**Question 1:** What is JavaScript? Explain the role of JavaScript in web development.

**Ans:** javascript is client site event base object oriented scripting language

**Question 2:** How is JavaScript different from other programming languages like Python orJava?

**Ans:** javascript is interpreted language does not need to be compiled before it can be run.

**Question 3**: Discuss the use of <script> tag in HTML. How can you link an external JavaScript file to an HTML document?

**Ans:** In HTML we can put script tag in body. We can put script tag in head. And externally we can give src in script tag in body.

**Variables and date types:**

**Question 1:** What are variables in JavaScript? How do you declare a variable using var, let,and const?

**Ans:** a named container that holds data that can be changed later.The [var](https://www.geeksforgeeks.org/javascript-var/" \t "https://www.geeksforgeeks.org/difference-between-var-let-and-const-keywords-in-javascript/_blank) is the oldest keyword to declare a variable in [JavaScript](https://www.geeksforgeeks.org/introduction-to-javascript/" \t "https://www.geeksforgeeks.org/difference-between-var-let-and-const-keywords-in-javascript/_blank). It has the [Global scoped](https://www.geeksforgeeks.org/understanding-variable-scopes-in-javascript/" \l ":~:text=types of scopes-,Global Scope,-%E2%80%93 Scope outside the" \t "https://www.geeksforgeeks.org/difference-between-var-let-and-const-keywords-in-javascript/_blank) or function scoped .var and let create variables that can be reassigned another value.const creates "constant" variables that cannot be reassigned another value.

**Question 2:** Explain the different data types in JavaScript. Provide examples for each.

**Ans:** JavaScript has several data types, including primitive and non-primitive types:

**Primitive data types**: Can hold a single value like **Boolean, String, Number, BigInt, Undefined, Null, Symbol**

**Non-primitive data types**: Can hold multiple values like **Objects**

**Question 3:** What is the difference between undefined and null in JavaScript?

**Ans:** **Undefined**: Denotes that a variable has been declared but not assigned a value. **Null**: Denotes no value

**JavaScript Operators :**

**Question 1:** What are the different types of operators in JavaScript? Explain with examples. • Arithmetic operators • Assignment operators • Comparison operators • Logical operators

**Ans:** **Assignment operators:** These include the basic assignment (=), addition assignment (+=), subtraction assignment (-=), multiplication assignment (\*=), and more.

**Comparison operators:** These include equal to (==), not equal to (!=), strict equal to (===), and more.

**Logical operators:** These include AND(&&), OR(||), and NOT(!=). The AND operator returns true only if both conditions are true. The OR operator returns true if at least one condition is true.

**Question 2:** What is the difference between == and === in JavaScript?

**Ans:** Double equals (==) will try to convert the values to the same data type and then try to compare them. But triple equals (===) strictly compares the value and the datatype

**Control Flow (If-Else, Switch) :**

**Question 1:** What is control flow in JavaScript? Explain how if-else statements work withan example.

**Ans:** JavaScript **control statement** is used to control the execution of a program based on a specific condition. If the condition meets then a particular block of action will be executed otherwise it will execute another block of action that satisfies that particular condition

**Question 2:** Describe how switch statements work in JavaScript. When should you use a switch statement instead of if-else?

**Ans:** The if-else statement checks for equality as well as for logical expression. On the other and, switch checks only for equality.The if statement [evaluates](https://builtin.com/software-engineering-perspectives/javascript-array-typeof" \t "https://builtin.com/articles/_blank) integer, character, pointer or [floating-point type](https://builtin.com/articles/0-1-0-2" \t "https://builtin.com/articles/_blank) or [boolean](https://builtin.com/software-engineering-perspectives/javascript-null-check" \t "https://builtin.com/articles/_blank) type. The switch statement evaluates only character or an integer datatype

**Loops (For, While, Do-While):**

**Question 1:** Explain the different types of loops in JavaScript (for, while, do-while). Provide abasic example of each.

### **Ans:** 1. **for Loop** The **for** loop is used when the number of iterations is known. It consists of three parts Initialization condition or increment/decrement.

### The **while** loop executes as long as a given condition is true. It’s useful when the number of iterations is not known in advance.

### The **do-while** loop is similar to the while loop, but it guarantees that the loop body will execute at least once, regardless of the condition, because the condition is checked after the execution.

**Question 2:** What is the difference between a while loop and a do-while loop?

**Ans:** **While loop:** Checks the condition before executing the loop body. If the condition is false, the loop body may not execute at all.

**Do-while loop:** Executes the loop body at least once before checking the condition. This ensures that the loop body executes at least once, regardless of the condition.

**Functions:**

**Question 1:** What are functions in JavaScript? Explain the syntax for declaring and calling a function. **Ans:** In JavaScript, functions are used to enable code reuse and modularity. They can be declared using the keyword function as a declaration or expression.

**Question 2:** What is the difference between a function declaration and a function expression? **Ans:**function declarations are hoisted to the top of their scope, while function expressions are not.

**Question 3:** Discuss the concept of parameters and return values in functions. **Ans:** Parameters and return values are concepts in programming that describe how functions receive inputs and produce results.

**Arrays:**

**Question 1:** What is an array in JavaScript? How do you declare and initialize an array? **Ans:**To declare an array with literal notation you just define a new array using empty brackets. It looks like this: let myArray = []; You will place all elements within the square brackets and separate each item or element with a comma.

**Question 2:** Explain the methods push(), pop(), shift(), and unshift() used in arrays. **Ans:push()**: Adds one or more items to the end of an array and returns the new array length. **pop()**: Removes the last item from an array and returns the removed element. **shift()**: Removes the first item from an array and returns the removed element. **unshift()**: Adds one or more items to the beginning of an array and returns the new array length

**Objects:**

**Question 1:** What is an object in JavaScript? How are objects different from arrays? **Ans:**In JavaScript, objects are used to represent entities with properties, while arrays are used to store ordered collections of data.

**Question 2:** Explain how to access and update object properties using dot notation and bracket notation. **Ans:**For example, if an object property name is held in a variable, then you can't use dot notation to access the value, but you can access the value using bracket notation. In the example below, the logProperty() function can use person[propertyName] to retrieve the value of the property named in propertyName

**JavaScript Events:**

**Question 1:** What are JavaScript events? Explain the role of event listeners. **Ans:**JavaScript's event listener function allows you to create custom responses to events like mouse clicks, keyboard clicks, and window resizing. The programming paradigm of waiting and responding to real-time events is called event handling.

**Question 2:** How does the addEventListener() method work in JavaScript? Provide an example **Ans:**The addEventListener() method of the EventTarget interface sets up a function that will be called whenever the specified event is delivered to the target example are **target.addEventListener(event, function, useCapture)**

**DOM Manipulation:**

**Question 1:** What is the DOM (Document Object Model) in JavaScript? How does JavaScript interact with the DOM? **Ans:** What is the DOM? The Document Object Model (DOM) is a programming interface for web documents. It represents the page so that programs can change the document structure, style, and content. The DOM represents the document as nodes and objects; that way, programming languages can interact with the page.

* **Question 2:** Explain the methods getElementById(), getElementsByClassName(),and querySelector() used to select elements from the DOM. **Ans:getElementById()**: Selects an element by its ID

**getElementsByClassName()**: Selects elements by their class name

**querySelector()**: Selects the first element that matches a specified CSS selector.

**JavaScript Timing Events (setTimeout, setInterval):**

**Question 1:** Explain the setTimeout() and setInterval() functions in JavaScript. Howare they used for timing events?

**Ans:** In JavaScript, the setTimeout() and setInterval() functions schedule tasks to run at a specific time.They are built-in methods of the global object on the Document Object Model.

**Question 2:** Provide an example of how to use setTimeout() to delay an action by 2 seconds. **Ans:** setTimeout(() => {console.log("Hello, World!");}, 2000);