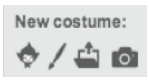
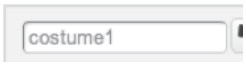
Monday 1/27/14 • LESSON 3 -- Costumes, Sprites, Scripts and more use of Random

Let's begin by talking about one Sprite with multiple costumes.

When you click on the COSTUMES folder tab right next to SCRIPTS, you see

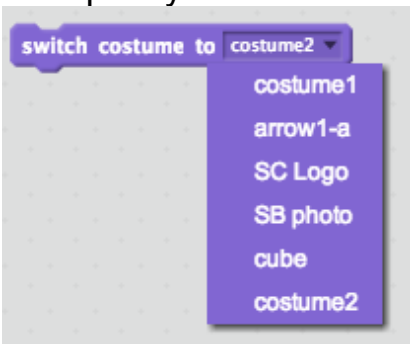
with a rich collection of features. At the upper left, the NEW COSTUME button 

lets you add a costume from the library, paint/modify your own, from your hard drive or from a new camera photo. I have done a few samples. Please note the very faint hard to read + sign in the editor  which is where the ink comes out from the back of the cat's neck (or whatever costume you are using). Every tiny button reveals its identity if you hover over it. Having one Sprite with multiple costumes is not the same as later when we have multiple Sprites. You can rename a

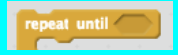
costume by typing in the 

box after you click on the costume you wish to rename. The Paint Editor is extraordinary with both Bitmap Mode and Vector Mode -- the former lets you easily fill regions e.g. my cube while the latter lets you easily resize an object. You can switch from Bitmap to Vector mode seamlessly.

You can DELETE or DUPLICATE a costume by right mouse clicking on it. There are two programming commands that deal with COSTUMES. They are located in the purple LOOKS section. The SWITCH COSTUME tells your Sprite to put on a specific costume with the pull down arrow specify which costume:



The NEXT COSTUME command just goes to the next one and after it reaches the last costume it goes to the first.

HW 3.1 Write a program modeled after the one above where you have multiple costumes and you are basically having a slideshow of your costumes. Try to have at least one costume of each type (the Scratch library, a file on your hard drive that perhaps you got from the Web, a graphic you drew, possibly a picture you took with your camea). Use the wait command so that there is a bit of a delay each time it changes costumes. Use the 

command from the gold section and use the 

command in the light blue section, changing to any key you want. In my program above, either lowercase "s" or uppercase "S" will stop the program.

Now let's talk about multiple Sprites with one costume.

Consider this program with my standard header and one Sprite, the standard cat:

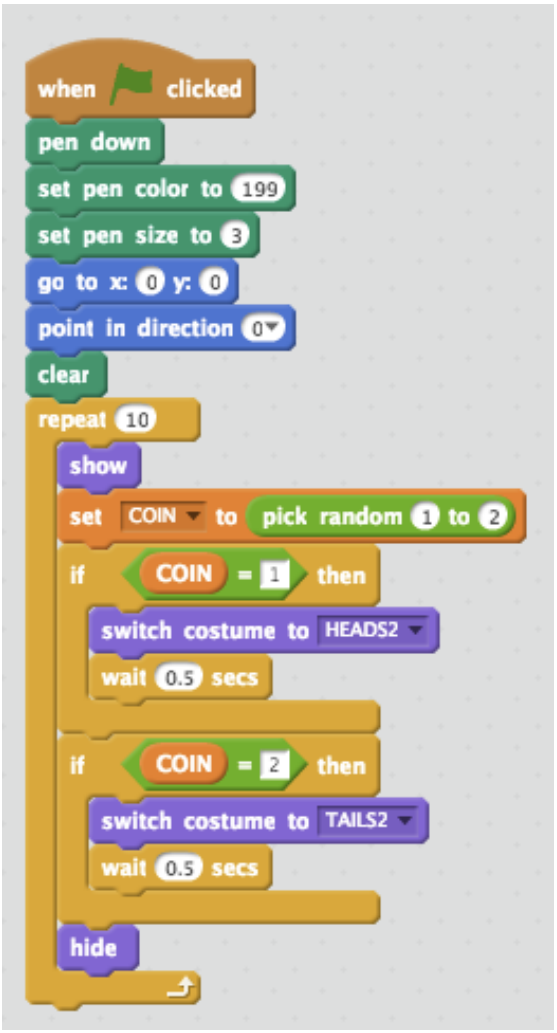
Hopefully, you can figure out what it does, but this required video will help you. The 9 minute video is at http://youtu.be/oGwmUBQMy3o and I use the above script with three Sprites and one costume. The video titled **3 Cats Race Up the Screen** shows a race that leads us to exercise 3.2.

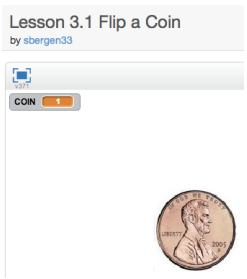
HW 3.2 Write a program similar to the one above with 3 cats all facing right and racing from left to right horizontally across the screen with different speeds based on different use of random numbers and the WAIT command. Include a sound that each cat makes going across the finish line.

Next, back to coins

Last week, we discussed the program on page 11 to flip a coin. Now -- with our costume know-how, we want to modify it so that you see a HEAD or a TAIL when you flip. Part of the work you need to do involves getting the two pictures from the web or using your camera.

In my library/studio, you can find the program called **2014 Lesson 3 Flip a Coin (with coins showing)**. To see this program work, please watch the required video at the http://youtu.be/fsc9A19kavs webpage. On the video, I show you how I took the pictures of a coin from the web and added them as files into the COSTUME section of my library. Notice the use of the IF ____ THEN ____ section and the new command SWITCH COSTUME.

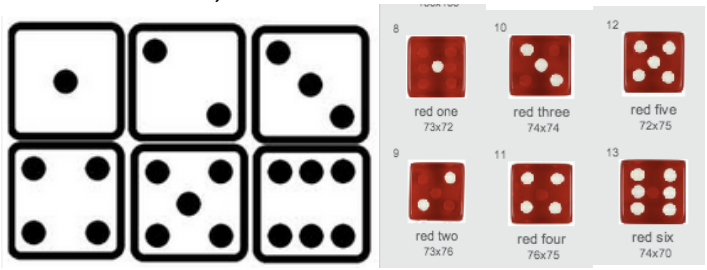




HW 3.3 Modify your coin program from last week so that it displays COINs. Or if you did not do it last week, please do it this week. I have two coins you can use in a Scratch template called **Coins in a Template you can use**. Or you can get your own coins from the web.

Next let us deal with dice

The next program uses random numbers to simulate rolling dice. We want to use two dice so we need 12 costumes, 6 for the red die and 6 for the white die.

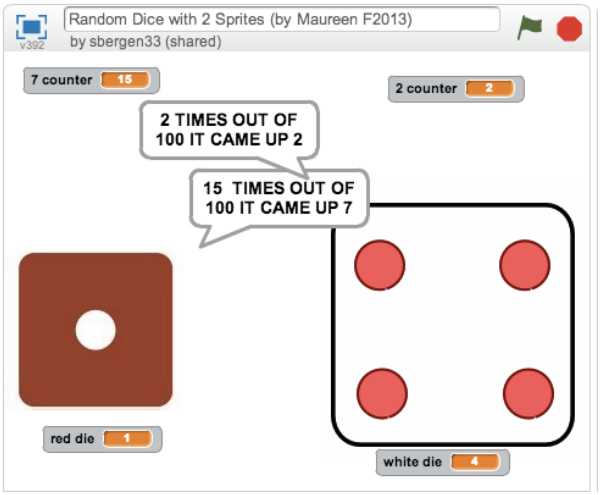


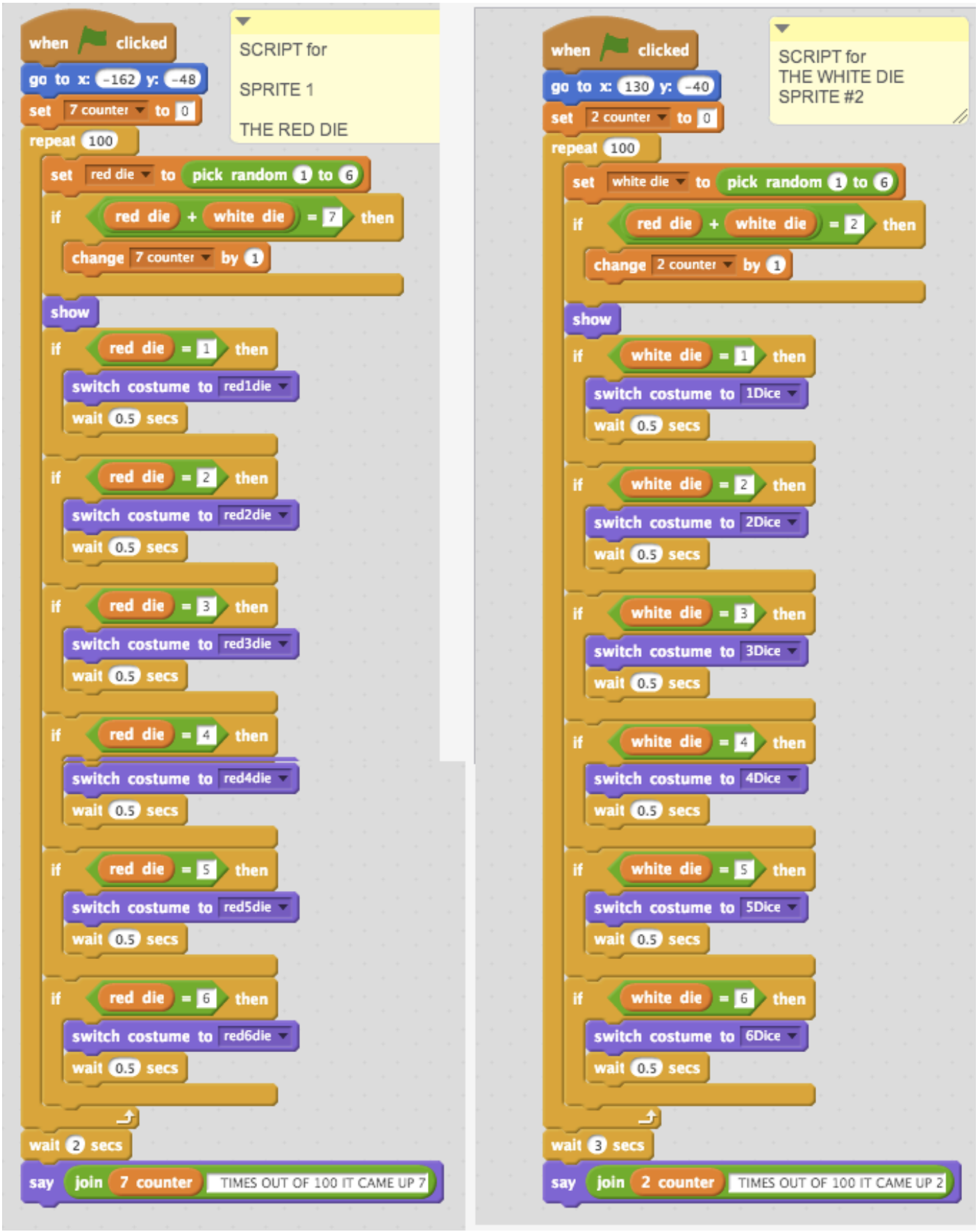
I have done the work for you so that you can focus on the programming. This program is marked **Lesson 3 Dice Template (graphics no script)** and you can get it from my library/studio.

Sources for my dice graphics: http://t1.ftcdn.net/jpg/00/34/26/52/400_F_34265213_6dfUzSQPOP5LjMlqmk9gDvZwqBJYImRF.jpg and http://image.shutterstock.com/display_pic_with_logo/65880/65880,1176077587,1/stock-photo-white-dice-in-a-row-from-to-3038623.jpg

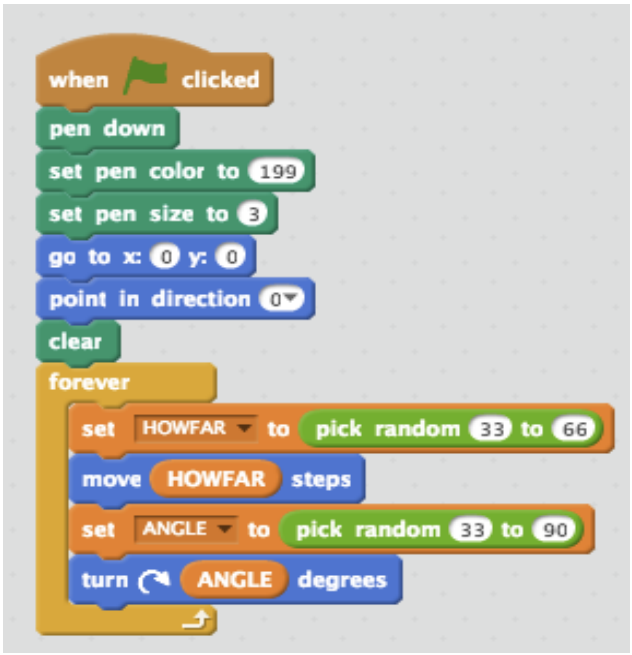
HW 3.4 Use the 12 dice I have given you in the template above to create a program with two Sprites that will roll a pair of dice 100 times, showing the dice on the screen. Count the # of times it comes up "2" which some people call "snakeeyes" and count the # of times it comes up "7" which is the most likely outcome with two dice.

On the next page is a completed program by one of the people in the Fall 2013 course. Please use it if you get stuck and want to see a sample.




when clicked
go to x: -162 y: -48
set 7 counter to 0
repeat 100
set red die to pick random 1 to 6
if red die + white die = 7 then
change 7 counter by 1
show
if red die = 1 then
switch costume to red1die
wait 0.5 secs
if red die = 2 then
switch costume to red2die
wait 0.5 secs
if red die = 3 then
switch costume to red3die
wait 0.5 secs
if red die = 4 then
switch costume to red4die
wait 0.5 secs
if red die = 5 then
switch costume to red5die
wait 0.5 secs
if red die = 6 then
switch costume to red6die
wait 0.5 secs
wait 2 secs
say join 7 counter TIMES OUT OF 100 IT CAME UP 7
SCRIPT for
SPRITE 1
THE RED DIE
when clicked
go to x: 130 y: -40
set 2 counter to 0
repeat 100
set white die to pick random 1 to 6
if red die + white die = 2 then
change 2 counter by 1
show
if white die = 1 then
switch costume to 1Dice
wait 0.5 secs
if white die = 2 then
switch costume to 2Dice
wait 0.5 secs
if white die = 3 then
switch costume to 3Dice
wait 0.5 secs
if white die = 4 then
switch costume to 4Dice
wait 0.5 secs
if white die = 5 then
switch costume to 5Dice
wait 0.5 secs
if white die = 6 then
switch costume to 6Dice
wait 0.5 secs
wait 3 secs
say join 2 counter TIMES OUT OF 100 IT CAME UP 2
SCRIPT for
THE WHITE DIE
SPRITE #2

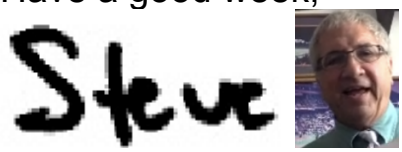
HW 3.5 The program called Lesson 3 Random Scribbling is one that randomly scribbles on the screen. Modify it so that it scribbles with a random color and with a random pen thickness.



What is cool about this program is that eventually (about 15 min) the screen is solid red. I find it interesting to watch (like a fire place) in a side window while I am working on other things. Total randomness. Total chaos.

By the way, here is my random chaos 20 minutes later -- solid red!

Have a good week,



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OPTIONAL 3.6 Challenge:

Write a program that has the computer pick a number from 1 to 100 but not tell you. The computer then lets you guess and tells you each time "too high" or "too low" until you guess the number.

If this interests you and you choose to work on this one, please watch the optional video at http://youtu.be/NCUcEcZxxeM that explains it all.
Lesson 3 -- Guess the Number (2 min)
Sample screen snapshot below. I am not sharing the code with you, however.