

Sprite Objects



What is our GOAL for this MODULE?

We created an animated ball in a playground project where we experimented with different sprite properties.

What did we ACHIEVE in the class TODAY?

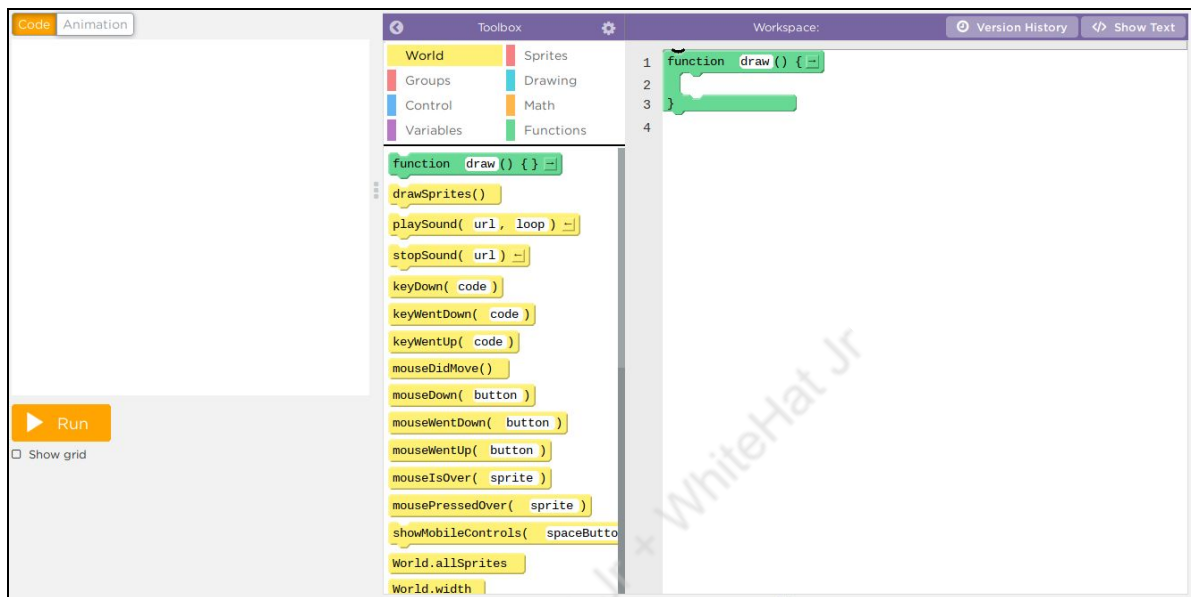
- Created a sprite object.
- Accessed predefined sprite properties and functions.

Which CONCEPTS/ CODING BLOCKS did we cover today?

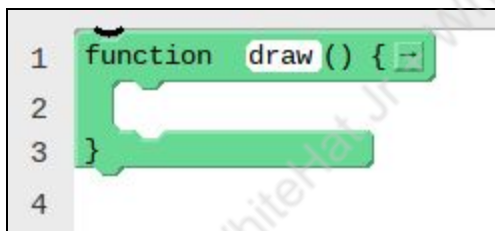
- Use of sprite class to create new sprite objects
- Use pre-defined sprite properties and functions

How did we DO the activities?

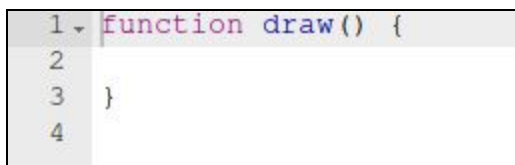
- Coding environment in code.org



- Work space in Block mode:

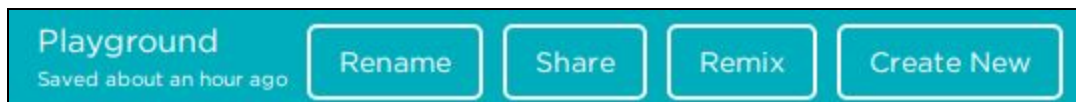


- Work space in Text mode:

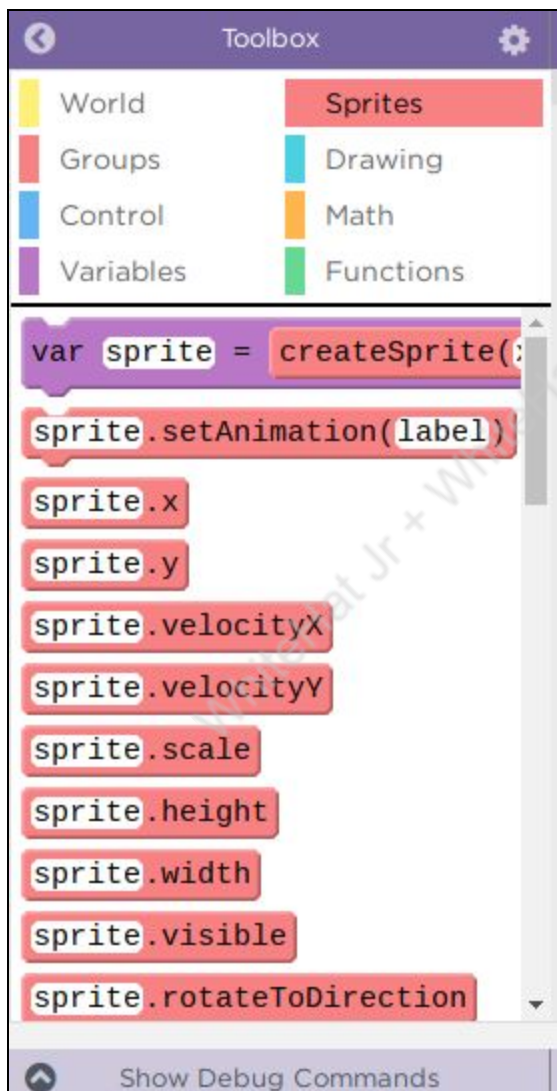


Activity 1: Project 'Playground'

1. Create a project 'Playground'.



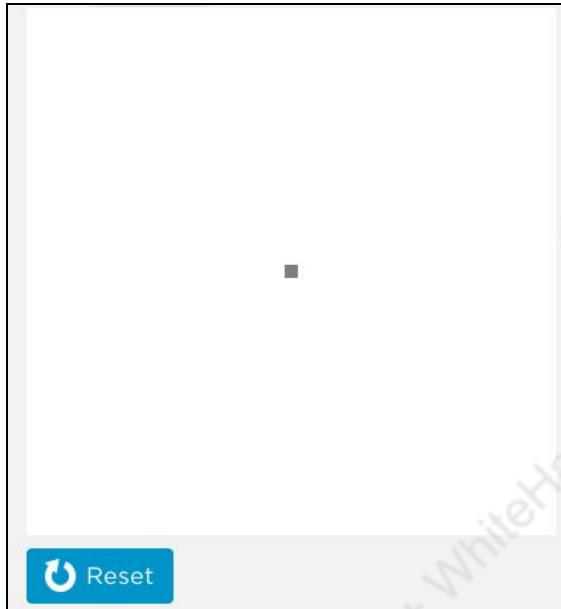
2. Look into the 'Sprites' section under our Toolbox. It should tell us how to create a Sprite object and what properties and functions it has.



*Note: Sprites are always rectangular, you can give them a shape later.

```
1 var ball = createSprite(200,200,10,10);  
2 function draw() {  
3   drawSprites();  
4 }
```

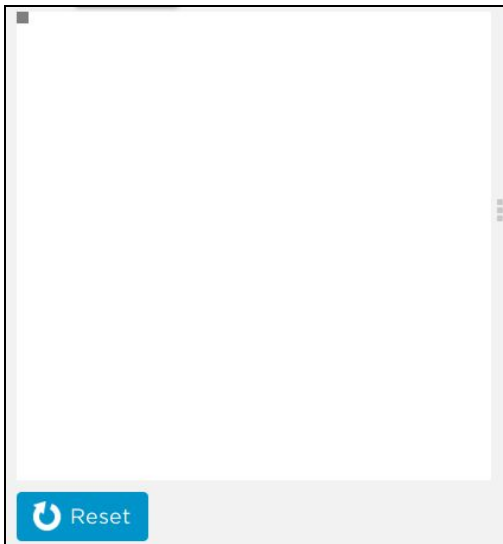
- **Output:**



3. Rename the Sprite to “ball” and give it a position

```
1 var ball = createSprite(200,200,10,10);  
2 function draw() {  
3   ball.x = 5;  
4   ball.y = 5;  
5   drawSprites();  
6 }  
7 |
```

- **Output:**



4. Animate the ball.

```
1 var ball = createSprite(200,200,10,10)
2
3 function draw() {
4   background("white");
5
6   ball.velocityX = 2;
7   ball.velocityY = 3;
8   |
9   createEdgeSprites();
10  ball.bounceOff(edges);
11
12  drawSprites();
13 }
```

- **Output:** The ball keeps moving to and fro near the boundary.

5. Make the ball bounce off the walls.

```
1 var ball = createSprite(200,200,10,10);
2 ball.velocityX = 2;
3 ball.velocityY = 3;
4
5 function draw() {
6   background("white");
7   createEdgeSprites();
8   ball.bounceOff(edges);
9   drawSprites();
10 }
```

- Output: The ball bounces off all the edges.
6. Make 4 balls bounce off each other.

```
4 var ball3 = createSprite(395,5,10,10);
5 var ball4 = createSprite(5,395,10,10);
6
7 ball1.velocityX = 2;
8 ball1.velocityY = 2;
9
10 ball2.velocityX = 3;
11 ball2.velocityY = 3;
12
13 ball3.velocityX = -2;
14 ball3.velocityY = -2;
15
16 ball4.velocityX = 2;
17 ball4.velocityY = -3;
18
19 function draw() {
20   background("white");
21
22   createEdgeSprites();
23   ball1.bounceOff(edges);
24   ball2.bounceOff(edges);
25   ball3.bounceOff(edges);
26   ball4.bounceOff(edges);
27
28
29
30
31   drawSprites();
32 }
33
```

Complete Code with comments:

```
//create 4 ball sprites
var ball1 = createSprite(5,5,10,10);
var ball2 = createSprite(395,395,10,10);
var ball3 = createSprite(395,5,10,10);
var ball4 = createSprite(5,395,10,10);
```

```
//assign velocity to our balls
ball1.velocityX = 2;
ball1.velocityY = 2;
```

```
ball2.velocityX = 3;
ball2.velocityY = 3;
```

```
ball3.velocityX = -2;
ball3.velocityY = -2;
```

```
ball4.velocityX = 2;
ball4.velocityY = -3;
```

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

```
  //create boundaries on the edges
  createEdgeSprites();
```

```
  //make the balls bounce off the edges
  ball1.bounceOff(edges);
  ball2.bounceOff(edges);
  ball3.bounceOff(edges);
  ball4.bounceOff(edges);
```

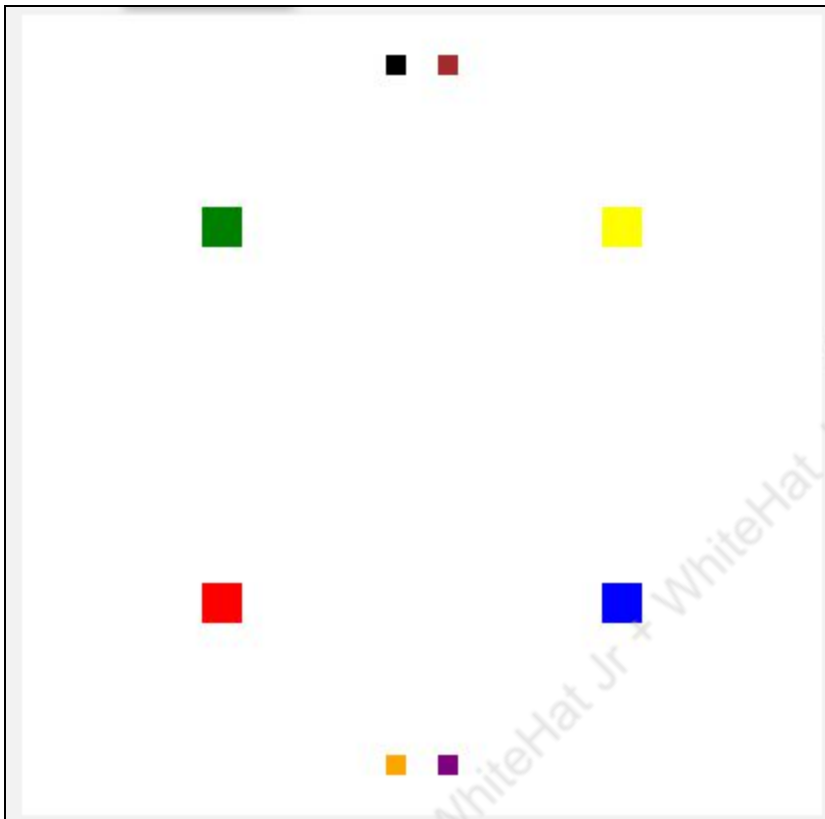
```
  //make the balls bounce off each other
  ball1.bounce(ball2);
  ball1.bounce(ball3);
  ball1.bounce(ball4);
```

```
  ball2.bounce(ball3);
  ball2.bounce(ball4);
```

```
  ball3.bounce(ball4);
```

```
  //draw the sprites
  drawSprites(); }
```

Output:



Same Code in p5:

```
1 <!DOCTYPE html>
2 <html lang="en" dir="ltr">
3   <head>
4     <meta charset="utf-8">
5     <title>Bouncing Ball</title>
6     <script src="p5.js"></script>
7     <script src="p5.dom.min.js"></script>
8     <script src="p5.sound.min.js"></script>
9     <script src="p5.play.js"></script>
10    <script src="sketch.js"></script>
11  </head>
12  <body>
13
14  </body>
15 </html>
```



```
1  var canvas, ball, edges
2
3  function setup(){
4    canvas = createCanvas(500,500)
5    ball = createSprite(5,5,10,10);
6
7    ball.velocityX = 2;
8    ball.velocityY = 2;
9  }
10
11 function draw(){
12   background("white");
13   edges = createEdgeSprites();
14
15   ball.bounceOff(edges);
16   // ball.bounceOff(edges[1]);
17   // ball.bounceOff(edges[2]);
18   // ball.bounceOff(edges[3]);
19
20   drawSprites()
21 }
```

What's NEXT?

We will continue to work on the same game. We are going to use the bouncing ball animation to create a more challenging game.

EXTEND YOUR KNOWLEDGE

- Sprites

<https://studio.code.org/docs/concepts/game-lab/sprites/>