**WEB TECHNOLOGY**

URL- Uniform Resource Locator

It is the address of the webpage.

Server –

It is where all the application and websites are stored.

Gateway –

Web browser

Websites –

Static – Websites that don’t change. It is not connected to the datatbase

Dynamic – Website changes every now and then. It is not connected to the database.

Application server vs web server

**HTTP Methods:**

POST – INSERT

GET – SELECT

PATCH- Partial UPDATE

PUT – UPDATE

DELETE - DELETE

SSL- Secure Socket Layer Certification

UI/UX

User Interface

User Experience

**CSS:**

Cascading Style Sheets

It describes how HTML elements are to be displayed on the screen.

CSS helps to make webpages more readable and attractive.

There are 3 ways to include CSS in HTML document

Inline CSS

Internal CSS

External CSS

**Inline css:**

<p style = “color:blue”>HELLO</p>

**Internal CSS:**

<!DOCTYPE html>

<html>

  <head>

    <style type = "text/css">

      body{background-color: blue;}

      p{color: yellow;}

    </style>

  </head>

</html>

**External CSS:**

Using a css file

**CSS BOX MODEL:**

Any HTML element on a webpage can be represented using a box.

That is, a web page is full of boxes.

These boxes have basically four components which affects their representation on a page.

**Content –** The actual content like text, images,…

**Padding –** This clears the main content from its containing box.

**Border –** This surrounds both content and padding.

**Margin –** This is a transparent space that separates it from other elements. A margin is the space outside something whereas, padding is the space inside something.

**JavaScript:**

JavaScript is a client side scripting language which runs on only users browsers.

We can say that HTML is for content and CSS is used for presentation and now we have JavaScript is for adding interactivity to the web content.

Types of JavaScript Inclusion:

JavaScript is already included in all standard browsers.

There are 2 ways to JavaScript in the document.

Internal Js

External Js

JavaScript variables:

Var:

Var declares a variable that is function-scoped or globally scoped if declared outside a function.

Variables declared with var can be re-declared and updated.

Let:

Let declares a variable that is block scoped , meaning it is only accessible within the block ({}) where it is defined.

Variables declared with let can be updated but not re-declared in the same scoped.

Const:

Const declares a block-scoped variables whose value cannot be reassigned after initialization.

It must be initialized at the time of declaration.

// string functions

// length property returns the length of the string.

// let text = "aihan";

// alert(text.length);

//for extracting parts of string, we can use 3 methods,

// slice, substring and substr.

//slice(start,end)

//returns a part of a string from start to before end.

//it doesn't modify the original string.

let str = "javaScript";

console.log(str.slice(0, 4)); // "java"

console.log(str.slice(4)); // "Script"

console.log(str.slice(-6)); // "Script"

//substring(start,end)

//substring returns a part of the string between start and before end.

//It's similar to slice but doesn't support negative values.

console.log(str.substring(0, 4)); // "java"

console.log(str.substring(4)); // "Script"

//if start>end, it swaps them

console.log(str.substring(4,0)); //same as substring(0,4);

//substr(start,length)

//returns a part of the string, starting from start and taking length characters.

//start: index to start

//length: number of characters to return

console.log(str.substr(0,4)); //Java

console.log(str.substr(4,6)); //Script

//string replacement

// The replace() replaces one part with another in the string.

let text = "Hi there How are you";

var newtext = text.replace("How","Who");

alert(newtext); //who are you?

//concat() joins two or more strings

var text1 = "Hi there ";

var text2 = "How are you?";

var newtext = text1.concat("Aihan, ",text2);

console.log(newtext);

//toUpperCase and toLowerCase to change the string cases

var text1 = "  Hi there!!"

var text2 = text1.toUpperCase();

console.log(text2);

//trim() to trim the whitespaces at the ends.

text2 = text1.trim();

console.log(text2);

//charAt() returns the character at the specified index in a string.

//charCodeAt() returns the unique code of the character.

text1 = "Hi there";

text2 = text1.charAt(0);

console.log(text2);

var text3 = text1.charCodeAt(0); //H

console.log(text3); //72

text = "meow"

console.log(text);

**QUESTIONS:**

You are given a string:

Let str = “ JavaScript is Awesome! ”;

Perform:

1. Trim the spaces from both ends of the string
2. Convert the trimmed string to lowercase
3. Convert the trimmed string to uppercase
4. Find the length of the trimmed string
5. Extract the word, “JavaScript” using:
6. Substring(start,end);
7. Slice(start,end);
8. Substr(start,length);
9. Replace the word, “Awesome” with “Powerful”

(Expected method: replace())

1. Concatenate the result with, “Let’s Code!”
2. Find the character at index 5
3. Find the ASCII code of the character at index 5.

let str = "   JavaScript is Awesome!   ";

// 1. Trim the spaces from both ends of the string

let trimmedStr = str.trim();

console.log(trimmedStr); // "JavaScript is Awesome!"

// 2. Convert the trimmed string to lowercase

console.log(trimmedStr.toLowerCase());// "javascript is awesome!"

// 3. Convert the trimmed string to uppercase

console.log(trimmedStr.toUpperCase());//"JAVASCRIPT IS AWESOME!"

// 4. Find the length of the trimmed string

console.log(trimmedStr.length); // 24

// 5. Extract the word, “JavaScript” using:

// a. Substring(start,end);

console.log(trimmedStr.substring(0, 10)); // "JavaScript"

// b. Slice(start,end);

console.log(trimmedStr.slice(0, 10)); // "JavaScript"

// c. substr(start,length);

console.log(trimmedStr.substr(0, 10)); // "JavaScript"

// 6. Replace the word, “Awesome” with “Powerful”

let  result = trimmedStr.replace("Awesome", "Powerful")

console.log(result); // "JavaScript is Powerful!"

// 7. Concatenate the result with, “Let’s Code!”

result = result.concat(" Let's Code!");

console.log(result); // "JavaScript is Powerful! Let's Code!"

// 8. Find the character at index 5

console.log(result.charAt(5)); // "c"

// 9. Find the ASCII code of the character at index 5

console.log(result.charCodeAt(5)); // 99 (ASCII code for 'c')

**Arithemetic Operations:**

//basic arithmetic operations

var a=5,b=10;

console.log("a: " + a);

console.log("b: " + b);

var sum=a+b;

console.log("Sum: " + sum);

var difference=a-b;

console.log("Difference: " + difference);

var product=a\*b;

console.log("Product: " + product);

var quotient=a/b;

console.log("Quotient: " + quotient);

var remainder=a%b;

console.log("Remainder: " + remainder);

// JavaScript eval() method

// It is used to evaluate JavaScript codes/expressions

var x=10;

var y=20;

var q = eval("x \* y + 2 + 1");

console.log("Result of eval: " + q);

// Boolean/logical operations

// basic logical operations: equality, Greater / less than, combined operations

console.log("Boolean/Logical Operations:");

console.log("a: " + a);

console.log("b: " + b);

var a =5,b=10,c=5;

var result = (a == b);

console.log("a == b: " + result);

result = (a != b);

console.log("a != b: " + result);

var result = (a > b);

console.log("a > b: " + result);

var result = (a < b);

console.log("a < b: " + result);

var result = (a >= b);

console.log("a >= b: " + result);

var result = (a <= b);

console.log("a <= b: " + result);

//conditional statements

var a=5, b=10;

if(a<b)

{

    console.log(a+" is less than "+b);

}

else if(a>b)

{

    console.log(a+" is greater than "+b);

}

else

{

    console.log(a+" is equal to "+b);

}

//switch statement

let day;

switch(new Date().getDay()) {

    case 0:

        day = "Sunday";

        break;

    case 1:

        day = "Monday";

        break;

    case 2:

        day = "Tuesday";

        break;

    case 3:

        day = "Wednesday";

        break;

    case 4:

        day = "Thursday";

        break;

    case 5:

        day = "Friday";

        break;

    case 6:

        day = "Saturday";

        break;

    default:

        day = "Unknown day";

        break;

}

console.log("Today is " + day);

**Questions:**

// 1. Write a program to check if a number is odd or even.

// 2. Check whether a number is positive, negative or zero.

// 3. Given marks, print grade using the rules:

//     90 - 100 : A

//     80 - 89 : B

//     70 - 79 : C

//     60 - 69 : D

//     Below 60 : F

// 4. Write a program to find the largest of three numbers.

// 5. Check is a person is :

//     1. Child (0-12 years)

//     2. Teenager (13-19 years)

//     3. Adult (20 and above)

// 6. Write a calculator program using switch that performs +,-,\*,/ operations based on operator value.

// 7. Given a color, print the traffic signal meaning:

//     1. Red - Stop

//     2. Yellow - Slow Down

//     3. Green - Go

// 8. Given a month Number(1-12), print the number of days of that month.

// 9. Given a letter, use switch to check if it's a vowel or consonant

// 1. Write a program to check if a number is odd or even.

let num = Number(prompt("Enter a number to check odd/even:"));

if (num % 2 === 0) {

    alert(num + " is even.");

}

else {

    alert(num + " is odd.");

}

// 2. Check whether a number is positive, negative or zero.

let value = Number(prompt("Enter a number to check if positive/even/zero:"));

if (value > 0) {

    alert(`${value} is positive.`);

}

else if (value < 0) {

    alert(`${value} is negative.`);

}

else {

    alert("The number is zero.");

}

// 3. Given marks, print grade using the rules:

let marks = Number(prompt("Enter your marks:"));

let grade;

switch (true) {

    case (marks >= 90 && marks <= 100):

        grade = "A";

        break;

    case (marks >= 80 && marks < 90):

        grade = "B";

        break;

    case (marks >= 70 && marks < 80):

        grade = "C";

        break;

    case (marks >= 60 && marks < 70):

        grade = "D";

        break;

    case (marks >= 0 && marks < 60):

        grade = "F";

        break;

    default:

        grade = "Invalid marks";

        break;

}

alert(`Your grade is: ${grade}`);

// 4. Write a program to find the largest of three numbers.

let num1 = Number(prompt("Enter first number:"));

let num2 = Number(prompt("Enter second number:"));

let num3 = Number(prompt("Enter third number:"));

switch (true)

{

    case (num1 >= num2 && num1 >= num3):

        alert(`${num1} is the largest number.`);

        break;

    case (num2 >= num1 && num2 >= num3):

        alert(`${num2} is the largest number.`);

        break;

    case (num3 >= num1 && num3 >= num2):

        alert(`${num3} is the largest number.`);

        break;

    default:

        alert("All numbers are equal.");

        break;

}

// 5. Check is a person is :

//     1. Child (0-12 years)

//     2. Teenager (13-19 years)

//     3. Adult (20 and above)

let age = Number(prompt("Enter your age:"));

switch (true)

{

    case (age >= 0 && age <= 12):

        alert("You are a Child.");

        break;

    case (age >= 13 && age <= 19):

        alert("You are a Teenager.");

        break;

    case (age >= 20):

        alert("You are an Adult.");

        break;

    default:

        alert("Invalid age entered.");

        break;

}

// 6. Write a calculator program using switch that performs +,-,\*,/ operations based on operator value.

let numA = Number(prompt("Enter first number:"));

let numB = Number(prompt("Enter second number:"));

let operator = prompt("Enter an operator (+, -, \*, /):");

let result;

switch (operator)

{

    case '+':

        result = numA + numB;

        alert(`The result of ${numA} + ${numB} is: ${result}`);

        break;

    case '-':

        result = numA - numB;

        alert(`The result of ${numA} - ${numB} is: ${result}`);

        break;

    case '\*':

        result = numA \* numB;

        alert(`The result of ${numA} \* ${numB} is: ${result}`);

        break;

    case '/':

        if (numB !== 0) {

            result = numA / numB;

            alert(`The result of ${numA} / ${numB} is: ${result}`);

        }

        else {

            alert("Cannot divide by zero.");

            result = null;

        }

        break;

    default:

        alert("Invalid operator.");

        break;

}

// 7. Given a color, print the traffic signal meaning:

//     1. Red - Stop

//     2. Yellow - Slow Down

//     3. Green - Go

let color = prompt("Enter a traffic signal color (Red, Yellow, Green):").toLowerCase();

switch (color)

{

    case 'red':

        alert("Stop");

        break;

    case 'yellow':

        alert("Slow Down");

        break;

    case 'green':

        alert("Go");

        break;

    default:

        alert("Invalid color entered.");

        break;

}

// 8. Given a month Number(1-12), print the number of days of that month.

let month = Number(prompt("Enter a month number (1-12):"));

switch (month)

{

    case 1: // January

    case 3: // March

    case 5: // May

    case 7: // July

    case 8: // August

    case 10: // October

    case 12: // December

        alert(`The month ${month} has 31 days.`);

        break;

    case 4: // April

    case 6: // June

    case 9: // September

    case 11: // November

        alert(`The month ${month} has 30 days.`);

        break;

    case 2: // February

        let year = Number(prompt("Enter the year to check for leap year:"));

        if ((year % 4 === 0 && year % 100 !== 0) || (year % 400 === 0)) {

            days = 29;

            alert(`The month ${month} in the year ${year} has 29 days.`);

        }

        else {

            alert(`The month ${month} in the year ${year} has 28 days.`);

        }

        break;

    default:

        alert("Invalid month number.");

        days = null;

        break;

}

// 9. Given a letter, use switch to check if it's a vowel or consonant

let letter = prompt("Enter a letter:").toLowerCase();

switch (letter)

{

    case 'a':

    case 'e':

    case 'i':

    case 'o':

    case 'u':

        alert(`${letter} is a vowel.`);

        break;

    default:

        if (letter.length === 1 && letter.match(/[a-z]/i))

        {

            alert(`${letter} is a consonant.`);

        } else {

            alert("Invalid input. Please enter a single letter.");

        }

        break;

}