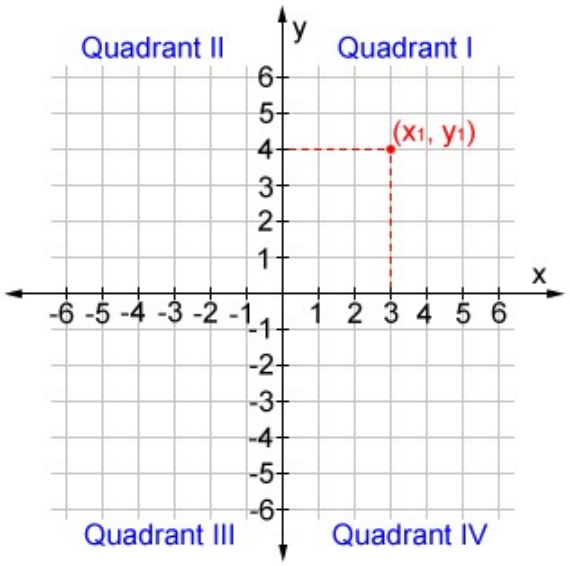
Pong Game

We will start by downloading a template from the ReachOut Kids Page
After downloading, go to MIT Stratch
Click File, select Load from your computer, click download and double click on Pong.sb3

Now you should have Space Background, downBar, and upBar



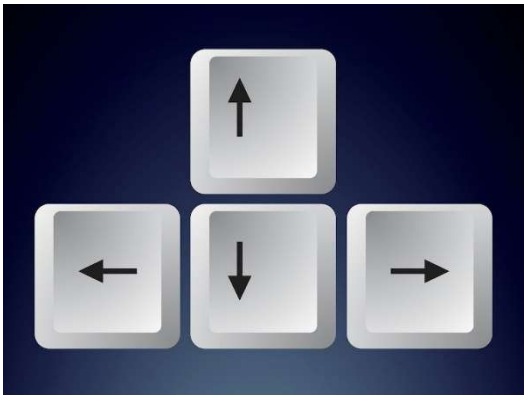
Let learn about coordinates – every game that we will use coordinates

Click on the Basketball
Change the x and y coordinates to 0 (0 and 0 is the center of the screen)
X is horizontal, and **Y is vertical**
How do I move the basketball to the right or to the left?
How do I move the basketball to the up or down?

Change the x and y coordinates to 0

Motion section
Change x by 10 (click on it), change to -10 and click on it
Change y by 10 (click on it), change to -10 and click on it

Knowing this is important because we will be moving our sprit (characters) in many directions
Click the platform and let get started



Let start coding

Click on the downBar

Event section
When Flag clicked

We will now connect the left and right arrow keys so that we can move left to right

Control Section
If then block

Sensing Section
Key space pressed? (change space to right arrow)
So if the right arrow is press I want to change the x coordinate

Motion Section
Change x by 10 block

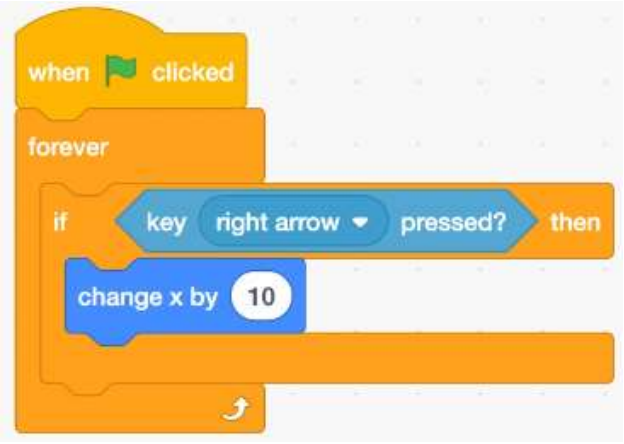
Right now when we run the script nothing will happen, why?
Because, by the time run to the time I click on the arrow key, the script is all ready done.

So we need it to run all the time. What do we need to do that?
We need to constantly check to see if the right arrow is pressed
We can do that by using a forever block.

Control Section
Forever block
Put everything in the forever block (except when clicked)

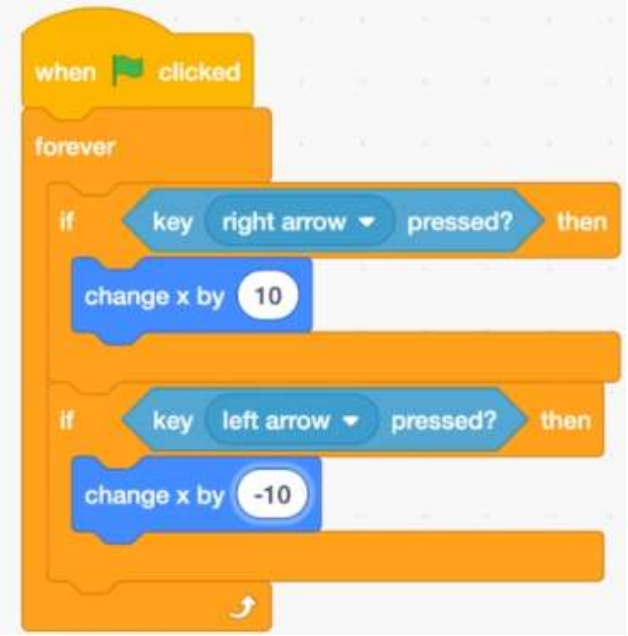
Now lets run the script
Click and the green flag and press on your right arrow key

Now lets duplicate it for the left arrow key
Right click on the if then block and select duplicate
Move it just below, and change the right arrow to left arrow

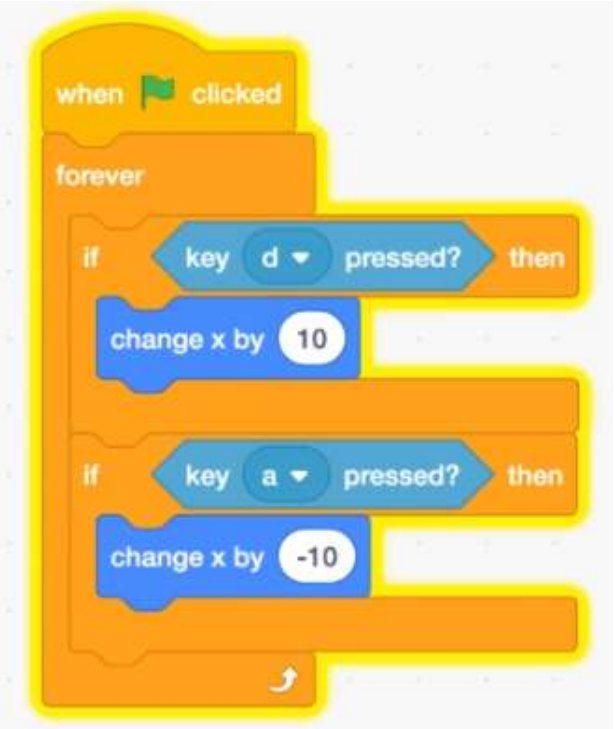


Now let do the same for the upBar sprit
We are simply going to take the code we have for the downBar and drag it to the upBar sprite
This is a simple way do duplicate the code

For the upBar
Change the right arrow → d
Change the left arrow → a



Now we have complete two play control for the game.
Next, script for the ball



Script for the Ball
We will learn about directions and degrees

Select the basketball sprite

Event Section
When flag clicked
Forever block

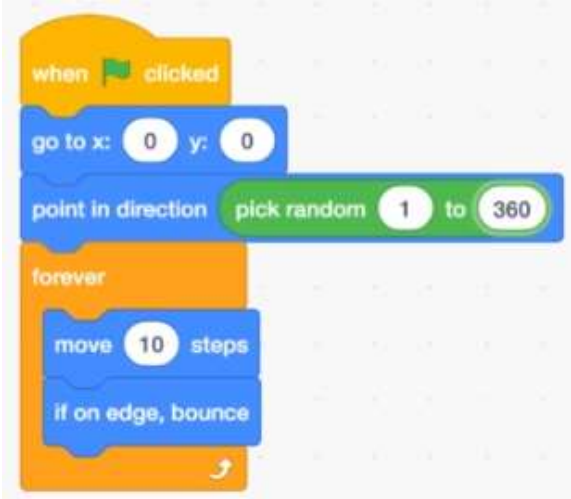
Motions Section
Move 10 steps block
If on edge, bounce

We need to start the game with the ball in the center

Motion Section
Add right below when clicked
Go to x:0 y:0
Point in direction 90

We need to make is so the ball goes in all direction
We need it to be done randomly

Operators Section
Pick random 1 to 10 (place inside the point in direction 90)
Change 1 to 10 → 1 to 360



Let run the script

Lets fix it so that the ball in not going through the platform

On the side of the code:

Control Section
If then block

Sensing Section
Touching mouse-pointer block
(change mouse pointer to downBar)

Motion section
Turn 15 degrees (change 180)

Now move the if then block to inside the forever loop
Between the two blocks

Let run the script
We will see that the ball will now bounce off the downBar
Turning 180 degree

Lets do the same for the upBar

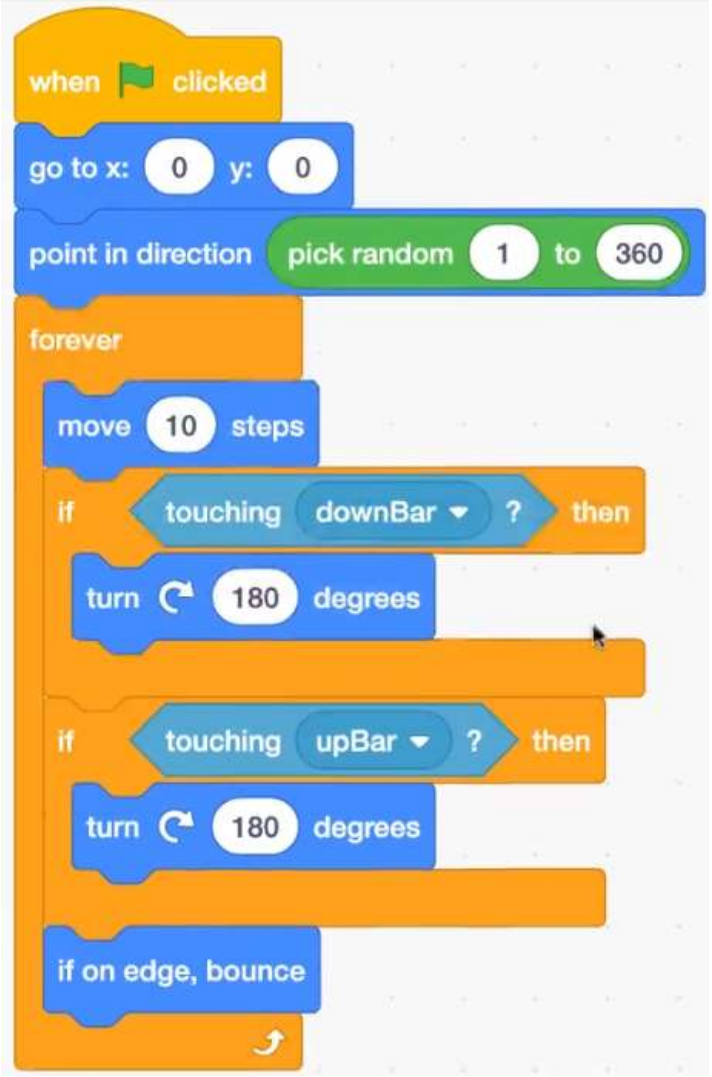
On the side of the code:

Control Section
If then block

Sensing Section
Touching mouse-pointer block
(change mouse pointer to upBar)

Motion section
Turn 15 degrees (change 180)

Now move the if then block below the other if then block



Let run the script

You may notice that the ball is not moving right, and it can get stuck in a forever direction, and it will not be fun playing it

We need a smarter way for the ball to bounce off the two platforms (downBar and upBar)

So left fix it.

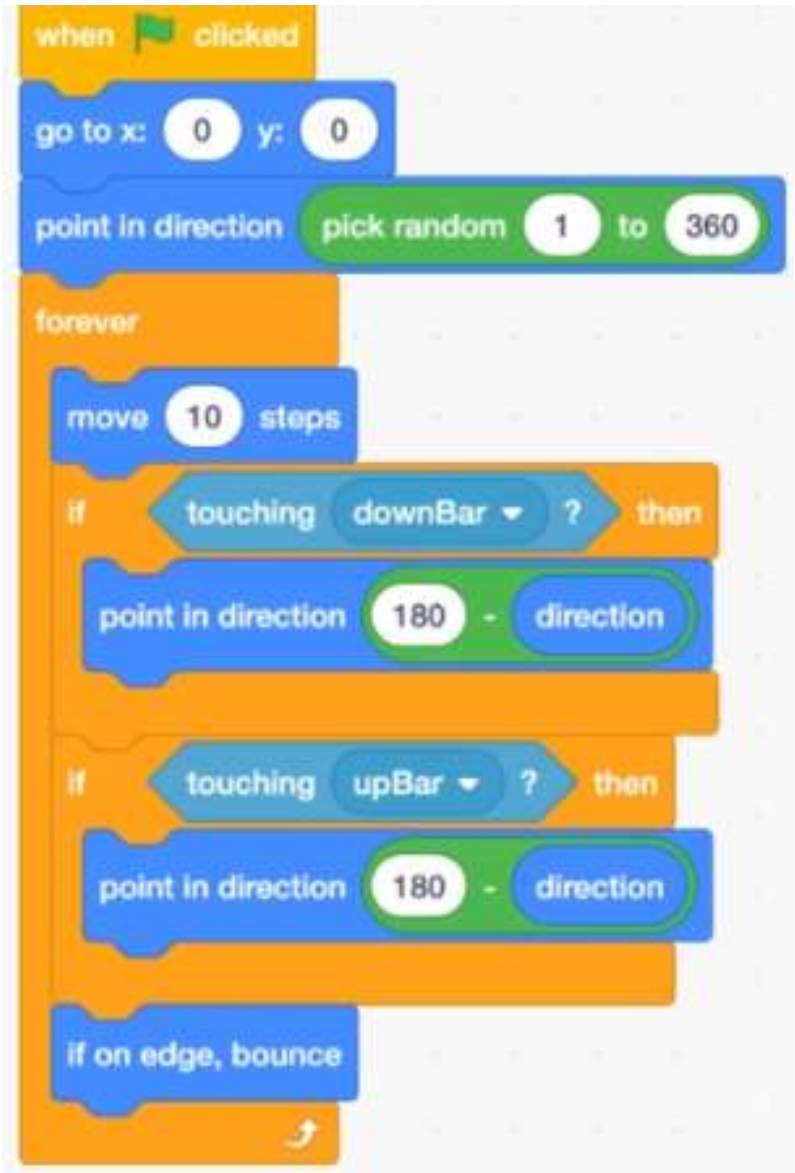
Lets do a proper bouncing

Lets move the turn 180 degrees to an open space
And lets replace it but point in direction block

Motion Section
Point in direction 90

Operators Section
Rounded difference operator
(Put inside the point in direction 90)
Enter 180 for the first hole
For the second one we will add the direction

Motion Section
Direction block (rounded)



We will do the same for the next if then blow
Remove the turn 180 degrees

Motion Section
Point in direction 90

Operators Section
Rounded difference operator
(Put inside the point in direction 90)
Enter 180 for the first hole
For the second one we will add the direction

Motion Section
Direction block (rounded)

Next we need to keep track of who is winning when the game is played

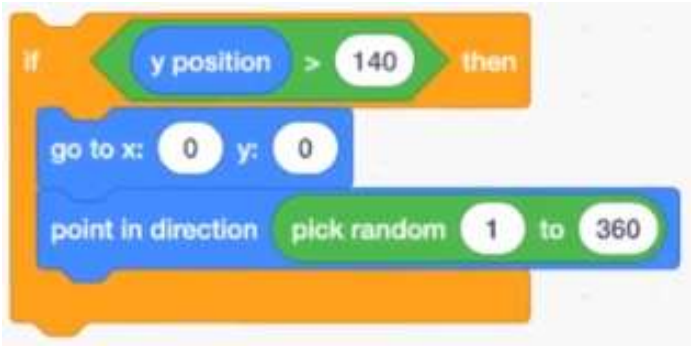
So when need to reset the game when someone score
Let add that code

On the side of the code add:

Control Section
If then block

In the diamond shape add

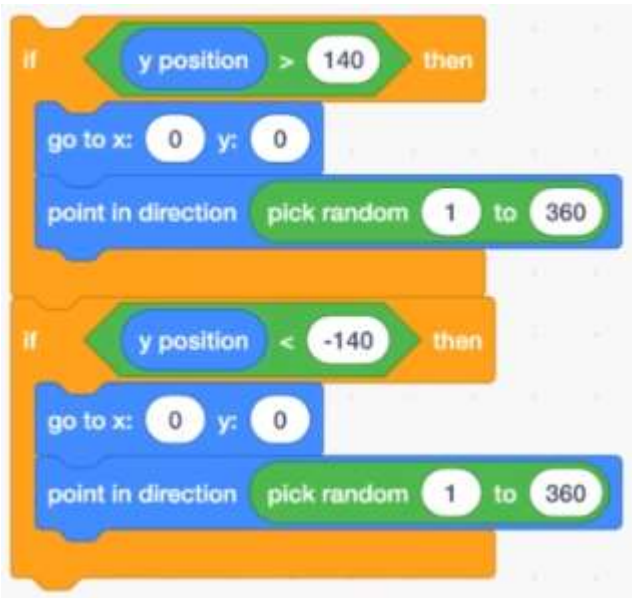
Operators Section
Greater than > 50 (change to 140)



Motion Section
Y position (place in the first hole)

Motion Section
Add right below when clicked
Go to x:0 y:0
Point in direction 90

Operators Section
Pick random 1 to 10 (place inside the point in direction 90)
Change 1 to 10 → 1 to 360



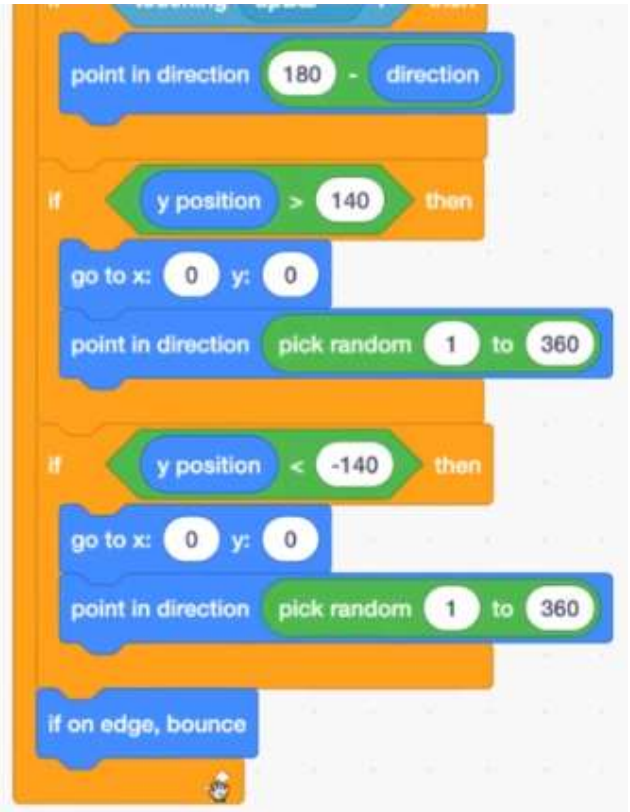
We will now duplicate it for the bottom part

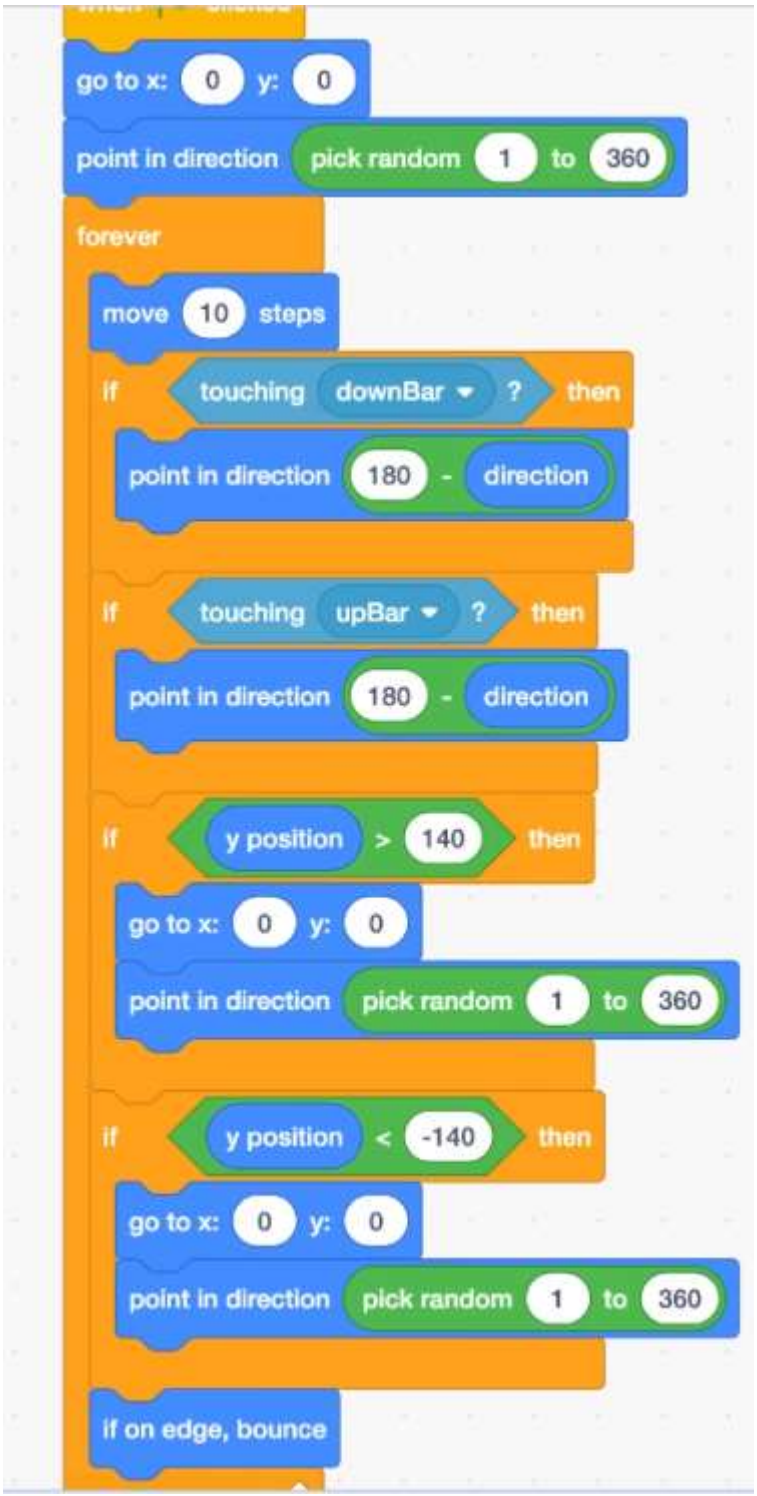
Remove the diamond shape

Operator Section
Less than < 50 (change to -140)

Motion Section
Y position (place in the first hole)

Now we going to move this block right before if on edge bounce block in the forever loop




go to x: 0 y: 0
point in direction pick random 1 to 360
forever
move 10 steps
if touching downBar ? then
point in direction 180 - direction
if touching upBar ? then
point in direction 180 - direction
if y position > 140 then
go to x: 0 y: 0
point in direction pick random 1 to 360
if y position < -140 then
go to x: 0 y: 0
point in direction pick random 1 to 360
if on edge, bounce

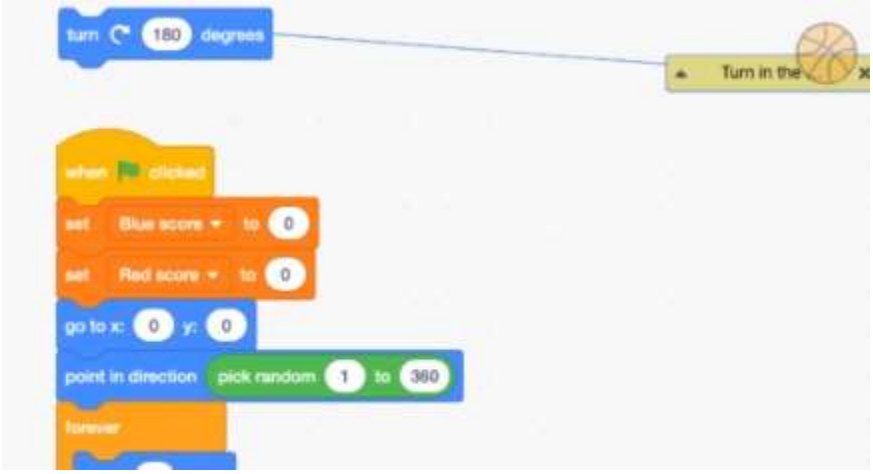
Now lets learn about Variables

Variables Section
Make a Variable (name it Red score)
Check for all sprites

Make another one and name it Blue score

Add to the platform
Set Blue score to 0
Duplicate it and change to Red score

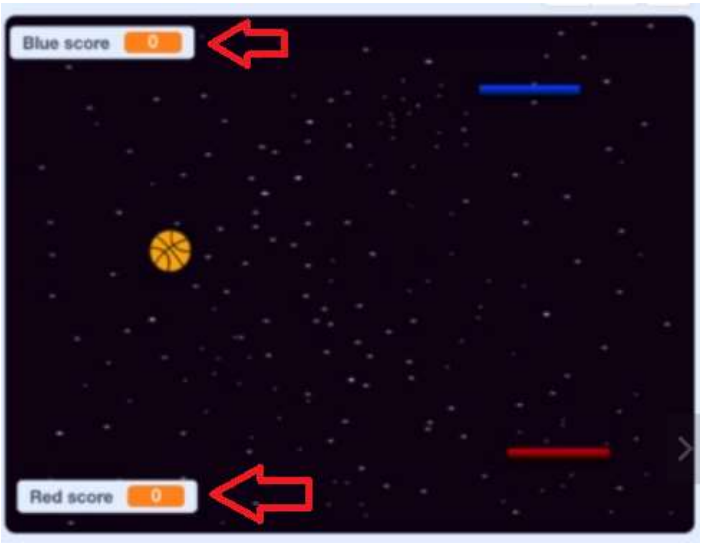
Now move both below when flag clicked



Add the change Blue score by 1 (change to Red score)
Put it in the if y position > 140

Add the change Blue score by
Put it in the if y position < -140

For good visual, let move the scores to their right place



Adding final touches

Have the ball wait some seconds when a player score before moving in a random direction

Control Section
Wait 1 seconds (change to 2)
Put it right before the forever loop

Let do the same in the if condition with the y positions
Place the wait 1 second (change to 2) after the change score by 1

Adding speed – making challenging

Variable Section
Make a Variable (name it speed, and select For this sprite only)

Add
Set Blow score to 0 (change to speed and set to 10)
Place it under the set scores under when flag clicked

In the forever block
Inside the move 10 steps, insert speed

Add
Change Blue score by 1 (change to speed)

Do the same for the other if condition

This means if the ball touches the upBar or downBar the speed will be increased by 1

Let hide the ball speed on the screen

Add hide variable Blue score (change to speed)
Place under the set speed to 10 on the top

We also need to reset the speed after a player score

Add
Set Blue score to 0 (change to speed and set to 10)
Place in the if statement if y position > 140 and again for y position < -140

Well done. That is the End.