



#### What is our GOAL for this MODULE?

We learned to think about programming in an object-oriented manner. We designed Paddle and Ball class and created objects using the class to use it in our program.

#### What did we ACHIEVE in the class TODAY?

- Designed a Paddle and Ball class.
- Created objects using Paddle and Ball class and used it in the program.
- Stored objects in variables.

## Which CONCEPTS/ CODING BLOCKS did we cover today?

- Variables
- Class
- Object



#### How did we DO the activities?

# Activity 1: Adding comments to codes.

Coding needs to be easily understandable and readable. A good programmer always adds comments for this reason.

Code: Comments added to the screen

```
1 function draw() {
2  //clear the screen
3  background("white");
4  //draw the Player Paddle
5  rect(390, World.mouseY, 10, 70);
6  //draw the Computer Paddle
7  rect(0, 150, 10, 70);
8  //draw the ball
9  rect(200,200,10,10);
10 }
```

# **Activity 2: Object-Oriented Programming (OOP)**

- In this programming style, we write code as if everything in the programming world were an object just like in the real world.
- In the real world, everything around us is an object. Each object has some properties and functions.
  - o PROPERTIES are the qualities/characteristics of the object.
  - FUNCTIONS are something which the object can do"

## Activity 3: Creating Paddle and Ball game using OOP

- 1. A programmer creating a paddle object would first make the design and assign all the properties and functions of the object to it. Based on this design, the programmer will create as many paddle objects as he/she wants in the game.
  - The design is called a CLASS in programming.
- 2. Create a blueprint of an object (class) and make an object using the blueprint.



3. Define the properties.

```
function Paddle(){
 2
      this.width = 10;
 3
      this.height = 70;
 4
      this.xPosition = 0;
 5
      this.yPosition= 0;
 6 }
 7
 8 - function draw() {
       //set background to white
 9
      background("white");
10
11
12
      //draw the player Paddle
13
      rect(390, World.mouseY, 10,70);
14
      //draw the computer Paddle
15
16
17
      //draw the ball
18
      rect(200, 200, 10, 10);
19
   }
20
```

- 4. Create a PlayerPaddle object using the Paddle class.
- 5. Assign properties to the paddle design.

```
preview

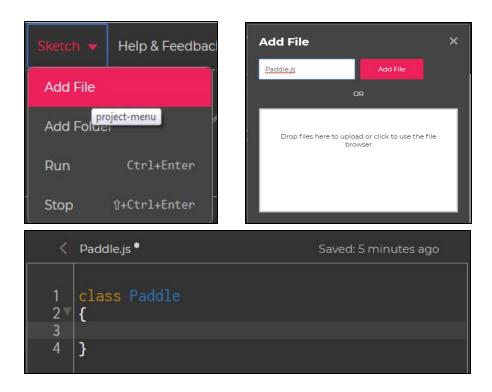
if unction setup() {
    createCanvas(400, 400);
}

function draw() {
    background(220);
}

Console
Clear Console
```



6. Add a new file:



7. Assign all the properties of the paddle inside our Paddle class/design.



8. Tell the computer where to find Paddle Class.

```
src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.9.0/p5
   .js"></script>
       <script
   src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.9.0/ad
   dons/p5.dom.min.js"></script>
       <script
   src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.9.0/ad
   dons/p5.sound.min.js"></script>
       <link rel="stylesheet" type="text/css"</pre>
   href="style.css">
8
9
       <script src="Paddle.js"></script>
     <body>
       <script src="sketch.js"></script>
     </body>
4
   </html>
5
```

9. Create a playerPaddle object using the Paddle class.

\*Note: Variables are memory spaces where computers store objects.

 Delete the old rect() instruction for the player paddle and let us try to create a new player paddle object based on the Paddle class/design we just defined new Paddle();

Remember we use a semicolon to tell the computer that this is the end of the line. Just like a full-stop for English language.

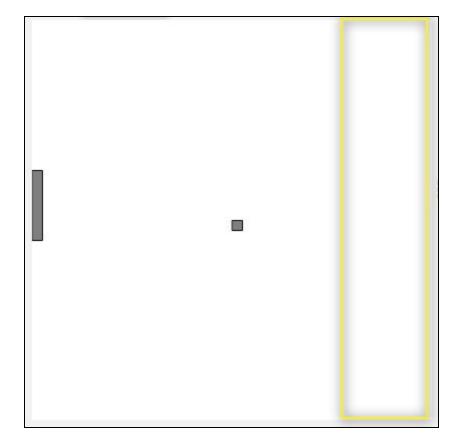
```
1 var playerPaddle;
2
3 vfunction setup() {
    createCanvas(400, 400);
    playerPaddle = new Paddle();
6
7
```



- 11. Change xPosition and yPosition properties for the playerPaddle object.
  - playerPaddle.xPosition = 390;
  - playerPaddle.yPosition = World.mouseY;

```
sketch.js
                                       Saved: 1 minute ago
    var playerPaddle;
    function setup() {
      createCanvas(400, 400);
playerPaddle = new Paddle();
    }
    function draw() {
      background("white");
9
10
      playerPaddle.xPosition=390;
      playerPaddle.yPosition
11
12
      rect(0,165,10,70);
       rect(200,200,10,10);
13
```

12. Run the code.



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- 13. Write display function for the playerPaddle object to display the paddle.
  - Add this line inside the Paddle class display() {
     rect(this.xPosition,this.yPosition,this.width,this.height);
    }

```
Paddle.js '
                                   Saved: 19 minutes ago
    class Paddle {
2
      //constructor is used to initialize an
    object
 3 V
      constructor() {
        this.xPosition = 0;
4
5
        this.yPosition = 0;
        this.width = 10;
6
         this.height = 70;
8
9
      display() {
        rect(this.xPosition, this.yPosition,
10
    this.width, this.height);
12
```

14. Add a playerPaddle.display() inside the draw().

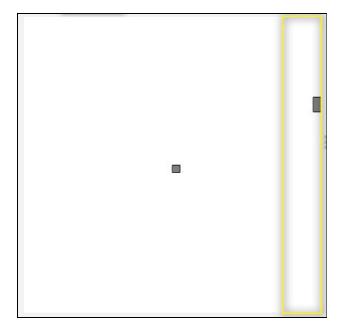
```
sketch.js
                                  Saved: 5 minutes ago
    var playerPaddle;
    function setup() {
      createCanvas(400, 400);
      playerPaddle = new Paddle();
 6
    }
    function draw() {
9
      background("white");
10
      playerPaddle.xPosition=390;
      playerPaddle.vPosition=mouseY;
11
12
      playerPaddle.display();
13
      rect(0,165,10,70);
14
      rect(200,200,10,10);
```



15. Change the width and height of the PlayerPaddle object.

```
sketch.js •
                                    Saved: 1 minute ago
      playerPaddle = new Paddle();
 6
    }
 7
8
    function draw() {
      //clear the screen
 9
      background("white");
10
      //draw the Player Paddle
11
      playerPaddle.xPosition=390;
      playerPaddle.yPosition=mouseY;
13
      playerPaddle.height=20;
14
15
      playerPaddle.display();
16
      //draw the Computer Paddle
17
18
      //draw the Ball
19
20
      rect(200,200,10,10);
```

16. Run the code to see the output.





17. Create another paddle using the same steps.

```
sketch.js •
                                   Saved: 2 minutes ago
    var playerPaddle,computerPaddle;
2
3
    function setup() {
      createCanvas(400, 400);
4
      playerPaddle = new Paddle();
6
      new Paddle():
8
91
    function draw() {
      //clear the screen
10
      background("white");
11
      //draw the Player Paddle
12
      playerPaddle.xPosition=390;
      playerPaddle.yPosition=mouseY;
      playerPaddle.height=20:
```

```
sketch.js •
                                   Saved: 3 minutes ago
    var playerPaddle,computerPaddle
 2
    function setup() {
      createCanvas(400, 400);
 4
      playerPaddle = new Paddle();
 5
      computerPaddle = new Paddle();
 6
 8
9 ₹
    function draw() {
      //clear the screen
10
      background("white");
11
      //draw the Player Paddle
      playerPaddle.xPosition=390;
      playerPaddle.yPosition=mouseY;
14
      playerPaddle.height=20;
15
```

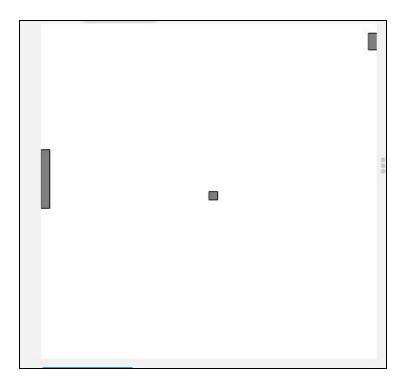


```
sketch.js •
                                  Saved: 15 seconds ago
      playerraddle = new raddle();
 6
      computerPaddle = new Paddle();
 7
8
    function draw() {
 9 7
10
      //clear the screen
      background("white");
11
      //draw the Player Paddle
12
13
      playerPaddle.xPosition=390;
      playerPaddle.yPosition=mouseY;
      playerPaddle.height=20;
      playerPaddle.display();
16
17
18
      //draw the Computer Paddle
      computerPaddle.xPosition=0;
19
      computerPaddle.yPosition=150:
20
```

```
sketch.is
                                   Saved: 2 minutes ago
10
      //clear the screen
      background("white");
11
      //draw the Player Paddle
12
      playerPaddle.xPosition=390;
13
      playerPaddle.yPosition=mouseY;
14
15
      playerPaddle.height=20;
      playerPaddle.display();
16
17
18
      //draw the Computer Paddle
      computerPaddle.xPosition=0;
19
20
      computerPaddle.yPosition=150;
21
      computerPaddle.display();
22
23
      //draw the Ball
24
      rect(200,200,10,10);
25
```



18. Run and see the output.

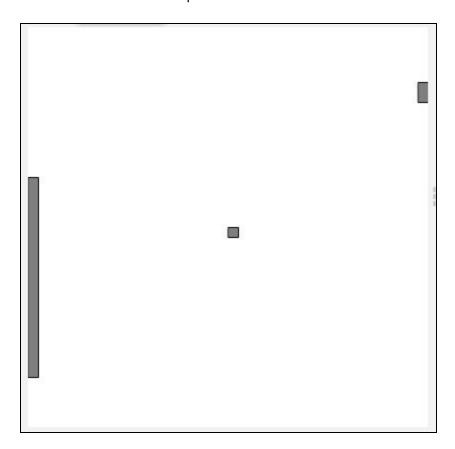


19. Modify the ComputerPaddle's width and height.

```
sketch.js •
                                  Saved: 4 minutes ago
      //clear the screen
10
      background("white");
11
      //draw the Player Paddle
12
      playerPaddle.xPosition=390;
      playerPaddle.yPosition=mouseY;
14
      playerPaddle.height=20;
15
      playerPaddle.display();
16
      //draw the Computer Paddle
18
      computerPaddle.xPosition=0;
19
      computerPaddle.yPosition=150;
20
21
      computerPaddle.height=200;
22
23
      computerPaddle.display();
24
      //draw the Ball
25
```



# 20. Run and see the final output.



#### What's NEXT?

We will continue to create more objects and assign additional properties to it, like make the ball bounce!

#### **EXTEND YOUR KNOWLEDGE**

OOPS Philosophy
 <a href="https://www.freecodecamp.org/news/object-oriented-programming-concepts-21bb0">https://www.freecodecamp.org/news/object-oriented-programming-concepts-21bb0</a>
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