FUNCTIONS AND LOOPS

What is our GOAL for this MODULE?

We used our knowledge of functions to create custom functions to serve the ball, reset the ball, and draw the net.

What did we ACHIEVE in the class TODAY?

- Wrote custom functions to serve the ball, reset the ball, and draw the net.
- Drew the net using line instruction and for-loop.

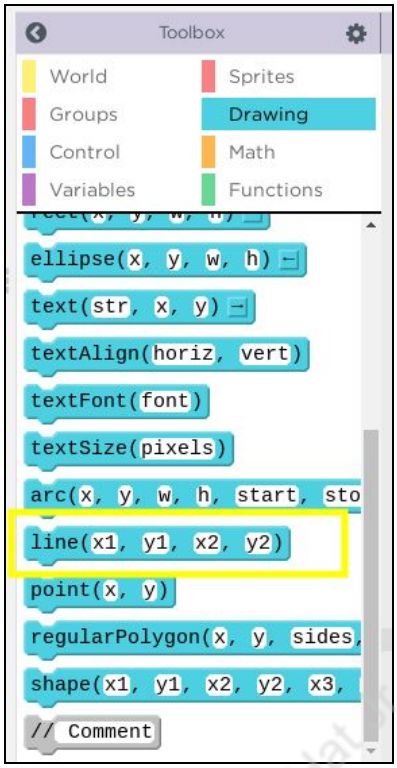
Which CONCEPTS/ CODING BLOCKS did we cover today?

- For-loop
- Custom functions
- 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.

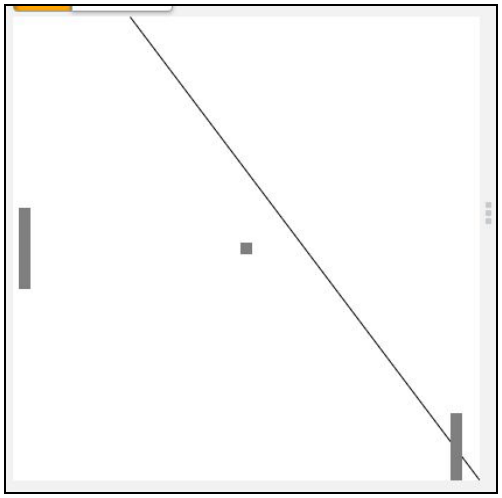
1. Use a predefined **line()** instruction.



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

```
15  //AI for the computer paddle
16  //make it move with the ball's y position
17  computerPaddle.y = ball.y;
18
19
20  line(100, 0, 400, 400);
21
22  //create edge boundaries
23  //make the ball bounce with the top and the bottom edges
24  createEdgeSprites();
25  ball.bounceOff(topEdge);
26  ball.bounceOff(bottomEdge);
```

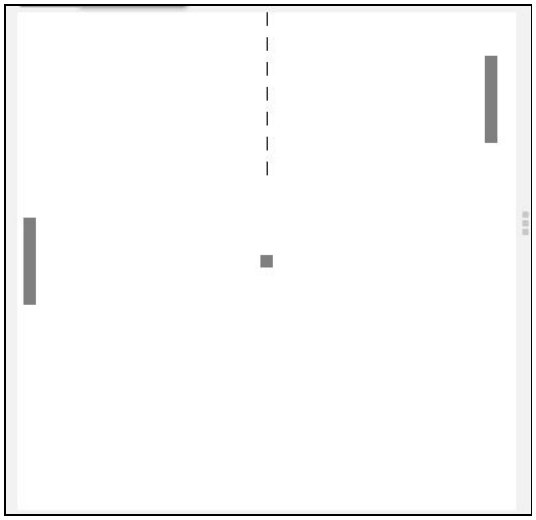
Output:



3. Make several small (dashed) lines with height 10 and leave a gap of 10 after every dash.
Code:

```
//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;


line(200,0,200,0+10);
line(200,0+20,200,0+20+10);
line(200,0+20+20,200,0+20+20+10);
line(200,0+20+20+20,200,0+20+20+20+10);
line(200,0+20+20+20+20,200,0+20+20+20+20+10);
line(200,0+20+20+20+20+20,200,0+20+20+20+20+20+10);
line(200,0+20+20+20+20+20+20,200,0+20+20+20+20+20+20+10);

//create edge boundaries
//make the ball bounce with the top and the bottom edges
createEdgeSprites();
bounceOff(topEdge, bottomEdge, playerPaddle,computerPaddle);


//serve the ball when space is pressed
if (keyDown("space")) {
  ball.velocityY = 3;
  ball.velocityX = 4;
}
```

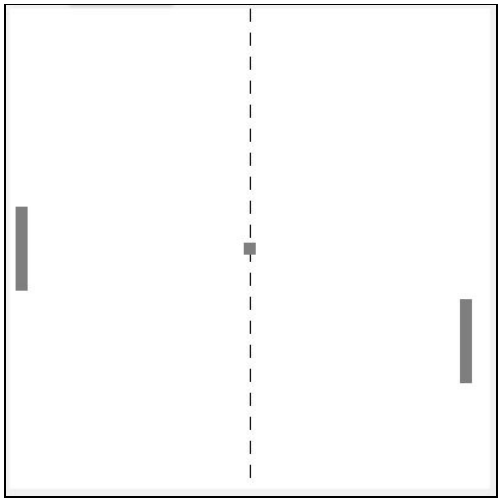
Output:



4. Use a **For Loop** to run the same instructions without repeating the code.
Code:

```
12  //make the player paddle move with the mouse's y position
13  playerPaddle.y = World.mouseY;
14
15  //AI for the computer paddle
16  //make it move with the ball's y position
17  computerPaddle.y = ball.y;
18
19  for (var num = 0; num < 400; num = num +20) {
20    line(200,num, 200, num+10);
21  }
22
23
24
25  //create edge boundaries
26  //make the ball bounce with the top and the bottom edges
27  createEdgeSprites();
28  bounceOff(topEdge, bottomEdge, playerPaddle,computerPaddle);
29
30
31  //serve the ball when space is pressed
32  if (keyDown("space")) {
33    ball.velocityY = 3;
34    ball.velocityX = 4;
35  }
```

Output:



5. Teach the computer to draw the net using a custom-defined function **drawnet()**.
Code:

```
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);
  }

  //create edge boundaries
  //make the ball bounce with the top and the bottom edges
  createEdgeSprites();

  //serve the ball when space is pressed
  if (keyDown("space")) {
    ball.velocityY = 3;
    ball.velocityX = 4;
```

6. Teach the computer to serve the ball and reset the ball by writing custom-defined functions.

```
function drawnet() {

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

}

function serveball() {
  ball.velocityY = 3;
  ball.velocityX = 4;
}

function resetball() {
    ball.x = 200;
    ball.y = 200;
    ball.velocityX = 0;
    ball.velocityY = 0;
}
```

What's next?

We will understand the different states of a game. We will also learn how to store information in the game states.

Extend Your Knowledge

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

1. Loops
2. Functions