Javascript Essentials And Advanced

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

- JavaScript is a high-level, interpreted programming language.
- JavaScript makes web pages interactive.
- It can update and modify both HTML and CSS in real-time.
- JavaScript can interact with browser APIs.
- JavaScript handles user inputs and events like clicks, keypresses, and mouse movements.

2) How is JavaScript different from other programming languages like Python or Java?

Answer: Javascript runs in the browser (client-side) and server-side with Node.js,Python runs on the server or locally as a script and java compiled to bytecode and runs on the JVM.

Javascript use case is web development ,interactive web pages , Python use case is Data science, automation, scripting, AI and java use case is applications, Android apps.

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

Answer: Embed JavaScript code directly inside the HTML file.

Ex:-<script src="script.js"></script>

4) What are variables in JavaScript? How do you declare a variable using var, let, and const?

Variables in JavaScript are used to store data values.

1>var: Declares a variable globally or function-scoped.

2>let: Block-scoped.

3>const: Block-scoped.

5) Explain the different data types in JavaScript. Provide examples for each.

- Primitive datatype -string,number,Boolean,null.
- Non-primitive datatype- object,array,function.

6) What are the different types of operators in JavaScript?

- Arrithmetic :- addition,subtraction,multiplication,division.
- Assignment :- assign, add and assign , subtract and assign, multiply and assign.
- Logical :- And ,OR , Not.
- Comparison :- equal,not eual,less than,greater than.

7) What is the difference between == and === in JavaScript?
-> The === operator compares both the value and the type
-> If the operands are of different types, JavaScript will attempt to convert them to a common type before making the comparison.

8) What is control flow in JavaScript? Explain how if-else statements work with an example.

-> Control flow refers to the order in which individual statements, instructions, or function calls are executed or evaluated. JavaScript provides various control flow mechanisms, such as conditionals (if-else, switch), loops (for, while), and function calls, which control the sequence of execution.

9) Describe how switch statements work in JavaScript. When should you use a switch statement instead of if-else

-> A switch statement is a control flow statement that executes one of several code blocks based on the value of an expression. It is often used when you have multiple conditions to check that are based on a single variable or expression.

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

->1> **For Loop**: The for loop is used when the number of iterations is known before the loop starts. It has three components: initialization, condition, and increment/decrement.

2> **While Loop**: The while loop is used when you want to loop as long as a condition remains true. The condition is evaluated **before** each iteration.

3> **Do-While Loop**: The do-while loop is similar to the while loop, but with one key difference: the condition is evaluated **after** each iteration. This means the loop will always run **at least once**, even if the condition is false initially.

11)What is the difference between a whileloop and a do-whileloop?

While Loop**:**The **condition is checked before the loop** starts. If the condition is false initially, the code inside the loop may never execute.If the condition is false at the beginning, the loop will not run at all.

Do-while Loop:The **condition is checked after the loop** executes. This means the loop will always execute at least once, even if the condition is false initially.The code inside the loop is guaranteed to run **at least once**, regardless of the condition.

12)What is function?

->A function in JavaScript is a block of reusable code designed to perform a specific task. Functions allow you to organize and modularize your code, making it more readable and easier to maintain. You can call a function multiple times, which helps in reducing redundancy.

13) What is the difference between a function declaration and a function expression?

-> A function declaration defines a named function that can be called before it is defined in the code. This is because JavaScript hoists function declarations, meaning the function definition is moved to the top of its scope during the compilation phase.

-> A function expression defines a function as part of an expression, typically assigned to a variable. Function expressions are not hoisted, meaning they cannot be called before they are defined.