Intro to Programming
Scratch #15h – Basketball

Objective: Turn the game we started in class into a 2 player game. Then add a start screen to the game and make an easy version of the game.

1. Login to the Scratch website. You should already have a project called *scratch_15_example* that we completed in class.

    a. Open the *scratch_15_example* project.

    b. Do *File->Save as a copy*. The name of the project will change *to scratch_15_example copy*.

    c. Rename the project to *first_last_scratch_15*

    d. Do *File->Save now*

2. Add a second player:

    a. Add another Cat to the project. Rename it to *Player 2*. Modify *Player 2* so that it is a different color than Orange. Make sure to modify both costumes.

    b. The *Player 2* sprite will need *2* variables: *y velocity **for this sprite only***, and *Player 2 Score **for all sprites***.

    c. The *Player 2 Score* variable needs to be set to 0 when the green flag is clicked.

    d. *Player 1 Score* and *Player 2 Score* should be on the Stage in large readout mode with labels.

    e. The scripts for *Player 2* are the same as the scripts for *Player 1* except:

        i. *Player 2* should start at x:165, y: -130

        ii. It should point in direction -90

        iii. It should use the left arrow and right arrow keys to move left and right instead of the a and d keys.

        iv. It should use the *up arrow* key to jump instead of the w key.

        v. It should use the *space* key to shoot instead of the v key.

3. The 2 players will share the *Hoop/Hitbox* and *Basketball*. This means that the *Basketball* can't go to either player unless neither player is shooting. Also, the *Basketball* should move right when *Player 1* is shooting, but left when *Player 2* is shooting. The *Basketball* should also turn right when *Player 1* is shooting, but turn left when *Player 2* is shooting. Here are some ideas on how to make that happen:

    a. Create a variable for the *Basketball* sprite only named *who has ball*. Make sure this is set to 0 when the green flag is clicked.

    b. Create 2 more variables for the *Basketball* sprite only named *x velocity* and *turn direction*.

    c. Now, find the script that executes when *Player 1* shoots. Instead of actually shooting in this script, check to see if *who has ball* = 0. If it does, set *who has ball* to 1, go to *Player 1*, set *x-velocity* to 8, set *turn direction* to 6, and broadcast *shoot*.

    d. Create another script for when the space key is pressed (which is how *Player 2* shoots.) This should look very similar to the script for *Player 1*: check to see if *who has ball* = 0. If it does, set *who has ball* to 2, go to *Player 2*, set *x-velocity* to -8, set *turn direction* to -6 and broadcast *shoot*.

  e. Create a *When I receive shoot* script that does the shooting. It should contain most of the code we did in class in the *When v key pressed* script. The new script will need to check to see which player has the ball in order to figure out which score to increment. It should change x by *x velocity* and turn by *turn direction*. At the end of the script, it should set *who has ball* back to 0.

4. Now, add a Start Screen:

  a. Create a backdrop that has directions for playing the game. Player 1 uses *a key* to move left, *d key* to move right, *w key* to move up and *v key* to shoot. Player 2 uses *left arrow key* to move left, *right arrow key* to move right, *up arrow key* to move up and *space* to shoot.

  b. Add sprites for *Easy* and *Hard*. You've done this before.

  c. Add variables EASY, HARD, and Difficulty Level.

  d. The game starts when the user clicks *Easy* or *Hard*.

  e. The *Player 1 Score* and *Player 2 Score* variables hide on the Start Screen.

5. The *Player 1 Score* and *Player 2 Score* variables show up when the game starts. They must be in large readout mode and labelled.

6. Make an easier version of the game.

  a. The game that you already created is the Hard game.

  b. In the Easy game, slow down the hoop so that it glides for 2.5 seconds instead of 1.5.

7. Always do *File->Save now* before you log out of the Scratch website.

8. Now do *File->Save to your computer*.

9. Turn in your *first_last_scratch_15.sb3* file to *missblomeyer.com* in the usual way.

Basketball

Player 1 On Left

Move Left- use a key
Move Right - use d key
Jump - use w key
Shoot - use v key

EASY

Player 2 on Right

Move Left - use left arrow
Move right - use right arrow
Jump - use up arrow
Shoot - use space

HARD