Lesson 05 Demo 03

Creating Various Events in Node.js

Objective: To create various events in Node.js for passing arguments to listeners, switching to asynchronous mode, emitting error events, handling events, and calling event listeners

Tools required: Node Package Manager and Visual Studio Code

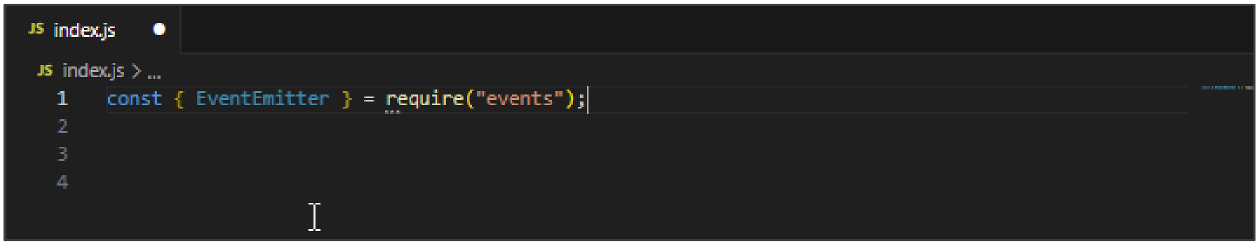
Prerequisites: Basic Linux Commands, NPM commands, JavaScript events module

Steps to be followed:

1. Create a simple **EventEmitter** instance
2. Pass arguments to the listeners
3. Use the listener function to switch to asynchronous mode
4. Emit the error events
5. Handle the events
6. Call and register event listeners

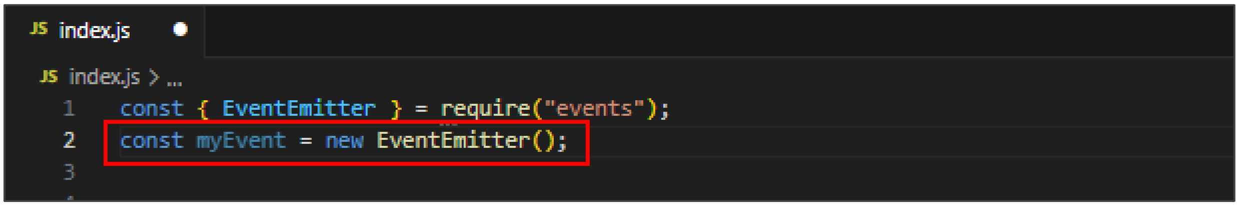
Step 1: Create a simple EventEmitter instance

1.1 Create a file named index.js within the project directory and import the **events** module to create a simple EventEmitter instance:
const { EventEmitter } = require("events");



```
const { EventEmitter } = require("events");
```

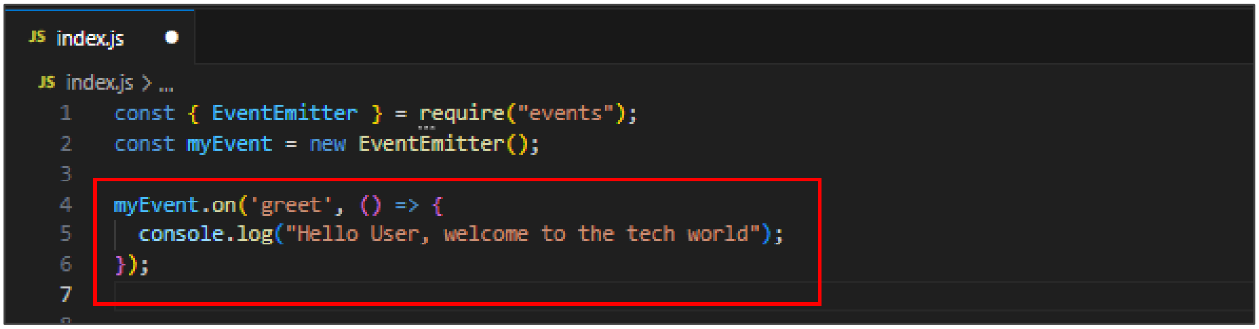
1.2 Enter the following code statement to create an object of **EventEmitter** instance:
const myEvent = new EventEmitter();



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
```

1.3 Use the **on** function to register the listener:

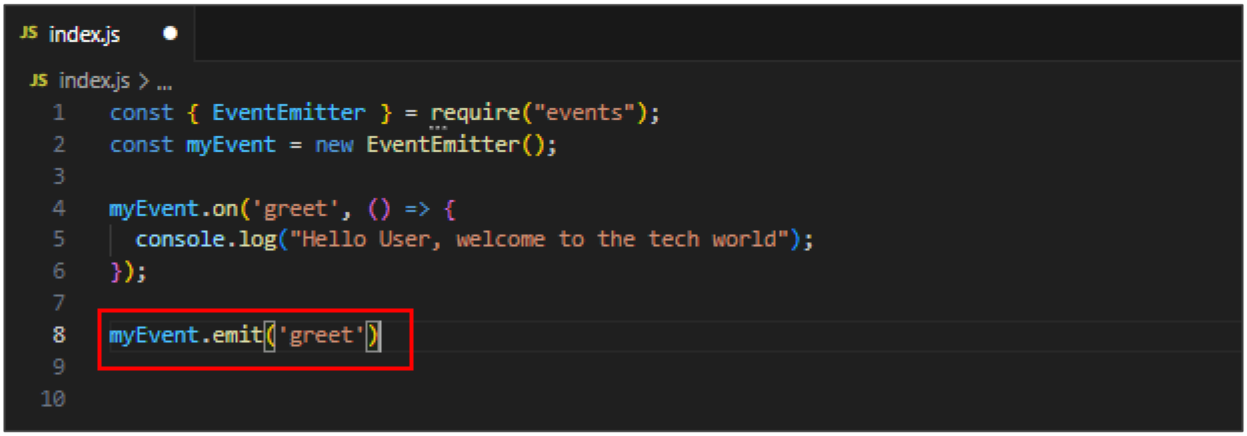
myEvent.on('greet', () => {
console.log("Hello User, welcome to the tech world");
});



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.on('greet', () => {
  console.log("Hello User, welcome to the tech world");
});

```

1.4 Execute the emit function by passing the suitable event:

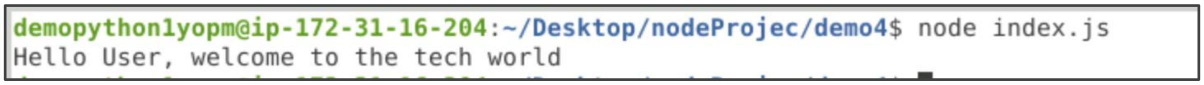
myEvent.emit('greet')



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.on('greet', () => {
  console.log("Hello User, welcome to the tech world");
});

myEvent.emit('greet')


```

1.5 Go to the terminal, inside the project directory run the following command:

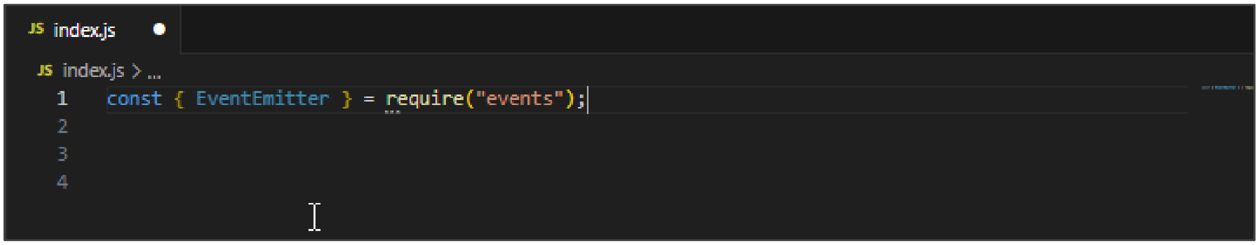
node index.js



```
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Hello User, welcome to the tech world
```

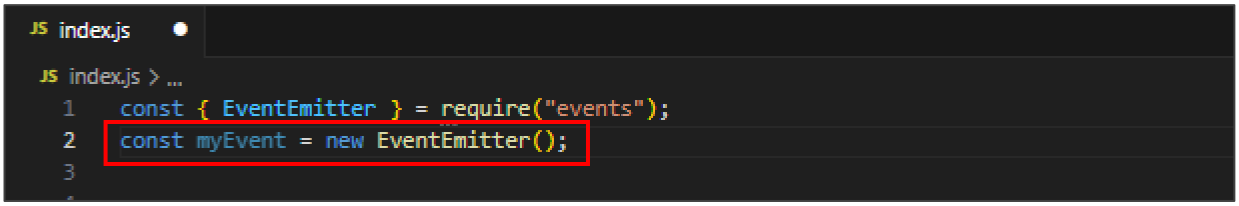
Step 2: Pass arguments to the listener

2.1 Import the events module within the **index.js** file:
const { EventEmitter } = require("events");



```
const { EventEmitter } = require("events");
```

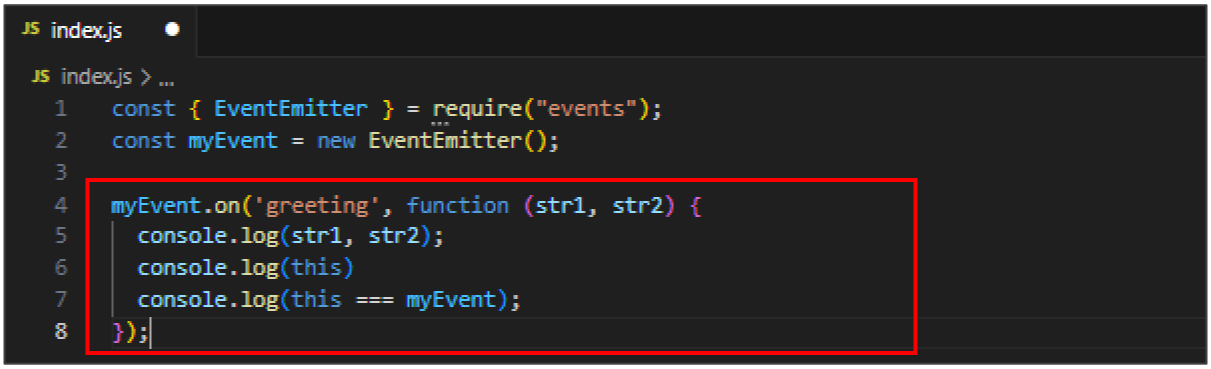
2.2 Create the object of **EventEmitter**:
const myEvent = new EventEmitter();



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
```

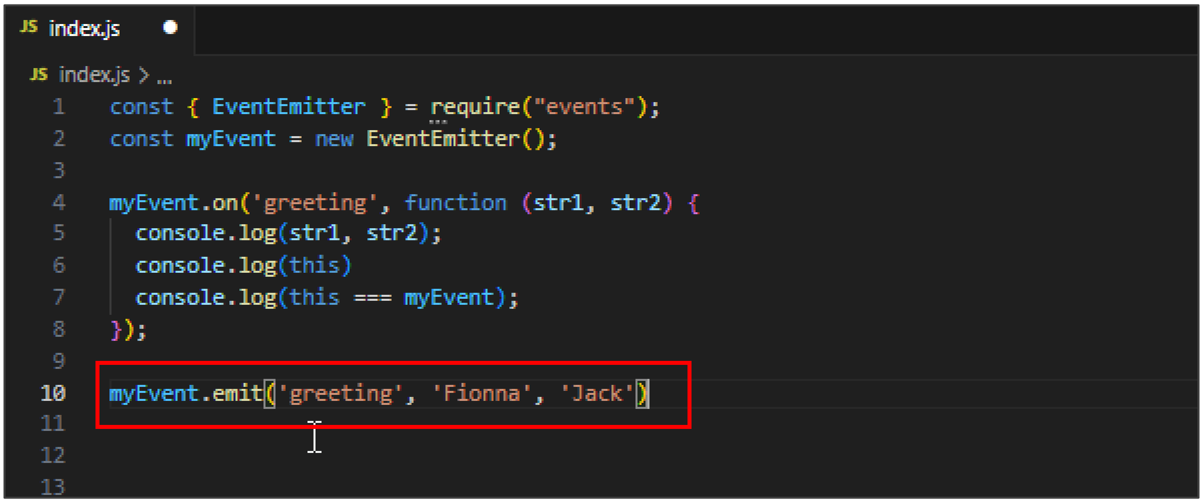
2.3 Use the **on** function to register the listener and create a function that takes **str1** and **str2** as two string inputs:

```
myEvent.on('greeting', function(str1, str2) {
 console.log(str1, str2);
 console.log(this)
 console.log(this === myEvent);
});
```



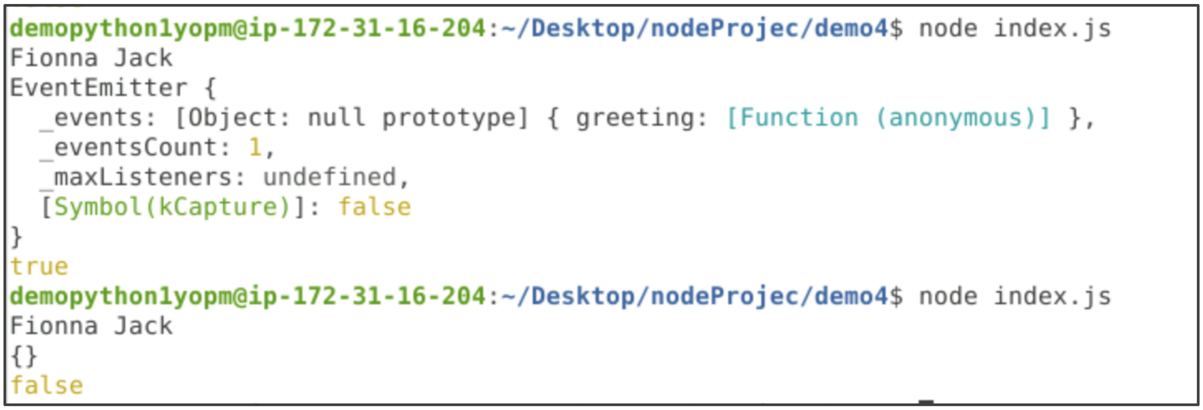
```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.on('greeting', function (str1, str2) {
  console.log(str1, str2);
  console.log(this)
  console.log(this === myEvent);
});
```

2.4 Execute the **emit** function by passing the suitable event and input strings
myEvent.emit('greeting', 'Fionna', 'Jack')



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.on('greeting', function (str1, str2) {
  console.log(str1, str2);
  console.log(this)
  console.log(this === myEvent);
});

myEvent.emit('greeting', 'Fionna', 'Jack')
```

2.5 Go to the terminal, inside the project directory run the following command:
node index.js

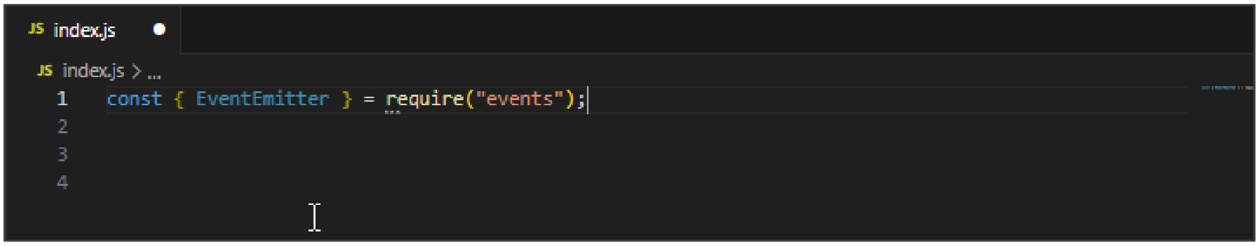


```
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Fionna Jack
EventEmitter {
  _events: [Object: null prototype] { greeting: [Function (anonymous)] },
  _eventsCount: 1,
  _maxListeners: undefined,
  [Symbol(kCapture)]: false
}
true
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Fionna Jack
{}
false
```

Step 3: Use the listener function to switch to asynchronous mode

3.1 Import the **events** module within the **index.js** file:

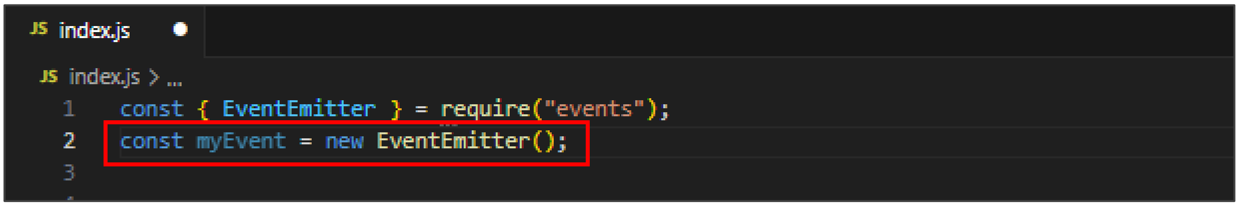
const { EventEmitter } = require("events");



```
const { EventEmitter } = require("events");
```

3.2 Create the object of **EventEmitter** instance:

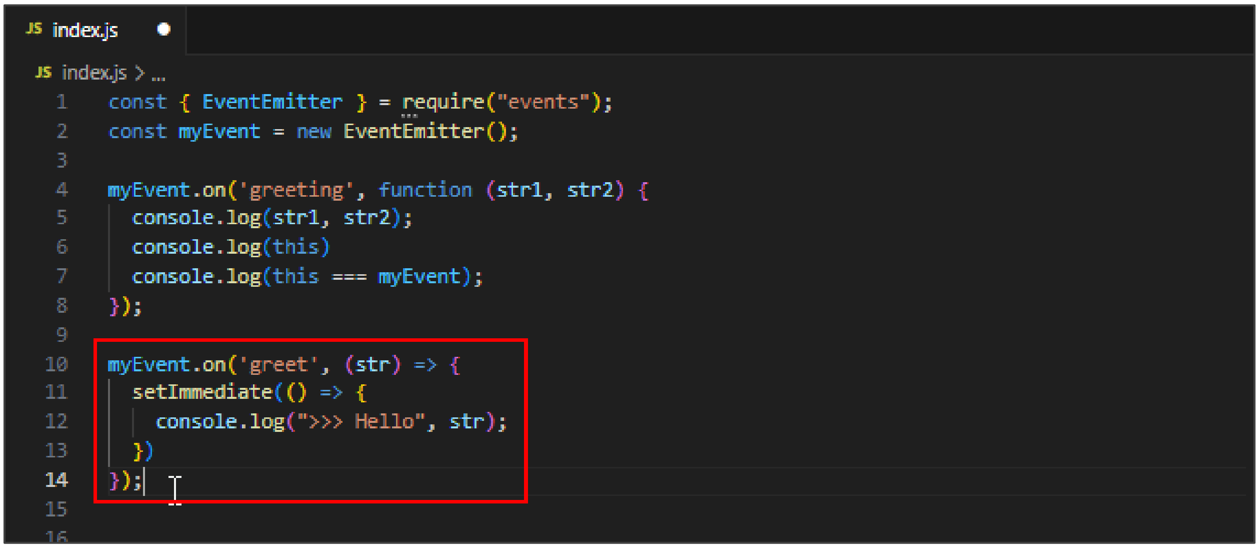
const myEvent = new EventEmitter();



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
```

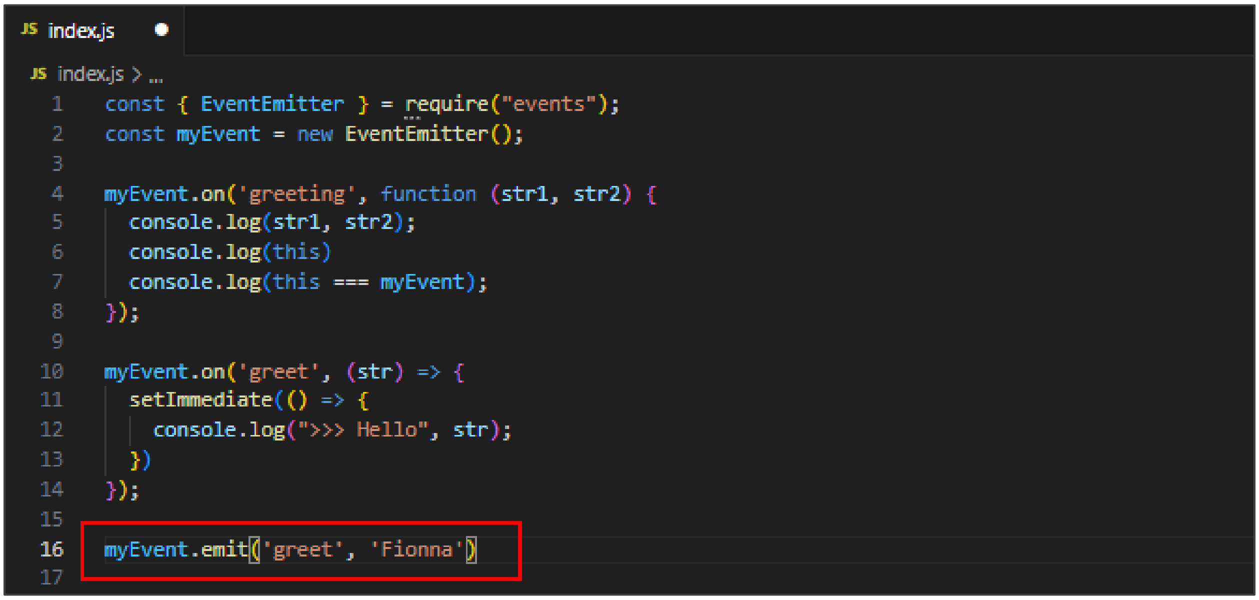
3.3 Use the **on** function to register the listener and create a function that takes **str** as string input:

```
myEvent.on(‘greet', (str) => {
 setImmediate(() => {
   console.log(">>> Hello", str);
 })
});
```



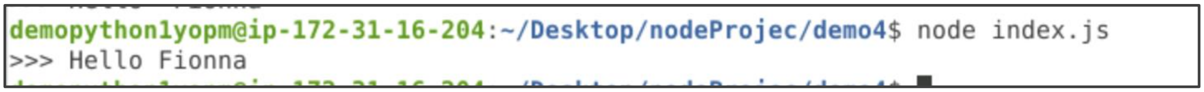
```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.on('greeting', function (str1, str2) {
  console.log(str1, str2);
  console.log(this)
  console.log(this === myEvent);
});

myEvent.on('greet', (str) => {
  setImmediate(() => {
    console.log(">>> Hello", str);
  })
});
```

3.4 Execute the emit function by passing the suitable event and input strings:
myEvent.emit('greet', 'Fionna')



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.on('greeting', function (str1, str2) {
  console.log(str1, str2);
  console.log(this)
  console.log(this === myEvent);
});

myEvent.on('greet', (str) => {
  setImmediate(() => {
    console.log(">>> Hello", str);
  })
});

myEvent.emit('greet', 'Fionna')

```

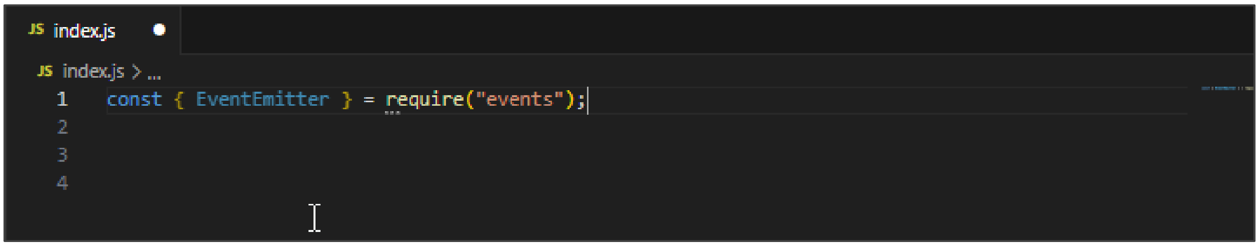
3.5 Go to the terminal, inside the project directory run the following command:
node index.js



```
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
>>> Hello Fionna
```

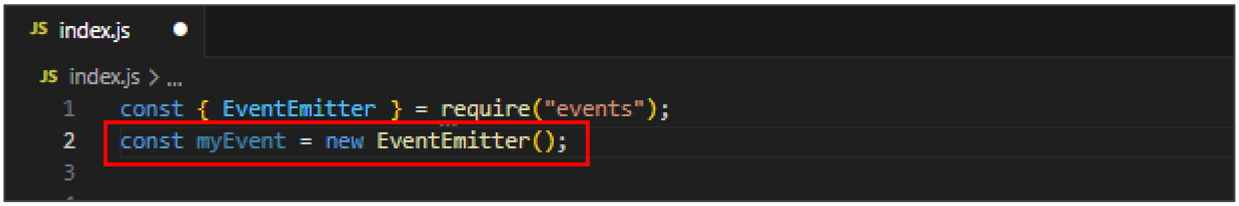
Step 4: Emit the error events

4.1 Import the **events** module within the **index.js** file:
const { EventEmitter } = require("events");



```
const { EventEmitter } = require("events");



```

4.2 Create the object of **EventEmitter** instance:
const myEvent = new EventEmitter();

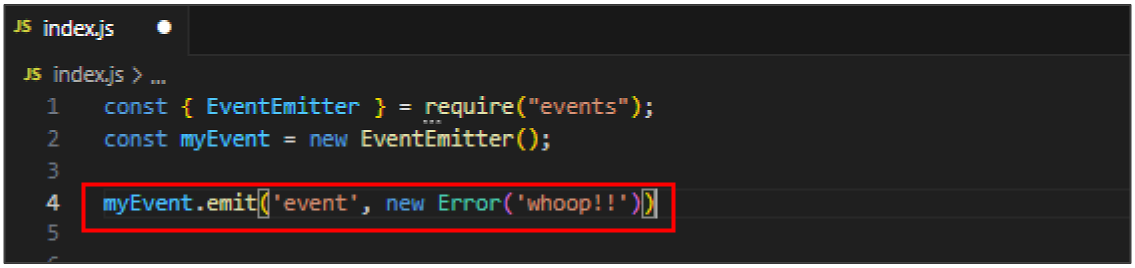


index.js ●

index.js > ...

```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

```

4.3 Execute the **emit** function with a new error object
myEvent.emit('event', new Error('whoop!!'))

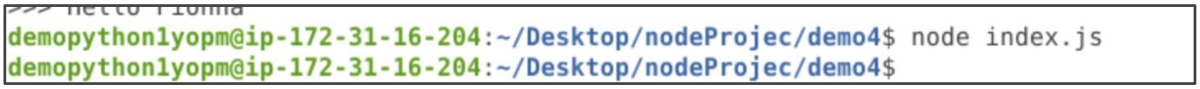


index.js ●

index.js > ...

```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();

myEvent.emit('event', new Error('whoop!!'))

```

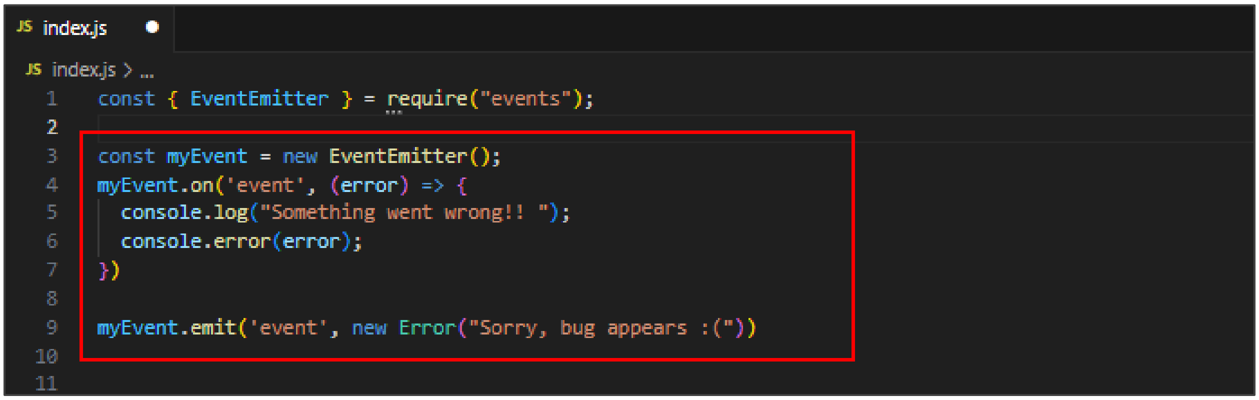
4.4 Go to the terminal, inside the project directory run the following command:
node index.js



```
>>> hello Fionna
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$
```

4.5 Use the following code in the **index.js** file to add listeners for the error events:

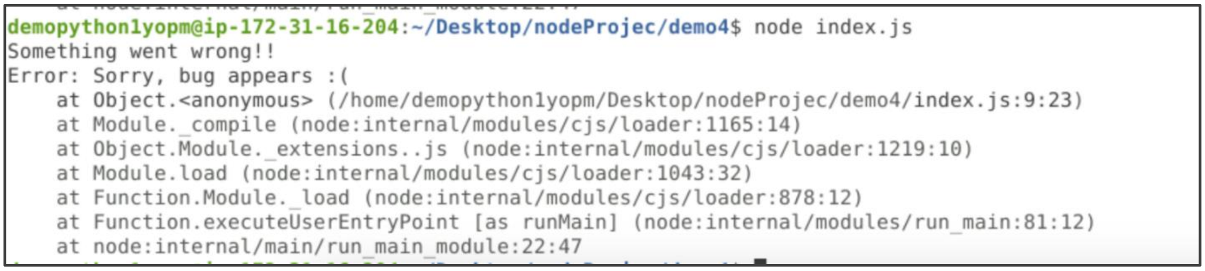
```
const { EventEmitter } = require("events");

const myEvent = new EventEmitter();
myEvent.on('event', (error) => {
  console.log("Something went wrong!! ");
  console.error(error);
})

myEvent.emit('event', new Error("Sorry, bug appears :("))
```



```
const { EventEmitter } = require("events");

const myEvent = new EventEmitter();
myEvent.on('event', (error) => {
  console.log("Something went wrong!! ");
  console.error(error);
})

myEvent.emit('event', new Error("Sorry, bug appears :("))


```

4.6 Run the Node.js app using the following command:

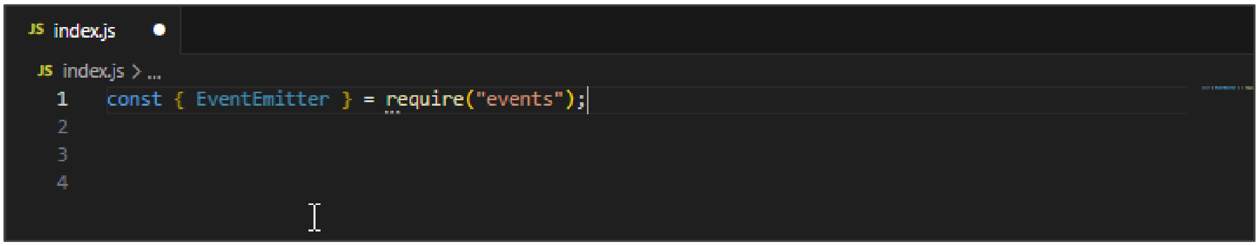
node index.js



```
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Something went wrong!!
Error: Sorry, bug appears :(
    at Object.<anonymous> (/home/demopython1yopm/Desktop/nodeProjec/demo4/index.js:9:23)
    at Module._compile (node:internal/modules/cjs/loader:1165:14)
    at Object.Module._extensions..js (node:internal/modules/cjs/loader:1219:10)
    at Module.load (node:internal/modules/cjs/loader:1043:32)
    at Function.Module._load (node:internal/modules/cjs/loader:878:12)
    at Function.executeUserEntryPoint [as runMain] (node:internal/modules/run_main:81:12)
    at node:internal/main/run_main_module:22:47
```

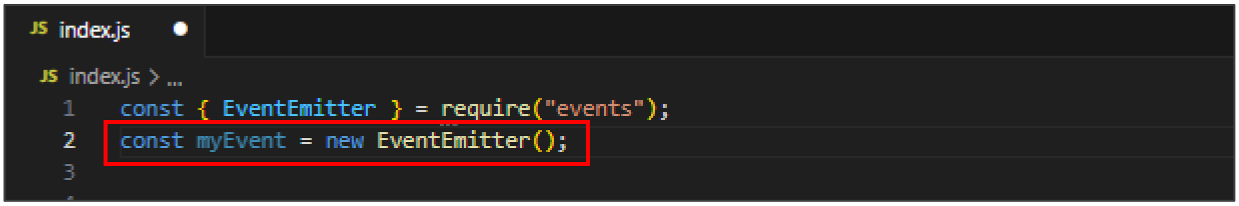
Step 5: Handle the events

5.1 Import the events module within the index.js file:
const { EventEmitter } = require("events");



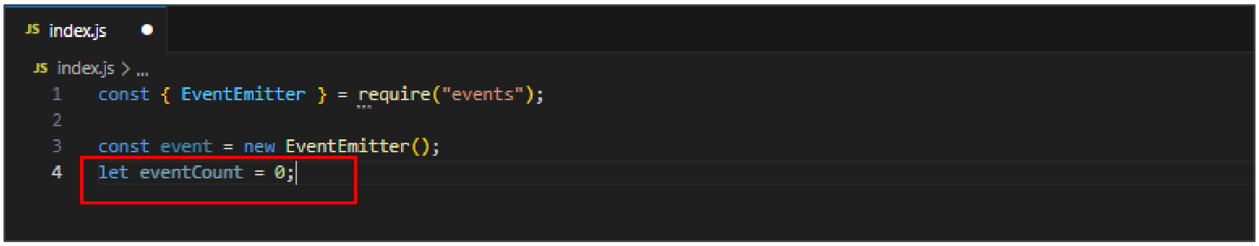
```
const { EventEmitter } = require("events");
```

5.2 Create the object of **EventEmitter** instance:
const myEvent = new EventEmitter();



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
```

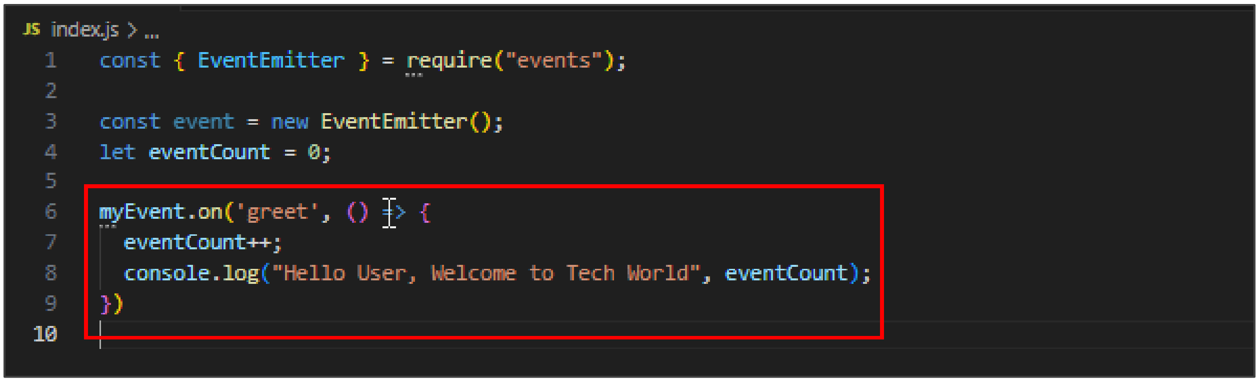
5.3 Create a variable **eventCount** and initialize it to 0:
let eventCount = 0;



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;
```

5.4 Register the listener for the **greet** event where the function will increment the **eventCount** variable and print its latest value on the console:

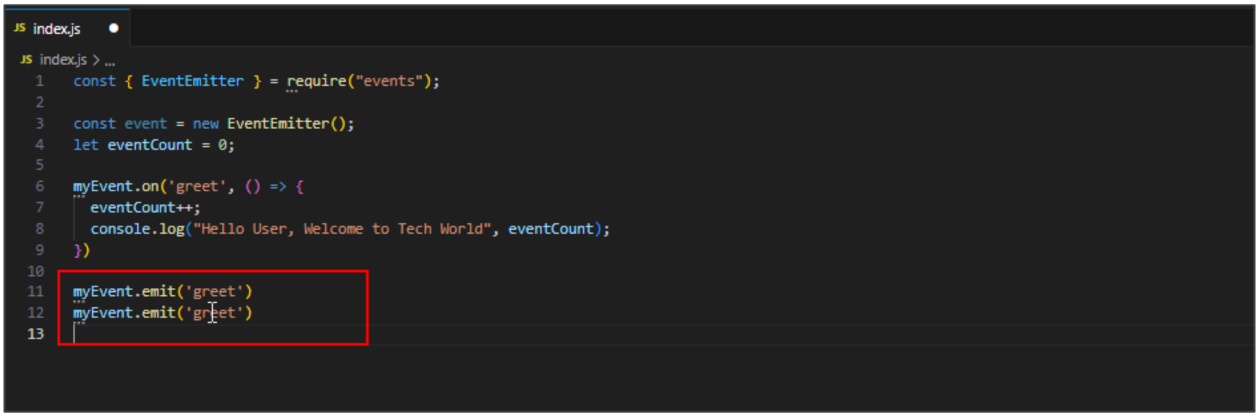
```
myEvent.on('greet', () => {
   eventCount++;
   console.log("Hello User, Welcome to Tech World", eventCount);
})
```



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;

myEvent.on('greet', () => {
  eventCount++;
  console.log("Hello User, Welcome to Tech World", eventCount);
})

```

5.5 Trigger the event using the **emit** function twice:

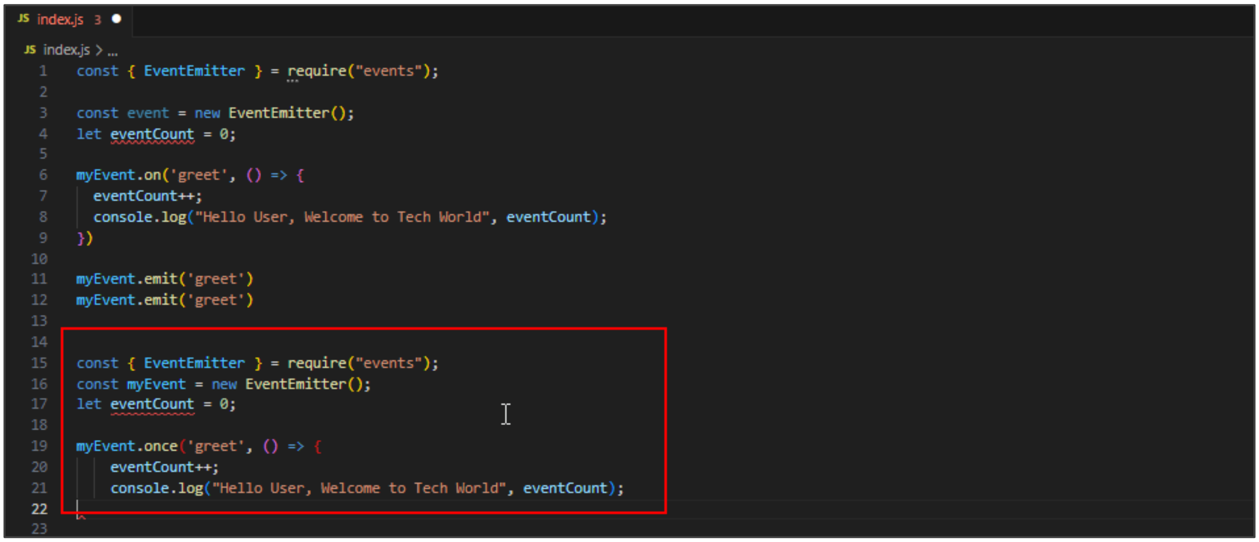
```
myEvent.emit('greet')
myEvent.emit('greet')
```



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;

myEvent.on('greet', () => {
  eventCount++;
  console.log("Hello User, Welcome to Tech World", eventCount);
})

myEvent.emit('greet')
myEvent.emit('greet')

```

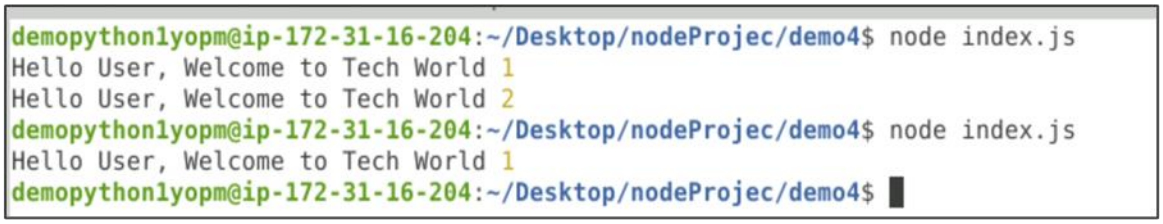
5.6 Use the following code snippet to call the event using **eventEmitter.once()** method:

```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
let eventCount = 0;

myEvent.once('greet', () => {
   eventCount++;
   console.log("Hello User, Welcome to Tech World", eventCount);
```



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;

myEvent.on('greet', () => {
  eventCount++;
  console.log("Hello User, Welcome to Tech World", eventCount);
})

myEvent.emit('greet')
myEvent.emit('greet')


const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
let eventCount = 0;

myEvent.once('greet', () => {
    eventCount++;
    console.log("Hello User, Welcome to Tech World", eventCount);

```

5.7 Execute the command **node index.js** on the terminal window to view the output:

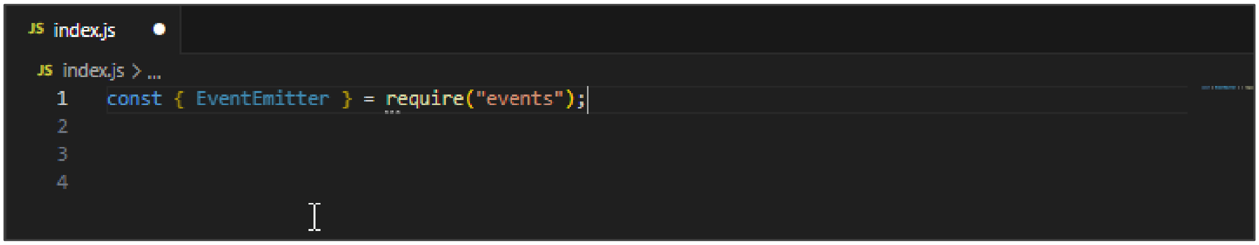


```
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Hello User, Welcome to Tech World 1
Hello User, Welcome to Tech World 2
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Hello User, Welcome to Tech World 1
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$
```

Step 6: Call and register event listeners

6.1 Import the **events** module within the **index.js** file:

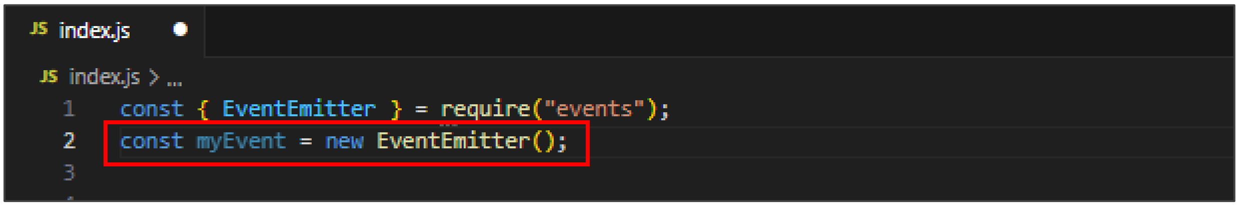
const { EventEmitter } = require("events");



```
const { EventEmitter } = require("events");
```

6.2 Create the object of **EventEmitter**:

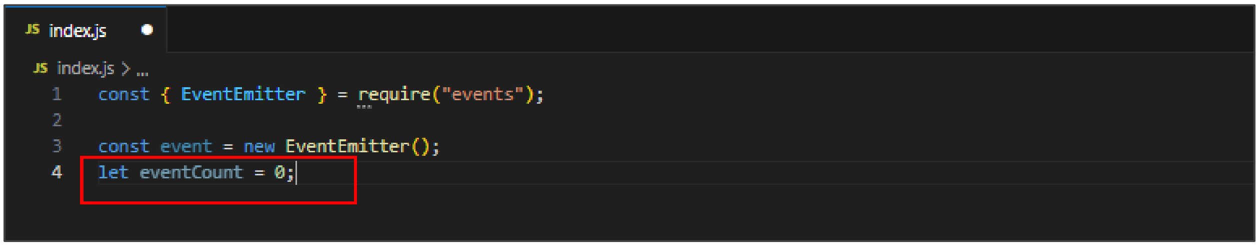
const myEvent = new EventEmitter();



```
const { EventEmitter } = require("events");
const myEvent = new EventEmitter();
```

6.3 Create an **eventCount** variable and initialize it to 0:

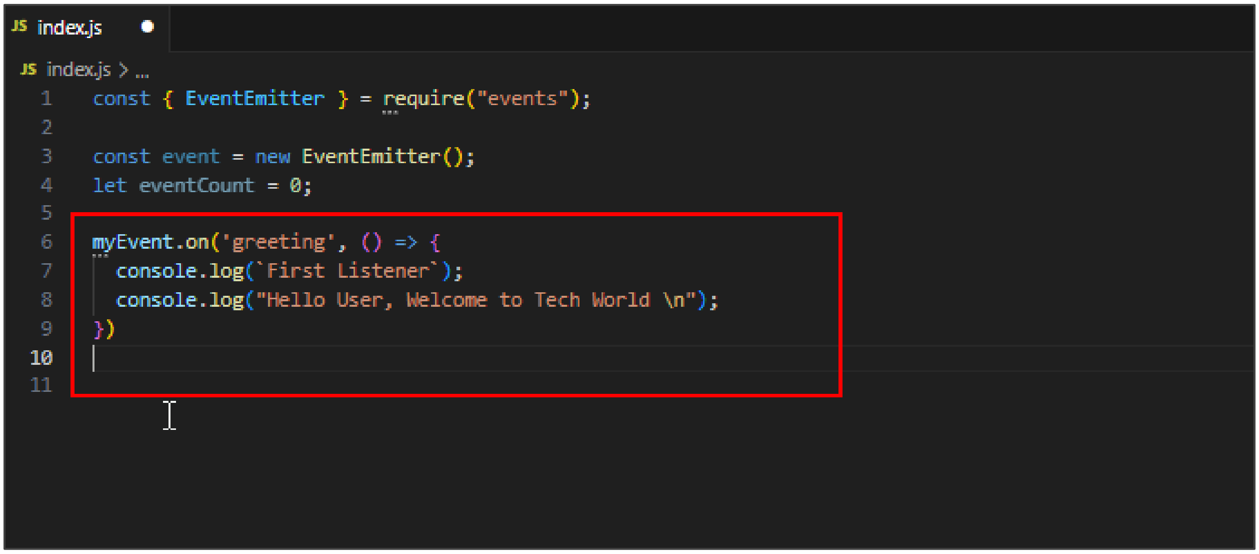
let eventCount = 0;



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;
```

6.4 Create an event named **greeting**:

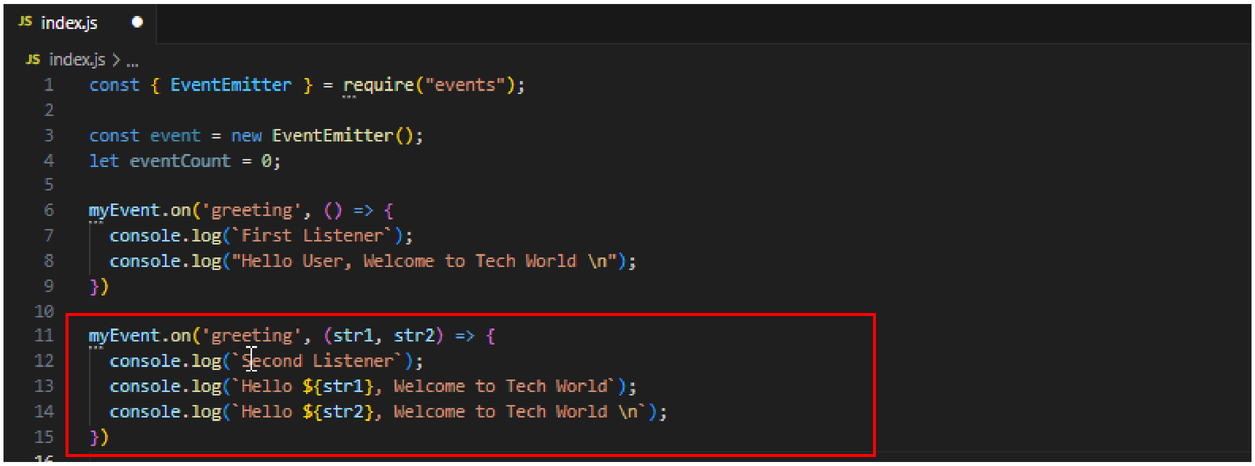
```
myEvent.on('greeting', () => {
  console.log(`First Listener`);
  console.log("Hello User, Welcome to Tech World \n");
})
```



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;

myEvent.on('greeting', () => {
  console.log(`First Listener`);
  console.log("Hello User, Welcome to Tech World \n");
})

```

6.5 Create another event greeting with two string inputs:

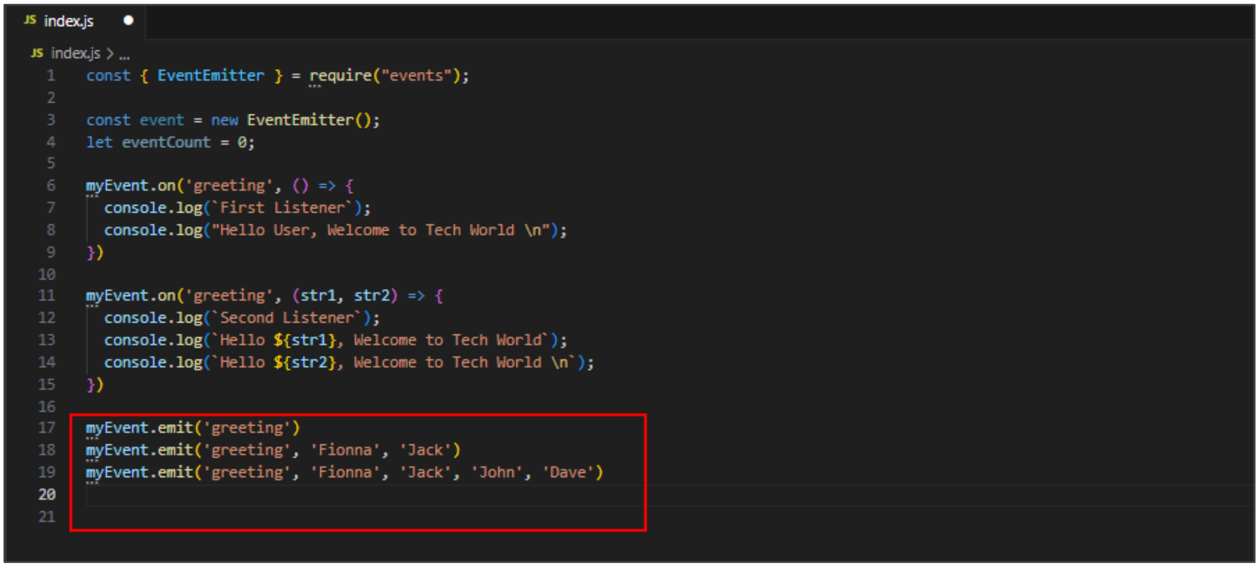
```
myEvent.on('greeting', (str1, str2) => {
  console.log(`Second Listener`);
  console.log(`Hello ${str1}, Welcome to Tech World`);
  console.log(`Hello ${str2}, Welcome to Tech World \n`);
})
```



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;

myEvent.on('greeting', () => {
  console.log(`First Listener`);
  console.log("Hello User, Welcome to Tech World \n");
})

myEvent.on('greeting', (str1, str2) => {
  console.log(`Second Listener`);
  console.log(`Hello ${str1}, Welcome to Tech World`);
  console.log(`Hello ${str2}, Welcome to Tech World \n`);
})
```

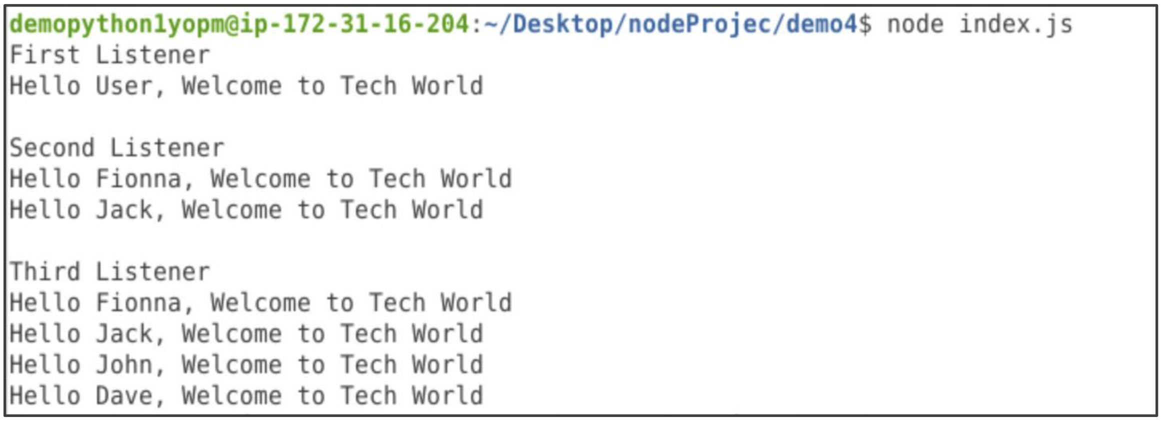
6.6 Trigger the events by passing different inputs:

myEvent.emit('greeting')
myEvent.emit('greeting', 'Fionna', 'Jack')
myEvent.emit('greeting', 'Fionna', 'Jack', 'John', 'Dave')



```
const { EventEmitter } = require("events");

const event = new EventEmitter();
let eventCount = 0;

myEvent.on('greeting', () => {
  console.log(`First Listener`);
  console.log("Hello User, Welcome to Tech World \n");
})

myEvent.on('greeting', (str1, str2) => {
  console.log(`Second Listener`);
  console.log(`Hello ${str1}, Welcome to Tech World`);
  console.log(`Hello ${str2}, Welcome to Tech World \n`);
})

myEvent.emit('greeting')
myEvent.emit('greeting', 'Fionna', 'Jack')
myEvent.emit('greeting', 'Fionna', 'Jack', 'John', 'Dave')
```

6.7 Execute the command **node index.js** on the terminal window to view the output:



```
demopython1yopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
First Listener
Hello User, Welcome to Tech World

Second Listener
Hello Fionna, Welcome to Tech World
Hello Jack, Welcome to Tech World

Third Listener
Hello Fionna, Welcome to Tech World
Hello Jack, Welcome to Tech World
Hello John, Welcome to Tech World
Hello Dave, Welcome to Tech World
```

By following these steps, you have successfully created various events in Node.js for passing arguments to listeners, switching to asynchronous mode, emitting error events, handling events, and calling event listeners.