



CoderDojo

Season 4
Episode 5
11/15/2015

Find Your Group



New to Scratch?
Want a little more
guidance?



More experienced Scratcher?
Able to work independently
with a partner?



Robot Gearheads*

* If you haven't been attending this group ask AI if he has room to accommodate you. Resources are limited.

The Hour of Code Cometh

And with it comes a lot of excitement and hooplah. Check out [Code.org](http://code.org) for some interesting info and coding projects.

Also encourage your ninja to consider participating in the Cool Code Awards Event put on by our Dojo. See this [site](http://www.coolcode.co) for details (<http://www.coolcode.co>).

Backup if the Wifi is flakey

Last session no luck with wifi. So let's hope for the best but plan for the worst ...

Install Scratch Offline Editor

- From CD or Thumb drive
- If you are following along at home
 - <https://scratch.mit.edu/scratch2download/>

The Rainbow Challenge

Last Dojo meeting we created and remixed stories. I loved experiencing all of your wonderful creations*!

I did notice that we could stand to increase our fluency in Scratch. To that end, I give you the Rainbow Challenge. The Rainbow Challenge is a series of ~40 challenges that encourage you to explore the Scratch programming language and figure out how to do more cool stuff. We will use the Novice through Journeyman challenges as a metric to demonstrate readiness for the White Belt!

We put together 4 to 7 challenges per colored block type. The challenges have varying degrees of difficulty. Confused? Lets look at the challenges!

* See some of these fun stories in our studio:
<https://scratch.mit.edu/studios/1675084/>

Rainbow Challenge: Blue - Motion



Choose a sprite.

1. [Novice] : Move your sprite 150 steps in any direction.
2. [Apprentice] : Move your sprite 150 steps in any direction, then 150 steps in the opposite direction.
3. [Journeyman] : Make your sprite move in a square pattern.
4. [Master] : Make another sprite that looks like a set of stairs. Make your original sprite appear to walk up the stairs.
5. [Expert] : Start with two sprites. Have the first sprite chase the mouse pointer around when the pointer is moved. Have the second sprite chase the first sprite. Be able to vary how fast or how slow each sprite moves.

Rainbow Challenge:

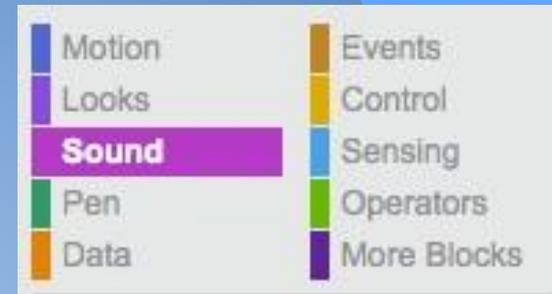
Purple - Looks



Choose or create a sprite. Choose or create a background

1. [Novice] : Have your sprite say your name.
2. [Apprentice] : Have your sprite say your name. Then think of another name.
3. [Journeyman] : Have your sprite say your name. Then think of something. Then change either color or costume. Then change the background.
4. [Journeyman] : Have your sprite change using a graphical effect whenever you press the 'C' key.
5. [Master] : Have your sprite say something about feeling like a ghost. Then use a graphic effect to make it look ghost-like, float up a bit, then float across the screen, then float down. Say it is feeling better now and return to the normal sprite appearance.

Rainbow Challenge: Fuchsia - Sound



1. [Novice] : Select a new sound from the sound tab. Play it.
2. [Apprentice] : Play four different notes one after the other after the 'N' key is pressed.
3. [Journeyman] : Have your favorite sound play when you click on your sprite.
4. [Master] : Make a short 'song' using multiple sprites who each play a different instrument. Have them play notes or a drum etc. The song should start playing when you press the green flag.
5. [Expert] : Make a mini-piano app. Make sprites that look like keys. When the "keys" are pressed play a note.

Rainbow Challenge: Green - Pen



Select a color for your pen by clicking the color square and the hovering over a color you like.

1. [Novice] : Using the move block and Pen blocks draw a line using your favorite color.
2. [Apprentice] : Draw two lines. Each with a different color and different thickness.
3. [Journeyman] : Draw a square.
4. [Master] : Draw a square and have the color of the line change in a rainbow pattern.
5. [Master] : Draw your first and last initial changing color shade as you go.
6. [Expert] : Make a spirograph pattern generator.

Rainbow Challenge:

Orange - Data



1. [Novice] : Create a variable.
2. [Apprentice] : Create a variable. Increase the value of the variable by one every time the spacebar is pressed.
3. [Journeyman] : Figure out how to display your variable in its four possible configurations (Hidden, Name & Value, Just Value, Name Value and Slider {if it is a number})
4. [Master] : Play a sound when your variable gets larger than 10 then reset the score.
5. [Apprentice] : Create a list that is 5 elements long and contains the first 5 letters of the alphabet.
6. [Master] : Create a block that clears the contents of your list then assigns the default starting values.
7. [Expert] : Make a letter guessing game by making a list that contains all the letters in the alphabet. Pick one at random. Ask the user to guess a letter. If they guess correctly, play a sound say they won and stop. If the guessed incorrectly, ask for another guess.

Rainbow Challenge:

Brown - Events



Choose a sprite.

1. [Novice] : When the green flag is pressed have your sprite exclaim GO!
2. [Journeyman] : Have your sprite move up when the 'W' key is pressed. Down with 'S' Right with 'D' and Left with 'A'
3. [Journeyman] : Add a second backdrop. Switch to it 2 seconds after the green flag is pressed. Have your sprite say it likes the new look after the switch. No timers allowed to trigger your sprite talking.
4. [Master] : Choose a second sprite. Have the first one appear with the green flag, say 'Can you find me?' then disappear. When you click the second sprite have it say 'Where can he be?' and then have it pass a message to the first sprite and wait for a response. When the first sprite gets the message have it reappear and say 'Here I am!'. Have the second sprite respond by saying something.
5. [Expert] : Create an extended dialog by having two sprites talk to each other by broadcasting messages to each other. Have them start the conversation when you clap your hands loudly! :) (need to have a microphone on your laptop for this to work)

Rainbow Challenge: Mustard - Control



Choose a sprite.

1. [Novice] : 2 seconds after the green flag is pressed say 'Boo!'.
2. [Apprentice] : Play the same note 10 times only having one copy of the play note block in the project.
3. [Journeyman] : Create a variable. Add one to it when you hit the spacebar. Have one type of sound play when you hit the spacebar while the variable is less than 5 and a different sound play when it is greater than 5.
4. [Master] : Ask user a yes/no question. If they answer correctly say 'You got it!'. If they answer incorrectly say 'Wrong!!!' (hint: use the 'ask and wait' block in the Cyan colored Sensing blocks and use the 'answer' block as the answer.
5. [Expert] : Create a game where one sprite is food. Make 15 clones of the food sprite. Choose another Sprite that you control. When you touch any of the food clones increase your score by 1 and make the food sprite you touched disappear. When all food sprites are eaten, say you won!

Rainbow Challenge:

Cyan - Sensing



Choose a sprite.

1. [Novice] : Have your sprite say ‘Hello ____’ where ____ is the Scratch Username.
2. [Apprentice] : Ask the user ‘What is your favorite color?’ After the user enters and answer say ‘I like <answer>, too’
3. [Journeyman] : Add a second sprite lined up even with the first sprite. Have the second sprite move back and forth across the screen. Whenever the second sprite touches the first sprite change its costume and have it say ‘Stop touching me!’ Change the costume back when not touching.
4. [Master] : Start your app by pressing the green flag. Your sprite must start out not moving. Make your sprite move across the screen without using any timers and without touching your laptop after you click the green flag (laptop needs to have a camera).
5. [Expert] : Make a project that puts your sprite in one of the four corners of the screen depending on how loud the computer senses the room is. Quiet top right. Some noise top left. Medium noise bottom right. Loud noise bottom left.

Rainbow Challenge: Light Green - Operators



Choose a sprite.

1. [Novice] : Pick a random direction 0-359 and move a random number of steps 1-100 forever.
2. [Apprentice] : Have your sprite say '1 + 1 = <2>' But use the addition operator to calculate the 2 and join the '1 + 1 =' and the sum.
3. [Journeyman] : Have your sprite do the "L" "E" "T" "S" "G" "O" "Let's Go" cheer only using two say blocks.
4. [Master] : Add a second sprite. Have the first sprite save a random variable between 1 and 10 and the sum of 3 + this random variable. Have the sprite say '3 + x = <sum>' where sum is the value calculated. Broadcast to the second sprite and wait for it to finish. Have the second sprite ask 'What is x?' If the user answers correctly say 'You got it!' otherwise say 'Sorry the correct answer is <x>' where x is the random number. Repeat forever.
5. [Expert] : Make a simple calculator.

Rainbow Challenge: More Blocks - Dark Purple

Events
Control
Sensing
Operators

More Blocks

Choose a sprite.

1. [Apprentice] : Make a block that says 'I made a new block' when it is used.
2. [Master] : Explain why you would make a new block.
3. [Expert] : Go find a project that you like that does not have any Dark Purple blocks. Remix the project and encapsulate some of the code in new blocks. Try to make your remixed version easier to understand than the original. Good names for blocks can help with this.

Break Time (1:55?!?)

Please be back by

2:05

The Second Hour

- New to Scratch?
 - Let's keep working on the challenges
- Advanced Scratchers:
 - If you have completed all the Novice, Apprentice and Journeyman challenges (or if you just need a change of pace), then you are ready for Unit 4 of the Creative Computing handbook.
 - Unit 4 is all about Games!
 - First things first, Talk about your favorite games
 - Any platform (web, pc, game system, board game)
 - What makes them fun?
 - What do they have in common?
 - What elements would your dream game have?
 - Next pick one of the starter games that is closest to your dream game (or start from scratch, har har pardon the pun)
 - Maze
 - Pong
 - Scrolling
 - Make a game!
 - Maybe think about something you can do for the Cool Code Awards

Dojo Dialog

- Gallery Walk
 - Set up your laptop to demo your project
 - Walk around your room
 - Look at each other's work
 - Questions, comments, suggestions?