

## Intro to Programming Scratch #16h – 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\_16\_example* that we completed in class.
  - a. Open the *scratch\_16\_example* project.
  - b. Do *File->Save as a copy*. The name of the project will change to *scratch\_16\_example copy*.
  - c. Rename the project to *first\_last\_scratch\_16*
  - 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 game 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\_16.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**

Player 1

4

6

Player 2

