

- **What is Javascript?**

JavaScript is a high-level programming language for creating dynamic and interactive web pages.

- **How to add JS into an HTML page?**

1. **Embedding code using `<script></script>` tag either in the body or head of the HTML page**

```
test.html
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>test web page</title>
5   <script>
6     document.write("We can write js codes inside head tags.");
7     document.write("<br>");//newline
8   </script>
9 </head>
10 <body>
11   <script>
12     document.write("We can write js codes inside body tags");
13     document.write("<br>");//newline
14   </script>
15 </body>
16 </html>
```

2. **JS as an external file.**

- Create a new file called test.html and create a button called "click".
- Create another new file called "new.js".
- Define a function to display an alert "hello this is a javascript program" When clicking the button
- Link that js file to the test.html file.

```
test.html
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>test web page</title>
5   <script src="new.js"></script>
6 </head>
7 <body>
8   <form>
9     <button onclick="display()">CLICK</button>
10  </form>
11
12 </body>
13 </html>
```

```
new.js
1 function display(){
2   alert("Hello, this is a javascript program");
3 }
4
```

- How to display data in javascript?

1. Using **document.getElementById(id).innerHTML** to write into an HTML element.

```
test.html x
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>test web page</title>
5 </head>
6 <body>
7   <h5>CALCULATION :</h5>
8   <p id = "demo"></p>
9   <p id = "calc"></p>
10  <script>
11    document.getElementById("demo").innerHTML = 10 + 20;
12    document.getElementById("calc").innerHTML = 200/5;
13  </script>
14
15 </body>
16 </html>
```

2. Using **document.write()** to write into the HTML output.

```
test.html x
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>test web page</title>
5 </head>
6 <body>
7   <h2>let's do some calculations using javascript</h2>
8
9   <script>
10    document.write("total of 30 and 70 is :");
11    document.write("<br>");
12    document.write(30+70);
13  </script>
14
15 </body>
16 </html>
```

3. Using **window.alert()** to Write into an alert box.

```
6 <body>
7   <script>
8     window.alert(10 + 20);
9   </script>
10 </body>
```

- **Javascript Variables**

1. **Rules for constructing names for variables (unique identifiers)**

- Names can contain letters, digits, underscores, and dollar signs.
- Names **must begin with a letter**.
- Names **can also begin with \$ and _**.
- Names are **case sensitive** (y and Y are different variables).
- Reserved words (like JavaScript keywords) cannot be used as names.

- **Javascript Variables**

- JavaScript variables can hold numbers like 100 and text values like "John Doe".
- Text values are called text strings.
- JavaScript can handle many types of data, but for now, just think of numbers and strings.

- **How to declare a variable?**

```
6 ▼ <body>
7 ▼   <script>
8       var myName; //1st method to create a variable
9       var age;
10
11       let number; //2nd method to create a variable
12       let courseName;
13
14   </script>
```

- **How to assign values to a variable?**

```
6 ▼ <body>
7 ▼   <script>
8       var myName; //1st method to declare a variable
9       var age;
10
11       let number; //2nd method to declare a variable
12       let courseName;
13
14       myName = "sadun perera";// assign values
15       number = 135;
16
17       let email = "sadun@gmail.com";// declare and assign at same time
18   </script>
19 </body>
```

Exercise 01:

1. Declare a variable called **flowerName** and assign the value **Lili** to it
 2. Create **x**, **y**, and **z** variables using the var keyword. Assign value 5 to x and 6 to y. z variable should hold the total of x and y.
 3. Create variables price1 and price2 using the const keyword and variable total using let keyword. Assign total of price1 and price2 to total.
-

• Javascript operators

```
7      <script>
8          let x =5;
9          let y = 10;
10
11      //arithmetic operators
12      document.write(x+y); // addition
13      document.write("<br>");
14      document.write(x-y); // subtraction
15      document.write("<br>");
16      document.write(x*y); // multiplication
17      document.write("<br>");
18      document.write(y/x); // divition
19      document.write("<br>");
20  </script>
```

Exercise 02:

1. Create three variables called Mark1, Mark2, Mark3 and assign values 30,40,90 and write a JS program to get the total and the average of above marks.
2. Write a JS program to display your name, age and gender using relevant variables.
3. Find out the area of a rectangle using javascript.

4. Create variables a,b, and and assign 10,20 and try out following operations
 - a. `a += b`
 - b. `a -= b`
 - c. `a += b`
 - d. `a *= b`
 - e. `a /= b`
 - f. `a %= b`
 5. Create variables x, y ,text1,text2 and and assign 5,4, "A","B" and try out following operations
 - a. `x >= y`
 - b. `x != y`
 - c. `text1 < text2`
 6. Create a variable called statement1 and assign value "what a very " and create another variable called statement2 and assign value " nice day". Write a program to concatenate these two statements.
 7. Try to get outputs for the following x,y and z.
 - a. `x = 5 + 5;`
 - b. `y = "5" + 5;`
 - c. `z = "Hello" + 5;`
-

● Javascript functions

```
function name(parameter1, parameter2, parameter3) {  
    // code to be executed  
}
```

```
7 ▼      <script>  
8          let value = toCelsius(77);  
9  
10 ▼      function toCelsius(fahrenheit) {  
11          return (5/9) * (fahrenheit-32);  
12      }  
13      document.write(value);  
14      </script>
```

- Create a function called “getTotal” and try to return a total of any three values.

```
7 ▼    <script>
8 ▼        function getTotal(a,b,c){
9             return (a+b+c);
10        }
11        let total = getTotal(10,20,30);
12        |
13        document.write(total);
14    </script>
```

Exercise 03:

1. Write a JS program to calculate the area and the perimeter of a circle using two different functions.
2. Write a JavaScript program to calculate the volume of a Cube using a function.
3. Write a JavaScript function to display an message as an alert
Message: “hello , welcome to our paradise”.

• Javascript objects

1. How to define an object?

```
const obj = {
    property1: value1, // property name may be an identifier
    property2: value1,
    .....
};
```

```
<script>
    //method 01
    const student = {
        firstName: "sadun",
        lastName : "Madushanka",
        age      : 23,
        gender   : 'm'
    };

    //method 02
    const car = {name: "benz", type: "mercedes", price: 50000000};

</script>
```

2. How to access object properties?

`objectName.propertyName`

OR

`objectName["propertyName"]`

```
7 <script>
8   const student = {
9     firstName: "sadun",
10    lastName : "Madushanka",
11    age      : 23,
12    gender   : 'm'
13  };
14  const car = {name: "benz", type: "mercedes", price: 50000000};
15
16  document.write(student.firstName + "<br>");
17  document.write(student["age"] + "<br>");
18  document.write(car.price + "<br>");
19 </script>
```

Exercise 04:

1. Create an object called "mammal". Properties are color : orange , type : cat, legs:4, name:kitty,speed :24.and display type and name of that mammal.
2. Try the following simple program and get the output.

```
7 <script>
8   const person = {
9     firstName: "John",
10    lastName : "Doe",
11    id       : 5566,
12    fullName : function() {
13      return this.firstName + " " + this.lastName;
14    }
15  };
16 </script>
```

3. Create an object called " triangle".Height is 25, base is 24, color is red,area are the properties of this object. The value for the area should be returned using a function. Display each and every property in a web page.
-

- Javascript if else if statements

```
<script>
  let age = 20;
  if(age>18)
  {
    window.alert("you are an adult");
  }
  else
  {
    window.alert("you are a child");
  }
</script>
```

- Javascript switch statements

```
6  <body>
7    <!--get the day as a user input-->
8    <label>Enter Day:</label><br>
9    <input type = "text" placeholder="enter text" id = "value"><br><br>
10   <input type="submit" name="submit" onclick="getDay()" value = "Try IT">
11
12   <!--js switch to display alert-->
13   <script>
14     function getDay(){
15       let day = document.getElementById("value").value;
16       switch(day){
17         case "morning":
18           alert("good morning");
19         case "afternoon":
20           alert("good afternoon");
21         case "evening":
22           alert("good evening");
23         case "night":
24           alert("good night");
25       }
26     }
27   </script>
28 </body>
```

- Javascript while loop

```
<script>
  let i = 1;
  while (i <= 10) {
    document.write(i + "<br>");
    i++;
  }
</script>
```


- Javascript do while loop

```
<script>
  let i = 2;
  do {
    document.write(i + "<br>");
    i += 2;
  }
  while (i <= 20);
</script>
```

- Javascript for loop

```
<script>
  for(let i = 0; i<10;i++)
  {
    document.write(i + "<br>")
  }
</script>
```

- Javascript arrays

```
const array_name = [item1, item2, ...];
```

1. How to create an array?

```
<script>

  //how to create an array
  const numArray = [2,34,56,67]; // method 01

  const colors; //method 02
  colors[0] = "red";
  colors[1] = "yellow";
  colors[2] = "white";
  colors[3] = "blue";

  const fruits = new Array("apple","orange","pine apple");
</script>
```

2. How to access object properties?

```
<script>
  const numArray = [2,34,56,67];

  document.write(numArray[2] + "<br>");
</script>
```

Exercise 05:

1. Write a solution for the below scenario using the if else condition

If time is less than 10:00, create a "Good morning" greeting, if not, but time is less than 20:00, create a "Good day" greeting, otherwise a "Good evening" .

2. Create a switch statement that will alert "Yellow" if the fruit is "banana", "Orange" if fruit is "pineapple" and "Green" if fruit is "apple".
3. Write a JS program to input three numbers and find the largest number.
4. Write a simple program to find whether the given number is a prime number or not.
5. Write a simpleJS program to print odd numbers between 1 to 30.
6. Create an array and display each element using for loops.
7. Create the following array.

```
const numbers = [80,30,40,50,23]
```

- i. Change the element in the second index to 78.
 - ii. Find the length of the above array.
 - iii. Write js code to sort the array.
8. Create the following array.

```
const names = ["sadun","kamal","nimal","ruwan"]
```

- i. Write a program to convert the above array into string.
- ii. Remove the last element from the array.
- iii. Add a new item called "nuwani".

9. Create the following arrays and merge these two arrays.

```
const myGirls = ["Cecilie", "Lone"]
```

```
const myBoys = ["Emil", "Tobias", "Linus"]
```

10. Calculate the sum of all the numbers in the following array.

```
numbersArray = [1,13,22,123,49]
```
