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

JavaScript is a programming language that adds interactive features to web pages. It's used to create dynamic content, animations, and user interactions.

JavaScript is a key part of modern web development and is used in both front-end and back-end development.

1. How is JavaScript different from other programming languages like Python or Java?

JavaScript is often used for web development, while Python is used for data science and web development, and Java is used to create applications.

1. Discuss the use of <script> in HTML. How can you link an external JavaScript

file to an HTML document?

To include an external JavaScript file, we can use the script tag with the attribute src . You've already used the src attribute when using images. The value for the src attribute should be the path to your JavaScript file. This script tag should be included between the <head> tags in your HTML document.

<script src=”main.js” type=”text/javascript”></script>

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

Variables declared with var are hoisted, which means they can be accessed before they are declared. Variables declared with let are not hoisted. Variables declared with const are not hoisted.

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

* **String:**
  + “Prashant Shukla!!”
  + 'JavaScript'
* **Number:**
  + 10 (integer)
  + 3.14 (floating point)
* **Boolean:**
  + true
  + false
* **Null:**
  + Null
* **Undefined:**
  + A variable declared without an assignment, like let x;
* **Symbol:**
  + Symbol("uniqueID")

**Object**:

let person = { name: "John", age: 30 }

1. What is the difference between undefined and null in JavaScript?

undefined means a variable has been declared but has not yet been assigned a value, whereas null is an assignment value, meaning that a variable has been declared and given the value of null .

1. What are the different types of operators in JavaScript? Explain with examples. o Arithmetic operators o Assignment operators o Comparison operators o Logical operators

JavaScript operators are symbols or keywords used to perform operations on values and variables.

**Arithmetic Operators**

* **+**adds two numbers.
* **–**subtracts the second number from the first.
* **\***multiplies two numbers.
* **/**divides the first number by the second.

**Assignment Operators**

* **=** assigns a value to a variable.
* **+=**adds and assigns the result to the variable.
* **\*=**multiplies and assigns the result to the variable.

**Comparison Operators**

* > checks if the left value is greater than the right.
* === checks for strict equality (both type and value).
* Other operators include <, <=, >=, and !==.

**Logical Operators**

* && returns true if both operands are true.
* || returns true if at least one operand is true.
* ! negates the boolean value.

1. What is the difference between == and === in JavaScript?

**==**

Compares the value of two variables, but performs type conversion to do so. This means that it converts the operands to a common type before comparison.

* **===**

Compares both the value and the type of two variables. It does not perform type conversion, so if the types differ, it returns false.

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

Control flow is the order in which the computer executes statements in a script.

if ( condition\_is\_given\_here ) {  
 // If the condition is met,   
 //the code will get executed.  
}

else

{

//if not execute

//else will execute

}

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

For the switch statement, if the expression inside of the switch statement turns out to be false, then the default statements are executed.

It can be difficult to edit if-else statements since it’s tedious to trace where the correction is required. Many people agree that it’s much simpler to edit switch statements since they’re easy to trace.

1. Explain the different types of loops in JavaScript (for, while, do-while). Provide a basic example of each.

Loop repeats the particular statement till the condition will satisfy

Type of loop

1. Entry Control Loop : while,for
2. Exit Control Loop : do while

let count = 0;

while (count <=10) {

console.log("Number : ", count);

count++;

}

for (let i = 0; i < =10; i++) {

console.log(i); // Prints numbers from 0 to 10

}

let i = 0;

do {

console.log(i);

i++;

} while (i <=100);

// Prompts the user to enter a positive number until they provide one

1. What is the difference between a while loop and a do-while loop?

A while loop checks the condition before executing the loop body, while a do while loop checks the condition after executing the loop body.

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

Functions are blocks of code that can be reused multiple times.

Function functioname() //defination

{

//code;

}

Functionname() //calling

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

Function declarations have names, while function expressions can be anonymous

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

parameters are the inputs to a function, and return values are the results of a function's execution.

1. What is an array in JavaScript? How do you declare and initialize an array?

JavaScript arrays are versatile, ordered collections of elements that can hold items of any data type, including numbers, strings, or objects.

int[] myArray = new int[]{1, 2, 3};

1. Explain the methods push(), pop(), shift(), and unshift() used in arrays.

* push()

Adds one or more items to the end of an array. It returns the new length of the array.

* pop()

Removes the last item from an array. It returns the item that was removed. If the array is empty, it returns undefined.

* shift()

Removes the first item from an array. It returns the item that was removed. If the array is empty, it returns undefined.

* unshift()

Adds one or more items to the beginning of an array. It returns the new length of the array.

1. What is an object in JavaScript? How are objects different from arrays?

In JavaScript, arrays use numbered indexes. In JavaScript, objects use named indexes. Arrays are a special kind of objects, with numbered indexes.

1. Explain how to access and update object properties using dot notation and bracket notation.

In general, dot notation is preferred for its readability and simplicity, but square bracket notation is necessary when you need to access properties dynamically or when dealing with property names that are not valid identifiers.