

## Lesson 02 Demo 02

### Working with Logical Operators

**Objective:** To introduce logical operators in JavaScript and demonstrate their usage in making decisions based on multiple conditions

**Tools Required:** Visual Studio Code and Node.js

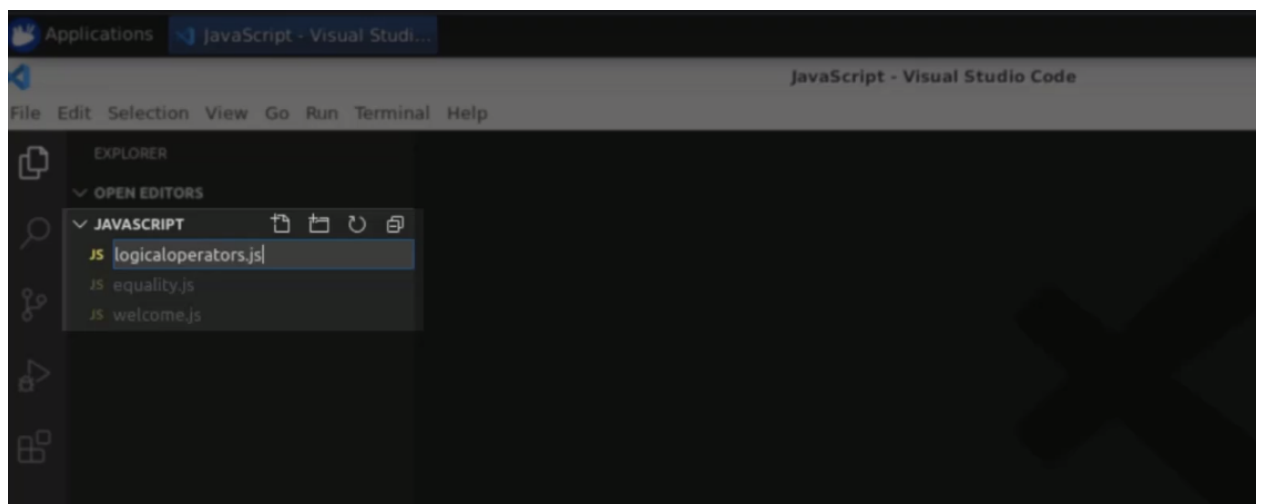
**Prerequisites:** None

#### Steps to be followed:

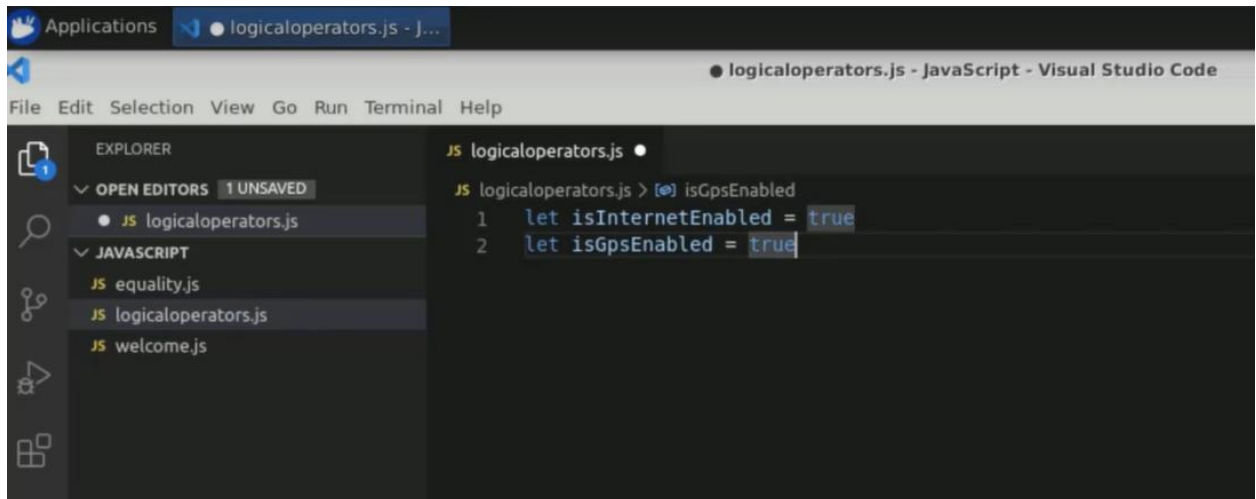
1. Create a JavaScript file
2. Implement logical AND operator
3. Implement logical OR operator
4. Implement logical NOT operator

#### Step 1: Create a JavaScript file

- 1.1 Open Visual Studio Code and create a new file named **logicaloperators.js**



- 1.2 In the **logicaloperators.js** file, create Boolean variables **isInternetEnabled** and **isGPSEnabled** and assign the value **true** to both variables



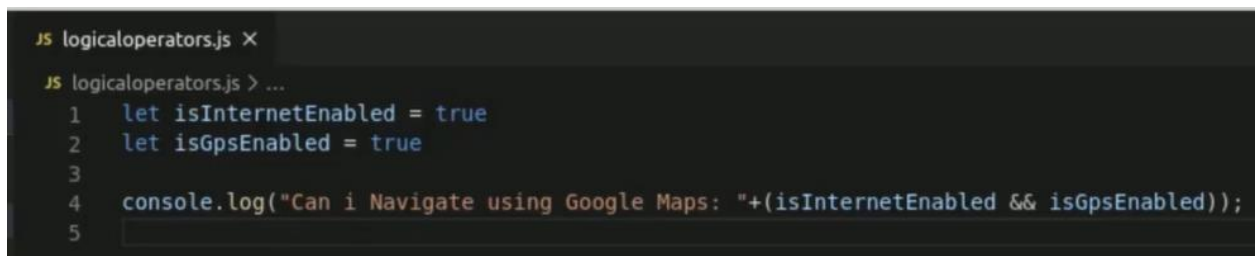
```
Applications logicaloperators.js - J...
logicaloperators.js - JavaScript - Visual Studio Code
File Edit Selection View Go Run Terminal Help

EXPLORER
  OPEN EDITORS 1 UNSAVED
    JS logicaloperators.js
  JAVASCRIPT
    JS equality.js
    JS logicaloperators.js
    JS welcome.js

JS logicaloperators.js
JS logicaloperators.js > isGpsEnabled
1 let isInternetEnabled = true
2 let isGpsEnabled = true
```

## Step 2: Implement logical AND operator

- 2.1 Use the **console.log()** function to write a message, such as **Can I Navigate using Google Maps**: followed by the logical AND operator (**&&**) between **isInternetEnabled** and **isGPSEnabled**



```
JS logicaloperators.js X
JS logicaloperators.js > ...
1 let isInternetEnabled = true
2 let isGpsEnabled = true
3
4 console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
5
```

This ensures that both conditions must be true for the output to be true.

## 2.2 Run the JavaScript program using Node.js: node logicaloperators.js

```
JS logicaloperators.js X
JS logicaloperators.js > [0] isGpsEnabled
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled))
6

PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$
```

Observe the output on the console. If **isInternetEnabled** and **isGPSEnabled** are true, it will print **true**. Otherwise, it will print **false**.

## 2.3 Change the value of either **isInternetEnabled** or **isGPSEnabled** to false

```
$ logicaloperators.js ●
JS logicaloperators.js > [0] isGpsEnabled
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
6
```

## 2.4 Run the program again and observe the output

```
JS logicaloperators.js X
JS logicaloperators.js > [0] isGpsEnabled
1 let isInternetEnabled = true
2 let isGpsEnabled = false
3
4 // Logical And
5 console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled))
6

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
```

The output should be **false** because both conditions are not true.

### Step 3: Implement logical OR operator

- 3.1 Add the code to use the logical OR operator (||) to check if either **eWallet** is greater than zero or the **isCreditCardLinked** is **true**. Print a message using **console.log()**, such as "Can I book a cab?"

```
JS logicaloperators.js X
JS logicaloperators.js > ...
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
6
7  // Logical Or
8  let eWallet = 300;
9  let isCreditCardLinked = true;
10
11 console.log("Can i Book Cab: "+(eWallet > 0) || isCreditCardLinked);
```

- 3.2 Run the JavaScript program using Node.js:  
**node logicaloperators.js**

```
JS logicaloperators.js X
JS logicaloperators.js > ...
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
6
7  // Logical Or
8  let eWallet = 300;
9  let isCreditCardLinked = true;
10
11 console.log("Can i Book Cab: "+(eWallet > 0) || isCreditCardLinked);
12
13
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE 1: bash

```
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
Can i Book Cab: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$
```

Observe the output on the console. If either **eWallet** is greater than zero or **isCreditCardLinked** is true, it will print **true**. Otherwise, it will print **false**.

3.3 Change the values of **eWallet** and **isCreditCardLinked** to different combinations of true and false

```
JS logicaloperators.js X
JS logicaloperators.js > [0] eWallet
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
6
7  // Logical Or
8  let eWallet = 0;
9  let isCreditCardLinked = false;
10
11 console.log("Can i Book Cab: "+(eWallet > 0) || isCreditCardLinked);
12
13
```

### 3.4 Run the program again and observe the output

```
JS logicaloperators.js X
JS logicaloperators.js > [0] eWallet
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
6
7  // Logical Or
8  let eWallet = 0;
9  let isCreditCardLinked = false;
10
11 console.log("Can i Book Cab: "+(eWallet > 0) || isCreditCardLinked);
12
13
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE 1: bash

```
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
Can i Book Cab: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
Can i Book Cab: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
Can i Book Cab: false
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$
```

The output should reflect the logical OR conditions.

## Step 4: Implement logical NOT operator

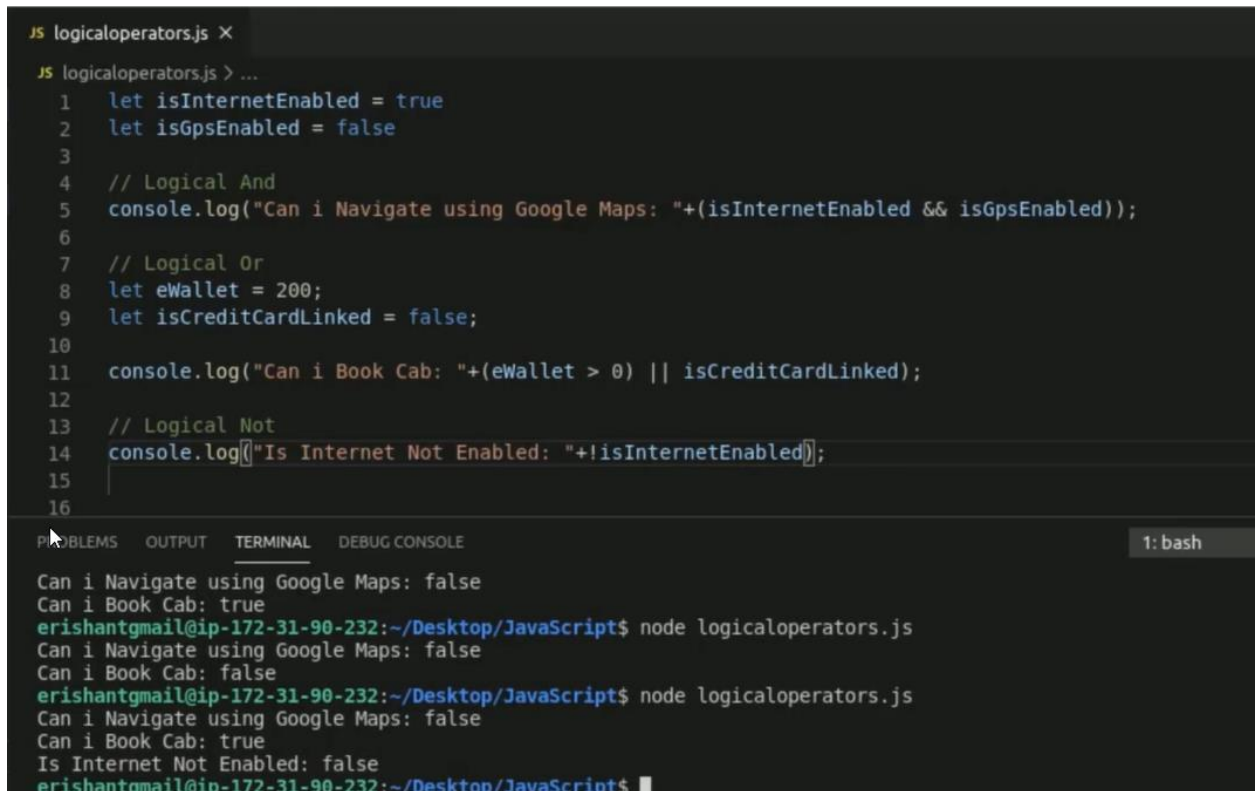
- 4.1 Use the `console.log()` function to write a message, such as **Is Internet Not Enabled;**, followed by the logical NOT operator (!) and `isInternetEnabled`

```
JS logicaloperators.js X
JS logicaloperators.js > ...
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled))
6
7  // Logical Or
8  let eWallet = 200;
9  let isCreditCardLinked = false;
10
11 console.log("Can i Book Cab: "+(eWallet > 0) || isCreditCardLinked);
12
13 // Logical Not
14 console.log("Is Internet Not Enabled: "+!isInternetEnabled);
15
```

This will invert the Boolean value of `isInternetEnabled`.



#### 4.2 Run the JavaScript program again using Node.js: node logicaloperators.js



```
JS logicaloperators.js X
JS logicaloperators.js > ...
1  let isInternetEnabled = true
2  let isGpsEnabled = false
3
4  // Logical And
5  console.log("Can i Navigate using Google Maps: "+(isInternetEnabled && isGpsEnabled));
6
7  // Logical Or
8  let eWallet = 200;
9  let isCreditCardLinked = false;
10
11 console.log("Can i Book Cab: "+(eWallet > 0) || isCreditCardLinked);
12
13 // Logical Not
14 console.log("Is Internet Not Enabled: "+!isInternetEnabled);
15
16

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE 1: bash
Can i Navigate using Google Maps: false
Can i Book Cab: true
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
Can i Book Cab: false
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$ node logicaloperators.js
Can i Navigate using Google Maps: false
Can i Book Cab: true
Is Internet Not Enabled: false
erishantgmail@ip-172-31-90-232:~/Desktop/JavaScript$
```

Observe the output on the console. If **isInternetEnabled** is true, the logical NOT operator will convert it to false, and vice versa.

By following the above steps, you have successfully demonstrated the use of logical operator in JavaScript for making decisions based on multiple conditions.