Q1. What are functions in JavaScript? Explain the syntax for declaring and calling a function.

Ans: Functions in JavaScript are reusable blocks of code designed to perform a specific task. They help reduce code repetition, improve readability, and make programs easier to maintain.

Declaring a Function (Function Definition)

The most common way to declare a function is using the function keyword.

Syntax:

function functionName(parameters) { // code to be executed

}

Example:

function greet(name) {

  console.log("Hello " + name);

}

Calling a Function (Function Invocation)

To execute a function, you call it using its name followed by parentheses.

Syntax:

functionName(arguments);

Example:

greet("Nagesh");

Output: Hello Nagesh

Function with Return Value

A function can return a value using the return statement.

function add(a, b) {

  return a + b;

}

let result = add(5, 3);

console.log(result);   // 8

Q2. What is the difference between a function declaration and a function expression?

Ans: In JavaScript, functions can be created in two common ways: function declaration and function expression. The main difference lies in how and when they are executed.

1. Function Declaration

- Defined using the function keyword with a function name.

- Hoisted, meaning it can be called before it is defined in the code.

- Commonly used for general-purpose functions.

Syntax & Example:

sayHello();

function sayHello() {

  console.log("Hello!");

}

2. Function Expression

- A function is assigned to a variable.

- Not hoisted, so it must be defined before calling.

- Can be anonymous (no function name).

Syntax & Example:

const sayHello = function() {

  console.log("Hello!");

};

sayHello();

Q3. Discuss the concept of parameters and return values in functions.

Ans: In JavaScript, parameters and return values are important parts of functions that allow data to be passed into and out of a function.

Parameters

Parameters are variables listed in a function definition. They receive values when the function is called and are used inside the function.

Syntax:

```
function functionName(parameter1, parameter2) {
  // use parameters
}
```

Example:

```
function multiply(a, b) {
  console.log(a * b);
}

multiply(4, 5); // 20
```

Here, a and b are parameters, and 4 and 5 are arguments passed to the function.

Return Values

A return value is the value that a function sends back after execution. The return statement ends the function and returns a result.

Syntax:

```
function functionName() {
  return value;
}
```

Example:

```
function add(a, b) {
  return a + b;
}

let result = add(10, 5);
console.log(result); // 15
```