1.1 Game Coding: Getting Started

Introduction
How are video games made? Why it's in computer of code of course! In this lesson you will learn how to program in Scratch.

Equipment

- Computer with Internet
- Scratch™ create an account

Vocabulary

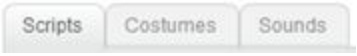
- Pair programming – two programmers working one program on one computer
- Sprites – Objects that perform actions
- Scripts – Computer Code
- Costumes – a sprites appearance
- Pair programing – two programmers working one program on one computer
- Algorithm – set of rules to be followed by a computer
- Iterate – do over and over
- Remix – a modified and shared version of a Scratch program. The Scratch Team use the word remix, because that is what musical artists call changing a song by using the same tune but changing the style. It is also related to the word "Scratch," as in "scratching" like a DJ does with records, also related to music.
- Gallery Walk – Is a chance for you share your work with your classmates. You will set up your project so the other students can interact with it. You will check out all the other projects!

Part 1: Getting Started
Scratch is a web based programing language. In this lesson you will sign up for a Scratch Account and then learn the basics of Scratch through a tutorial.

1. Form pairs as instructed by your teacher. You will be completing the tutorial with your partner. In Pair Programing you will work together on one computer alternating who is "driving" with the keyboard and mouse. Professional coders work together to reduce errors and increase creativity.

2. Launch a Web browser and navigate to the Scratch website at http://scratch.mit.edu/projects/editor/?tip_bar=getStarted. Work with your partner to complete the tutorial.

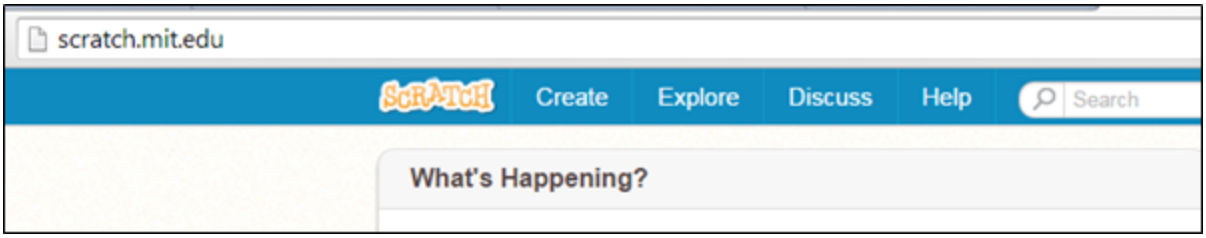
Part 2: Character Movement

Now that you have completed the Tutorial in last lesson let's start programming your own game. In Scratch you create graphic **sprites** that move on the **stage**. Each sprite in Scratch has its own **scripts**, **costumes**, and **sounds** . 

The stage also has its own script, backgrounds, and sounds.

In this activity you will program your Wizard sprite to move around a game board. You will learn how to use "if-then" blocks to make branches in an **algorithm**. You will also learn how to make a program **iterate**.

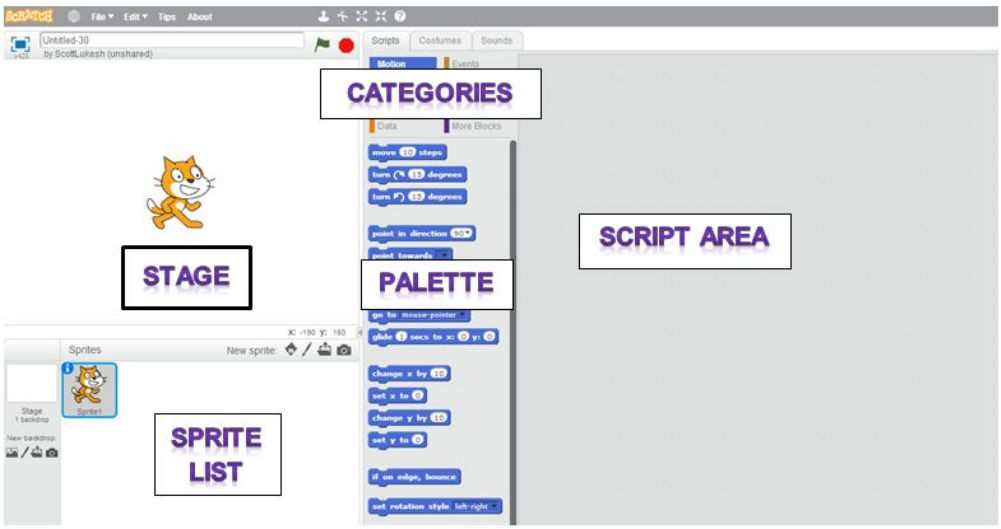
3. Start building a Scratch program by clicking the Create Tab.



4. Now you will be able to build a game! Give your game a name like **My First Game** 

. Scratch will automatically save your game as you code; you can always click on save now 

. Scratch starts you out in the Scripts view, notice these five parts of the Scripts view.



5. Now let's program the Scratch cat to move. In the categories box click on 

and drag 

into the Script Area.

6. In the categories box click on 

and drag 

into the if-then script .

7. In the categories box click on 

and drag 

into the if-then script 

.

8. Change the space to right arrow and 

the x by 4.

9. Now here is a great skill! Left click on the code and choose duplicate

and connect the blocks together

.

10. Change the bottom space to left arrow and the y by -4

.

11. In the categories box click on

and drag

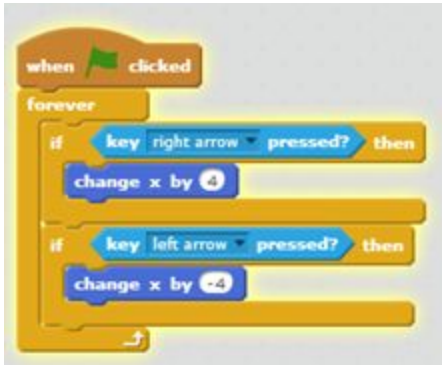
around the if-then block

.

12. Let's test it out. In the categories box click on

and drag

on to the top of the code



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13. Now click on

and test the left and right arrow. Scratch Cat moves!

14. Duplicate the two if-then statements and add them on to the bottom. Change the arrows to up and down. Remove the change x by and replace them with change y by 

and finally change the 10 to 4 and -4.

15. Your final code should look this this 

.

16. When you press the up, down, left and right arrows Scratch Cat will move around the game board.

Part 3: Visual Design

Now that you have your game started let's make it look cool. Scratch lets you create graphic **sprites** that move on the **stage**. You will change your character from Scratch Cat to a wizard and the background of the stage from white to green.

17. Now click the Costumes tab and we will change your sprites look, then click on Choose Costume from Library 

and choose the Wizard Girl 

now delete the two Scratch Cats with the X in the upper right hand corner 

.

18. Right click on the wizard girl sprite 

and select info. Change the sprites name to wizard 

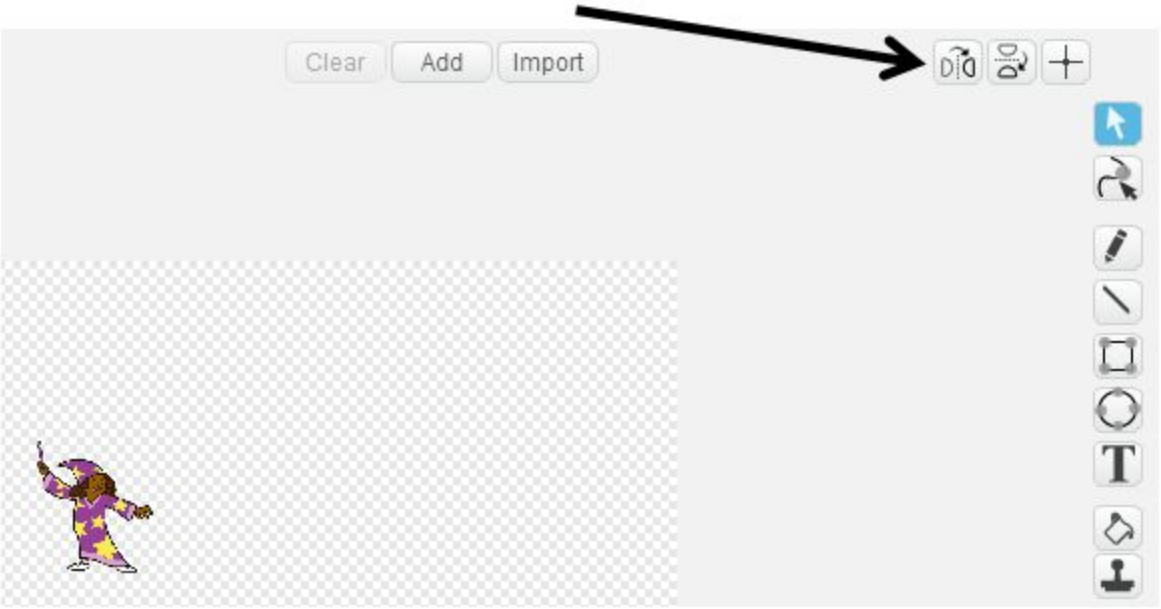
and click the blue arrow.

19. Click on Costumes tab of the Wizard Girl 
and using one of the corner buttons, reduce her to approximately ¼ her original size 
.

20. Right click on the costume 

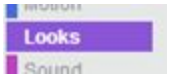
and duplicate it.

21. Select the Flip left-right button.



Now your costumes will look like this 

.

22. Let's program the new costumes. Click on Scripts and choose Looks 

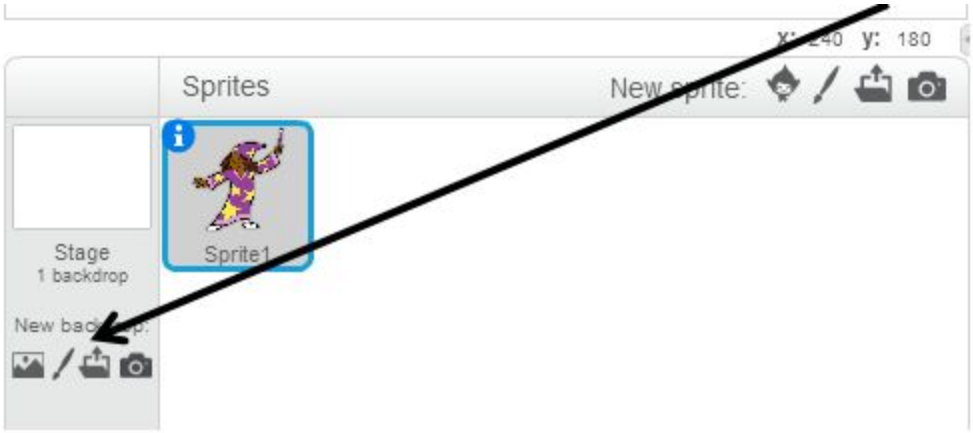
, drag and drop 

into the right and left arrow if-then blocks. Your code will look like this 

. Now when you click on the 

your Wizard will point her wand in the direction she is moving.

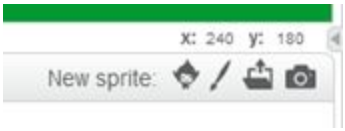
23. Time to make the background of the Stage green. Click on Paint New Backdrop.



24. Select green  and click the Paint Bucket  , click the Stage and it will turn green.

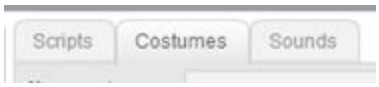
25. Test out your program, your Wizard now has grass to play on! In the next lesson you will add some fruit and some sounds.

Part 4: Graphics & Sound

26. Click on Choose Sprite from the Library  . Choose Things and double click on the apple  .

27. You will see the apple on the stage let resize the apple. Click on the apple in the sprite list

select Costumes



click on the

and using one of the corner buttons, reduce it to approximately 50% the size of the wizard.

28. Right click on the costume

and duplicate it.

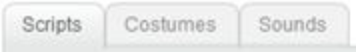
29. Select the Flip left-right button

. Now your costumes will look like this

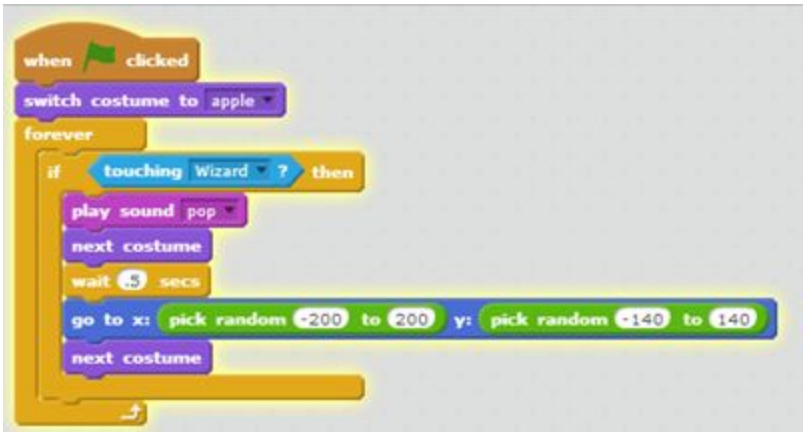
.

30. Continue this process adding the watermelons and oranges until your Costumes look like this; the order down the page is important!

31. Resize each piece of fruit to the same size as the apple  .

32. Click on the Scripts tab 

and build this code in the Script Area



33. Now when the wizard touches a piece of fruit five things happen:
    1. a pop sound is plays
    2. the fruit changes costumes to a cut piece of fruit
    3. there is a one half of a second pause

4. two random numbers are selected
5. and the fruit costume changes again and is move to the random numbers!

Part 5: Your Turn

34. Open up 

and remix it!

35. You might want to start with changing the character and the fruit. A great way to start a remix is by coming up with a theme you are interested.

36. Other changes you can make:
backround
sounds
have music playing during the game
add a timer
add a score
make the game two player.

37. Whenever you need help you can always search Scratch Wiki http://wiki.scratch.mit.edu/wiki/Scratch_Wiki_Home. Enjoy!