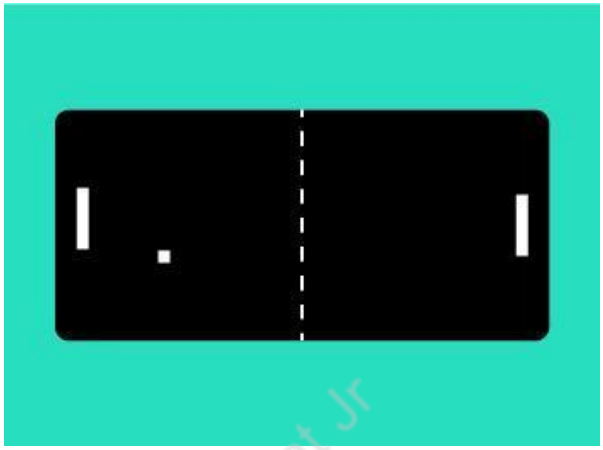
FUNCTIONS AND LOOPS



What is our GOAL for this MODULE?

We used our knowledge of loops and functions to create and assign game behavior in the Pong Game such as creating a net and resetting the ball.

What did we ACHIEVE in the class TODAY?

- Wrote user-defined functions to serve the ball, reset the ball, and draw the net.
- Drew the net using the line instruction and a **for()** loop.

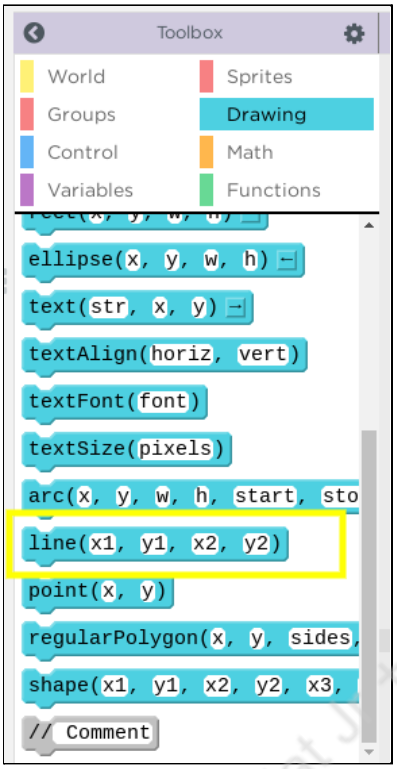
Which CONCEPTS/ CODING BLOCKS did we cover today?

- The **for**-loop.
- User-defined functions.
- The DRY principal.

How did we DO the activities?

In coding, we have a principle **D-R-Y: Don't Repeat Yourself**. Good Programmers don't like to repeat themselves while writing code.

1. Use a predefined **line()** instruction.



2. Draw a line by giving the start and the end coordinates.

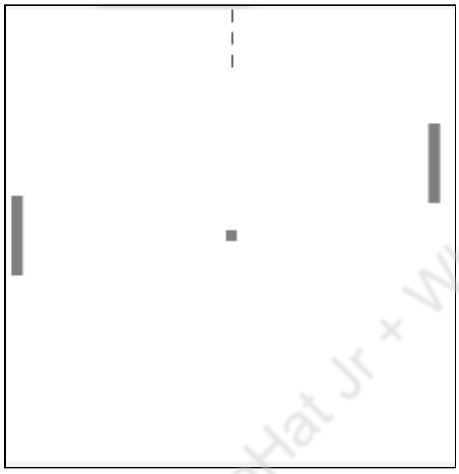
```
1  //create the ball, playerPaddle and computerPaddle as sprite objects
2  var ball = createSprite(200,200,10,10);
3  var playerPaddle = createSprite(380,200,10,70);
4  var computerPaddle = createSprite(10,200,10,70);
5
6
7  function draw() {
8    //clear the screen
9    background("white");
10
11   //make the player paddle move with the mouse's y position
12   playerPaddle.y = World.mouseY;
13
14   //AI for the computer paddle
15   //make it move with the ball's y position
16   computerPaddle.y = ball.y;
17
18
19   line(200,0,200,400);
20
21   //create edge boundaries
22   //make the ball bounce with the top and the bottom edges
23   createEdgeSprites();
24   ball.bounceOff(topEdge);
```

Output:

3. Make several small (dashed) lines with a distance of **10** and likewise leave a gap of **10** after every dash.

```
10  //make the player paddle move with the mouse's y position
11  playerPaddle.y = World.mouseY;
12
13  //AI for the computer paddle
14  //make it move with the ball's y position
15  computerPaddle.y = ball.y;
16
17  line(200, 0, 200, 10);
18  line(200, 0+20, 200, 0+20+10);
19  line(200, 0+20+20, 200, 0+20+20+10);
20
21  //create edge boundaries
22  //make the ball bounce with the top and the bottom edges
23  createEdgeSprites();
24  ball.bounceOff(topEdge);
25  ball.bounceOff(bottomEdge);
```

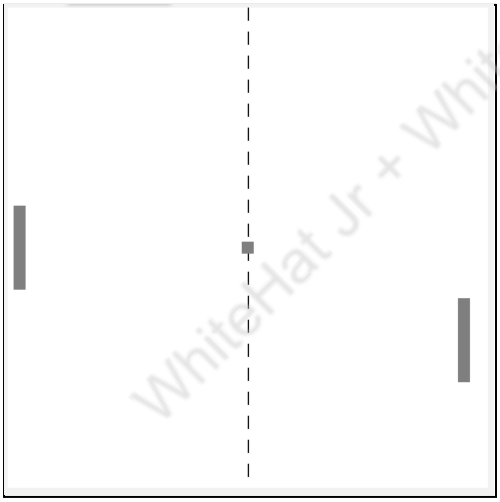
Output:



4. Use a **for()** loop to run the same instructions without repeating the code.

```
5
6  function draw() {
7    //clear the screen
8    background("white");
9
10   //make the player paddle move with the mouse's y position
11   playerPaddle.y = World.mouseY;
12
13   //AI for the computer paddle
14   //make it move with the ball's y position
15   computerPaddle.y = ball.y;
16
17   for (var num = 0; num <= 400; num = num+20){
18       line(200, num, 200, num +10);
19   }
20
21
22   //create edge boundaries
23   //make the ball bounce with the top and the bottom edges
24   createEdgeSprites();
```

Output:



5. Use a user-defined function **drawnet()** to draw the net.

```
function draw() {
  //clear the screen
  background("white");

  //make the player paddle move with the mouse's y position
  playerPaddle.y = World.mouseY;

  //AI for the computer paddle
  //make it move with the ball's y position
  computerPaddle.y = ball.y;

  drawnet();

  for (var num = 0; num < 400; num = num +20) {
    line(200,num, 200, num+10);
  }
```

What's next?

We will use our knowledge to build a completely new game.

Extend Your Knowledge

Here are a few resources for you to learn more about using loops in functions and JavaScript:

1. Loops
2. Functions

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