WhiteHat Jr
Live Online Coding for Kids

OBJECT-ORIENTED PROGRAMMING

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. We also learned to use it on our p5 editor.

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?

1. Add comments to codes to make it easily understandable and readable. A good programmer always adds comments for this reason.

```
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);
```
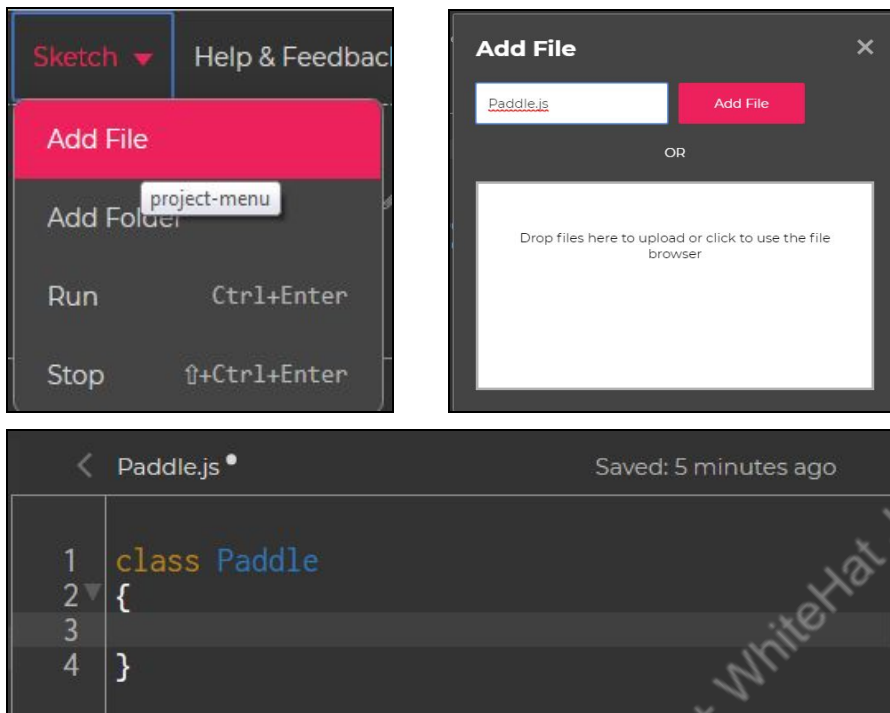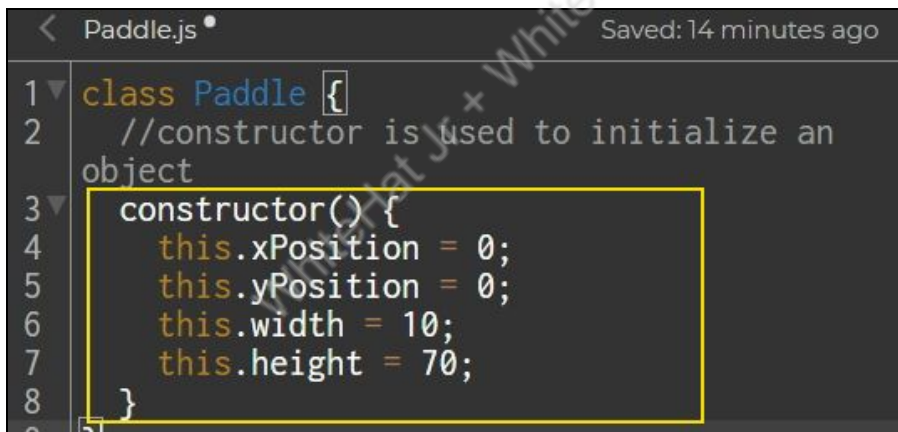
2. Add the class file.

```
sketch.js                                    Preview

1 function setup() {
2     createCanvas(400, 400);
3 }
4
5 function draw() {
6     background(220);
7 }

Console                                      Clear
```

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


```
class Paddle {
    //constructor is used to initialize an object
    constructor() {
        this.xPosition = 0;
        this.yPosition = 0;
        this.width = 10;
        this.height = 70;
    }
}
```

4. 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"
href="style.css">
    <meta charset="utf-8" />
    <script src="Paddle.js"></script>
    </head>
  <body>
    <script src="sketch.js"></script>
  </body>
</html>
```

5. Create a playerPaddle object using the Paddle class.

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

6. Delete the old **rect()** instruction for the player paddle and create a new player paddle object based on the Paddle class/design we just defined.


```
sketch.js                          Saved: 1 minute ago

1  var playerPaddle;
2
3  function setup() {
4    createCanvas(400, 400);
5    playerPaddle = new Paddle();
6  }
7
```

7. Change x-Position and y-Position properties for the **playerPaddle** object.

```
< sketch.js •                    Saved: 1 minute ago

1   var playerPaddle;
2
3▼  function setup() {
4      createCanvas(400, 400);
5      playerPaddle = new Paddle();
6   }
7
8▼  function draw() {
9      background("white");
10     playerPaddle.xPosition=390;
11     playerPaddle.yPosition=mouseY;
12     rect(0,165,10,70);
13     rect(200,200,10,10);
```

8. Run the code.
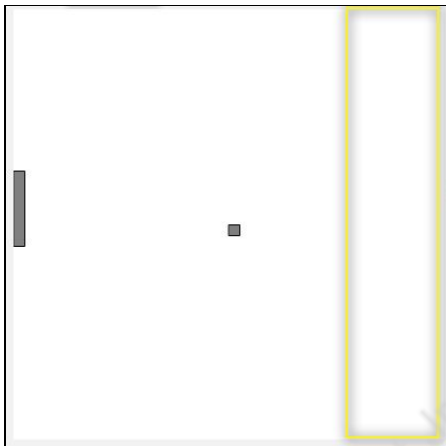
9. Write display function for the playerPaddle object to display the paddle. Add the following line inside the Paddle class.

```
< Paddle.js •                    Saved: 19 minutes ago

1▼  class Paddle {
2      //constructor is used to initialize an
    object
3▼     constructor() {
4         this.xPosition = 0;
5         this.yPosition = 0;
6         this.width = 10;
7         this.height = 70;
8      }
9▼     display() {
10        rect(this.xPosition, this.yPosition,
    this.width, this.height);
11     }
12  }
```

10. Add a **playerPaddle.display()** inside the **draw()** function.

```
sketch.js                                    Saved: 5 minutes ago

1   var playerPaddle;
2
3   function setup() {
4      createCanvas(400, 400);
5      playerPaddle = new Paddle();
6   }
7
8   function draw() {
9      background("white");
10     playerPaddle.xPosition=390;
11     playerPaddle.yPosition=mouseY;
12     playerPaddle.display();
13     rect(0,165,10,70);
14     rect(200,200,10,10);
15  }
```

11. Change the width and height of the playerPaddle object.

```
sketch.js                                    Saved: 1 minute ago

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

12. Run the code to see the output.
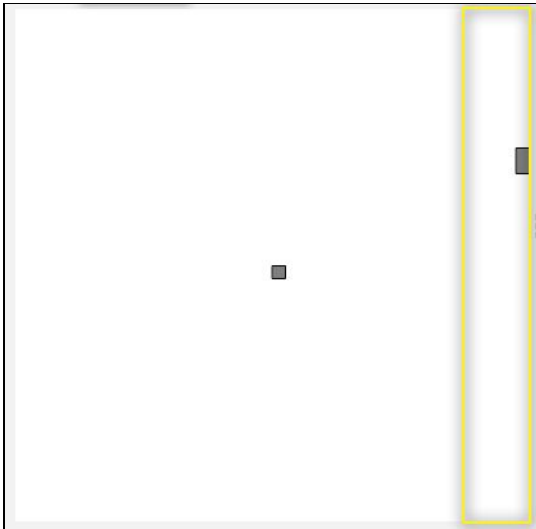
What's NEXT?

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

EXTEND YOUR KNOWLEDGE

1. **OOPS Philosophy:**
   https://www.freecodecamp.org/news/object-oriented-programming-concepts-21bb035f7260/