

Lesson 05 Demo 01

Working with Events

Objective: To implement EventEmitter in Node.js for creating the event instance, passing listener arguments, using asynchronous operations, and emitting error events

Tools required: Visual Studio Code and Node Package Manager

Prerequisites: JavaScript and knowledge of basic Linux and NPM commands

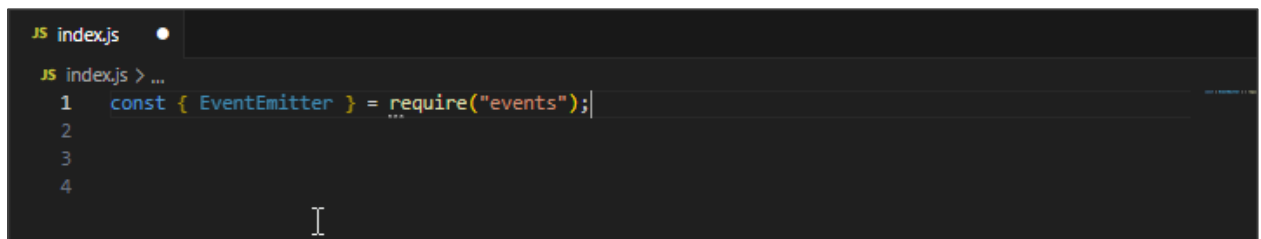
Steps to be followed:

1. Create a simple **EventEmitter** instance
2. Pass arguments to listeners
3. Use the listener function to switch to asynchronous mode
4. Emit the error events

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:

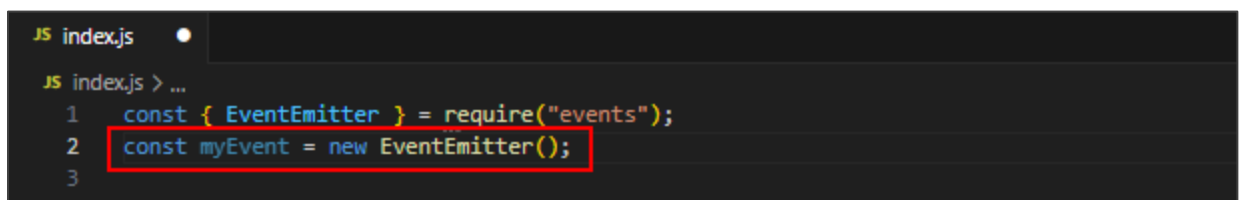
```
const { EventEmitter } = require("events");
```



```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2
3
4
```

- 1.2 Enter the following code statement to create an object of **EventEmitter** instance:

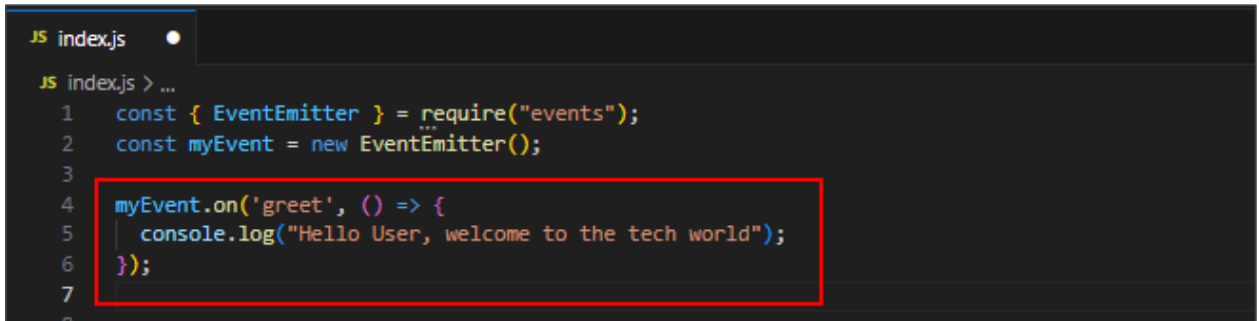
```
const myEvent = new EventEmitter();
```



```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
```

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

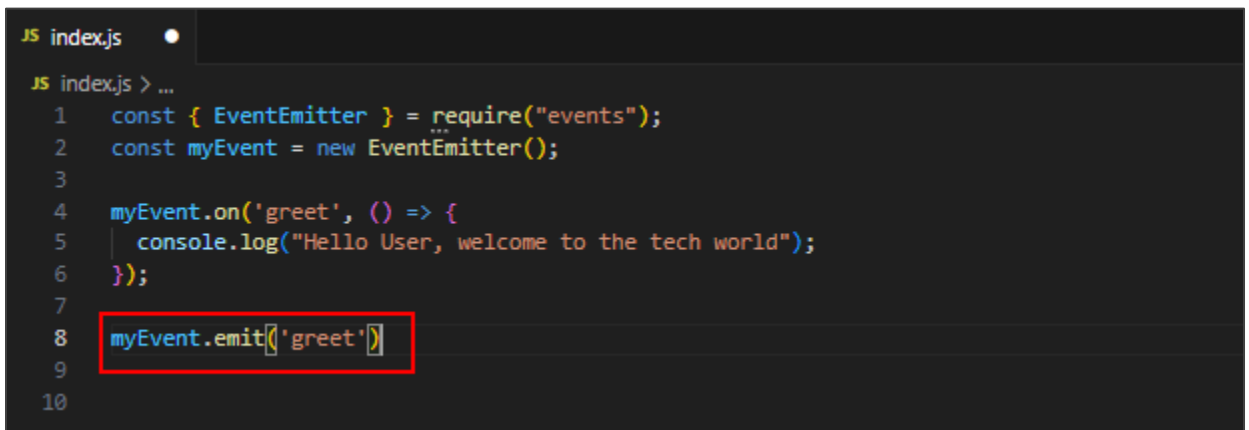
```
myEvent.on('greet', () => {  
  console.log("Hello User, welcome to the tech world");  
});
```



```
JS index.js  
JS index.js > ...  
1  const { EventEmitter } = require("events");  
2  const myEvent = new EventEmitter();  
3  
4  myEvent.on('greet', () => {  
5    console.log("Hello User, welcome to the tech world");  
6  });  
7
```

1.4 Execute the emit function by passing the suitable event:

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



```
JS index.js  
JS index.js > ...  
1  const { EventEmitter } = require("events");  
2  const myEvent = new EventEmitter();  
3  
4  myEvent.on('greet', () => {  
5    console.log("Hello User, welcome to the tech world");  
6  });  
7  
8  myEvent.emit('greet');  
9  
10
```

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

```
node index.js
```



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

Step 2: Pass arguments to listeners

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

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

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2
3
4
```

2.2 Create the object of **EventEmitter**:

```
const myEvent = new EventEmitter();
```

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
```

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);
});
```

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
4  myEvent.on('greeting', function (str1, str2) {
5    console.log(str1, str2);
6    console.log(this)
7    console.log(this === myEvent);
8  });
```

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

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
4  myEvent.on('greeting', function (str1, str2) {
5    console.log(str1, str2);
6    console.log(this)
7    console.log(this === myEvent);
8  });
9
10 myEvent.emit('greeting', 'Fionna', 'Jack')
11
12
13
```

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

```
demopythonlyopm@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
demopythonlyopm@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");

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2
3
4
```

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

```
const myEvent = new EventEmitter();
```

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
```

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);
  })
});
```

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
4  myEvent.on('greeting', function (str1, str2) {
5    console.log(str1, str2);
6    console.log(this)
7    console.log(this === myEvent);
8  });
9
10 myEvent.on('greet', (str) => {
11   setImmediate(() => {
12     console.log(">>> Hello", str);
13   })
14 });
```

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

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
4  myEvent.on('greeting', function (str1, str2) {
5    console.log(str1, str2);
6    console.log(this)
7    console.log(this === myEvent);
8  });
9
10 myEvent.on('greet', (str) => {
11   setImmediate(() => {
12     console.log(">>> Hello", str);
13   })
14 });
15
16 myEvent.emit('greet', 'Fionna')
17
```

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");`

```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2
3
4
```

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

```
const myEvent = new EventEmitter();
```

```
JS index.js •
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
```

4.3 Execute the **emit** function with a new error object

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

```
JS index.js •
JS index.js > ...
1  const { EventEmitter } = require("events");
2  const myEvent = new EventEmitter();
3
4  myEvent.emit('event', new Error('whoop!!'));
5
```

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

```
node index.js
```

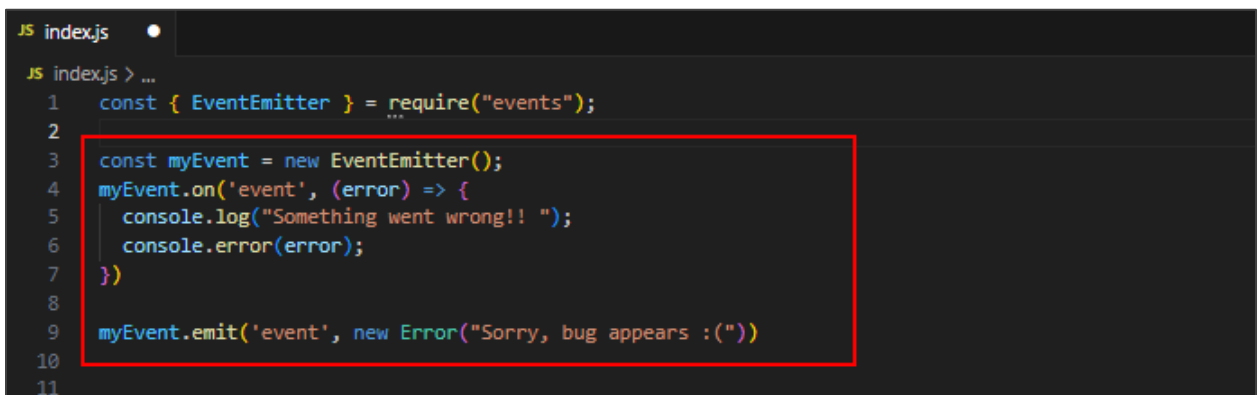
```
>>> netto 110m
demopythonlyopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
demopythonlyopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$
```

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 :("))
```



```
JS index.js
JS index.js > ...
1  const { EventEmitter } = require("events");
2
3  const myEvent = new EventEmitter();
4  myEvent.on('event', (error) => {
5    console.log("Something went wrong!! ");
6    console.error(error);
7  })
8
9  myEvent.emit('event', new Error("Sorry, bug appears :("))
10
11
```

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

node index.js



```
demopythonlyopm@ip-172-31-16-204:~/Desktop/nodeProjec/demo4$ node index.js
Something went wrong!!
Error: Sorry, bug appears :(
    at Object.<anonymous> (/home/demopythonlyopm/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
```

By following these steps, you have successfully implemented **EventEmitter** in Node.js for creating the event instance, passing listener arguments, using asynchronous operations, and emitting error events.

