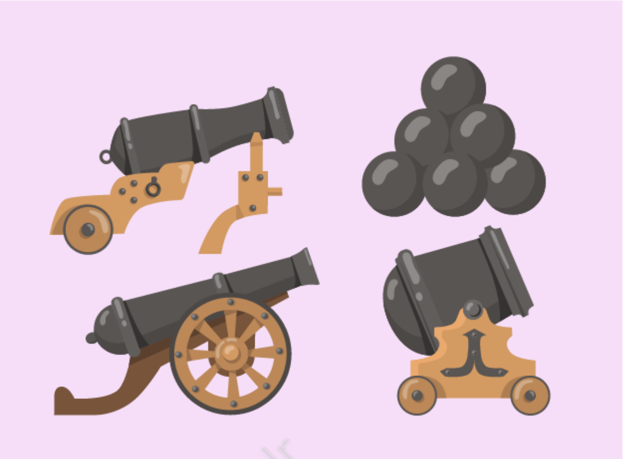
CS-PRO-C24(V3)

MULTIPLE CANNONBALLS



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What is our GOAL for this MODULE?

In this class, we created more cannonball objects and shot them from the cannon on the press of a button. We also traced and showed the trajectory taken by the cannonball when it was shot.

What did we ACHIEVE in the class TODAY?

- Created multiple cannonballs.
- Created **showCannonBalls().**

Which CONCEPTS/ CODING BLOCKS did we cover today?

- **Arrays()**
- Create a new cannonball on the press of the down arrow key.

How did we DO the activities?

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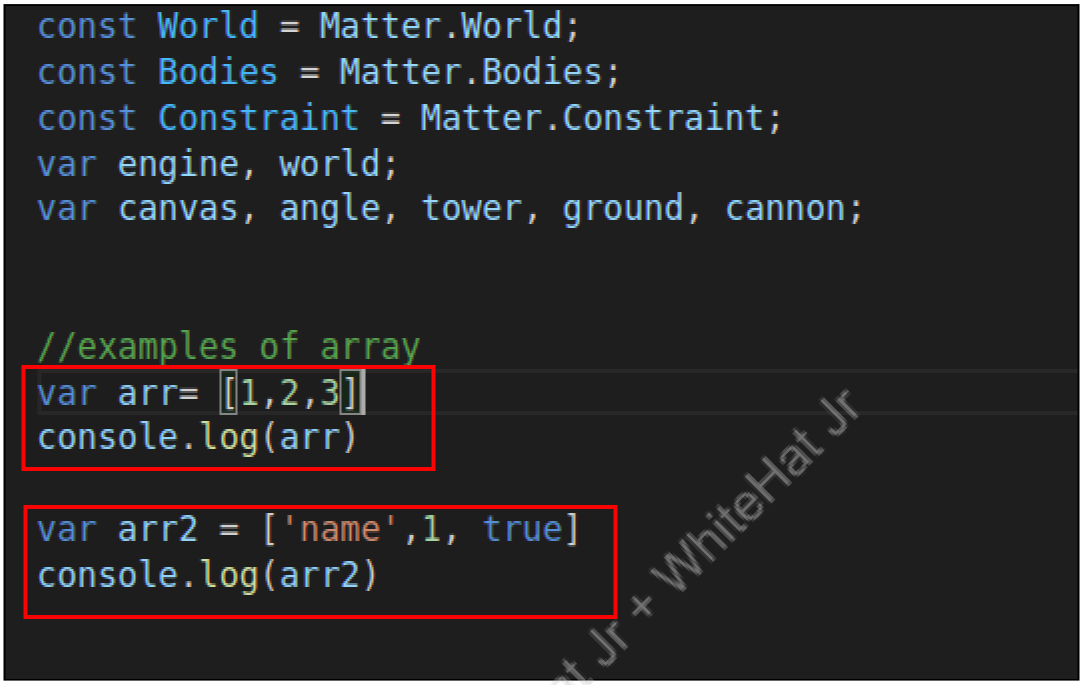
1. Explore different ways to iterate on a 2D array.



```
const World = Matter.World;
const Bodies = Matter.Bodies;
const Constraint = Matter.Constraint;
var engine, world;
var canvas, angle, tower, ground, cannon;


//examples of array
var arr= [1,2,3]
console.log(arr)

var arr2 = ['name',1, true]
console.log(arr2)
```

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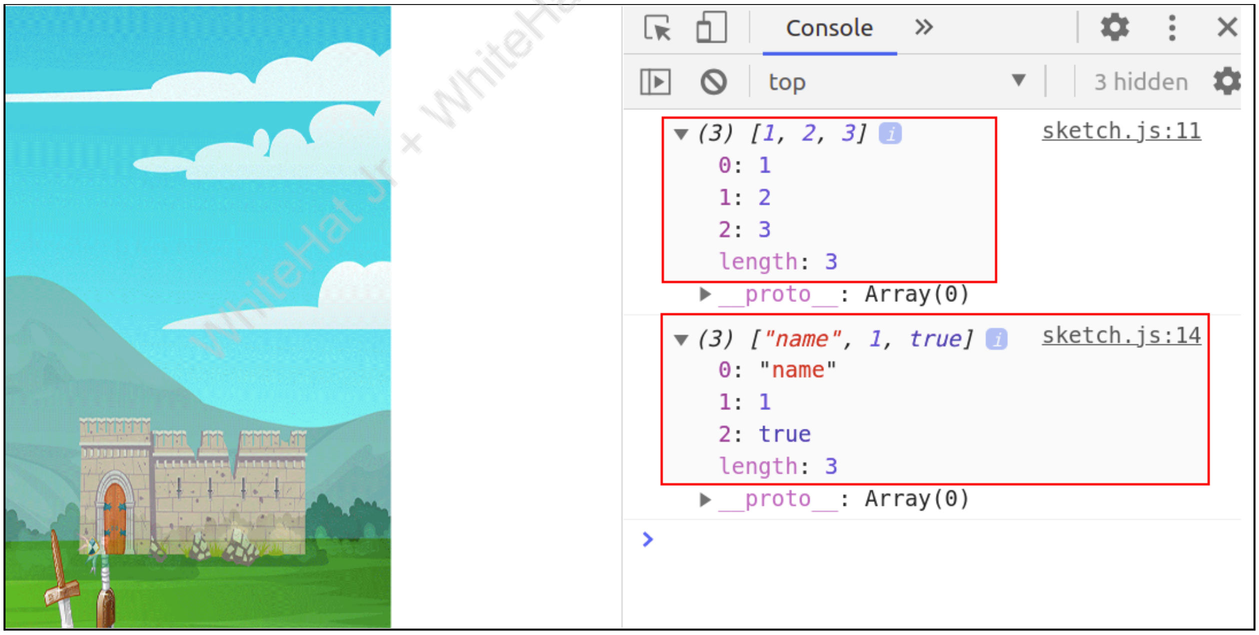

```
▼ (3) [1, 2, 3]                    sketch.js:11
    0: 1
    1: 2
    2: 3
    length: 3
  ▶ __proto__: Array(0)
▼ (3) ["name", 1, true]            sketch.js:14
    0: "name"
    1: 1
    2: true
    length: 3
  ▶ __proto__: Array(0)
>
```

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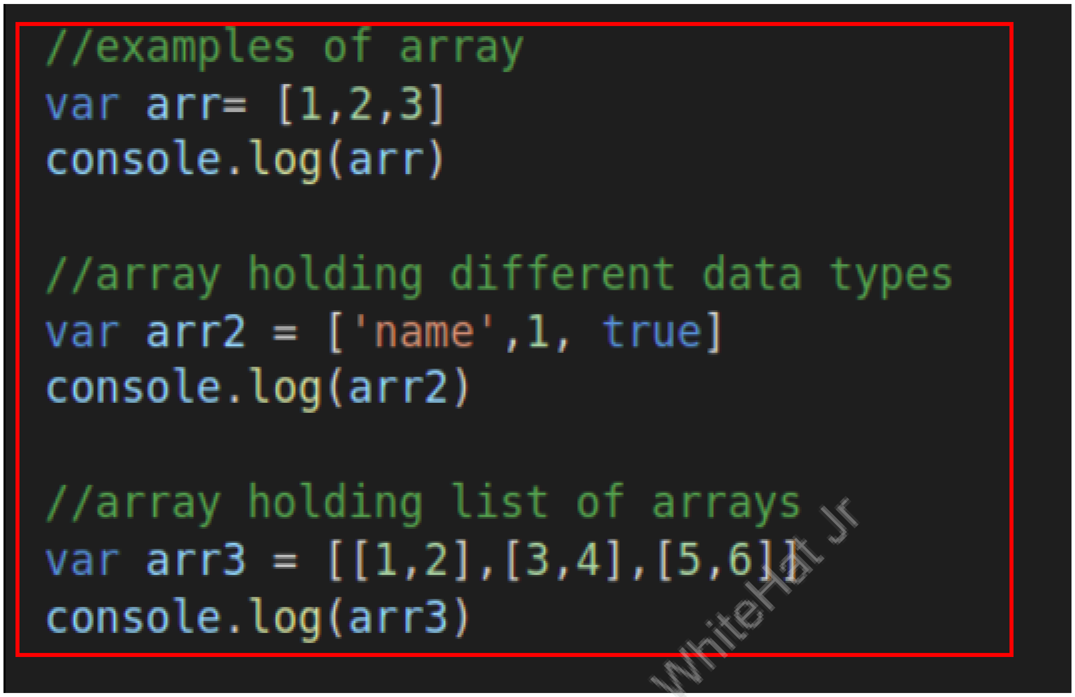
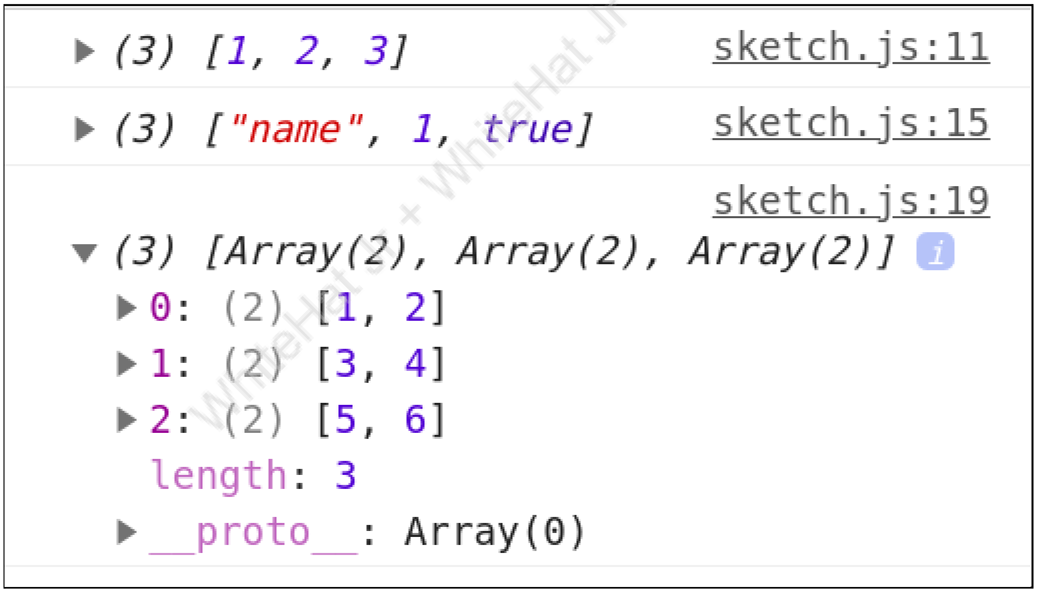


```
//examples of array
var arr= [1,2,3]
console.log(arr)

//array holding different data types
var arr2 = ['name',1, true]
console.log(arr2)

//array holding list of arrays
var arr3 = [[1,2],[3,4],[5,6]]
console.log(arr3)
```



```
▶ (3) [1, 2, 3]                              sketch.js:11
▶ (3) ["name", 1, true]                      sketch.js:15
                                             sketch.js:19
▼ (3) [Array(2), Array(2), Array(2)] i
   ▶ 0: (2) [1, 2]
   ▶ 1: (2) [3, 4]
   ▶ 2: (2) [5, 6]
     length: 3
   ▶ __proto__: Array(0)
```

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2. Try to access the first element of the array.

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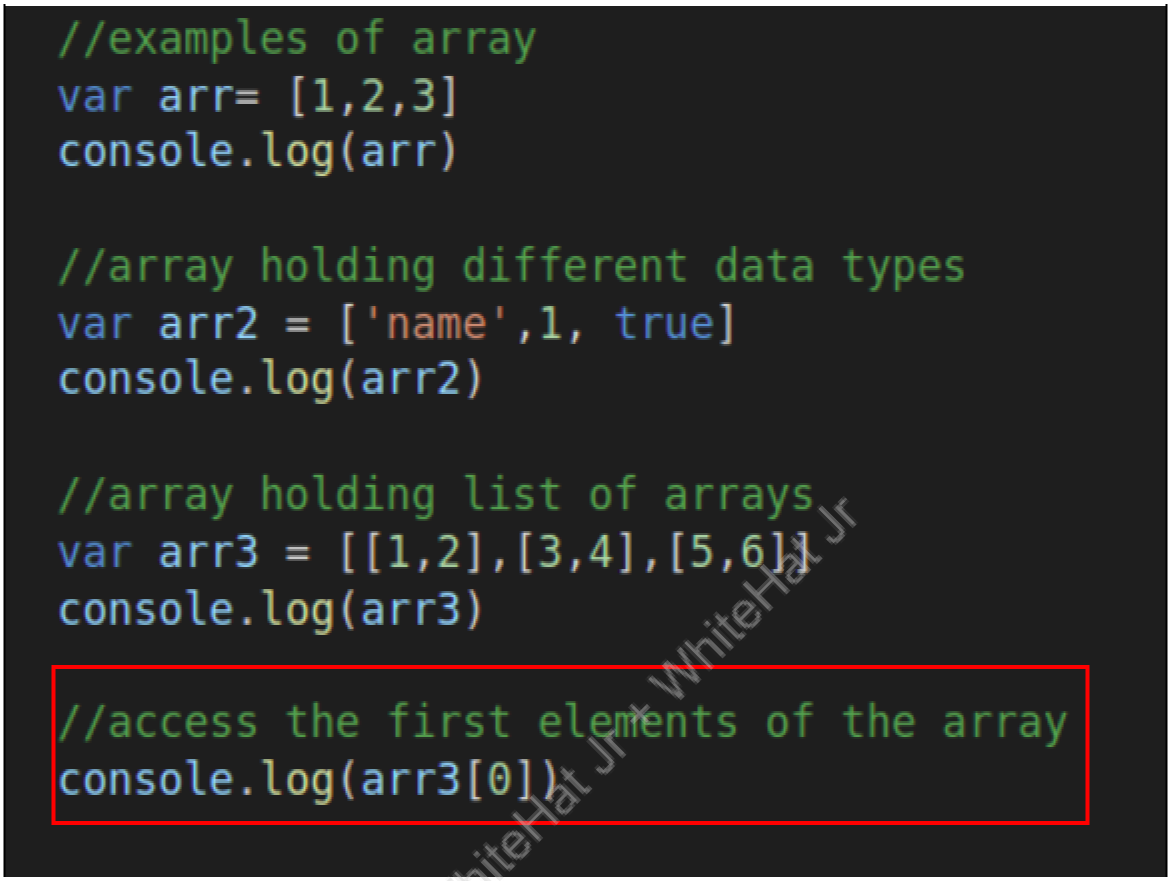
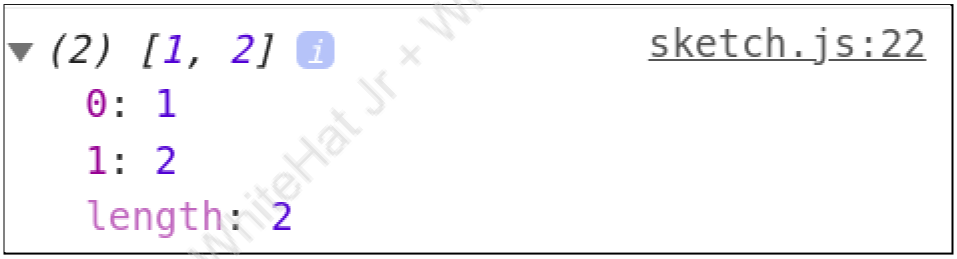


```
//examples of array
var arr= [1,2,3]
console.log(arr)

//array holding different data types
var arr2 = ['name',1, true]
console.log(arr2)

//array holding list of arrays
var arr3 = [[1,2],[3,4],[5,6]]
console.log(arr3)

//access the first elements of the array
console.log(arr3[0])
```



```
▼ (2) [1, 2] i                          sketch.js:22
    0: 1
    1: 2
    length: 2
```

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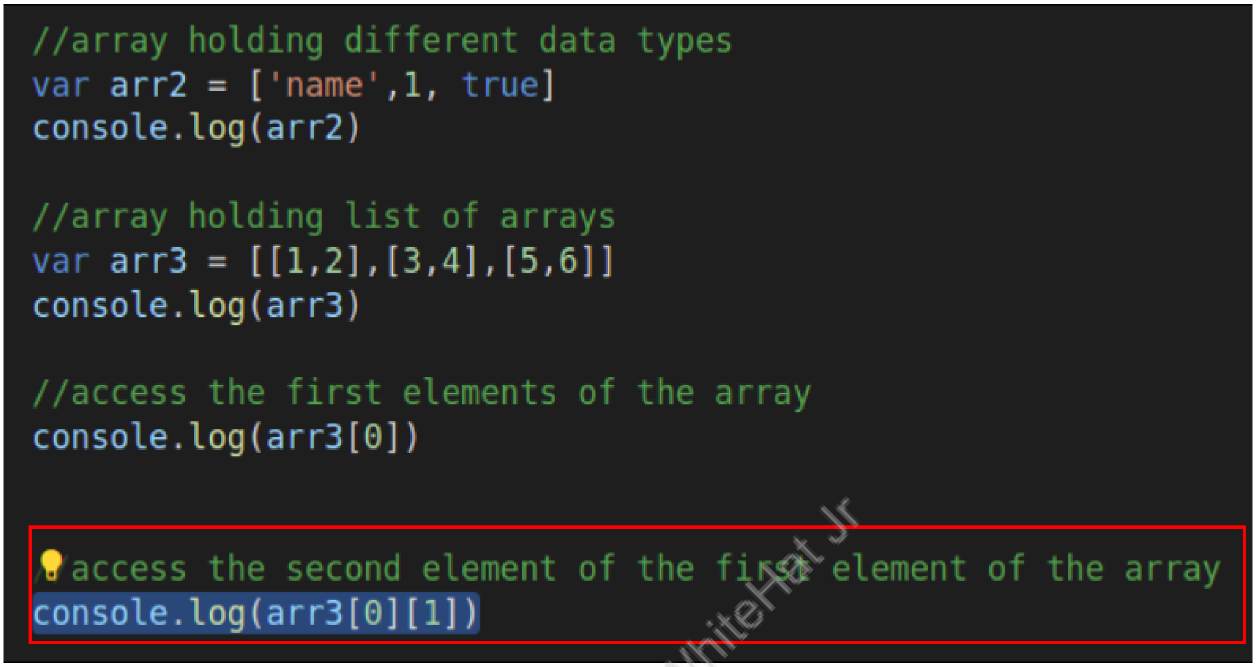
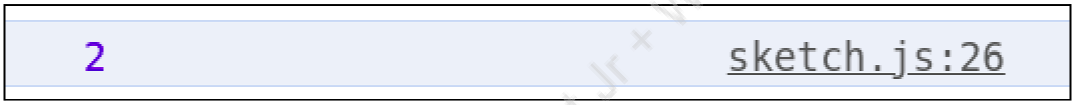
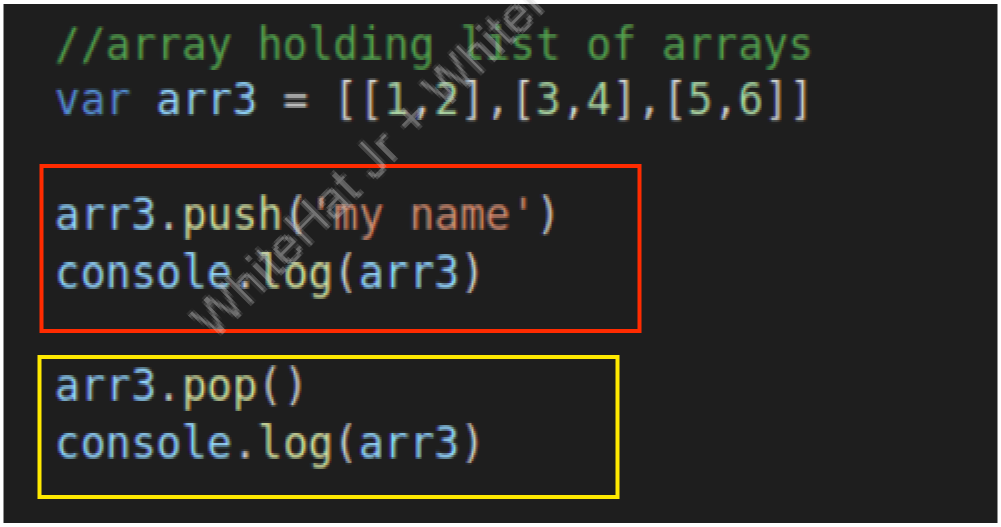


```
//array holding different data types
var arr2 = ['name',1, true]
console.log(arr2)

//array holding list of arrays
var arr3 = [[1,2],[3,4],[5,6]]
console.log(arr3)

//access the first elements of the array
console.log(arr3[0])


//access the second element of the first element of the array
console.log(arr3[0][1])
```



```
  2                                   sketch.js:26
```



```
//array holding list of arrays
var arr3 = [[1,2],[3,4],[5,6]]

arr3.push('my name')
console.log(arr3)

arr3.pop()
console.log(arr3)
```

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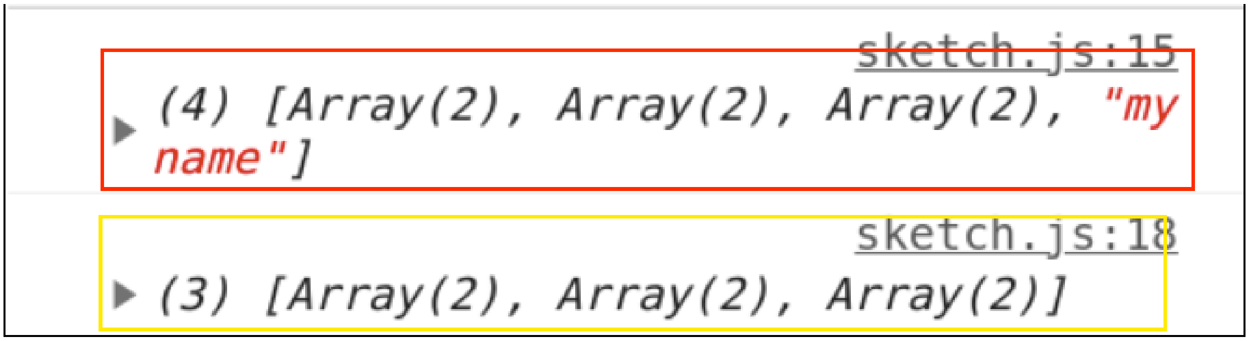
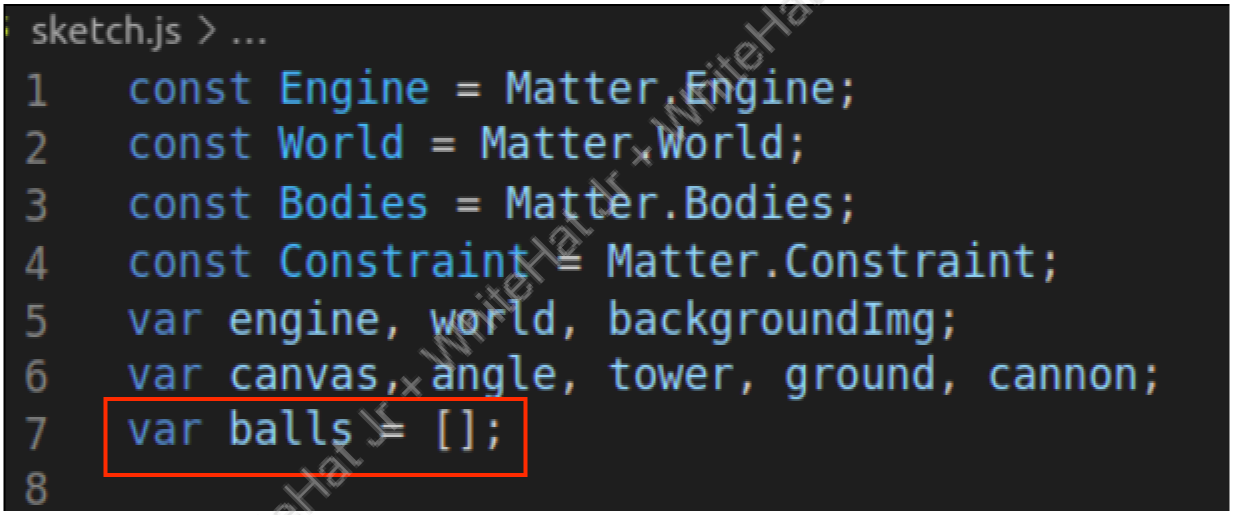


```
                                          sketch.js:15
▶ (4) [Array(2), Array(2), Array(2), "my
  name"]
                                          sketch.js:18
▶ (3) [Array(2), Array(2), Array(2)]
```

3. To create multiple cannonballs. Start by creating an empty array of balls.



```
sketch.js > ...
const Engine = Matter.Engine;
const World = Matter.World;
const Bodies = Matter.Bodies;
const Constraint = Matter.Constraint;
var engine, world, backgroundImg;
var canvas, angle, tower, ground, cannon;
var balls = [];

```

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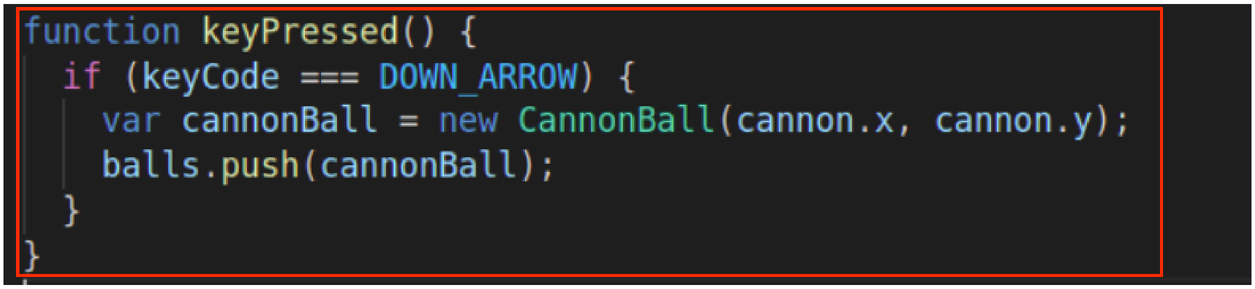
4. Create a cannonball when the **DOWN_ARROW** key is pressed and then push it into the **balls** array.



```
function keyPressed() {
  if (keyCode === DOWN_ARROW) {
    var cannonBall = new CannonBall(cannon.x, cannon.y);
    balls.push(cannonBall);
  }
}
```

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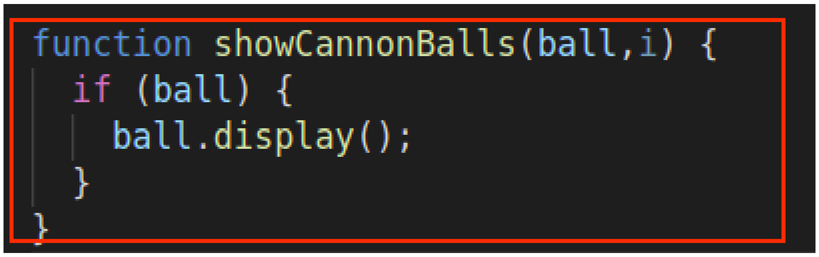
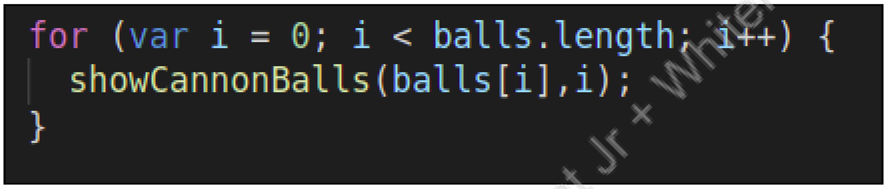
5. Write a **showCannonballs()** function to display the cannonballs.



```
function showCannonBalls(ball,i) {
  if (ball) {
    ball.display();
  }
}
```

6. Write a for loop on the balls array to get all the balls. Call the **showCannonBalls()** function inside the loop.



```
for (var i = 0; i < balls.length; i++) {
  showCannonBalls(balls[i],i);
}
```

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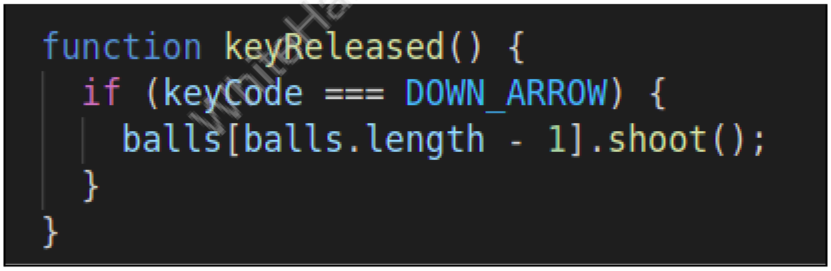
7. Shoot the cannonball when the **DOWN_ARROW** key is released. Call the **shoot()** function by accessing the balls from the array.



```
function keyReleased() {
  if (keyCode === DOWN_ARROW) {
    balls[balls.length - 1].shoot();
  }
}
```

OUTPUT

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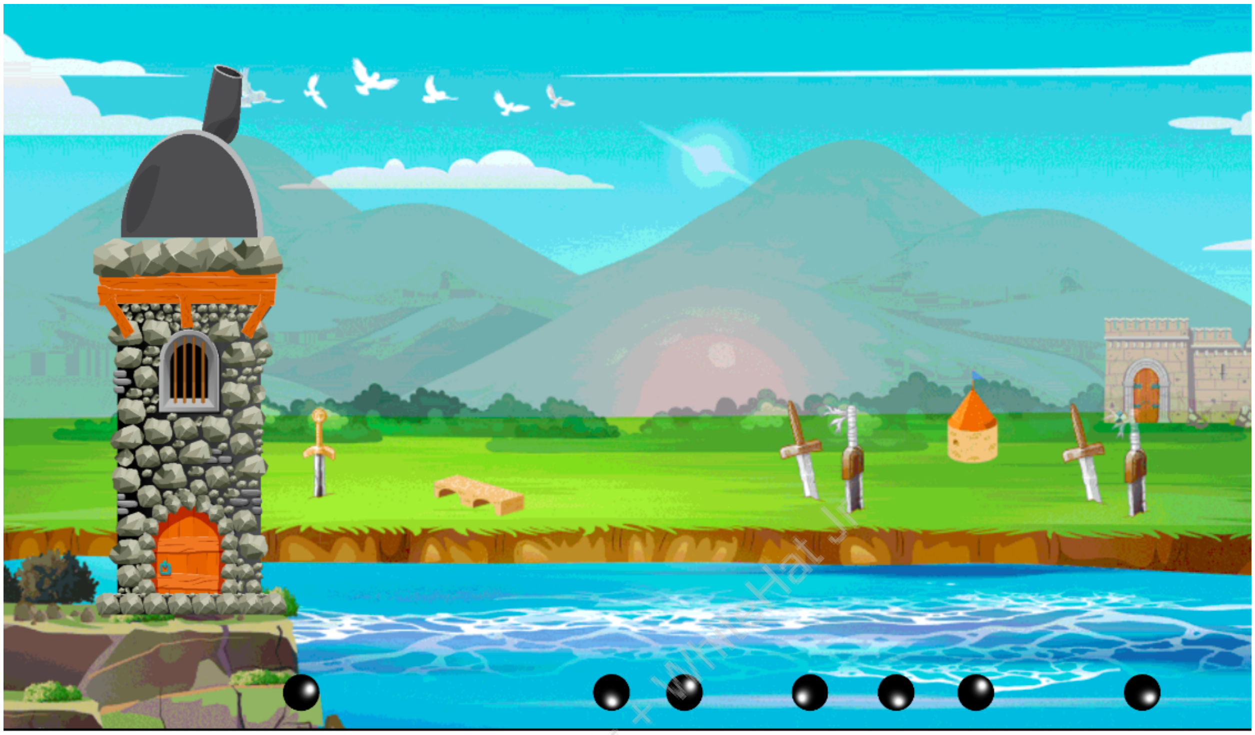

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What's next?

In the next class, we will create pirate boats.

EXTEND YOUR KNOWLEDGE

Bookmark the following link to know more about loops and iterations in the following link created by Mozilla and individual contributors:

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Loops_and_iteration

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