

Turn, Move 10, Goto X, Y, Glide to X, Y

Sensing

Touching (sprite), timer, reset timer

Variables

Set score, Add 1 to score

The programmer drags the commands from the command list to the scripting area for the stage or sprite that has been selected.



The screenshot displays the Scratch interface. On the left, the 'Scripts' category is selected, showing a list of command blocks. In the center, the 'Scripts' area for the 'bee' sprite contains a script starting with 'when I receive start', followed by a sequence of 'show', 'go to x: -185 y: 17', 'glide 1 secs to x: -143 y: -25', 'wait 1 secs', 'glide 1 secs to x: -56 y: 20', 'wait 1 secs', 'glide 1 secs to x: 57 y: -50', 'wait 1 secs', 'glide 2 secs to x: 250 y: -50', and 'hide'. On the right, a blue stage with the text 'The Be' is visible. A callout box with a hand icon points to the script area, containing the text: 'The statements from the script above are dragged from the command list on the left for the bee sprite.'

The scripts for a "Pong Game" and the start for a "Bee Attack Story" are listed below.

Stage 1 in the Pong Game will cause the ball to bounce at an angle on the screen. The paddle will move left or right based on where the user moves the mouse pointer. The paddle will stay near the bottom of the screen.

Pong Game - Stage 1

Paint ball and paddle sprites

Ball Script

When Flag Clicked

Forever

Move 10

If on edge bounce

Paddle script

When Flag clicked

Set X to mouse X (Set X is Motion, Mouse X is sensing)

Set Y to -100

Stage 2 in the pong game will cause the ball to bounce off the paddle when it touches the paddle. It will bounce in an upward direction at an angle. In addition a score variable will start at 0 and increase every time the ball touches the paddle and a sound will be played. A presenter's face will constantly be changing to a new face when the paddle hits the ball.

Pong Game - Stage 2

Ball script add on

When Flag clicked set score to 0

Inside Forever loop add on

If touching (paddle)

Point in direction (25)

Change score by 1

Play sound (hand clap)

Broadcast (next)

** Add presenter sprite and import costumes*

Presenter sprite Script

When I receive (next)

Next costume

Stage 3 in the Pong Game - The player of the game will play against the clock. The player must hit the ball a number of times before time runs out. Two levels for the game will be created an easy level with a large ball and a hard level with a small ball.

Pong Game Stage 3

Ball script add on

Adding a Timer to game (need to create a time variable)

Inside forever loop

Set time to timer (timer in sensing)

**** Winning case****

If score > 4

Say (You Won) for 5 secs

Reset timer

Set score to 0

****Losing case****

If (time) > 10 and (score) < (5)

Say (you lost) for 5 secs

Reset timer

Set score to 0

****Add levels to Game 1 - hard 2 - easy**

In the Ball script at top

When Flag clicked

Ask (Type 1 for easy game 2 for hard)

If (answer) = 2

Change ball (-50)

Process to create your own sprites from digital pictures in PhotoShop

Elements

Open digital image, Copy image using lasso tool, copy to clipboard, paste into new image with transparent background, resize to 100 pixels, save as .png file. The image can now be opened in Scratch as a sprite.

The script below is the Start for a "Bee Attack Story"

Boy and Bee are sprites

Boy walking on the screen

Get 3 costumes for the boy sprite in different walking positions

Script for boy sprite

Goto X: -200 Y:0

Repeat (250)

Move 10 steps

Next costume

If on edge bounce

wait .1 sec

If touching (bee)

play sound (ouch)

Bee flying on the screen (duplicate bees)

Scripts to use for Bee flying

Goto X: 100 Y: -100

Forever

Move 10 steps

Turn (pick random -30 to 30 degrees)

If on edge, bounce

Wait .1 secs