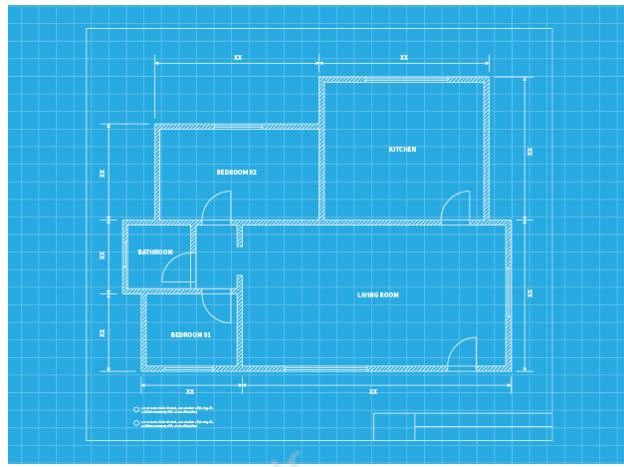


CREATING BLUEPRINTS



What is our GOAL for this MODULE?

In this class, we learned to create a tower, and a cannon using the OOPs concept and Physics Engine.

What did we ACHIEVE in the class TODAY?

- Created tower object and cannon class
- Added a background image to the game.

Which CONCEPTS/ CODING BLOCKS did we cover today?

- OOP concepts
- image()

How did we DO the activities?

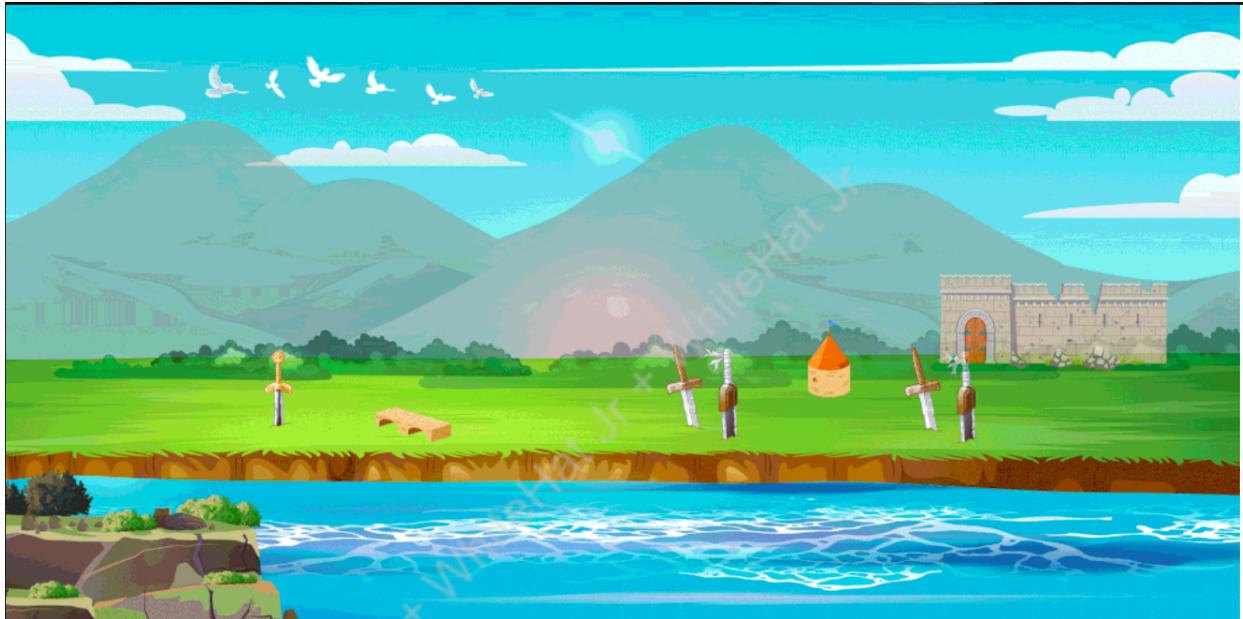
1. Revise the code to create the ground body.

```
function setup() {  
  
    canvas = createCanvas(1200, 600);  
    engine = Engine.create();  
    world = engine.world;  
  
    var options = {  
        isStatic: true  
    }  
  
    ground = Bodies.rectangle(0, height - 1, width * 2, 1, options);  
    World.add(world, ground);  
}  
  
function draw() {  
    backgroundImg(189)  
    Engine.update(engine);  
  
    rect(ground.position.x, ground.position.y, width * 2, 1);  
}
```

2. Add an image to the background of the screen to set the theme for the game.

```
function preload() {  
    backgroundImg = loadImage("./assets/background.gif");  
}
```

```
function draw() {  
    image(backgroundImg,0,0,1200,600)  
    Engine.update(engine);
```



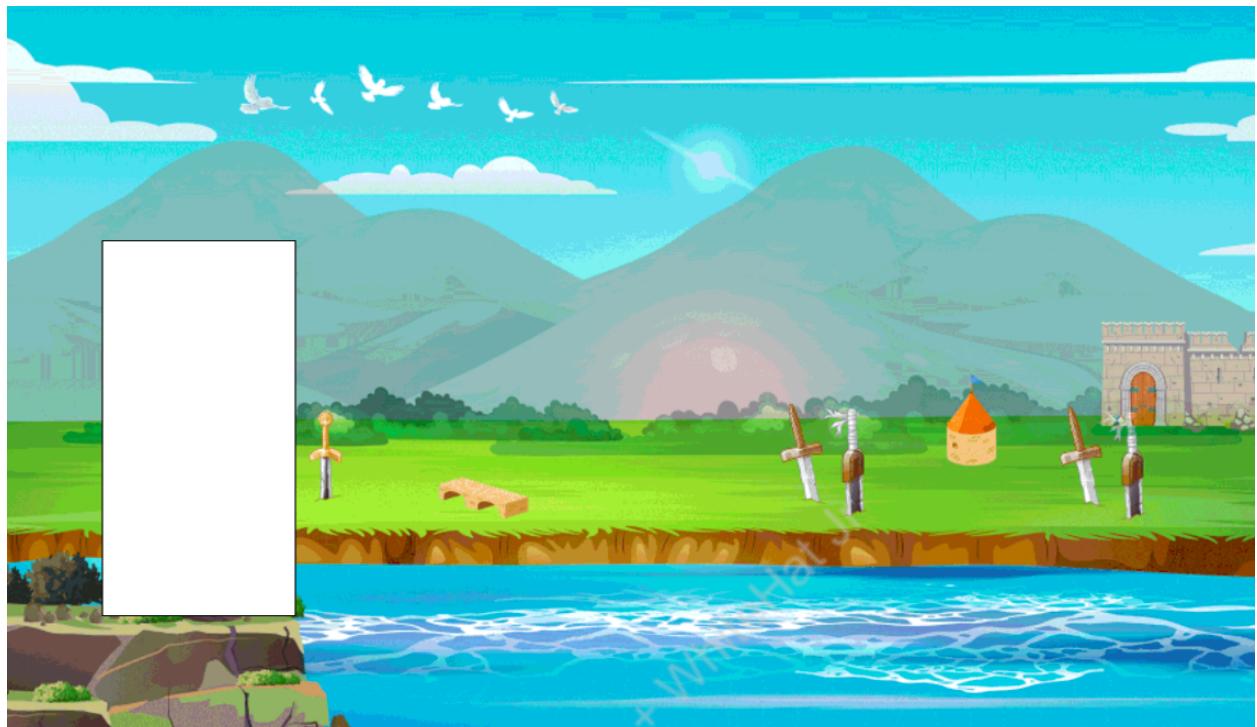
3. Create a tower object using Matter.Bodies and display in the **draw()** function.

```
function setup() {  
  
    canvas = createCanvas(1200, 600);  
    engine = Engine.create();  
    world = engine.world;  
  
    var options = {  
        isStatic: true  
    }  
  
    ground = Bodies.rectangle(0, height - 1, width * 2, 1, options);  
    World.add(world, ground);  
  
    tower = Bodies.rectangle(160, 350, 160, 310, options);  
    World.add(world, tower);  
  
}  
  
function draw() {  
    image(backgroundImg, 0, 0, 1200, 600)  
    Engine.update(engine);  
  
    rect(ground.position.x, ground.position.y, width * 2, 1);  
  
    rect(tower.position.x, tower.position.y, 160, 310);  
}
```



4. Use **push()** and **pop()** methods to set the position of the rectangle properly.

```
function draw() {  
    image(backgroundImg,0,0,1200,600)  
    Engine.update(engine);  
  
    rect(ground.position.x, ground.position.y, width * 2, 1);  
  
    push();  
    rectMode(CENTER);  
    rect(tower.position.x, tower.position.y, 160, 310);  
    pop();  
}
```



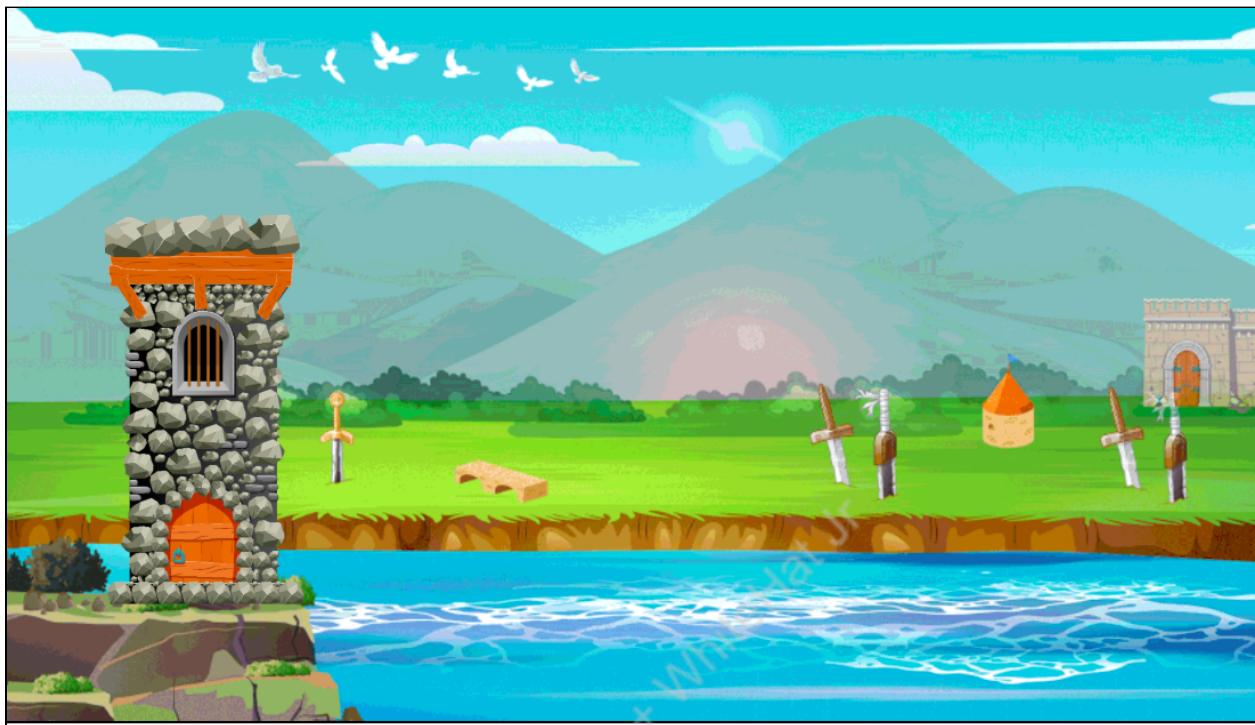
5. In the **preload()** function load the tower image and add it to the tower.

```
function preload() {
    backgroundImg = loadImage("./assets/background.gif");
    towerImage = loadImage("./assets/tower.png");
}

function draw() {
    image(backgroundImg, 0, 0, 1200, 600)
    Engine.update(engine);

    rect(ground.position.x, ground.position.y, width * 2, 1);

    push();
    imageMode(CENTER);
    image(towerImage, tower.position.x, tower.position.y, 160, 310);
    pop();
}
```



6. Create a cannon class that will help us to create the cannon.

- Create the cannon.js file

```
js > JS Cannon.js > Cannon
1   class Cannon {
```

- Add this file in the index.html file to be used in sketch.js.

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8" />
    <title>Pirates Invasion</title>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.10.2/p5.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.10.2/addons/p5.sound.min.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/0.10.0/addons/p5.dom.min.js"></script>
    <script src="./lib/p5.gif.min.js"></script>
    <script src="./lib/matter.js"></script>
    <link rel="stylesheet" type="text/css" href="style.css" />

    <script src=".js/Ground.js"></script>
    <script src=".js/Tower.js"></script>
    <script src=".js/Cannon.js"></script>

  </head>
  <body>
    <script src="sketch.js"></script>
  </body>
</html>
```

7. Create the properties in the **constructor()**; these properties will be used to create the cannon.

```
js > JS Cannon.js > Cannon
  1  class Cannon {
  2    constructor(x, y, width, height) {
  3      this.x = x;
  4      this.y = y;
  5      this.width = width;
  6      this.height = height;
  7
  8    }
  9
 10 }
```

8. Write the **display()** function for the Cannon class to display the cannon.

```
display() {  
    //code to create cannon top  
    push();  
    rectMode(CENTER);  
    rect(this.x, this.y, this.width, this.height);  
    pop();  
  
    //code to create cannon bottom  
    rect(70, 20, 200, 200);  
    noFill();  
}
```

9. Create a cannon using the Cannon class in the **sketch.js** file.

```
angle = 20  
  
cannon = new Cannon(180, 110, 130, 100, angle);  
  
cannon.display();
```



10. Add images to the cannon.

```
display() {
    //code to create cannon top
    push();
    imageMode(CENTER);
    image(this.cannon_image, this.x, this.y, this.width, this.height);
    pop();

    //code to create cannon bottom
    image(this.cannon_base,70, 20, 200, 200);
    noFill();
}
```



What's next?

In the next class, we will be using what we learned today and create the moving cannon, also create a cannonball to shoot from the cannon.

EXTEND YOUR KNOWLEDGE

1. Bookmark the following link to know more about OOP in the following link created by Mozilla and individual contributors:
https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/Object-oriented_JS

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