**LESSON 4: Assigned 4/20**
Vocabulary: background, character, bitmapped graphic, forever loop, key pressed command, new costume procedure, point toward command, play sound command, switch costume, vector graphic

First, a new twist to our course. I am matching you up with a partner and there will be various team requests over the next few weeks of the course. I have worked hard with a lot of research to match you up with the nicest person in the course ;-)

| | | | | |
|---|---|---|---|---|
| Craig | Luntz | Calvert School MD | 5th Grade Technology | cluntz@calvertschoolmd.org |
| Ka'ala | Yezbick | Bentley School CA | Latin to high schoolers, though I'm going to be teaching a "maker" programming type course to middle schoolers for the first time this summer | kyezbick@bentleyschool.net |
| Margaret | Piraino | Rodeph Sholom School MA | Nursery, 4th Grade | mpiraino7191@gmail.com |
| Jeannie | Finley | Flintridge Sacred Heart Academy CA | 9-12 | jfinley@fsha.org |

HW 4.0 First HW assignment is to BROWSE or CHECKOUT the Scratch Library of your partner. I have links to the Scratch libraries for all of you posted on our online webpage.

Send him or her an email
• introducing yourself
• something that caught your eye or you found intriguing in his or her Scratch library
• some comments about things that you have enjoyed or frustrated you in this course.
**No need to cc me.** Yes you should FOLLOW your partner.

Each week, there will be another partner assignment. We will keep the same partners above for the rest of the course.

NOTE -- I will send an email to each of you connecting you with partner(s).

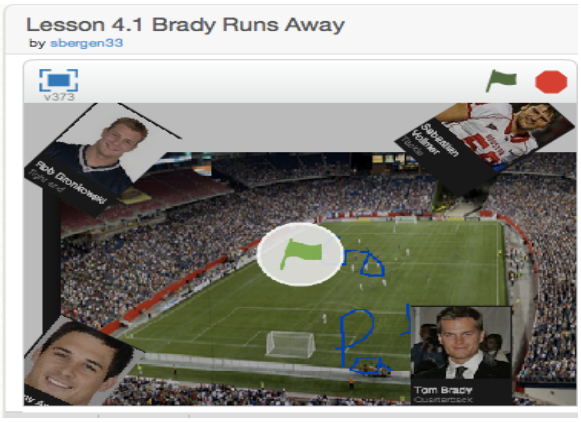
# Okay, now for Lesson 4.

I am going to challenge you to be creative and think of some interesting scene where several sprites chase a central character who is try running away. Quite a few teachers over the last few years have come up with creative, innovative idea for this Lesson 4 assignment, so please put on your "challenge hat." You want to choose a theme that is personal and meaningful, that intrigues you. In lessons 5 and 6, you will be building on this Lesson 4 project, so please rise to the challenge and choose graphics and a theme that reflects personal interests, passion or enjoyment.

We are ready to pull our skills together and create something that involves multiple Sprites. I want you to start by watching this video before you continue doing any more reading -- two minutes of what I call **Brady Moves No Coding**.

http://youtu.be/muFZBu6i6J8

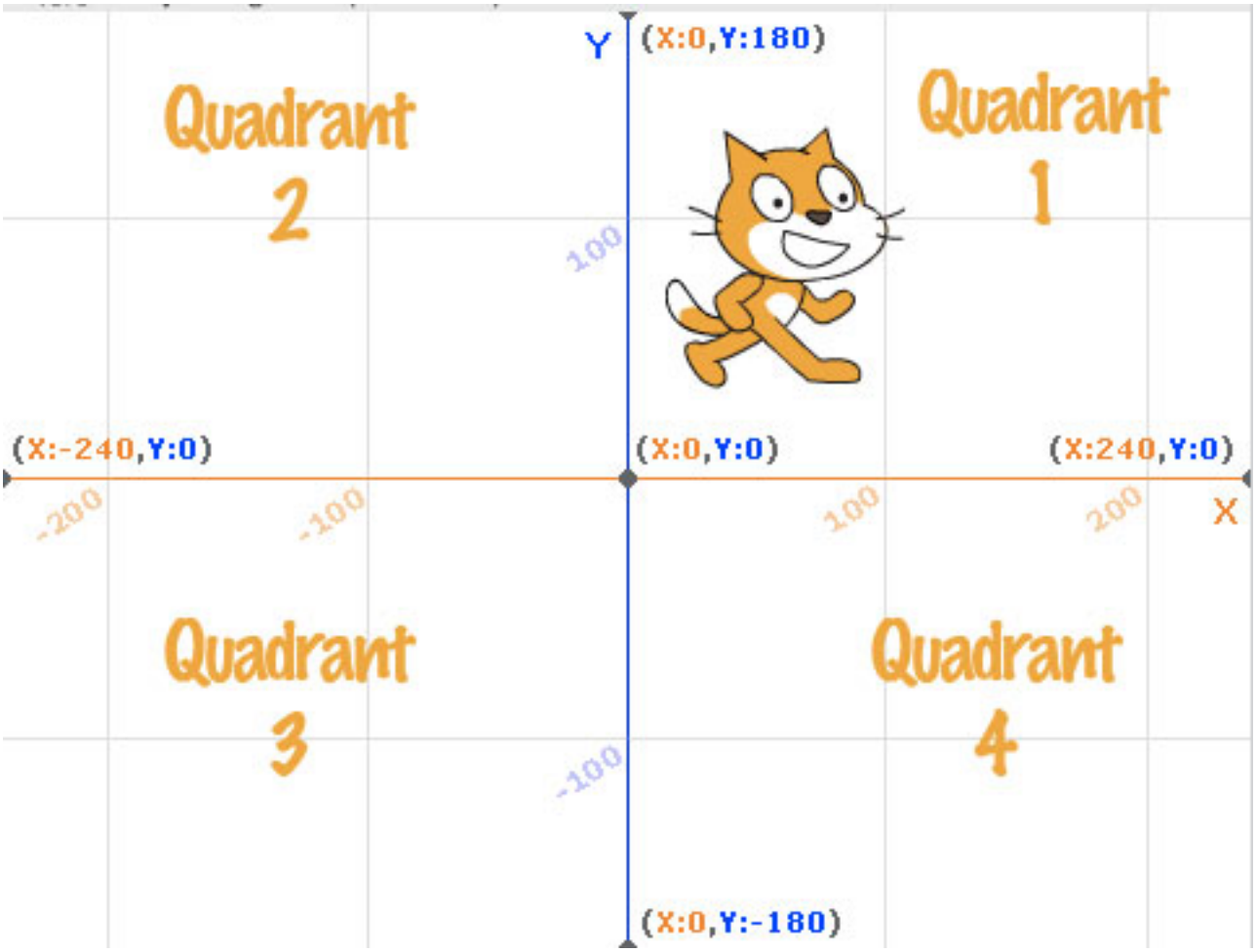
Because I am a bit of a crazed Patriots fan, I have used pictures of 4 football players, but when you do this, you can use any 3 or 4 objects you want. What you should observe from the video above is that
a) all the Sprites are moving simultaneously
b) the leader object (Tom Brady) moves when the operator presses a key (1,2,3,4 for the 4 quadrants of the screen)
c) there is a sound (my dumb voice) you hear each time Tom moves
d) the other 3 Sprites are constantly heading towards Tom no matter where he goes on the screen



Here is an important short 3 minute video called SCRATCH SIZE OF GRAPHIC showing the difference between vector graphics and bitmapped graphics.

http://youtu.be/THtXxl93zGY

Reminder of the dimensions of the screen with the 4 quadrants labeled.




Okay, so here are the new commands and procedures for the week.

**Adding characters or a background from a file on your computer.**
You will need to be able to make screen snapshots on your PC or Mac.
See the bottom of summercore33.com/tips for step by step help if this is not in your skill set. Or I will help you one on one whenever you arrange for us to talk.

**This 18 minute video called Brady Runs Away takes you through the Lesson 4 content.** You can watch it before or after you read through this PDF, whatever you prefer. This video is the essence of lesson 4, working with multiple Sprites.

http://youtu.be/7rVWA-P1Cyw

**Creating a FOREVER loop:**

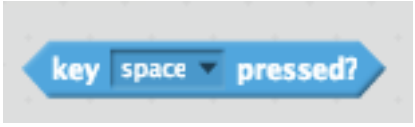
Why this command? Because in creating this game, you need the program to constantly be checking to see if the human has pressed 1,2,3 or 4 to move Tom Brady into quadrants 1,2,3 or 4.

We have used this before

Why this command? Because in creating this game, we need to check to see IF the human presses "1" and if so, we need to have Tom Brady with pen up move into quadrant 1. And of course we will need a total of four of these IF commands, one for each quadrant.

**New SENSOR command to detect if a key has been pressed.**

This is a new one and is essential. Notice the shape is a hexagon (6 sides) and notice that it will "fit" into the IF statement above.



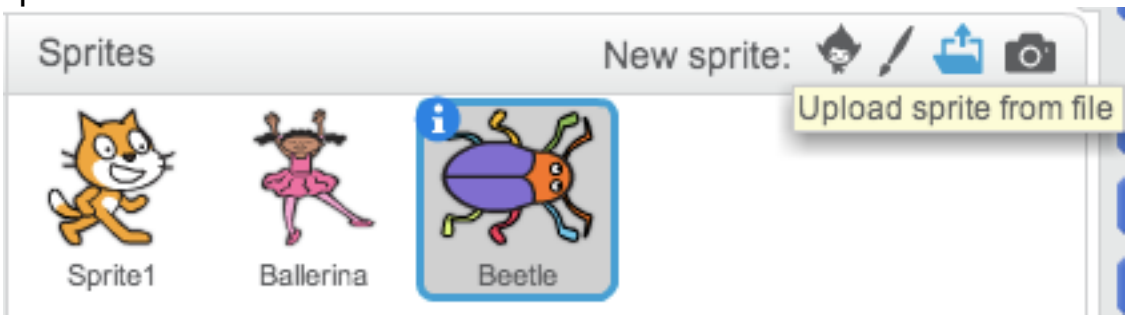

So this is why Scratch is a "powerful computer language" since it is allowing us as programmers to detect if the human has pressed a certain key. Under the triangle where it says SPACE you will see all the keys anyone might press.

**New MOTION command to make one Sprite point towards another Sprite**

The next one is also new and will be put into the script for the other 3 Patriots.

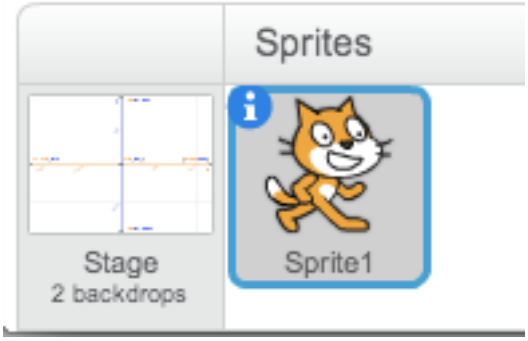
When you click under the triangle, you will see each of the other Sprites you have made.

The next procedure is at the bottom left of the screen.

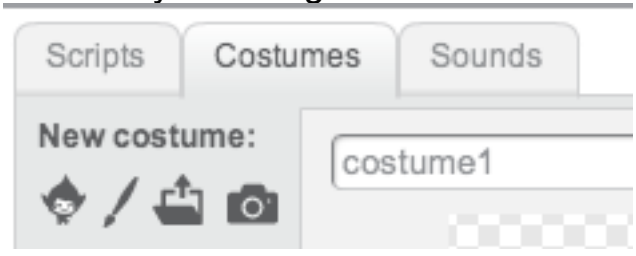



This is where you will see all of the SPRITES in your program. The section that says NEW SPRITE allows you to add a Sprite from the library or from a file. It is my hope that you will pick characters of your choice as I have done, but if you get frustrated by screen snapshots, feel free to use the Sprites in the library.

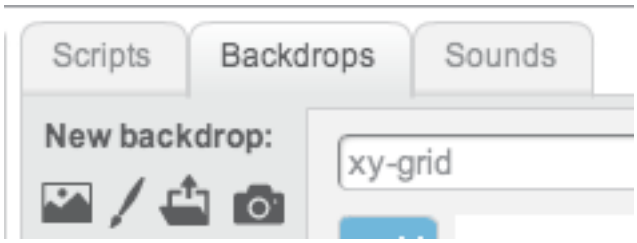
When you look at the bottom left of your scratch screen, you will see




and the top of the screen will let you change costumes.

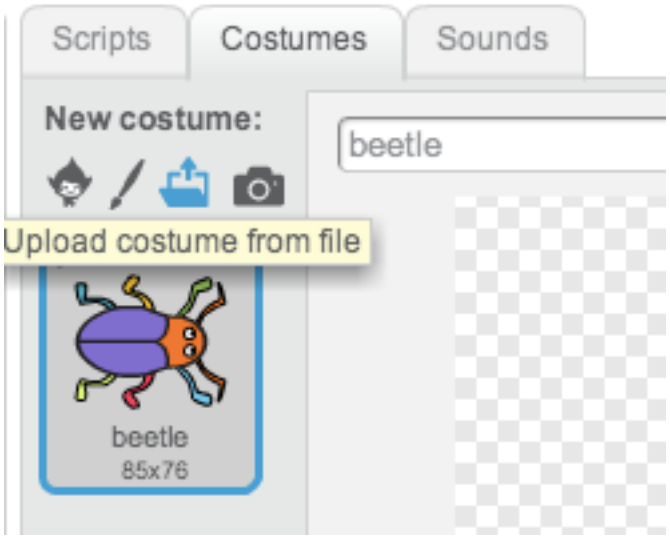


But when you click on STAGE at the bottom left, the top of the screen changes to



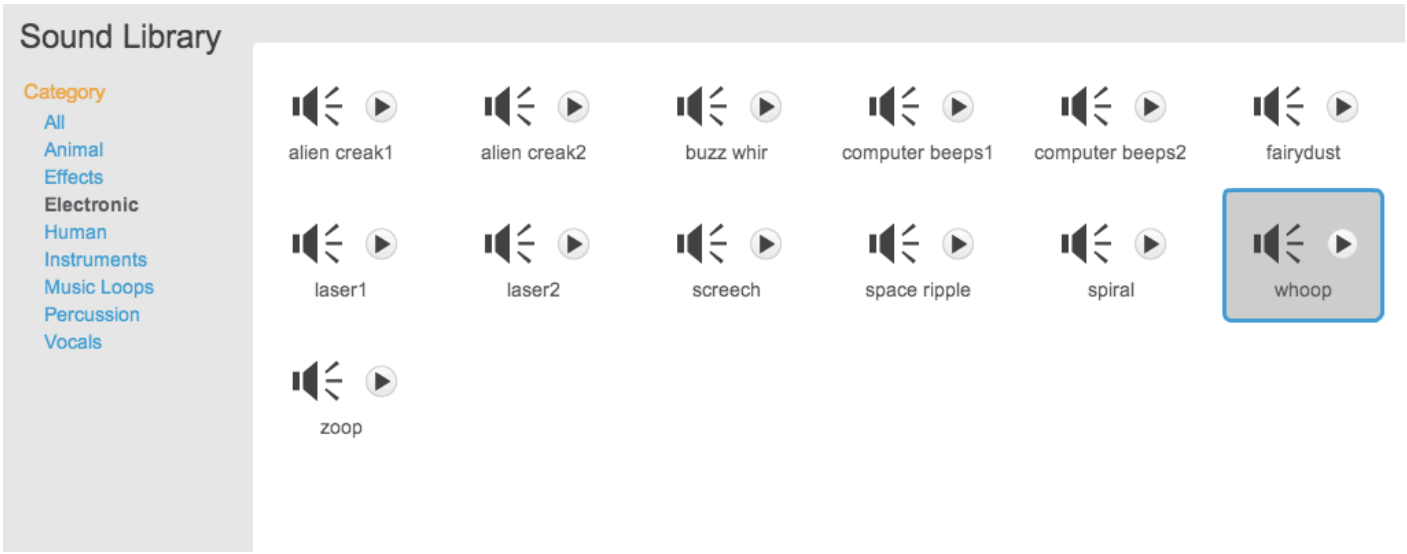

and you can add a backdrop from the library or from a file on your computer.

So the bottom left icon controls whether you are in COSTUME mode or BACKDROP mode. When in costume mode, you can change the costume, choosing from a file or from your library.

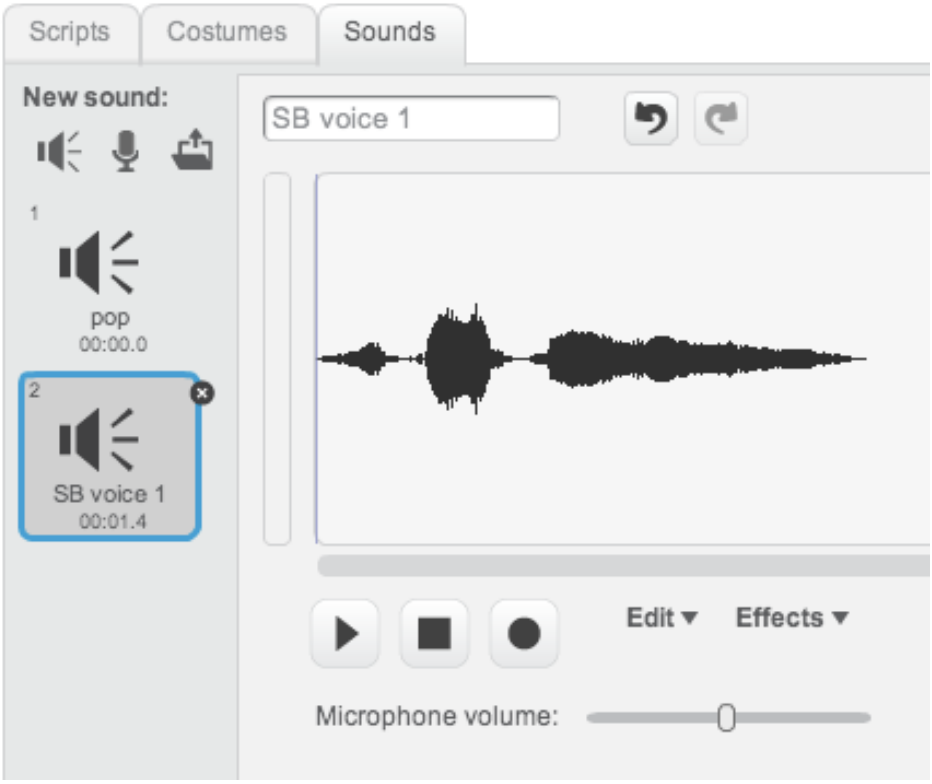



Notice that the THIRD TAB above says SOUNDS.

When you choose it, you can add a sound from the SOUND LIBRARY as you see on the next page.

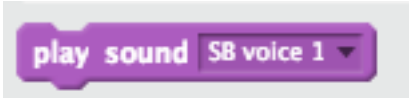



Or if you have a microphone on your computer, you can add a sound from your own voice and can name (and edit) the sound file.

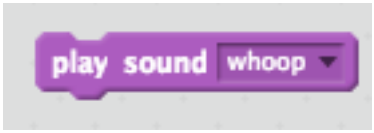



If you have never edited a sound file, it is one of the most empowering things to do on a computer, using CUT or COPY after highlighting a section of your recorded voice. So you use the mouse to highlight part of the sound file, then you CUT or COPY. Then you click within the sound file somewhere if desired and PASTE.

Here is the new command you will use in your TOM BRADY script, either with your voice such as




Or with a sound from the library




Okay. Got it? You pick the theme. I want you to be creative and clever and think something that has a personal connection for you. Over the past few years, here are some examples from teachers who have taken this course:
animals chasing an apple in a farm scene

- swimmers chasing another swimming but watching out for a shark
- weather changes in the Midwest
- fractions racing across a football field
- cartoon characters swimming and dancing on the screen
- dodgeball as the player tries to avoid being hit with one of the balls
- characters of Downtown Abbey chasing one another

I would like you to be creative and take the techniques of this lesson and do something interesting.

Maybe you can have several cars race across the screen.
Maybe you can have several balloons drop to the ground.
Maybe you can have several cats run away from a dog.

This lesson allows you to have several Sprites moving in different directions. Since you know about the RANDOM command, you can make your Sprites move at random speeds which I did not choose to do.

**Other Ideas for making your program better than mine:**
-- use GLIDE instead of MOVE
-- have Tom move to a random spot in each quadrant instead of a fixed place
-- have Tom (or whomever is your leader) have a different sound depending on whether in quadrant 1,2,3 or 4
-- have the followers head towards Tom at different speeds'
-- have a SPIN button that makes Tom (or whomever is your leader) spin

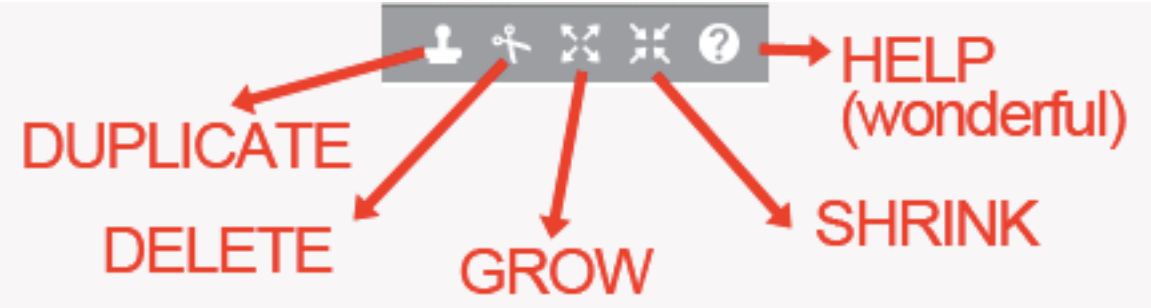
-- use the faces of the people in our class

Required specs: sound, motion, multiple Sprites, allowing the user to push keys during the program that results in something interesting happening on the screen. Here are screen shots of the key components which you should understand now.

Tom Brady (or the leader of your group) has this script

Each of the followers has this script

**Another tip?**
When you have a Sprite, the script belongs to the sprite. So when you duplicate the Sprite by right-mousing on it, you get the script to come with it. Then you can change the costume of the duplicated script. You can also drag a SCRIPT from one sprite to another. Or you can use the backpack. You can also use the icon up top to DUPLICATE a script.




HW 4.1 Create your own innovative version of Lesson 4.1 and make it be SHARED. Send me and your partner an email when done so we can play it! Please make sure that **the file name begins with HW 4.1** in it since we will use it in future lessons.

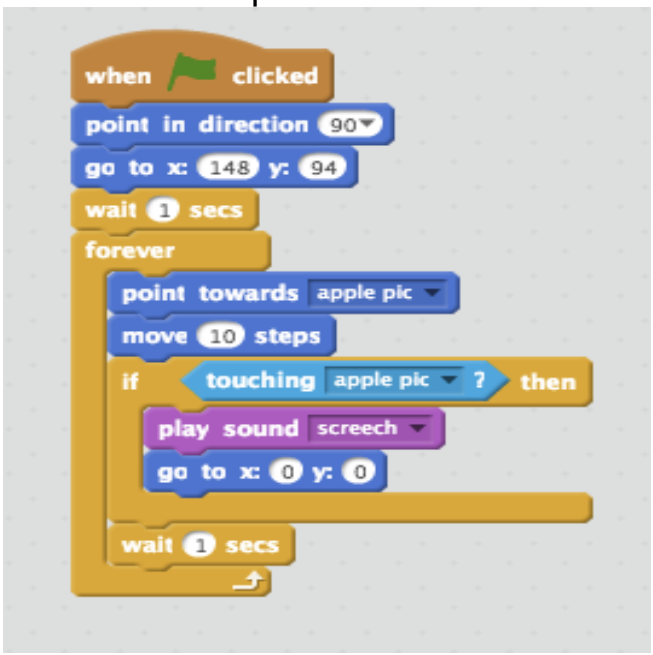
**Please send an email to me AND your partner when done.** This will be one more way your relationship with your partner will grow. Thanks!

# Helping to give you an Idea for HW 4.1?

**These links and samples below from teacher in this course from the past few years.** The actual programs are posted in my studio/library with file names that begin with HW 4.1. Please note that some samples use an additional technique called SCROLLING TEXT on the next page. We will get to it in another week, but you are welcome of course to look at the code from any of these projects.

Animals chase the apple in the upper left corner (Ruth)
Link? http://scratch.mit.edu/projects/17263111/

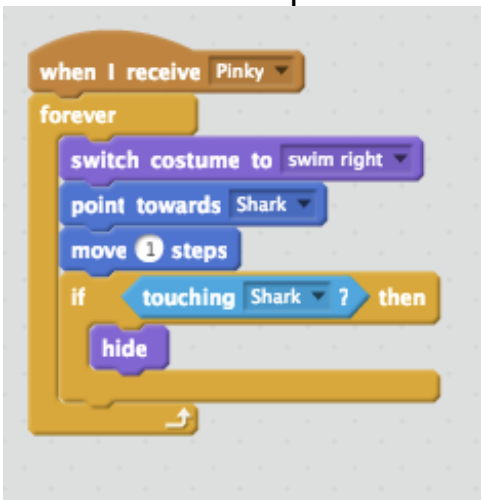
Script of raccoon



Swimmers chase one swimmer but must beware of the shark (Maureen)
Link? http://scratch.mit.edu/projects/17262411

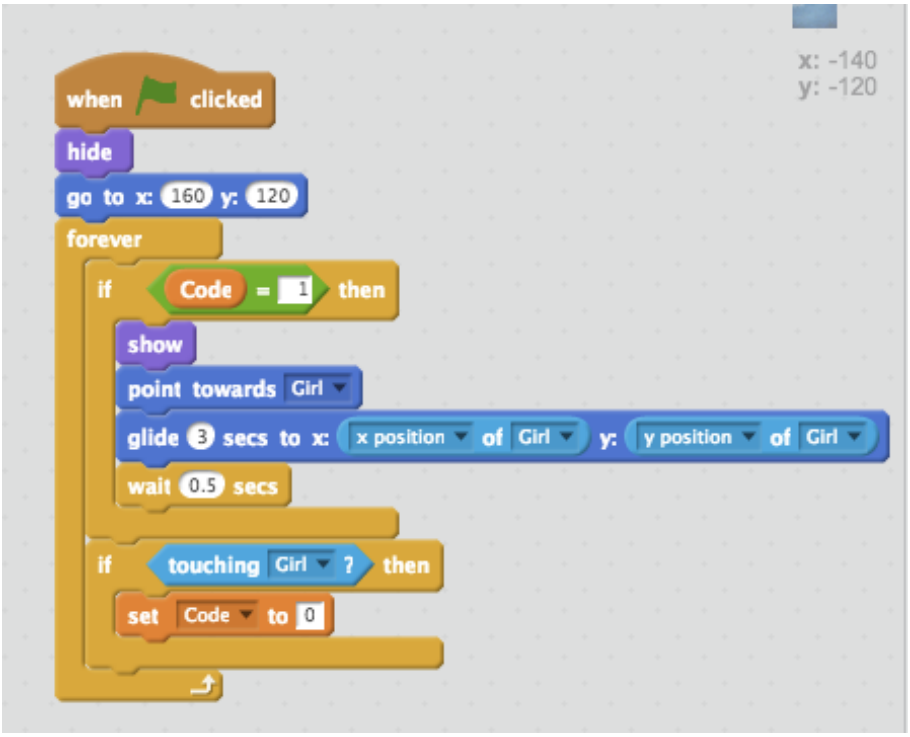
script of one portion of swimmer using MESSAGE

and another portion

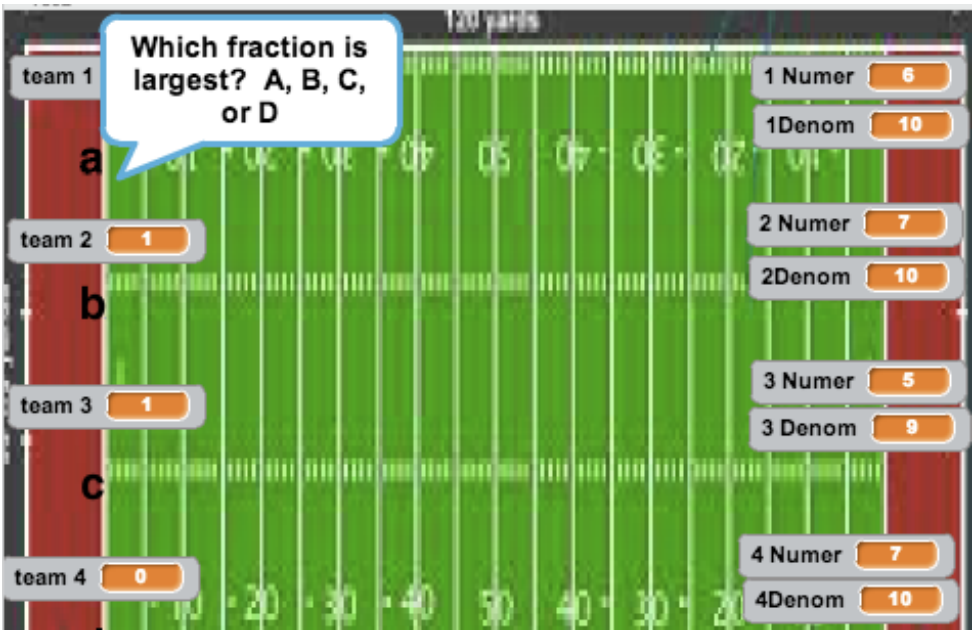


Weather Changes in the Midwest (Jessica)
LINK: http://scratch.mit.edu/projects/17262228/

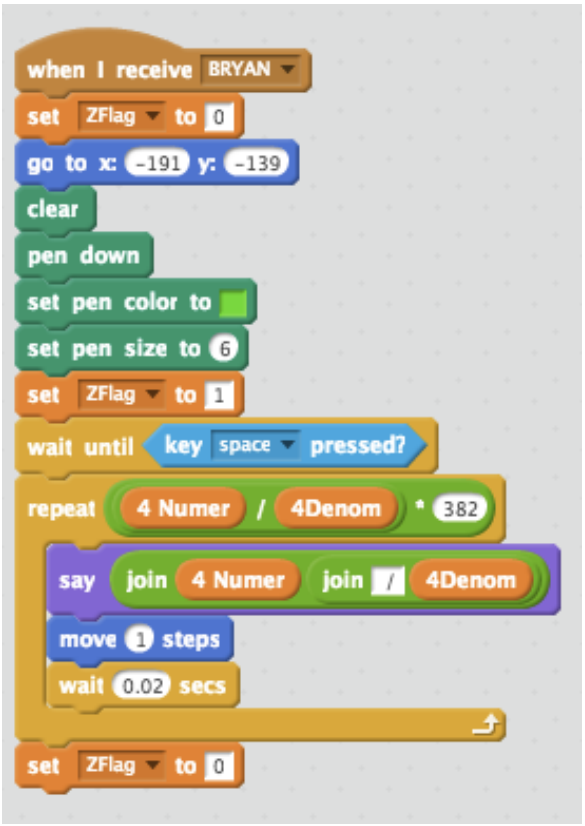
Use of GLIDE command



Football Fractions Race across the Screen (Bryan)
Link: http://scratch.mit.edu/projects/17262129/

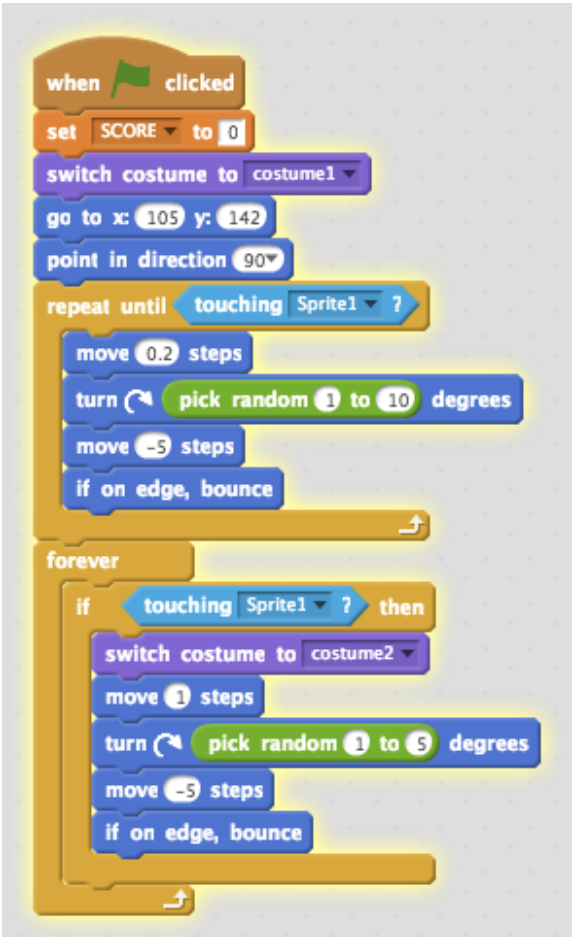



Script for one of the fractions. Notice the use of MESSAGE.



Animated Characters were drawn by hand and Swim and Dance on the screen (Ian)
http://scratch.mit.edu/projects/17739743

Script below makes the fish circle! Notice the use of the IF ON EDGE COMMAND



Dodgeball! (from Jayme)
LINK: http://scratch.mit.edu/projects/17980211

Note that the programmer added these instructions for clarity.

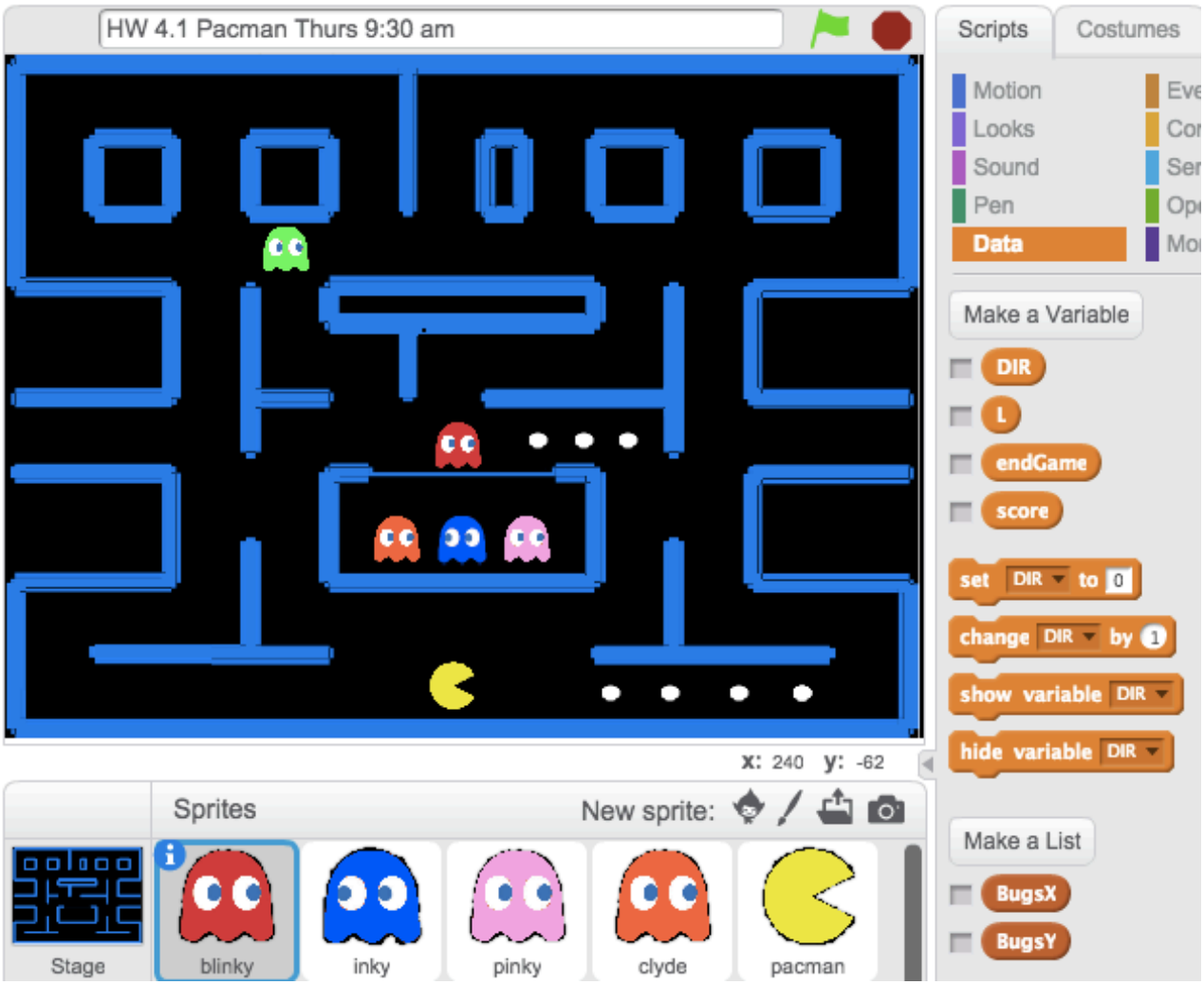
**Instructions**

Press the UP arrow to start.
Press the numbers 1-4 to move the player.
Press the SPACE bar to stop.

Cyclocross Riders Shrink & Grow (Jeff from Seattle)
LINK: https://scratch.mit.edu/projects/51890518/

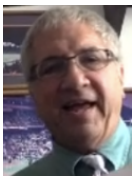
Alien Game (by Jo from TX) with STAMP & SCROLLINGLINK:
https://scratch.mit.edu/projects/49693886

Pacman (from Kathy)
LINK: https://scratch.mit.edu/projects/49249766




**Have a good week and have fun!**

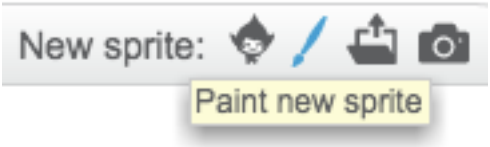
Steve



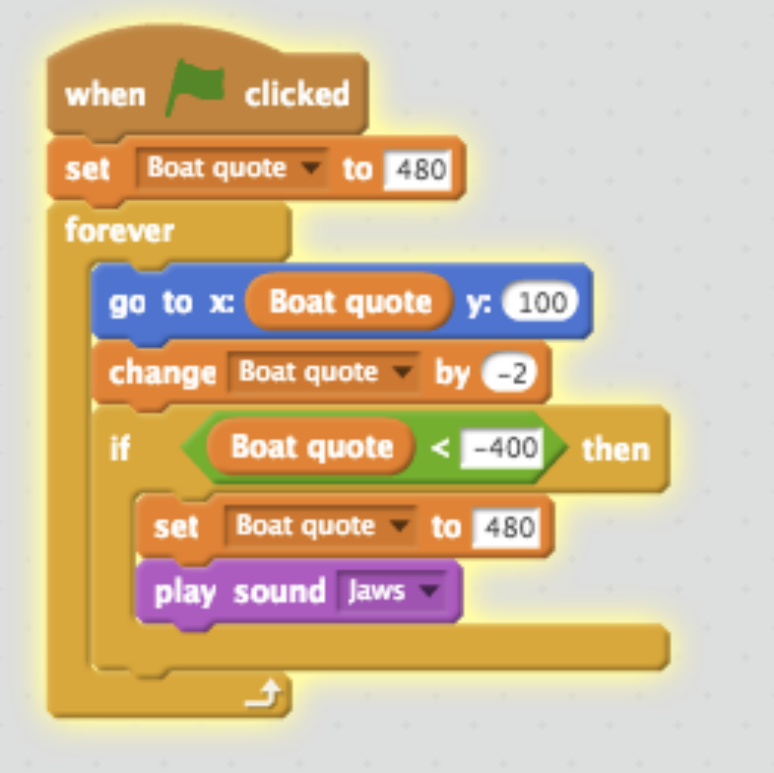
781-953-9699 • skype name = stevebergen (no spaces) • sbergen33@gmail.com

**OPTIONAL SCROLLING TEXT**

Create a new Sprite via the second NEW SPRITE item called PAINT NEW SPRITE




and then type a message on that sprite more interesting than "My 4.1 Project"




## INDEX of HIGHLIGHTS can be found on the last page

☑ HW 4.0 Check out the Scratch library of your partner then send him or her an email. Make the choice to FOLLOW your partner. (p1)
☑ HW Required -- watch video called Brady No Coding (p 2)
☑ HW Required -- watch 3 min video called SCRATCH SIZE OF GRAPHIC about vector vs bitmapped (p3)
☑ HW Required -- watch 18 min video called Brady Runs Away (p4)
☑ HW 4.1 -- create your own innovative version of 4.1 and share it, letting your partner and me know when done
☑ Optional -- put scrolling quote on your project (page 19)