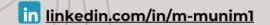
# Class No: 04







# **Functions, Arrays, and Objects**

#### What is a Function?

A function is a block of code designed to perform a **specific task**. You can "call" or "invoke" the function whenever you need that task to be performed.

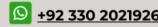
#### **Function Syntax**

```
function functionName(parameters) {
    // Code to execute
```

functionName("hello") //calling the function





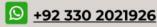


#### **Types of Functions in JavaScript**

#### **Function with No Parameters**

A function that does not take any input values (parameters) when called. It simply performs its task and may or may not return a value.

```
function greet() {
    console.log("Hello, World!");
}
greet();  // Output: Hello, World!
```



#### **Function with Parameters**

A function that takes input values (called parameters) when called. The parameters allow the function to work with different data.

```
function greet(name) {
    console.log("Hello, " + name + "!");
}
greet("Ali");  // Output: Hello, Ali!
greet("rabia");
greet("Abdullah");
```

#### **Function with Return Value**

A function that sends a result back to the code that called it. The return keyword is used to give back the result.

```
function addNumber(a, b) {
    return a + b;
}
let sum = addNumber(5, 10);
console.log("Sum:", sum);
    // Output: Sum: 15
```

#### **Arrow Functions in JavaScript**

Arrow functions provide a shorter syntax to define functions. They are defined using the => (arrow) symbol.

#### **Syntax:**

```
const functionName = (parameters) => {
    // Code to execute
};
```

#### **Example (Arrow Function with No Parameters):**

```
const greet = () => {
   console.log("Hello, World!");
};
greet();  // Output: Hello, World!
```





```
Web Development
```

#### **Example (Arrow Function with Parameters):**

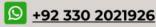
```
const add = (a, b) => {
    return a + b;
};
console.log(add(5, 10));
```

// Output: 15

#### **Simplified Arrow Function (Single Line):**

If the function has only one expression, you can omit the braces {} and the return keyword:

```
const multiply = (a, b) => a * b;
console.log(multiply(5, 3)); // Output: 15
```



### **Arrays in JavaScript**

#### What is an Array?

An array is a collection of multiple values stored in a single variable. Each value in an array is called an "element."

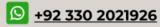
#### **Array Syntax**

let arrayName = [value1, value2, value3];

#### **Example (Declaring an Array):**

```
let fruits = ["Apple", "Banana", "Mango"];
console.log(fruits);  // Output: ["Apple", "Banana", "Mango"]
```





#### **Accessing Array Elements**

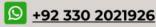
You can access an array element by its index (position). Indexes start from 0.

#### **Example:**

#### **Common Array Methods**

push(): Adds an element to the end of the array.

```
let fruits = ["Apple", "Banana"];
fruits.push("Mango");
console.log(fruits);  // ["Apple", "Banana", "Mango"]
```



• pop(): Removes the last element.

• **shift():** Removes the first element.

```
let fruits = ["Apple", "Banana"];
fruits.shift();
console.log(fruits);  // ["Banana"]
```



• unshift(): Adds an element to the beginning of the array.

```
let fruits = ["Banana"];
fruits.unshift("Apple");
console.log(fruits);
```

// ["Apple", "Banana"]

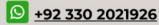
# **Objects in JavaScript**

#### What is an Object?

An object is a collection of key-value pairs. Each key represents a property, and the value represents the property's data.

#### **Object Syntax**

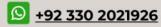
```
let objectName = {
    key1: value1,
    key2: value2,
    key3: value3
};
```



# Web Development **Example:** let student = { name: "Ali", age: 20, isEnrolled: true console.log(student.name); // Output: Ali github.com/M-Munim +92 330 2021926 in linkedin.com/in/m-munim1

#### **Accessing and Modifying Object Properties**

- You can access object properties using dot notation or bracket notation.
- You can also modify or add new properties.



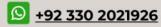
# **Activity-Based Task: Student Report Generator**

In this task, we will build a Student Report Generator using functions and objects.

#### **Task Description:**

- 1. Create an object student with properties like name, age, and marks (an array of subject marks).
- 2. Write a function calculateAverage() to calculate the average marks.
- 3. Display the student details and average marks.





```
Web Development
                                  name: "Ali",
Code for Activity:
                                  age: 20,
                                  marks: [85, 90, 78, 88, 92]
                                                              400/5
                                function calculateAverage(marks) {
                                  let sum = 0;
                                  for (let i = 0; i < marks.length; i++) {
                                   sum += marks[i];
                                  return sum / marks.length;
                                console.log("Student Name:", student.name);
                                console.log("Student Age:", student.age);
                                console.log("Average Marks:",
                                calculateAverage(student.marks));
                                             github.com/M-Munim
                                                                          +92 330 2021926
        in linkedin.com/in/m-munim1
```

let student = {

#### **Home Task 4**

- 1. What is a function in JavaScript? Create a function to calculate the square of a number.
- 2. Write a function that takes two numbers as input and returns their product.
- 3. Declare an array of colors. Add a new color to the end and remove the first color.
- 4. Create an array of numbers and find the sum of all numbers using a loop.
- 5. Create an object car with properties make, model, and year. Print each property.
- 6. Write a function is Even() that checks if a number is even or odd.
- 7. Create an array of student names. Use a loop to print each name.
- 8. Write a function that takes an array of numbers and returns the largest number.
- 9. Create an object person with properties firstName and lastName. Write a function to display the full name.
- 10. Write a program to reverse the elements of an array without using any built-in methods.

