

## 1.Data types:

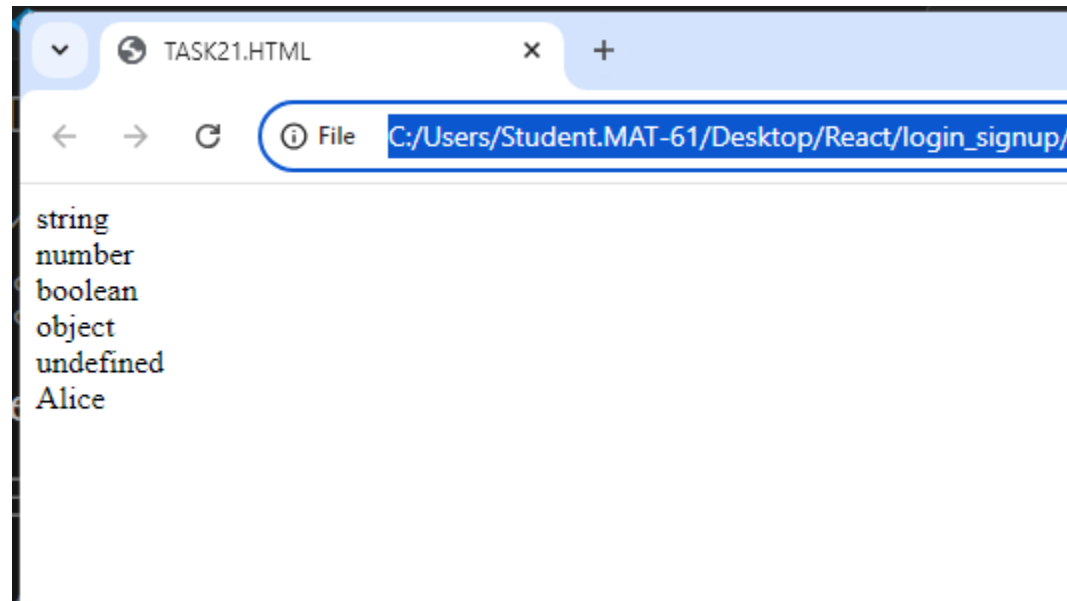
### Task 21

Create variables of different data types (e.g., string, number, boolean, null, undefined, object).

#### CODE:

```
<html>
  <script>
let a = "Hello, World!";
let b = 42;
let c = true;
let d= null;
let e;
let person = {
  name: "Alice",
  age: 25
};
document.writeln(typeof(a)+"<br>");
document.writeln(typeof(b)+"<br>");
document.writeln(typeof(c)+"<br>");
document.writeln(typeof(d)+"<br>");
document.writeln(typeof(e)+"<br>");
document.writeln(person.name);
  </script>
</html>
```

#### OUTPUT:



### Task 22

Use the typeof operator to determine the type of various variables.

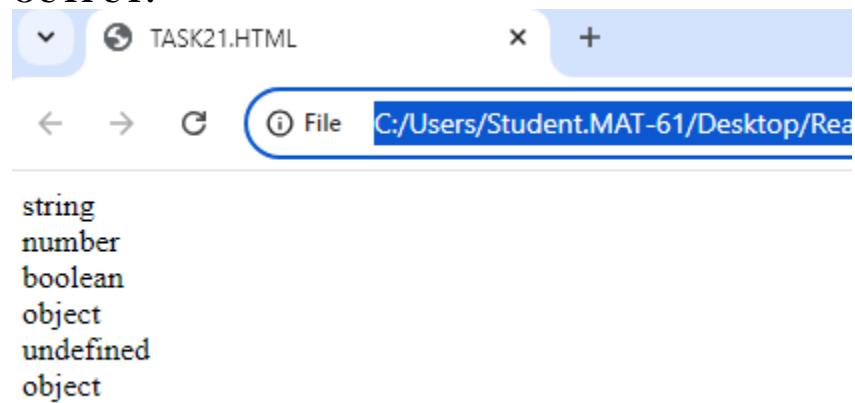
#### CODE:

```

<html>
  <script>
let a = "Hello, World!";
let b = 42;
let c = true;
let d= null;
let e;
let person = {
  name: "Alice",
  age: 25
};
document.writeln(typeof(a)+"<br>");
document.writeln(typeof(b)+"<br>");
document.writeln(typeof(c)+"<br>");
document.writeln(typeof(d)+"<br>");
document.writeln(typeof(e)+"<br>");
document.writeln(typeof(person)+"<br>");
  </script>
</html>

```

## OUTPUT:



## Task 23

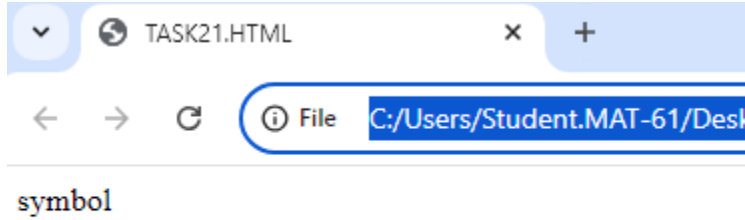
Declare a symbol and print its type.

## CODE:

```

<html>
  <script>
let a = Symbol("myId");
document.writeln(typeof(a));
  </script>
</html>

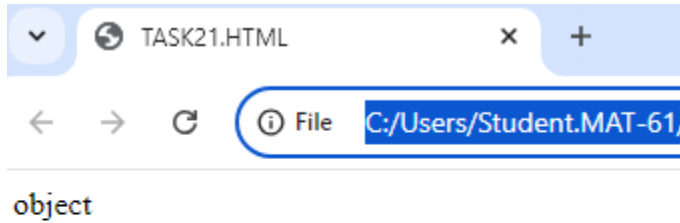
```

**OUTPUT:****Task 24**

Assign the value null to a variable and check its type using typeof.

**CODE:**

```
<html>
  <script>
let a = null;
document.writeln(typeof(a));
  </script>
</html>
```

**OUTPUT:****Task 25**

Differentiate between declaring a variable using var and let in terms of scope.

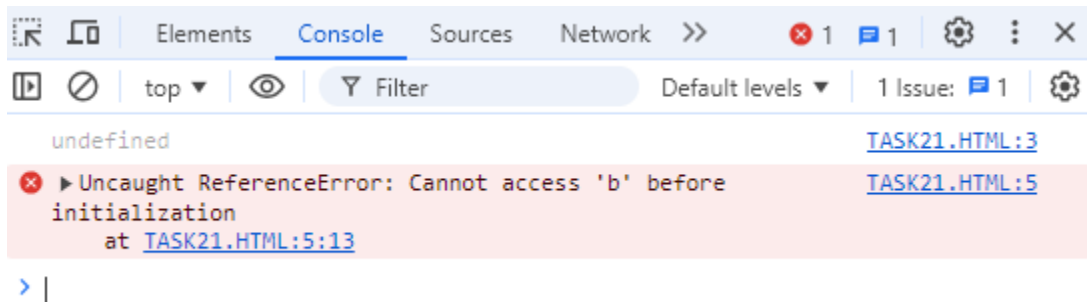
**CODE:**

```
<html>
  <script>
    console.log(a);
var a = 5;
console.log(b);
let b = 10;
```

```
</script>
</html>
```

## OUTPUT:

Both `var` and `let` are hoisted to the top, but `var` is initialized with `undefined`, while `let` stays uninitialized until its declaration is reached, causing an error if accessed before that.



## 2.Basic operators, maths:

### Task 26

Convert a string to a number using both implicit and explicit conversion.

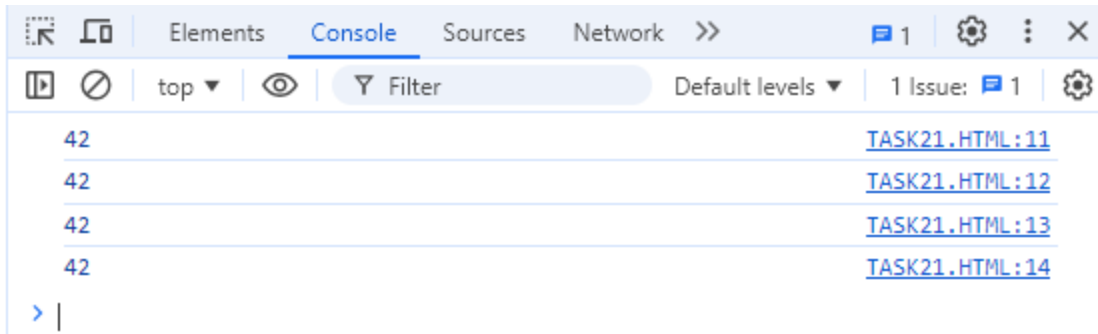
## CODE:

```
<html>
  <script>
    let str = "42";
    //IMPLICIT
    let num = str * 1;
    //EXPLICIT
    let num1 = Number(str);
    let num2 = parseInt(str);
    let num3 = parseFloat(str);

    console.log(num);
    console.log(num1);
    console.log(num2);
    console.log(num3);

  </script>
</html>
```

## OUTPUT:



### Task 27

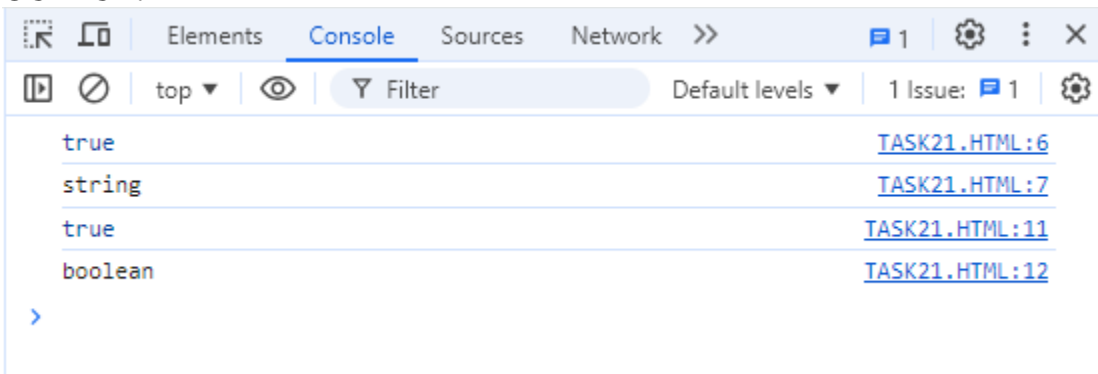
Convert a boolean to a string and vice versa.

#### CODE:

```
<html>
  <script>
    //boolean to string
    let a = true;
    let b = String(a);
    console.log(a);
    console.log(typeof b);
    //string to boolean
    let c = "true";
    let d= Boolean(c);
    console.log(d);
    console.log(typeof d);

  </script>
</html>
```

#### OUTPUT:



### Task 28

Practice basic arithmetic operators (+, -, \*, /, %).

#### CODE:

```
<html>
  <script>
```

```

    let a = 20;
    let b = 5;

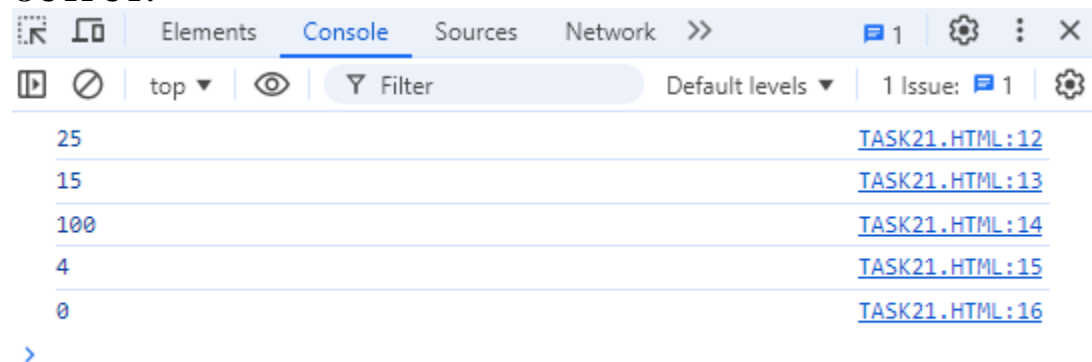
    let addition = a + b;
    let subtraction = a - b;
    let multiplication = a * b;
    let division = a / b;
    let modulus = a % b;

    console.log(addition);
    console.log(subtraction);
    console.log(multiplication);
    console.log(division);
    console.log(modulus);

</script>
</html>

```

## OUTPUT:



## Task 29

Use the ++ and -- operators on a numeric variable.

## CODE:

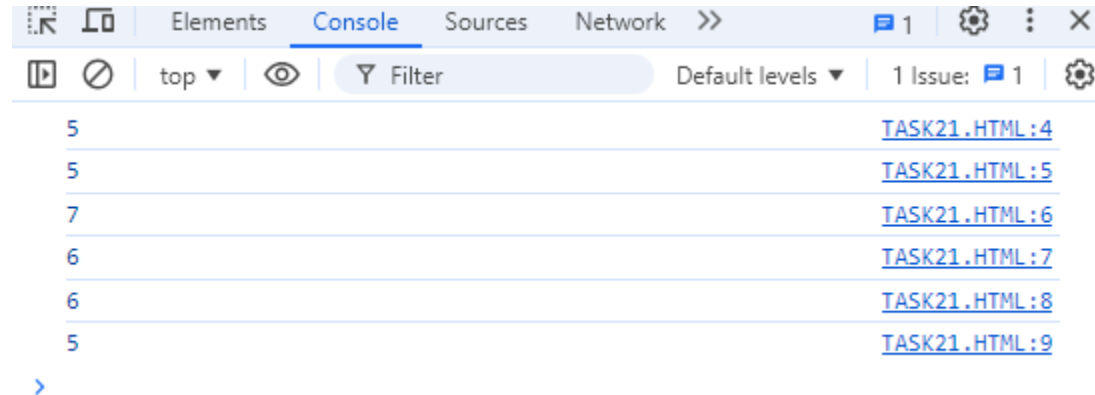
```

<html>
  <script>
    let x = 5;
    console.log(x);
    console.log(x++);
    console.log(++x);
    console.log(--x);
    console.log(x--);
    console.log(x);
  </script>

```

```
</html>
```

## OUTPUT:



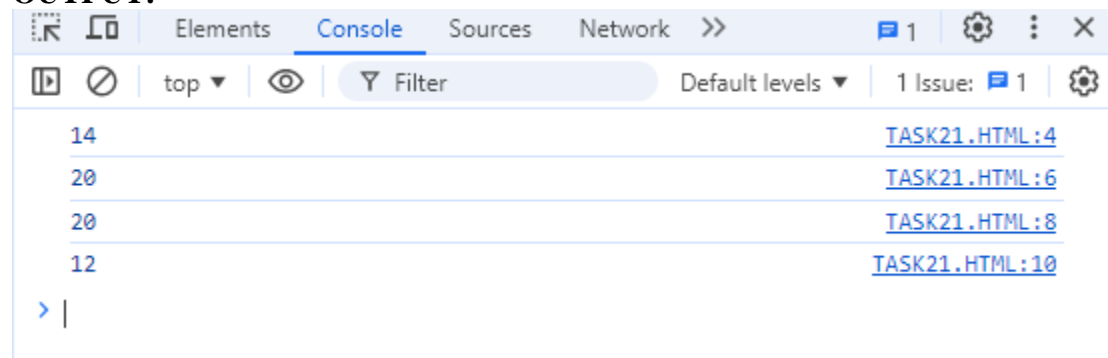
## Task 30

Explore the precedence of operators by combining multiple operators in a single expression.

## CODE:

```
<html>
  <script>
    let result = 2 + 3 * 4;
    console.log(result);
    let result2 = (2 + 3) * 4;
    console.log(result2);
    let result3 = 10 / 2 + 5 * 3;
    console.log(result3);
    let result4 = 10 + 5 * 2 / (2 + 3);
    console.log(result4);
  </script>
</html>
```

## OUTPUT:



## 1. Comparisons:

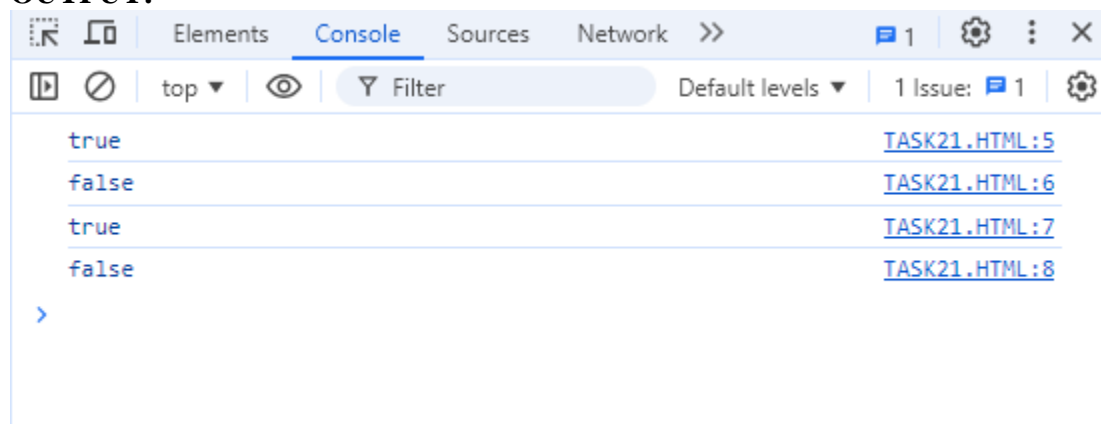
## Task 31

Compare two numbers using relational operators (>, =, <=).

### CODE:

```
<html>
  <script>
    let a = 10;
    let b = 5;
    console.log(a > b);
    console.log(a < b);
    console.log(a >= b);
    console.log(a <= b);
  </script>
</html>
```

### OUTPUT:



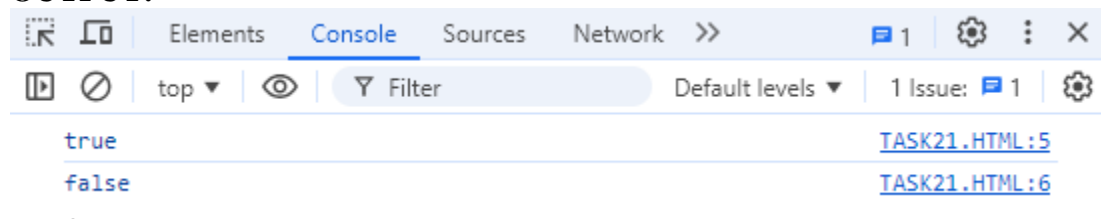
### Task 32

Use equality (==) and strict equality (===) operators to compare different data types and note the differences.

### CODE:

```
<html>
  <script>
    let num = 5;
    let str = "5";
    console.log(num == str);
    console.log(num === str);
  </script>
</html>
```

### OUTPUT:





### Task 33

Compare two strings lexicographically.

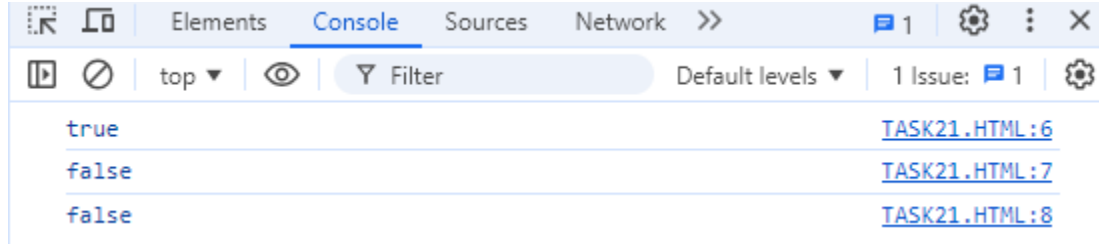
**CODE:**

```
<html>
  <script>
    let str1 = "MANJU";
    let str2 = "PAVYA";

    console.log(str1 < str2);
    console.log(str1 > str2);
    console.log(str1 === str2);

  </script>
</html>
```

**OUTPUT:**



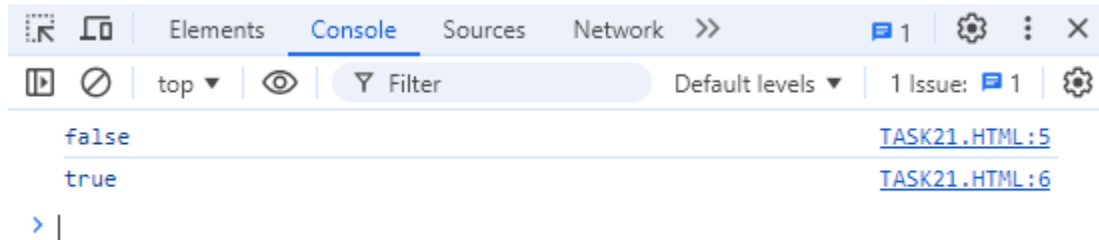
### Task 34

Use the inequality (!=) and strict inequality (!==) operators to compare values.

**CODE:**

```
<html>
  <script>
    let a = 5;
    let b = "5";
    console.log(a != b);
    console.log(a !== b);
  </script>
</html>
```

**OUTPUT:**



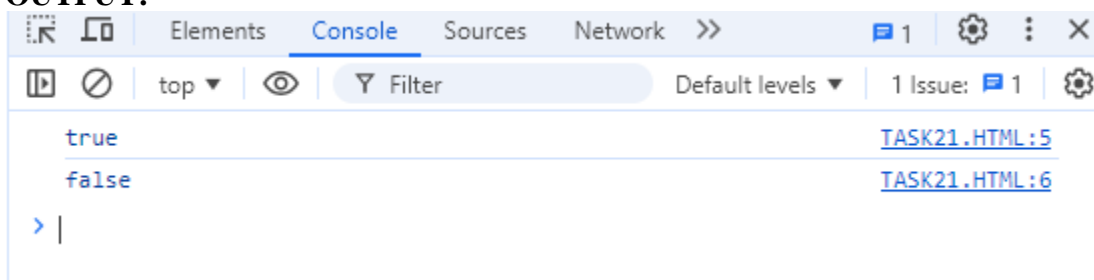
### Task 35

Compare null and undefined using both == and ===.

**CODE:**

```
<html>
  <script>
    let a = null;
    let b = undefined;
    console.log(a == b);
    console.log(a === b);
  </script>
</html>
```

**OUTPUT:**



## 2. Conditional branching: if, '?':

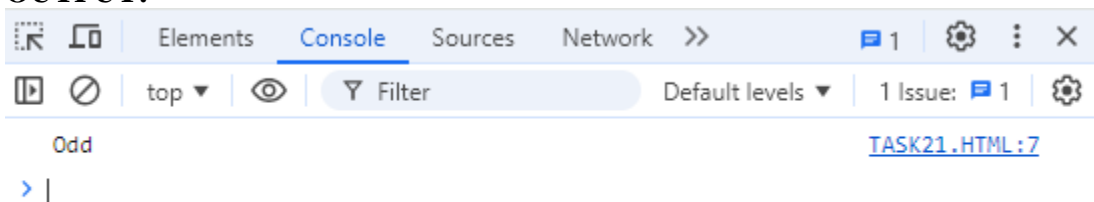
### Task 36

Write an if statement that checks if a number is even or odd.

**CODE:**

```
<html>
  <script>
    let number = 19;
    if (number % 2 === 0) {
      console.log("Even");
    } else {
      console.log("Odd");
    }
  </script>
</html>
```

**OUTPUT:**



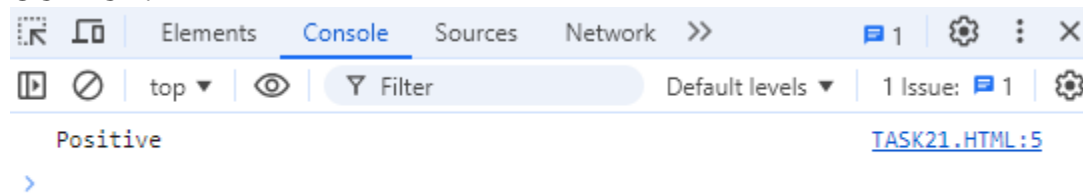
### Task 37

Use nested if statements to classify a number as negative, positive, or zero.

#### CODE:

```
<html>
  <script>
    let num = 10;
    if (num > 0) {
      console.log("Positive");
    } else {
      if (num < 0) {
        console.log("Negative");
      } else {
        console.log("Zero");
      }
    }
  </script>
</html>
```

#### OUTPUT:

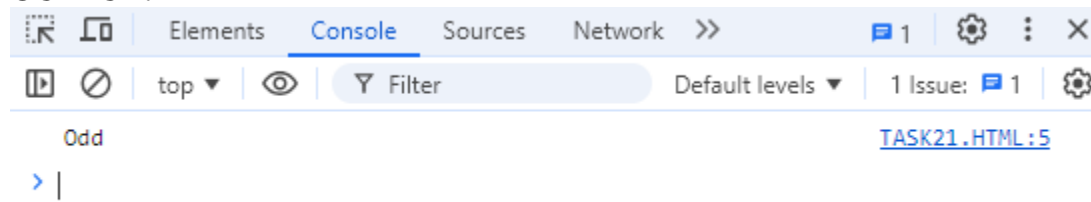


### Task 38

Use the conditional (ternary) operator '?' to rewrite a simple if...else statement.

#### CODE:

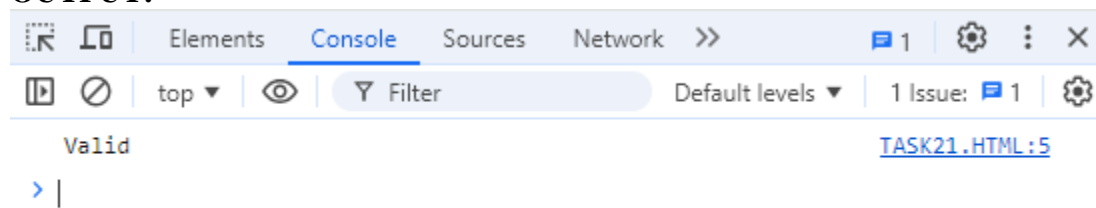
```
<html>
  <script>
    let number = 19;
    let result = (number % 2 === 0) ? "Even" : "Odd";
    console.log(result);
  </script>
</html>
```

**OUTPUT:****Task 39**

Check the validity of a variable using the ? operator.

**CODE:**

```
<html>
  <script>
    let a=10;
    let b = (a !== undefined && a !== null) ? "Valid" : "Invalid";
    console.log(b);
  </script>
</html>
```

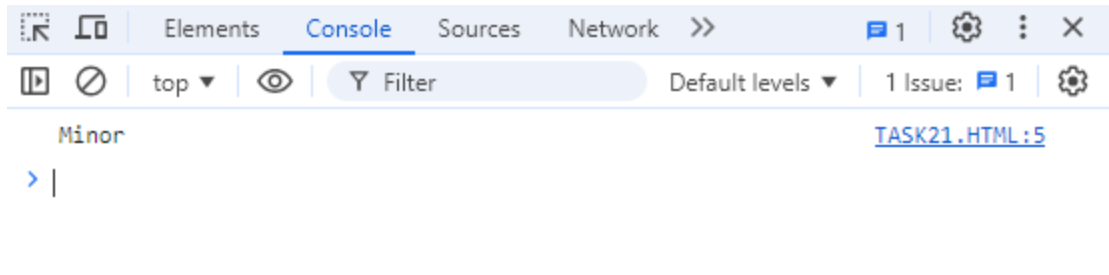
**OUTPUT:****Task 40**

Use the conditional operator to assign a value to a variable based on a condition.

**CODE:**

```
<html>
  <script>
    let age = 17;
    let category = (age >= 18) ? "Adult" : "Minor";
    console.log(category);
  </script>
</html>
```

**OUTPUT:**



## 1. Logical operators

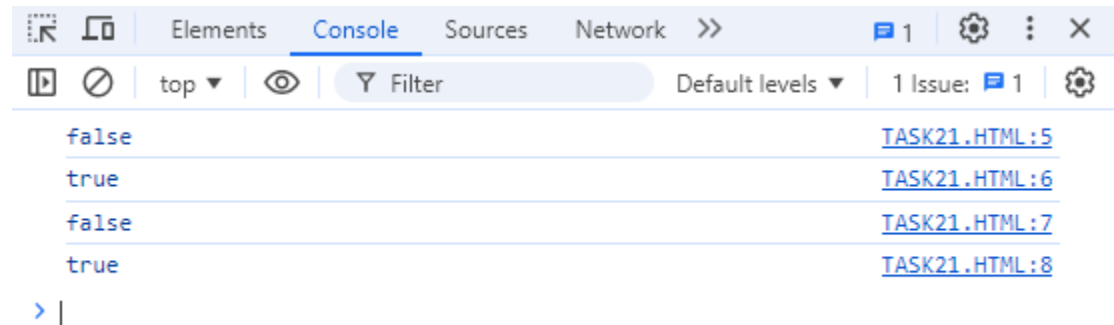
### Task 41

Evaluate various combinations of logical operators (&&, ||, !).

**CODE:**

```
<html>
  <script>
    let a = true;
    let b = false;
    console.log(a && b);
    console.log(a || b);
    console.log(!a);
    console.log(!(a && b));
  </script>
</html>
```

**OUTPUT:**



### Task 42

Use logical operators to write a condition that checks if a number is in a given range.

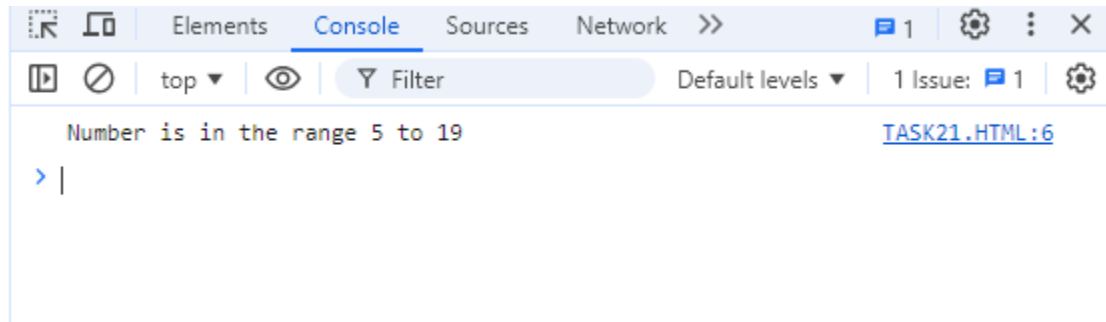
**CODE:**

```
<html>
  <script>
    let num = 19;

    if (num >= 5 && num <= 19) {
      console.log("Number is in the range 5 to 19");
    } else {
      console.log("Number is outside the range");
    }
  </script>
</html>
```

```
}  
  
</script>  
</html>
```

### OUTPUT:



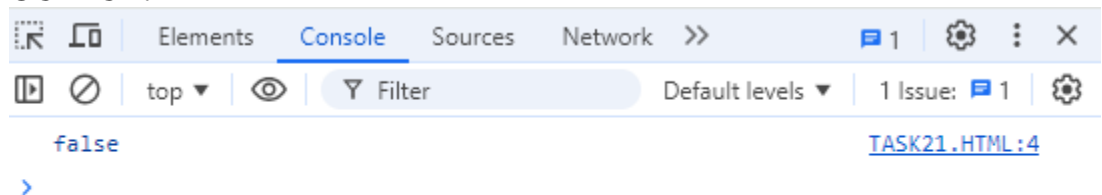
### Task 43

Use the NOT (!) operator to invert a boolean value.

### CODE:

```
<html>  
  <script>  
    let a = true;  
    console.log(!a);  
  </script>  
</html>
```

### OUTPUT:



### Task 44

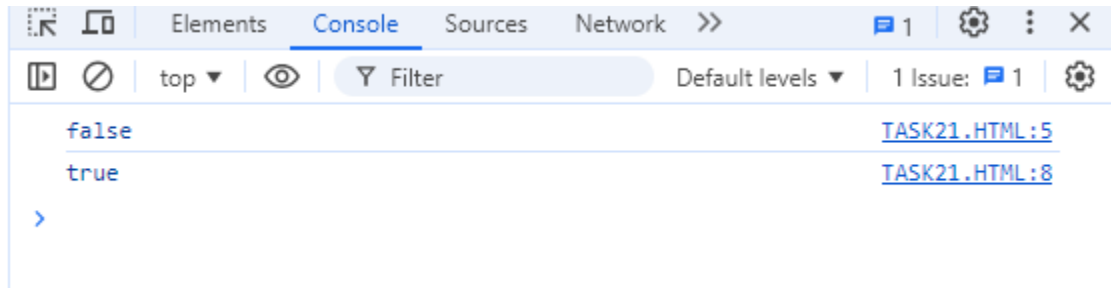
Evaluate the short-circuiting nature of logical operators.

### CODE:

```
<html>  
  <script>  
    let a = false;  
    let b = true;  
    console.log(a && b);  
    let c = true;  
    let d = true;  
    console.log(c && d);  
  </script>
```

```
</html>
```

### OUTPUT:



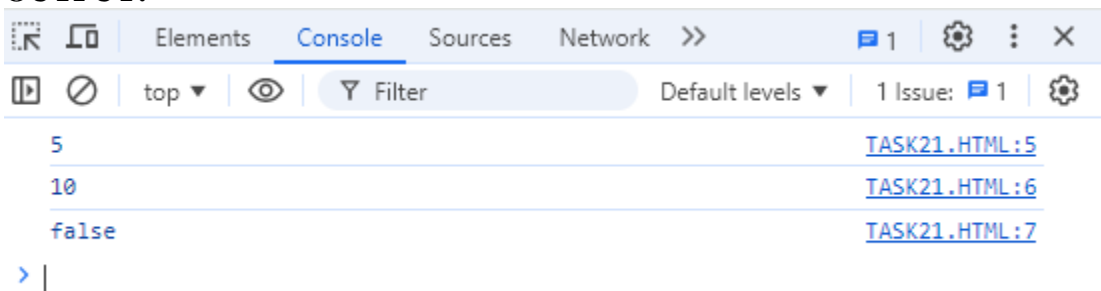
### Task 45

Compare two non-boolean values using logical operators and observe the result.

### CODE:

```
<html>
  <script>
let num1 = 10;
let num2 = 5;
console.log(num1 && num2);
console.log(num1 || num2);
console.log(!num1);
  </script>
</html>
```

### OUTPUT:



## 2. Functions

### Task 46

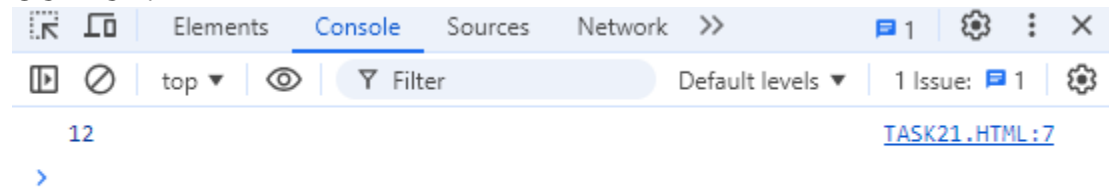
Write a function that takes two numbers as arguments and returns their sum.

### CODE:

```
<html>
  <script>
function add(num1, num2) {
  return num1 + num2;
}
let result = add(5, 7);
console.log(result);
  </script>
</html>
```

```
</script>
</html>
```

### OUTPUT:



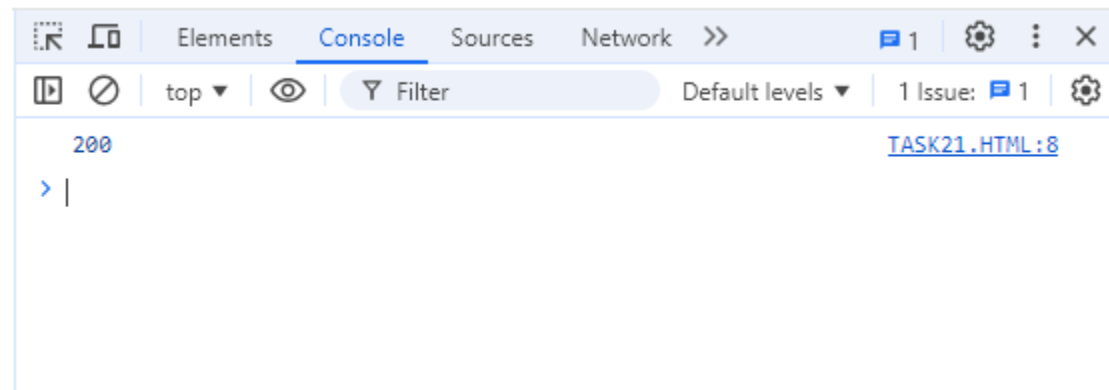
### Task 47

Create a function that calculates the area of a rectangle.

### CODE:

```
<html>
  <script>
    function calculateArea(l, w) {
      return l * w;
    }
    let a = calculateArea(5, 40);
    console.log(a);
  </script>
</html>
```

### OUTPUT:



### Task 48

Declare a function without parameters and call it.

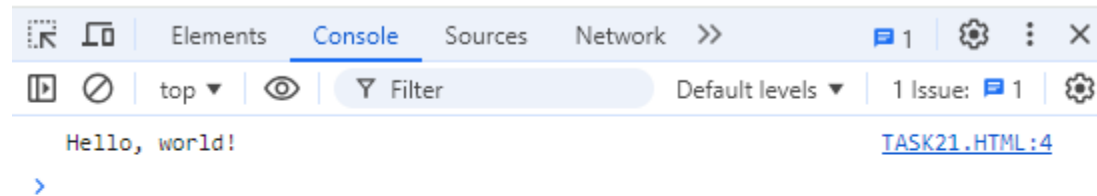
### CODE:

```
<html>
  <script>
    function wop() {
      console.log("Hello, world!");
    }
  </script>
</html>
```



```
}  
wop();  
</script>  
</html>
```

### OUTPUT:



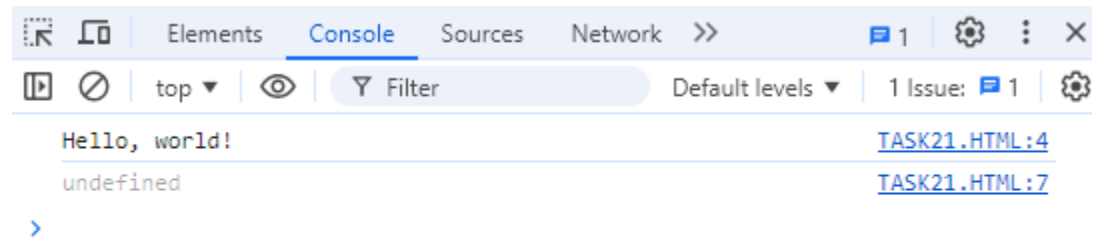
### Task 49

Write a function that returns nothing and observe the default return value.

### CODE:

```
<html>  
  <script>  
    function wop() {  
      console.log("Hello, world!");  
    }  
    let a=wop();  
    console.log(a);  
  </script>  
</html>
```

### OUTPUT:



### Task 50

Declare a function with default parameters and call it with different arguments

### CODE:

```
<html>
  <script>
    function person(name = "Guest", age = 30) {
      console.log(`Hello, ${name}. You are ${age} years old.`);
    }
    person();
    person("Alice");
    person("Bob", 25);
  </script>
</html>
```

## OUTPUT:

