Experiment-1: Introduction to JavaScript, Applying JavaScript - internal and external, Understanding JS Syntax

a. Explain the importance of JavaScript.

JavaScript is a scripting language that you can use on both client-side and server-side for the development of dynamic web pages. Meanwhile, HTML and CSS build the structure of a website, JavaScript makes a website functional to entertain the end user's interaction with the application. You can execute JavaScript code on any modern browser, that's why we call it a scripting language. JavaScript works as a client-side and server-side scripting language, so we define it from both aspects.

JavaScript Importance as a Client-side Language

JavaScript allows the developers to create custom client-side scripts to integrate them into HTML. The JavaScript program is executed when the user has filled a form and it is going for submission to the server after validation of all the entries. Buttons, link navigation, pop-up boxes, and other features that allow the user to interact with an application are examples of JavaScript. Shortly put, traditionally, JavaScript acts as a gateway between the client (browser or a mobile app) and the server.

Use of JavaScript as Server-side Language

Today, the use of JavaScript is not only limited to the client-side to support user interaction but it has also become a full-stack web development framework due to its server-side scripting and development support. There are several JavaScript frameworks and libraries that we will discuss further that allow us to develop customized web applications. Now, JavaScript can deal with both client and server-side. Besides web applications, you can also use it in the development of fully functional mobile applications

Importance of JavaScript in Web development through its Frameworks

JavaScript has become the first choice of most of the developers in the world. Each framework provides a different set of functionalities. These frameworks are the reason for the importance of JavaScript in web development. So, we are presenting you with the top 3 frameworks that have changed the way of programming through JavaScript and played an important role in its development and popularity.

b. What JavaScript can do?

THINGS YOU CAN BUILD WITH JAVASCRIPT

1. WEBSITES:

Adding interactivity and behavior to otherwise static sites was what JavaScript was invented to do by Brendan Eich way back in 1995. It's still used for that.

2. WEB APPLICATIONS:

As browsers and personal computers have continued to improve, so, too, has the abilities to create robust web applications. Just think of applications like Google Maps.

3. PRESENTATIONS:

With the advent of NodeJS a few year ago, JavaScript made its way from the browser and into the server. Since then, Node has been adopted by many major companies, such as Walmart, as a key part of their back-end infrastructure.

5. WEB SERVERS:

It's easy to build a web server in about 10 lines of code. Of course, you can create much more robust servers using node or the standard server application framework expressJS. Many of

the previously mentioned applications using Node are actually built using the MEAN stack of which Express is a key component.

6. GAMES:

While the browser hasn't been a traditional games platform in the past, recently it has become a robust venue for games. Additionally, with the addition of the HTML5 canvas (more on that in a second), the level of complexity that is possible in browser-based games has increased exponentially.

7. ART:

One of the new features in the HTML5 specification is the canvas element,which allows the browser to render three-dimensional shapes. This opened the browser as a new medium for digital art projects.

8. SMARTWATCH APPS:

Popular smartwatch maker Pebble has created Pebble.js, a small javascript framework that allows a developer to create an application for the Pebble line of watches in JavaScript. But Pebble makes up a relatively small part of the market share.

9. MOBILE APPS:

One of the most powerful things you can do with JavaScript is build applications for non-web contexts. That's a fancy way of saying you can make apps for things that aren't the internet. For instance, mobile devices are now the most popular way to access the internet.

10. FLYING ROBOTS:

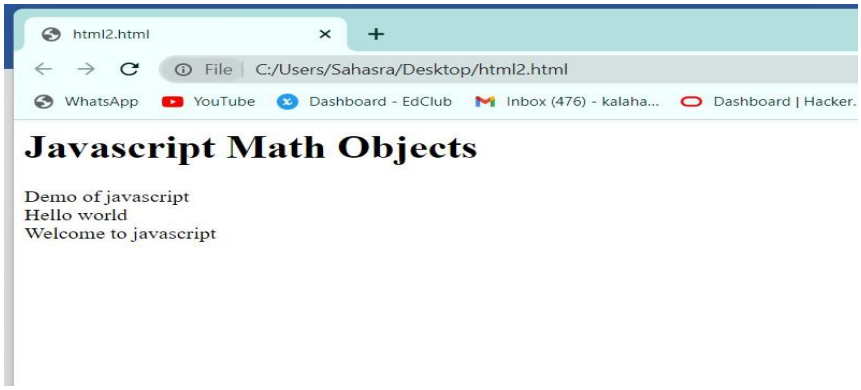
Yes, you read that right. Several commercially available quadcopters come outfitted with a simple OS that makes it possible to install NodeJS. This means that you can program a flying robot using JavaScript.

c. Write a program to explain how to use JavaScript in a web page.

Program:

```
<html>
<body>
<h1>Javascript Math Objects</h1>
<script>
document.write("Demo of javascript"+"<br>");
document.write("Hello world"+"<br>");
document.write("Welcome to javascript"+"<br>");
</script>
</body>
</html>
```

Output:



d. Write a program to explain how to link an external JavaScript page to a HTML page.

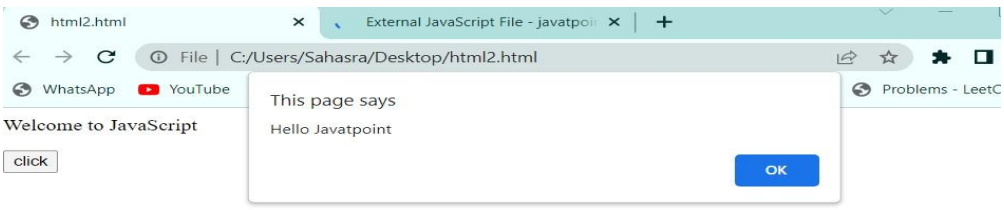
Program:

```
<html>
<head>
<script type="text/javascript" src="message.js"></script>
</head>
<body>
<p>Welcome to JavaScript</p>
<form>
<input type="button" value="click" onclick="msg()"/>
</form>
</body>
</html>
```

Message.js:

```
function msg(){
 alert("Hello Javatpoint");
}
```

Output:



Experiment-2: Introduction to document object

a. Explain JavaScript document object with properties and methods.

Javascript Document Object: JavaScript Document object is an object that provides access to all HTML elements of a document. When an HTML document is loaded into a browser window, then it becomes a document object.

The document object stores the elements of an HTML document, such as HTML, HEAD, BODY, and other HTML tags as objects.

A document object is a child object of the Window object, which refers to the browser.

You can access a document object either using window.document property or using object directly.

Properties:

As we know, a property of an object is the value associated with the object. The property is accessed by using the following notation:

objectName.propertyName where objectName is the name of the object and propertyName is the name of its property.

Properties	Description
cookie	returns a report that contains all the visible and unexpired cookies associated with the document
domain	returns the domain name of the server from which the document has originated
lastModified	returns the date on which document was last modified
documentMode	returns the mode used by the browser to process the document
readyState	returns the loading status of the document.
referrer	returns the URL of the documents referred to in an HTML document
title	returns the name of the HTML document defined between the starting and ending tags of the TITLE element
URL	returns the full URL of the HTML document.

JavaScript Document Object Methods

JavaScript Document object also provides various methods to access HTML elements. Now we will show you some of the commonly used methods of the document object:

Methods	Description	Syntax
open()	opens an HTML document to display the output	document.open(mimetype, replace)
close()	closes an HTML document	document.close()
write()	Writes HTML expressions or JavaScript code into an HTML document	document.write(exp1, exp2, ...)
writeln()	write a new line character after each HTML	document.writeln(exp1, exp2, ...)

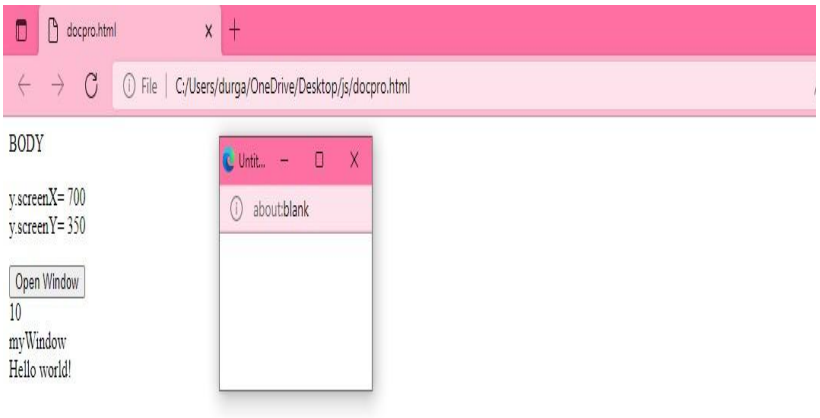
	expressions or JavaScript Code	
getElement ById()	returns the reference of first element of an HTML document with the specified id.	document.getElementById(id)
getElement ByName()	returns the reference of an element with the specified name	document.getElementsByName(name)
getElement sByTagNa me()	returns all elements with the specified ttagname	document.getElementsByTagName(tagna me)

b. Write a JavaScript program to explain the usage of Document object properties. i. document ii. length iii. name iv. parent v. status vi. screenX, screen

Program:

```
<html>
<body>
<p id="demo">Happy</p>
<p id="demo1"></p>
<button onclick="myFunction()">Open
Window</button>
<script>
let
a="javascript";
document.write("<br>"+a.length+"<br>");
window.name = "myWindow";
document.write(window.name);
var x = document.getElementById("demo").parentElement.nodeName;
document.getElementById("demo").innerHTML = x;
function myFunction() {
const y = document.open("", "", "left=700, top=350, width=200,
height=100");
let b = y.screenX;
let c = y.screenY;
document.getElementById("demo1").innerHTML =
"y.screenX= " + b + "<br>y.screenY= " + c;
}
document.write("<br>"+"Hello world!");
</script>
</body>
</html>
```

Output:

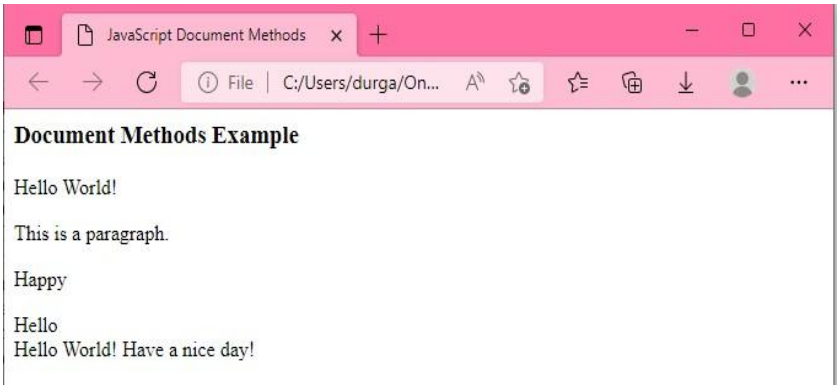


c. Write a JavaScript program to explain the usage of Document object methods.
i. open() ii. close() iii. write() &writeln() iv. getElementById() v. getElementByName() vi. getElementsByTagName()

Program:

```
<html>
<head>
<title>JavaScript Document Methods</title>
</head>
<body>
<h3>Document Methods Example</h3>
<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
<p id="demo"></p>
<script>
document.getElementsByTagName("p")[0].innerHTML = "Hello World!";
document.open();
document.write("Hello" +"<br>");
document.getElementById("demo").innerHTML = "Happy";
document.close();
document.writeln("Hello World!");
document.writeln("Have a nice day!");
</script>
</body> </html>
```

Output:



Experiment-3: Introduction to window object

a. Explain JavaScript window object with properties and methods.

The Windows Objects:

The window object represents the browser's window. All the global JavaScript objects are members of the window object. The window object has some methods and properties,

Methods in windows objects:

Methods	Description
Alert ()	It displays the popup messages with the ok button.
Confirm ()	It displays the message on the alert box with the OK and cancel button.
Prompt ()	It gets input from the user to display a text message in the dialog box.
Open ()	Opens the current window.
Close ()	Closes the current window.
moveTO ()	Moves the current window.
resizeTo ()	Resizes the current window.
setTimeout ()	It performs an action after a specified time, like calling a function, evaluating expressions, etc.

Properties in windows objects

Property	Descriptions
innerHeight	It returns the height of the browser window.
innerWidth	It returns the width of the browser window.
name	Specifies the name of the window.

b. Write a JavaScript program to explain the usage of window object properties.
i. title ii. url iii. cookie iv. last modified v. domain vi. readyState

Program:

```
<html>
<body>
<title>MY TITLE</title>
<h1>Java Script window object</h1>
<p id="demo"></p>
<p id="demo1"></p>
<p id="demo2"></p>
<p id="demo3"></p>
<p id="demo4"></p>
<p id="demo5"></p>
<script>
document.getElementById("demo").innerHTML = document.title;
let url = document.URL;
document.getElementById("demo1").innerHTML = url;
let allCookies = document.cookie;
```

```
document.getElementById("demo2").innerHTML = allCookies;
let text = document.lastModified;
document.getElementById("demo3").innerHTML = text;
let myDomain = document.domain;
document.getElementById("demo4").innerHTML = myDomain;
document.getElementById("demo5").innerHTML = document.readyState;
</script>
</body>
</html>
```

Output:

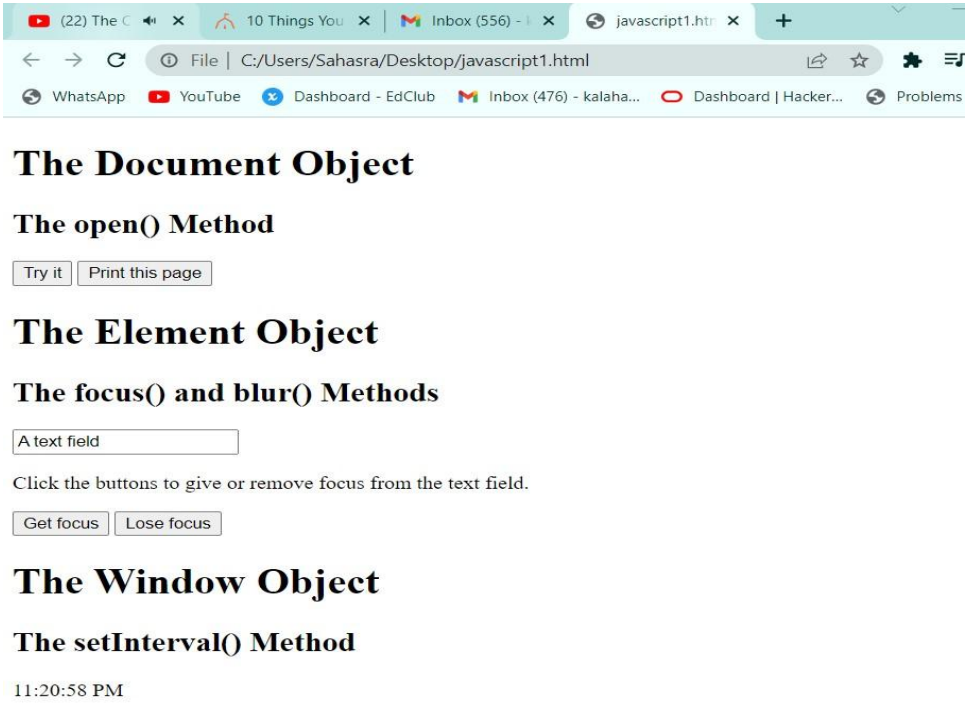
c. Write a JavaScript program to explain the usage of Document object methods. i. open() ii. close() iii. print() iv. stop() v. focus() vi. getInterval(), setInterval()

Program:

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript">
function printpage()
  {
        window.print()
  }
</script>
</head>
<body>
<h1>The Document Object</h1>
<h2>The open() Method</h2>
<button onclick="myFunction()">Try it</button>
<script> function
myFunction() {
document.open();
document.write("<h1>Hello World</h1>");
document.close();
}
</script>
```

```
<input type="button" value="Print this page"
onclick="printpage()"/>
<h1>The Element Object</h1>
<h2>The focus() and blur() Methods</h2>
<input type="text" id="myText" value="A text field">
<p>Click the buttons to give or remove focus from the text field.</p>
<button type="button" onclick="getFocus()">Get focus</button>
<button type="button" onclick="loseFocus()">Lose focus</button>
<script> function
getFocus() {
document.getElementById("myText").focus();
}
function loseFocus() {
document.getElementById("myText").blur();
}
</script>
<h1>The Window Object</h1>
<h2>The setInterval() Method</h2>
<p id="demo"></p>
<script>
setInterval(myTimer, 1000);
function myTimer() {
const date = new Date();
document.getElementById("demo").innerHTML = date.toLocaleTimeString(); }
</script>
</body>
</html>
```

Output:



Experiment-4: Variables and Operators, Data Types and Pop-up boxes

a. Write a JavaScript program to explain different types of variable. Write the differences between variables created with var, let, const keywords.

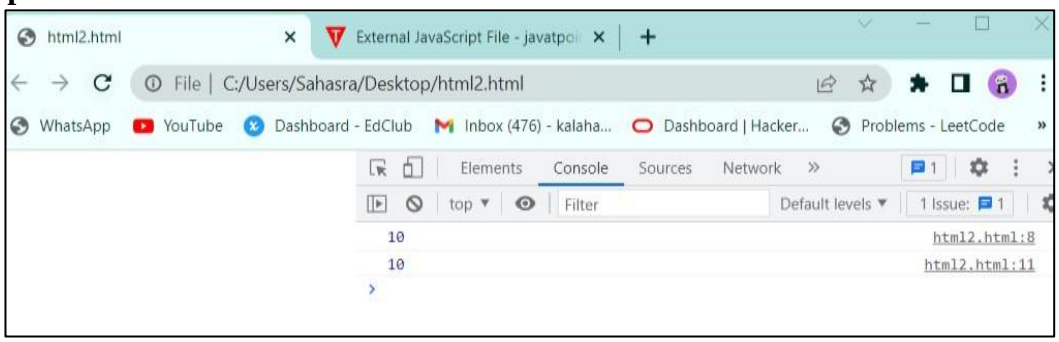
With var:

Program:

```
<html>
<body>
<script>
var a=10;

function f()
{
console.log(a);
}
f();
console.log(a);
</script>
</body>
</html>
```

Output:

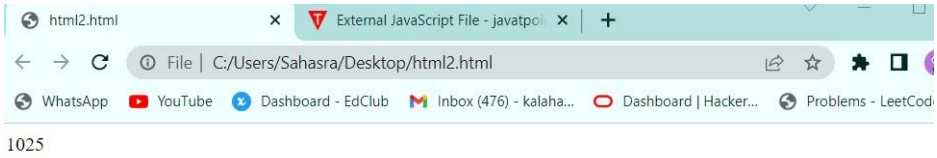


With let:

Program:

```
<html>
<body>
<script> let
a=10;
function f()
{
document.write(a);
}
f();
document.write(25);
</script>
</body>
</html>
```

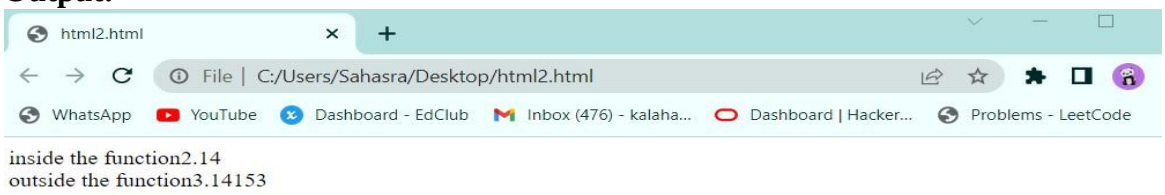
Output:



With constant:
Program:

```
 <html>
<body> <script>
const a =
3.14153; function
f()
{ var
a=2.14;
document.write("inside the function"+a+"<br>");
}
f();
document.write("outside the function"+a);
</script>
</body>
</html>
```

Output:

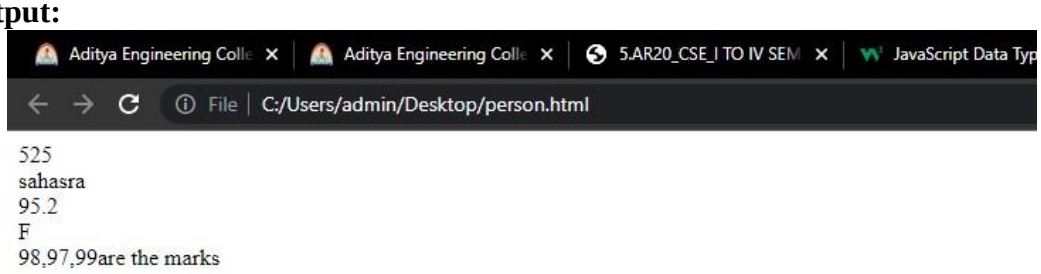


b. Write a JavaScript program to explain data types with example program.
Program:

```
<html>
<body>
<script>
var id=525;
var sname="sahasra";
var per=95.2;
var gender='F';
var ar=[98,97,99];
document.write(id+"<br>");
document.write(sname+"<br>");
document.write(per+"<br>");
document.write(gender+"<br>");
```

```
document.write(ar+"are the
marks");
</script>
</body>
</html>
```

Output:



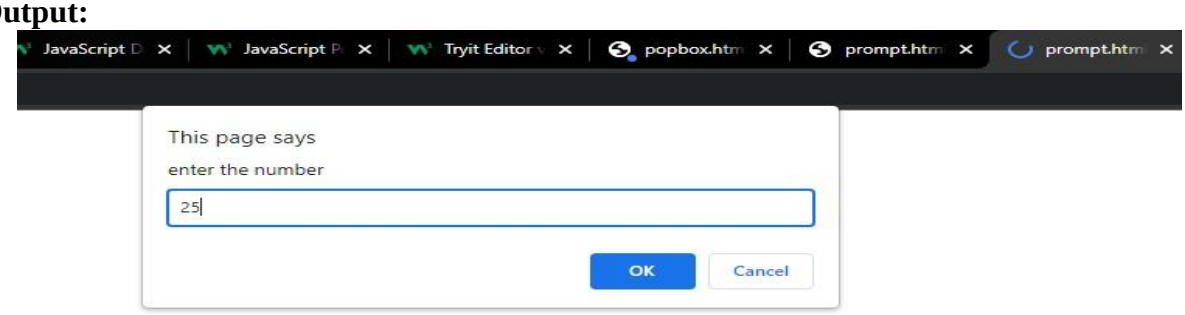
c. Write a program to explain the Pop-up boxes in JavaScript. (prompt box, alert box and confirm box).

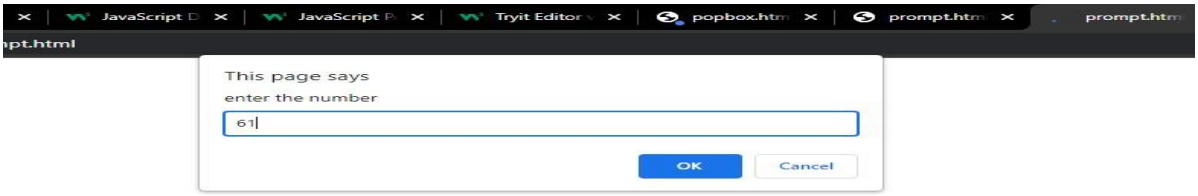
Prompt box:

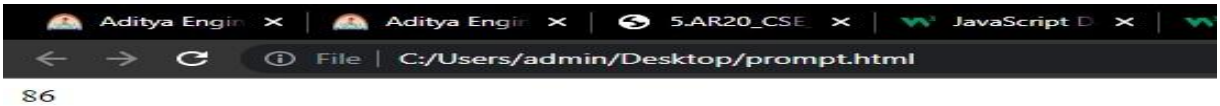
Program:

```
<html>
<body> <script>
a=parseInt(window.prompt("enter the number"));
b=parseInt(window.prompt("enter the number"));
c=a+b;
document.write(c);
</script>
</body>
</html>
```

Output:







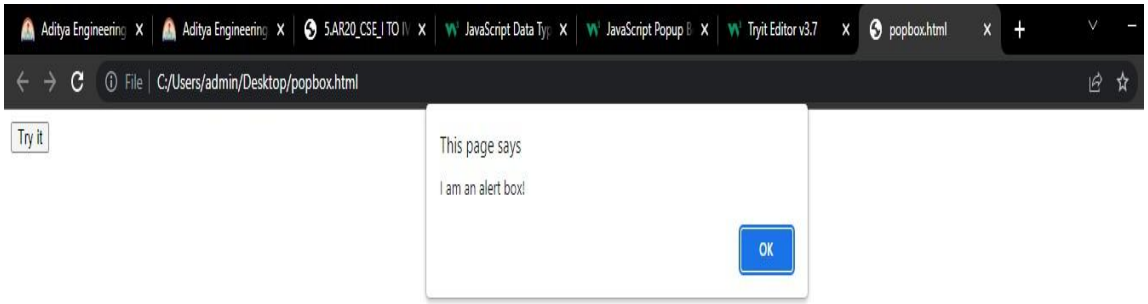
Alert box :

Program:

```
<html>
<body>
<button onclick="myFunction()">Try it</button>

<script> function
myFunction() { alert("I
am an alert box!");
}
</script>
</body>
</html>
```

Output:

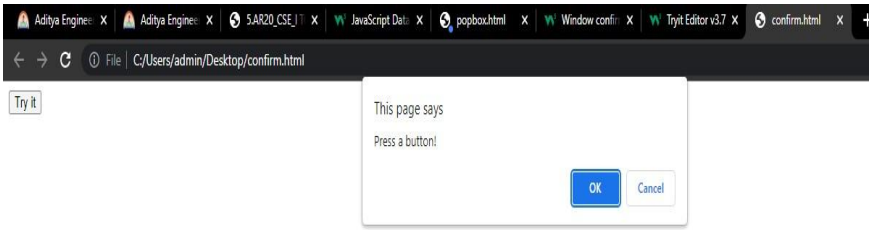


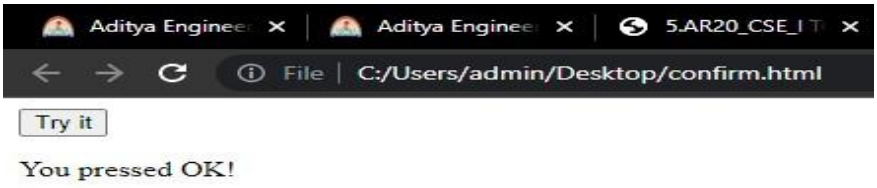
Confirm box:

Program:

```
<html>
<body>
<button onclick="myFunction()">Try it</button>
<p id="demo"></p>
<script>
function myFunction() {
  let text;
  if (confirm("Press a button!") == true) {
text = "You pressed OK!";
  } else {
    text = "You canceled!";
  }
document.getElementById("demo").innerHTML = text;
}
</script>
</body>
</html>
```

Output:



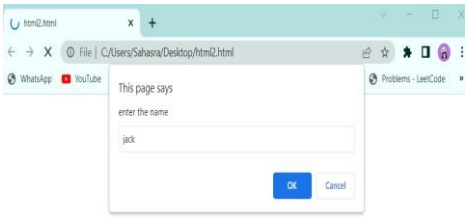


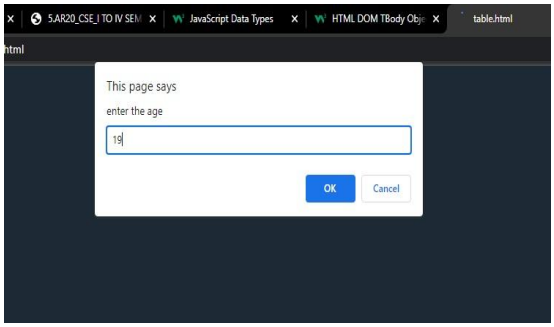
d. Create a webpage which uses prompt dialogue box to ask a user for their name, age and salary. Display the information they enter on the page formatted as a small table.

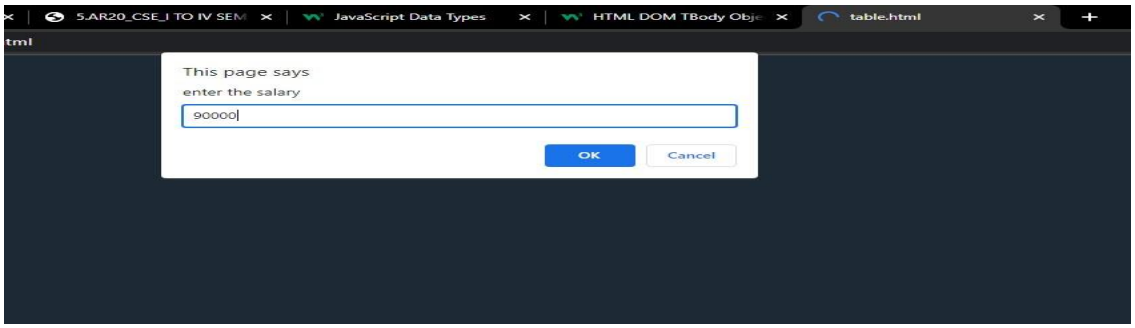
Program:

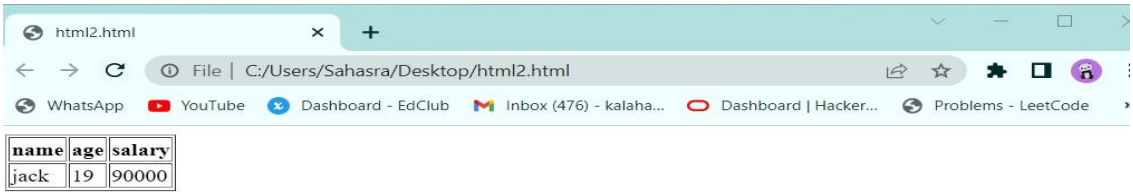
```
<html>
<body> <script>
name=window.prompt("enter the name");
age=window.prompt("enter the age");
sal=window.prompt("enter the salary");
document.write("<table border=1>");
document.write("<tr><th>name</th><th>age</th><th>salary</th></tr>");
document.write("<tr><td>"+name+"</td><td>"+age+"</td><td>"+sal+"</td></tr>");
document.write("</table>");
</script>
</body>
 </html>
```

Output:









name	age	salary
jack	19	90000

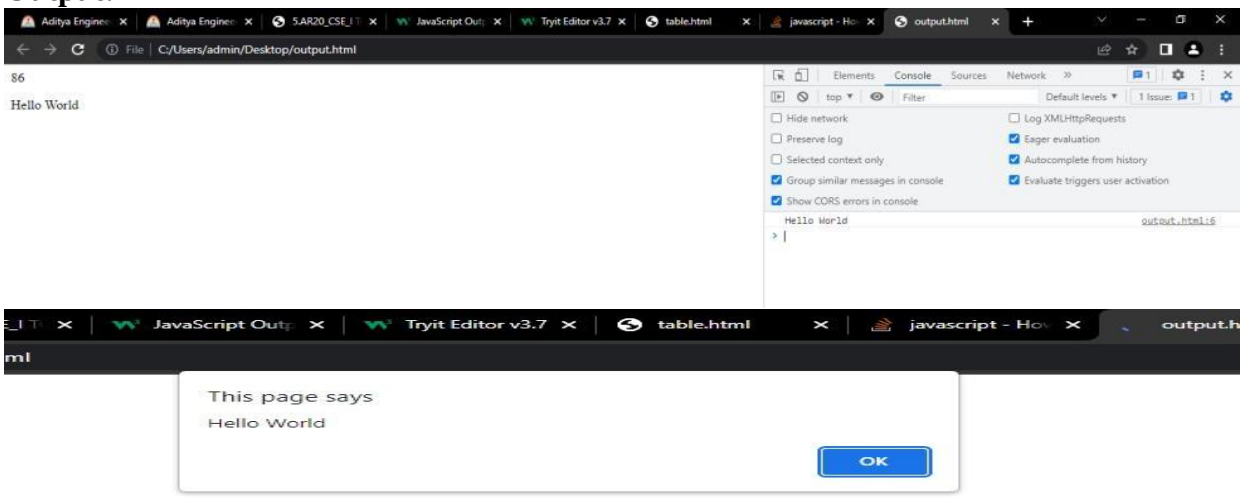
<u>Experiment-5:</u> Input and Output statements, Num Type Conversion

a. Write a JavaScript program to explain the different ways for displaying output.

Program:

```
<html>
<body>
<p id="demo"></p>
<script>
document.write("Hello World");
console.log("Hello World");
window.alert("Hello World");
document.getElementById("demo").innerHTML=parseInt(25+61);
</script>
</body>
</html>
```

Output:

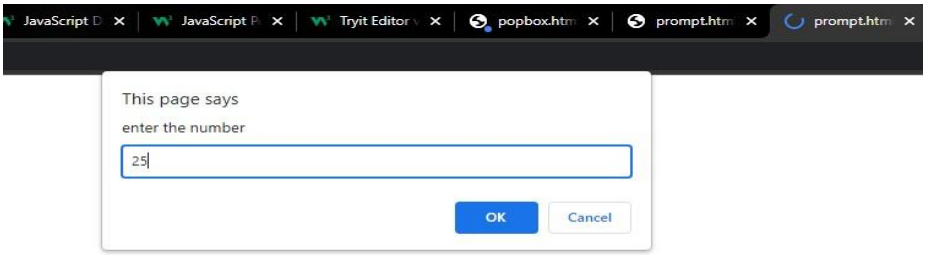


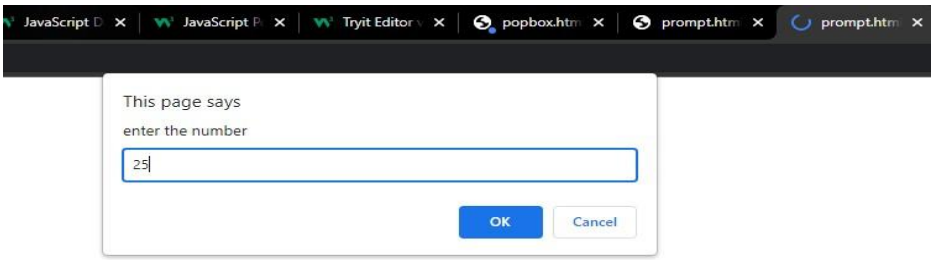
b. Write a JavaScript program to explain the different ways for taking input.

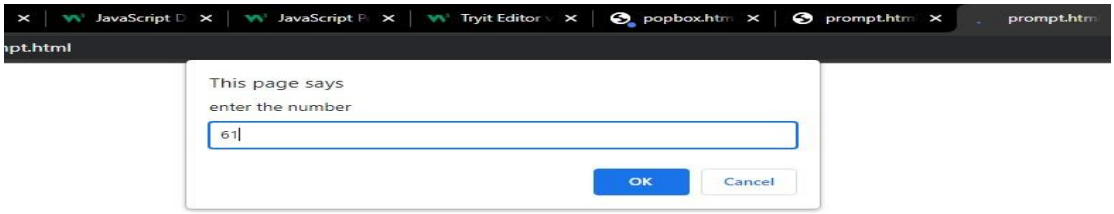
Program:

```
<html>
<body> <script>
a=parseInt(prompt("enter the number"));
b=parseInt(prompt("enter the
number")); c=a+b;
document.write(c);
</script>
</body>
</html>
```

Output:





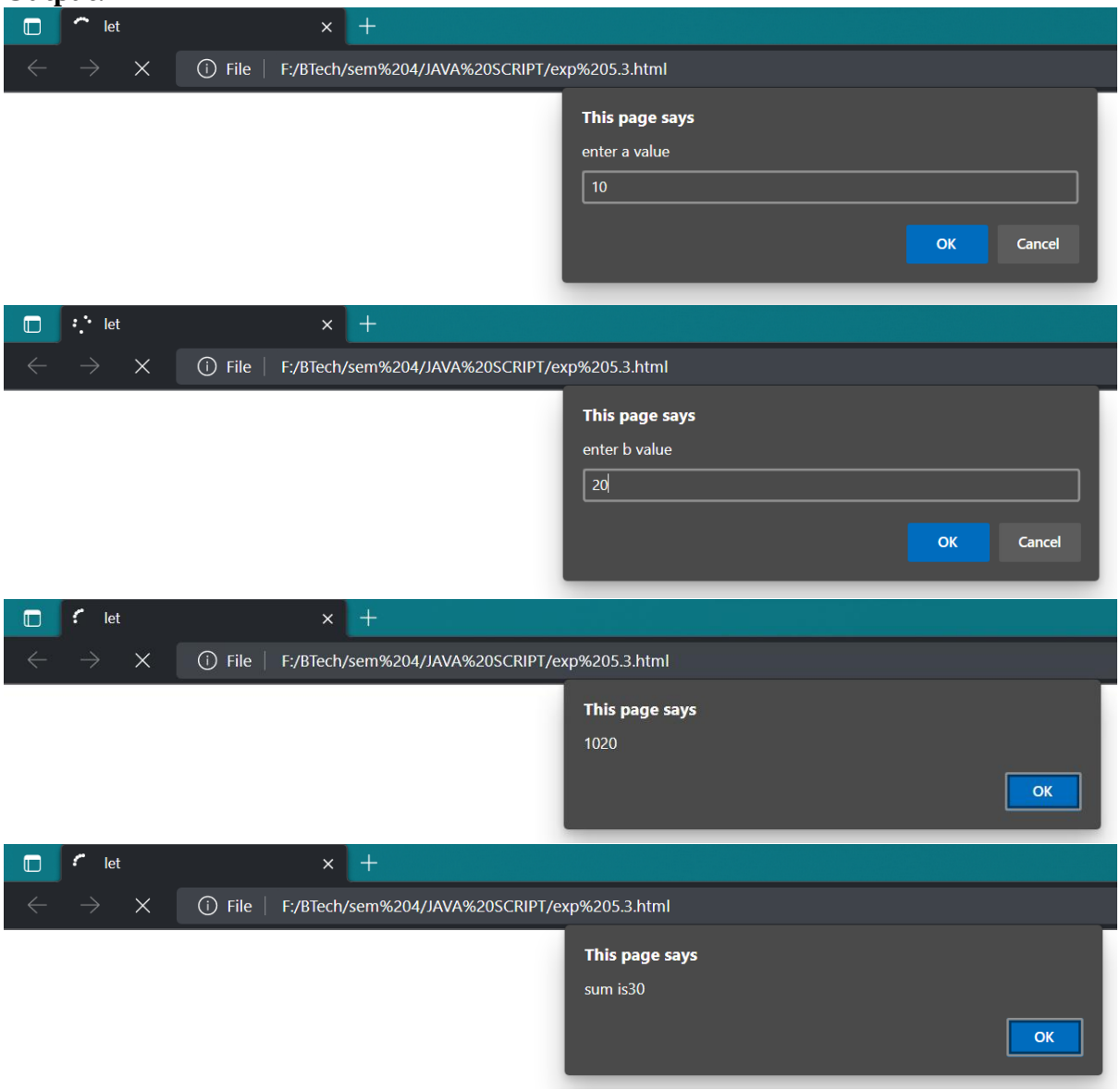


c. Write a program that uses JavaScript that adds some numbers together using number conversion, concatenates a couple of strings and then shows the result in an alert dialogue box and on the page. (Hint: Use parseInt() for converting string input to integer to add 2 integers)

Program:

```
<html>
<head>
<title>let</title>
</head>
<body>
<script>
var a=window.prompt("enter a value");
var b=window.prompt("enter b value");
var c=parseInt(a);
var d=parseInt(b);
window.alert(a+b);
window.alert("sum is"+(c+d));
</script>
</body>
</html>
```

Output:


let
File
F:/BTech/sem%204/JAVA%20SCRIPT/exp%205.3.html
This page says
enter a value
10
OK
Cancel
let
File
F:/BTech/sem%204/JAVA%20SCRIPT/exp%205.3.html
This page says
enter b value
20
OK
Cancel
let
File
F:/BTech/sem%204/JAVA%20SCRIPT/exp%205.3.html
This page says
1020
OK
let
File
F:/BTech/sem%204/JAVA%20SCRIPT/exp%205.3.html
This page says
sum is30
OK

Experiment-6: Math and String Manipulation

a. Write a JavaScript program to explain the use of a Math object.

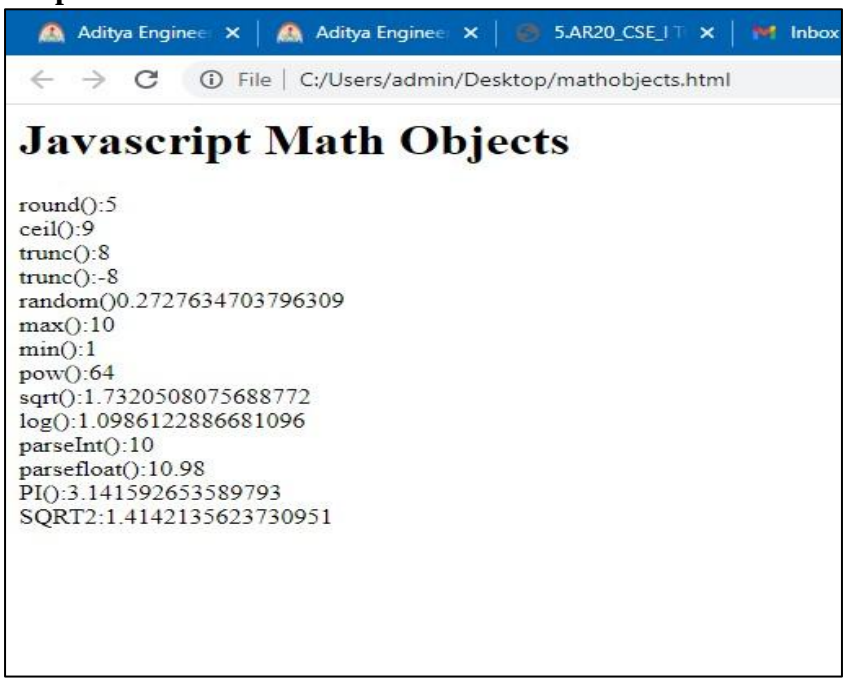
i. properties - PI, SQRT2

ii. functions – round(), ceil(), floor(), trunc(), random(), max(), min(), pow(), sqrt(), parseInt(), parseFloat()

Program:

```
<html>
<body>
<h1>Javascript Math Objects</h1>
<script>
document.write("round():"+Math.round(4.6)+"<br>");
document.write("ceil():"+Math.ceil(8.2)+"<br>");
document.write("trunc():"+Math.trunc(8.2)+"<br>");
document.write("trunc():"+Math.trunc(-8.2)+"<br>");
document.write("random()"+Math.random()+"<br>");
document.write("max():"+Math.max(8,2,4,5,6,9,1,10)+"<br>");
document.write("min():"+Math.min(8,2,4,5,6,9,1,10)+"<br>");
document.write("pow():"+Math.pow(8,2)+"<br>");
document.write("sqrt():"+Math.sqrt(3)+"<br>");
document.write("log():"+Math.log(3)+"<br>");
document.write("parseInt():"+parseInt("10.33") + "<br>");
document.write("parsefloat():"+parseFloat("10.98") + "<br>");
document.write("PI():"+Math.PI+"<br>");
document.write("SQRT2:"+Math.SQRT2+"<br>");
</script>
</body>
</html>
```

Output:



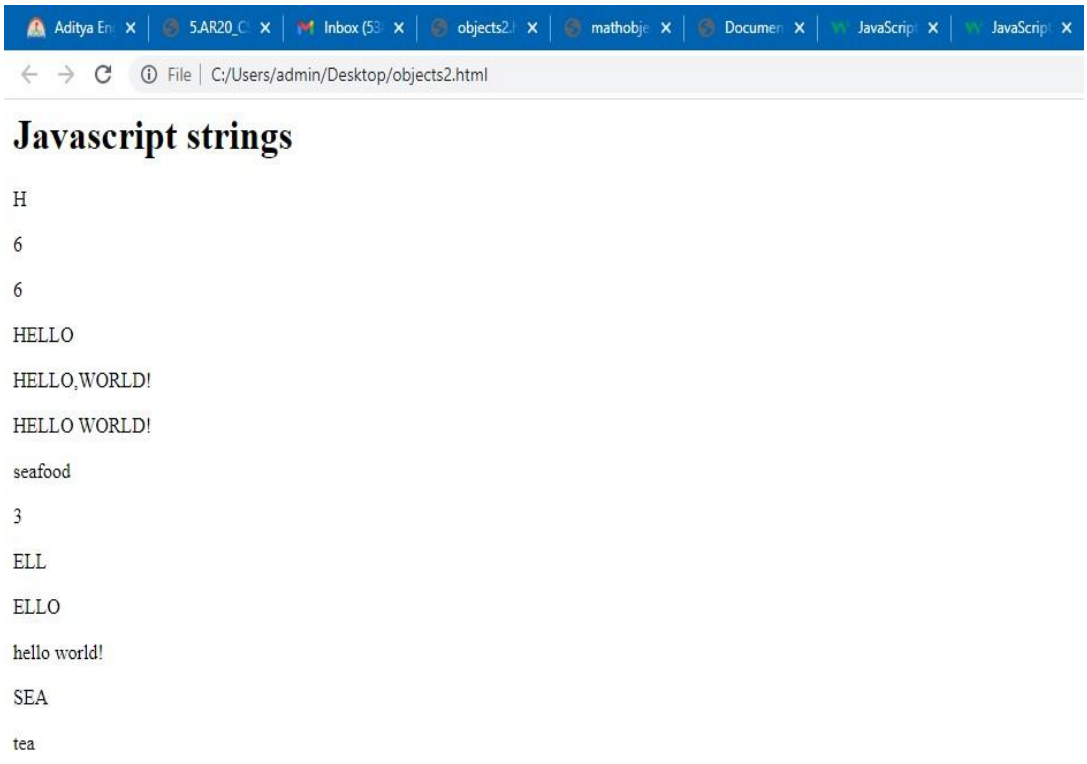
b. Write a JavaScript program to explain the use of String object.
i. properties - length
ii. functions – charAt(), concat(), indexOf(), lastIndexOf(), split(), trim(), slice(), substr(), substring(), toLowercase(), toUppercase(), replace().

Program:

```
<html>
<body>
<h1>Javascript strings</h1>
<p id="demo"></p>
<p id="demo1"></p>
<p id="demo2"></p>
<p id="demo3"></p>
<p id="demo4"></p>
<p id="demo5"></p>
<p id="demo6"></p>
<p id="demo7"></p>
<p id="demo8"></p>
<p id="demo9"></p>
<p id="demo10"></p>
<p id="demo11"></p>
<p id="demo12"></p>
<script>
let text="HELLO WORLD!";
let text1="  HELLO WORLD!  ";
let str1="sea";
let str2="food";
let result0=text.trim();
let letter=text.charAt(0);
let result=text.indexOf("WORLD");
let result1=text.lastIndexOf("WORLD");
let result2=text.slice(0,5);
const myArray=text.split(" ");
let result3=str1.concat(str2);
let result4=str1.length;
let result5=text.substring(1,4);
let result6=text.substr(1,4);
let result7=text.toLowerCase();
let result8=str1.toUpperCase();
let result9=str1.replace('s','t');
document.getElementById("demo").innerHTML=letter;
document.getElementById("demo1").innerHTML=result;
document.getElementById("demo2").innerHTML=result1;
document.getElementById("demo3").innerHTML=result2;
document.getElementById("demo4").innerHTML=myArray;
document.getElementById("demo5").innerHTML=result0;
document.getElementById("demo6").innerHTML=result3;
```

```
document.getElementById("demo7").innerHTML=result4;
document.getElementById("demo8").innerHTML=result5;
document.getElementById("demo9").innerHTML=result6;
document.getElementById("demo10").innerHTML=result7;
document.getElementById("demo11").innerHTML=result8;
document.getElementById("demo12").innerHTML=result9;
</script>
</body>
</html>
```

Output:



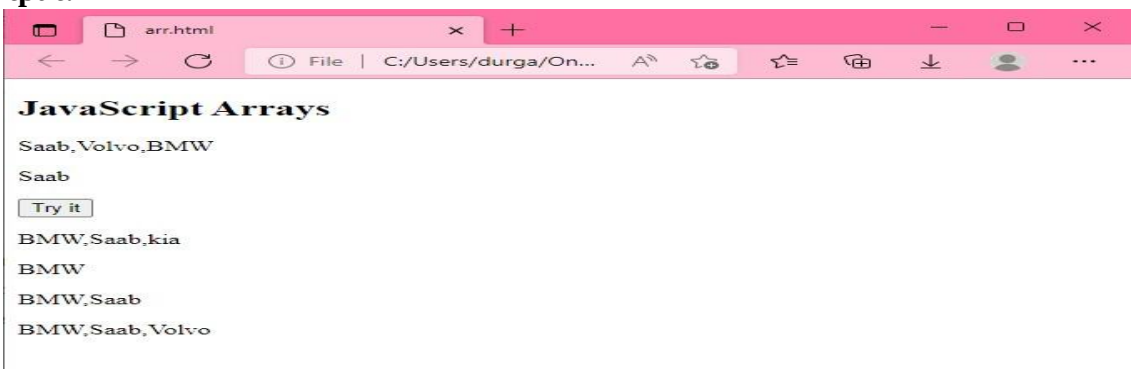
Experiment-7: Arrays, Date and Time

a. Write a program to explain the concept of Arrays. How to create, access an array, adding elements to array, searching element in an array, removing array numbers and sorting the numbers.

Program:

```
<html>
<body>
<h2>JavaScript Arrays</h2>
<p id="demo"></p>
<p id="demo1"></p>
<button onclick="myFunction()">Try it</button>
<p id="demo2"></p>
<p id="demo3"></p>
<p id="demo4"></p>
<p id="demo5"></p>
<script>
//creation
const cars = ["Saab", "Volvo", "BMW"];
document.getElementById("demo").innerHTML =cars;
//acess
document.getElementById("demo1").innerHTML =
cars[0];
//adding function
myFunction() {
  cars.push("kia");
  document.getElementById("demo2").innerHTML =
cars;
}
//searching
document.getElementById("demo3").innerHTML=
cars.find(checkcar); function checkcar(car) { return
car=="BMW";
}
cars.sort(
);
document.getElementById("demo5").innerHTML =
cars;
cars.pop();
document.getElementById("demo4").innerHTML =
cars;
</script>
</body>
</html>
```

Output:

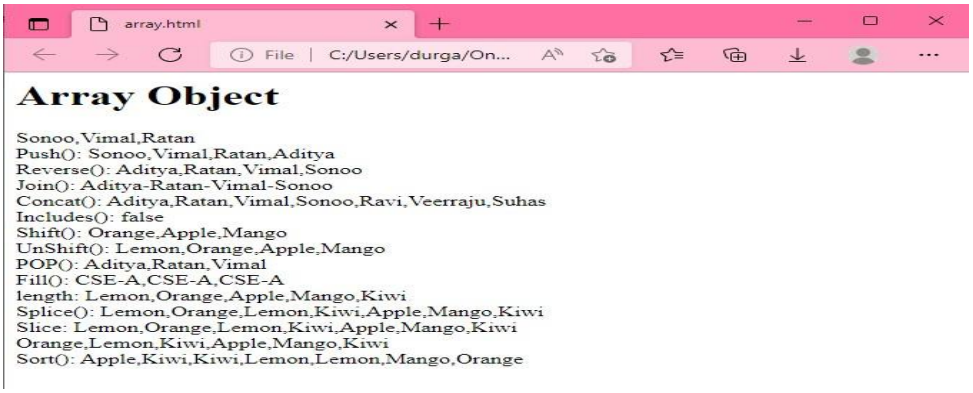


b. Write a JavaScript program to explain about Array object.
i. properties – length ii. functions - concat(), join(), pop(), push(), reverse(), shift(), slice(), sort(), splice(), unshift()

Program:

```
<html>
<body>
<h1> Array Object</h1>
<script>
var emp=["Sonoo","Vimal","Ratan"];  //array
declaration document.write(emp+"<br>");
emp.push("Aditya");
document.write("Push():   "+emp+"<br>");
document.write("Reverse():  "+emp.reverse()+"<br>");
document.write("Join():  "+emp.join("-")+"<br>");
var emp2=["Ravi","Veerraju","Suhas"];
document.write("Concat():     "+emp.concat(emp2)+"<br>");
document.write("
Includes():"+emp.includes("Ramesh")+"<br>");
var fruits = ["Banana", "Orange", "Apple", "Mango"];
fruits.shift();
document.write("Shift():   "+fruits+"<br>");
fruits.unshift("Lemon");
document.write("UnShift():   "+fruits+"<br>");
emp.pop();
document.write("POP():   "+emp+"<br>");
document.write("Fill():    "+emp.fill("CSE-
A")+"<br>");
fruits[fruits.length] = "Kiwi";
document.write("length:   "+fruits+"<br>");
fruits.splice(2, 0, "Lemon", "Kiwi");
document.write("Splice():   "+fruits+"<br>");
var b=fruits.slice(1);
document.write("Slice:   "+fruits+"<br>"+b+"<br>");
fruits.sort();
document.write("Sort():   "+fruits+"<br>");
```

</script>
</body>
</html>
Output:



c. Write a JavaScript program to explain about Date object.
Program:

```
<html>
<head> <title> Date Object </title> </head>
<body>
<center>
<h1><u> Date Object in Java Script</u></h1><br>
<script>
var my_date=new Date();
document.write("The date is :"+ my_date.toString()+"<br>");
document.write("Today's Date is :"+my_date.getDate()+"<br>");
document.write("Month is :"+my_date.getMonth()+"<br>");
document.write("Year is :"+my_date.getFullYear()+"<br>");
document.write("Hours :"+my_date.getHours()+"<br>");
document.write("Minutes :"+my_date.getMinutes()+"<br>");
document.write("Seconds :"+my_date.getSeconds()+"<br>");
</script>
</center>
</body>
</html>
```

Output:

Experiment-8: Conditional Statements, switch

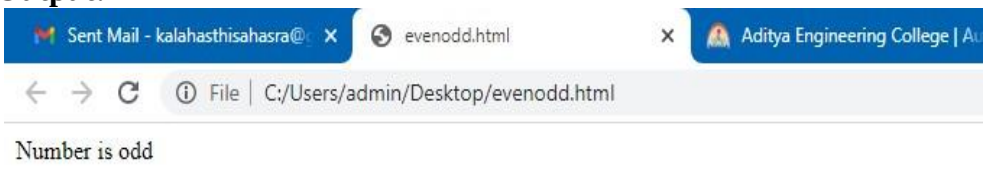
a. Write a program to demonstrate the conditional statements – if, if else, else if ladder.

If:

Program:

```
<html>
<script> let
a=25;
if(a%2==0)
document.write("Number is even"); if(a%2!=0)
document.write("Number is odd");
</script>
</html>
```

Output:



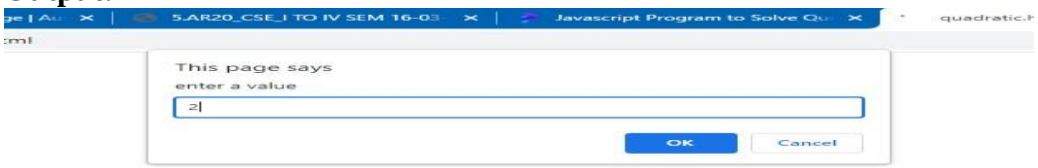
If-else:

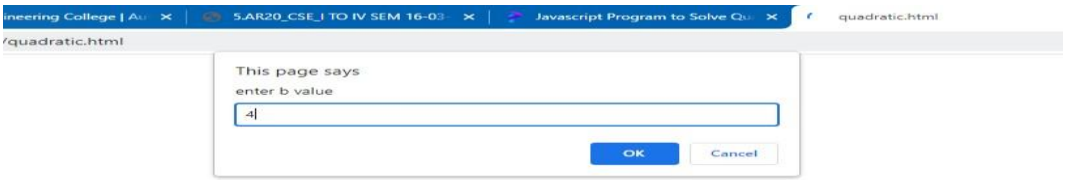
Program:

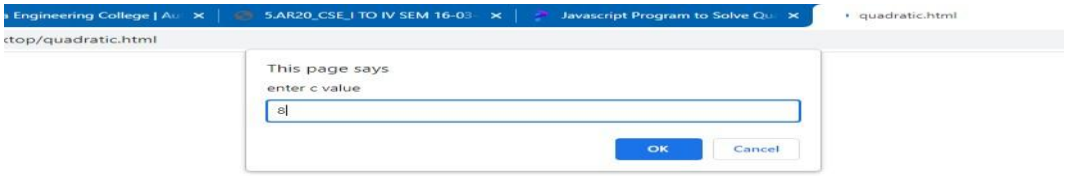
```
<html>
<body>
<h1>program for quadratic equation</h1>
<script>
let a=window.prompt("enter a value");
let b=window.prompt("enter b value");
let c=window.prompt("enter c value");
let discriminant=(b*b)-(4*a*c);
if (discriminant > 0) {
root1 = (-b + Math.sqrt(discriminant)) / (2 * a);
root2 = (-b - Math.sqrt(discriminant)) / (2 * a);
```

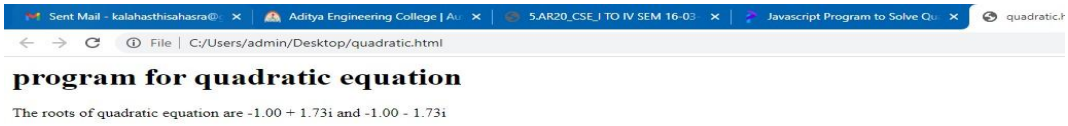
```
   document.write(`The roots of quadratic equation are ${root1} and ${root2}`);
} else if (discriminant == 0){
root1 = root2 = -b / (2 * a);
  document.write(`The roots of quadratic equation are ${root1} and ${root2}`);
}
else{
   let realPart = (-b / (2 * a)).toFixed(2);
   let imagPart = (Math.sqrt(-discriminant) / (2 * a)).toFixed(2);
  document.write(`The roots of quadratic equation are ${realPart} + ${imagPart}i and
${realPart} - ${imagPart}i`);
}
</script>
</html>
```

Output:









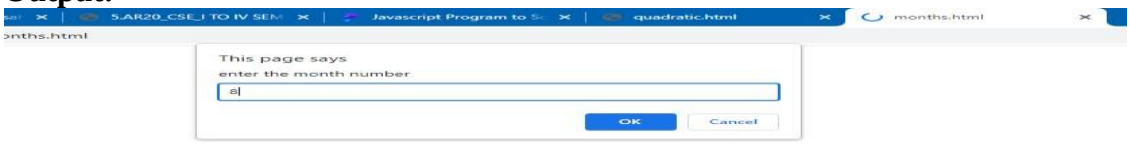
Nested if:

Program:

```
<html>
<body>
<h2>program to print the corresponding months for the given number</h2>
<script>
let a=window.prompt("enter the month number");
```

```
if(a==1)
document.write("january")
else if(a==2)
document.write("february");
else if(a==3)
document.write("march");
else if(a==4)
document.write("april");
else if(a==5)
document.write("may");
else if(a==6)
document.write("june");
else if(a==7)
document.write("july");
else if(a==8)
document.write("august");
else if(a==9)
document.write("september");
else if(a==10)
document.write("october");
else if(a==11)
document.write("november");
else if(a==12)
document.write("december");
else
document.write("invalid number");
</script>
</html>
```

Output:



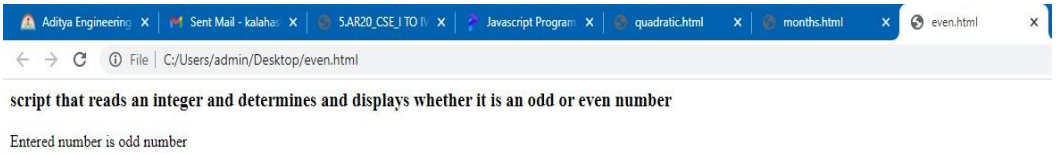
b. Write a script that reads an integer and determines and displays whether it is an odd or even number.

Program:

```
<html>
<body>
```

<h3>script that reads an integer and determines and displays whether it is an odd or even number</h3>
<script>
let a=window.prompt("enter a value");
if(a%2==0)
document.write("Entered number is even number") else
document.write("Entered number is odd number")
</script>
</html>

Output:



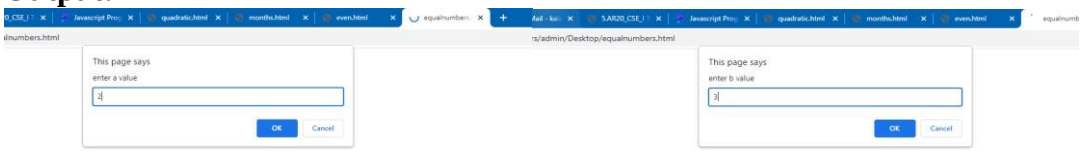
c. Write a javascript which asks the user to enter three integers, obtains the numbers from the user and outputs HTML text that displays the larger number followed by the words "LARGER NUMBER" in an information message dialog. If the numbers are equal, output HTML text as "EQUAL NUMBERS".

Program:

<html>
<body>
<h3>Largest among three numbers</h3>
<script>
let a=window.prompt("enter a value");
let b=window.prompt("enter b value");
let c=window.prompt("enter c value");
if(a>b && a>c)
document.write(a+" is the largest number")
else if(b>c && b>a)
document.write(b+" is the largest number")
else if(c>a && c>b)

```
document.write(c+" is the largest number")
else if(a==b && b==c)
document.write("equal numbers")
</script>
</html>
```

Output:



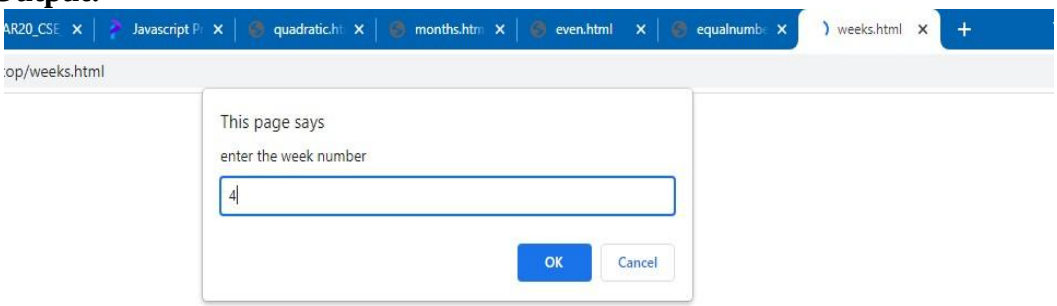
d. Write a JavaScript program to display week days using switch case.

Program:

```
<html>
<body>
<h3>JavaScript program to display week days using switch case</h3>
<script>
let a=parseInt(window.prompt("enter the week number"));
switch(a){
case 1:
document.write("Sunday")
break;
case 2:
document.write("Monday")
break
case 3:
document.write("Tuesday")
break;
case 4:
document.write("Wednesday")
break;
case 5:
document.write("Thursday")
break;
case 6:
document.write("Friday")
```

```
break;
case 7:
document.write("Saturday")
break;
default:
document.write("Invalid Number")
}
</script>
</html>
```

Output:



Date:

Experiment-9: Loops

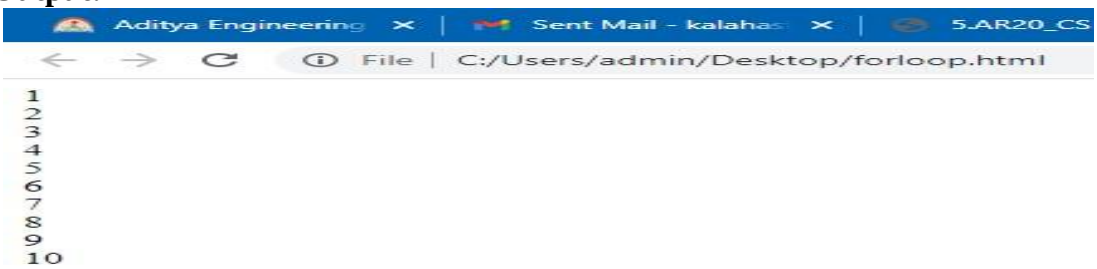
a. Write a JavaScript program to print 1 to 10 numbers using for, while and do-while loops.

For loop:

Program:

```
<html>
<body>
<script>
for(let a=1;a<=10;a++)
document.write(a+"<br>")
</script>
</html>
```

Output:

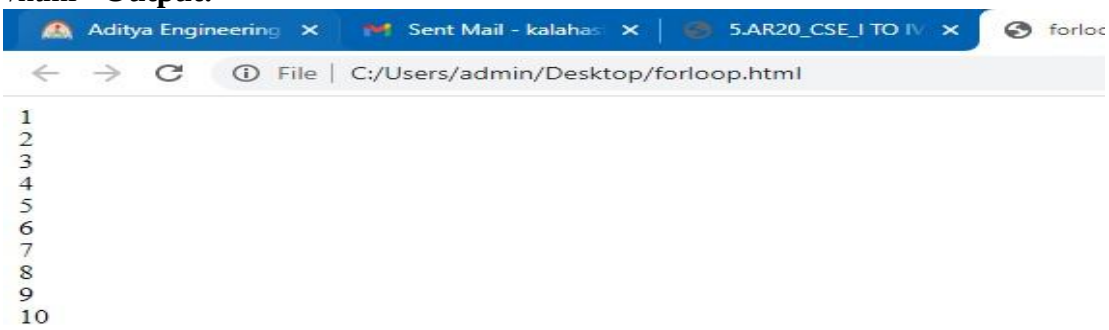


While :

Program:

```
<html>
<body>
<script>
var a= 1;
while (a<=10) {
document.write(a+"<br>");
a++;
}
</script>
</html>
```

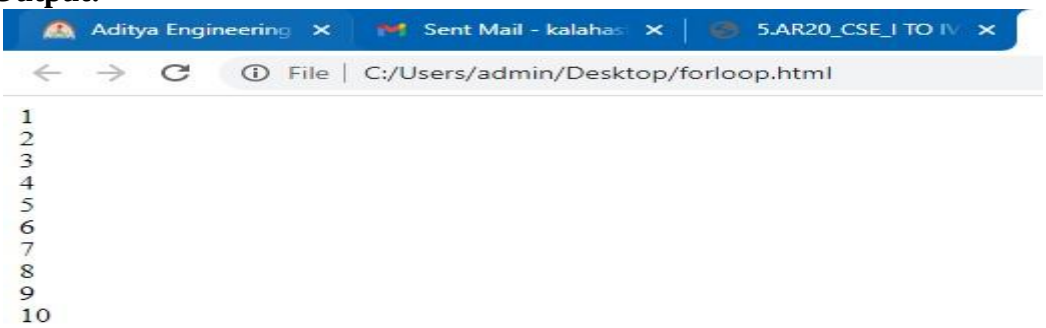
Output:



do-while: Program:

```
<html>
<body>
<script>
var a= 1;
do {
document.write(a+"<br>");
a++; }while (a<=10)
</script>
</html>
```

Output:



b. Write a JavaScript program to print data in object using for-in, for-each and for-of loops.

Program:

For-in:

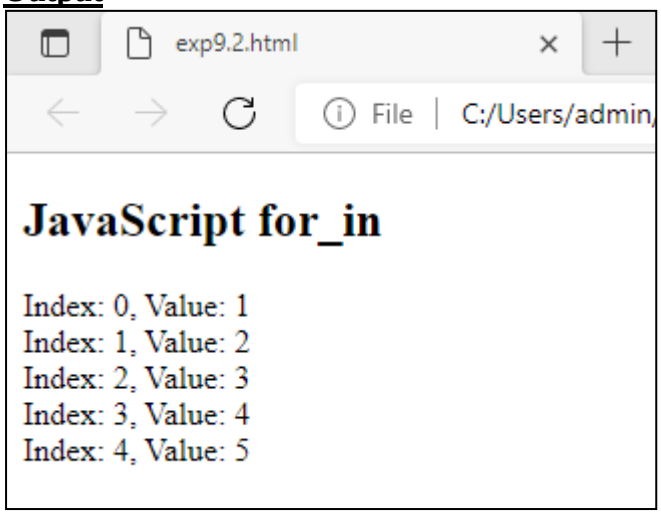
```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript for_in</h2>
<script>
const student =
{
   Name: 'John',
   Age: 20,
   Hobbies: ['reading', 'games', 'coding'],
};
for (let key in student)
{
   let value;
   value = student[key];
   document.write(key + " - " +  value);
   document.write("<br>");
}
</script>
</body>
</html>
```

Output:

For-each:

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript for_each</h2>
<script>
numbers = [1, 2, 3, 4, 5];
 numbers.forEach((number, index) =>
 {
   document.write('Index: ' + index + ', Value: ' + number);
   document.write("<br>");
}
);
</script>
</body>
</html>
```

Output



For-of:

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript for_of</h2>
<script>
const student =
{
   Name: 'John',
   Age: 20,
   Hobbies: ['reading', 'games', 'coding'],
};
for (let [key, value] of Object.entries(student))
{
   document.write(key + " - " +  value);
   document.write("<br>");
}
</script>
</body>
</html>
```

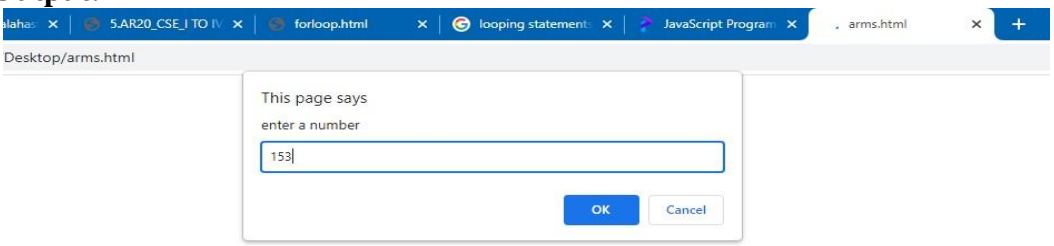
Output:

c. Develop a javascript to determine whether a given number is an 'ARMSTRONG NUMBER' or not. [Eg: 153 is an Armstrong number, since sum of the cube of the digits is equal to the number i.e.,13 + 53+ 33 = 153].

Program:

```
<html>
<body> <script>
let n=window.prompt("enter a number");
let temp=n; let sum=0;
while(temp>0){
let rem=temp%10;
sum=sum+rem*rem*rem;
temp=parseInt(temp/10);
} if(sum==n)
document.write("Yes!!Its a armstrong number");
else
document.write("No!!Its not a armstrong number");
</script>
</html>
```

Output:



Experiment-10: Functions and Objects

a. Write a program to explain the concept of functions. Define a function, pass parameters, return values, local and global scope.

Program:

```
<html>
<head>
   <title>Functions!!!</title>
<script type="text/javascript">
function myfirstFunction()
    {
   document.write("This is just a simple user-defined  function.<br />");
    }
     myfirstFunction();
   </script>
</head>
<body>
</body>
</html>
```

Output:

b. Design a appropriate JavaScript function should be called to display

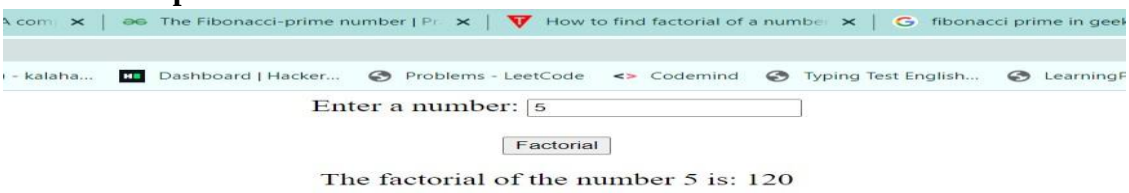
i. Factorial of that number

Program:

```
<!DOCTYPE html>
<html>
<head>
</head>
<body style = "text-align: center; font-size: 20px;">
Enter a number: <input id = "number">
<br><br>
<button onclick = "fact1()"> Factorial </button>
<p id = "res"></p>
<script>
function fact(num)
{
```

```
if (num == 0) {
return 1;
} else {
return num * fact( num - 1 );
}
}
function fact1()
{
var num = document.getElementById("number").value;
var f = fact(num);
document.getElementById("res").innerHTML="The factorial of the number "+num+" is: "+f;
}
</script>
</body>
</html>
```

Output:

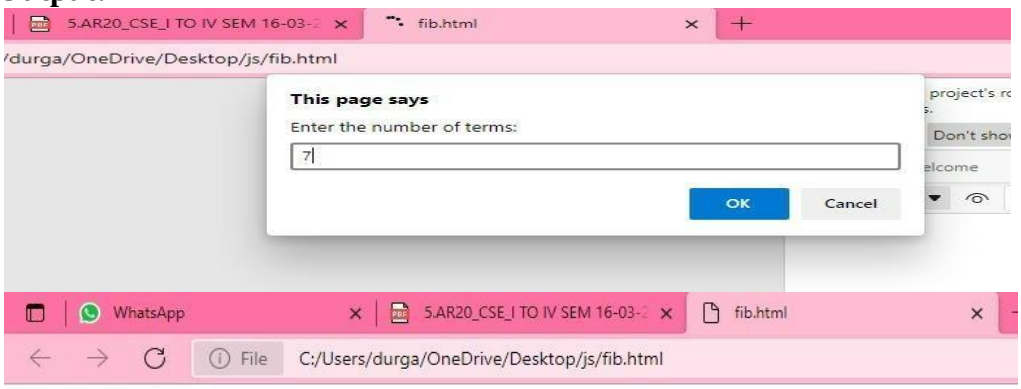


ii. Fibonacci series up to that number

Program:

```
<html>
<body>
<script>
function fibonacci(num) {
if(num < 2) {
      return num;
} else {
      return fibonacci(num-1) + fibonacci(num - 2);
   }
}
const n=prompt('Enter the number of terms: ');
if(n<=0) {
   document.write('Enter a positive integer.');
}
else{
   for(let i = 0; i < n; i++) {
      document.write(fibonacci(i)+"<br>");
   }
}
</script>
</body>
</html>
```

Output:

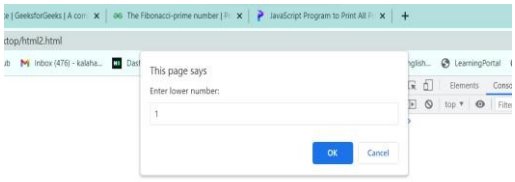


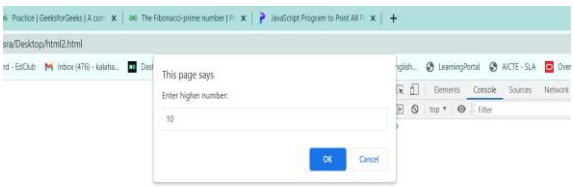
0
1
1
2
3
5
8

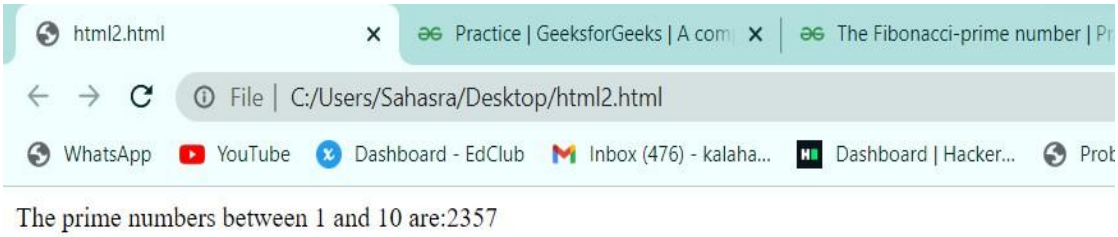
iii. Prime numbers up to that number

```
<html>
<body>
<script>
const lowerNumber = parseInt(prompt('Enter lower number: '));
const higherNumber = parseInt(prompt('Enter higher number: '));
document.write(`The prime numbers between ${lowerNumber} and ${higherNumber} are:`);
for (let i = lowerNumber; i <= higherNumber; i++) {
let flag = 0;
for (let j = 2; j < i; j++) {
if (i % j == 0) {
            flag = 1;
           break;
        }
    }
    if (i > 1 && flag == 0) {
document.write(i);
    }
}
</script>
</body>
 </html>
```

Output:



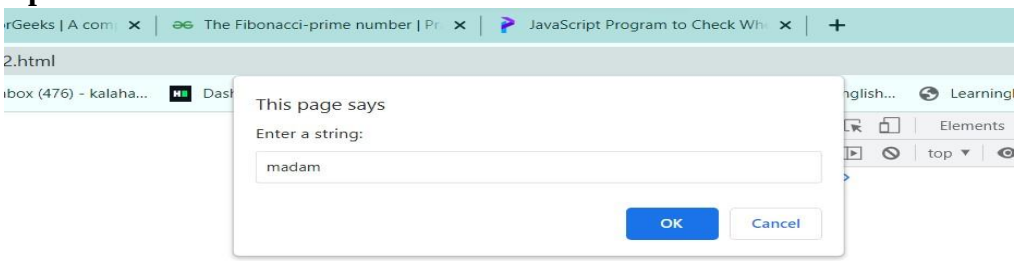


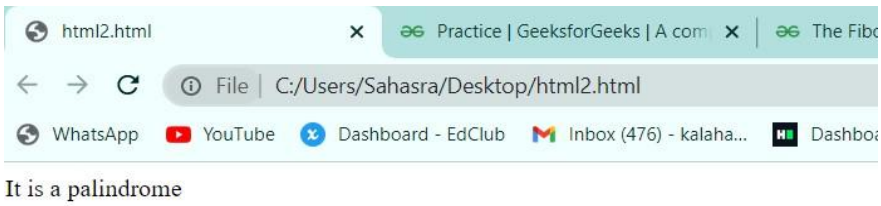


iv. Is it palindrome or not

```
<html>
<body>
<script>
function checkPalindrome(string) {
const len = string.length;
for (let i = 0; i < len / 2; i++) {
if (string[i] !== string[len - 1 - i]) {
          return 'It is not a palindrome';
       }
}
   return 'It is a palindrome';
}
const string = prompt('Enter a string: ');
const value = checkPalindrome(string);
document.write(value);
</script>
</body>
</html>
```

Output:





Experiment-11: Objects

Write a program to explain user-defined object by using properties, methods, accessors, constructors and display.

OBJECTS PROPERTIES:

Program:

```
<html>
<head>
<title>javascript objects</title>
</head>
<body bgcolor="aqua">
<center>
<h2>objects in javascript with .access property</h2>
<p id="sample"></p>
</center>
<script> //objects
const student =
{
name : "Alekhya",
age : 19,
branch : "Computer Science and Engineering",
rollnumber : "20A91A05B0",
};
document.getElementById("sample").innerHTML=student.name+" of the age
"+student.age+" studies "+student.branch+" with rollnumber "+student.rollnumber+".";
</script>
</body>
</html>
```

Output:

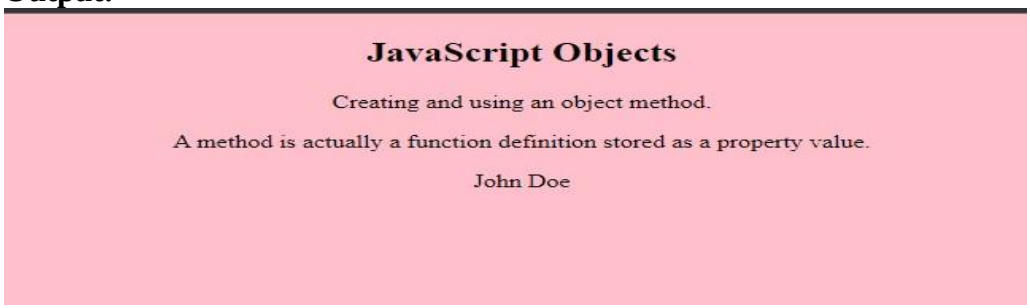
OBJECT METHODS:

Program:

```
<!DOCTYPE html>
<html>
<body bgcolor="pink">
<center>
<h2>JavaScript Objects</h2>
<p>Creating and using an object method.</p>
<p>A method is actually a function definition stored as a property value.</p>
<p id="demo"></p>
```

```
</center>
<script>
const person =
{
firstName:"John",
lastName: "Doe",
 id: 5566,
fullName: function() {
return this.firstName + " " + this.lastName;}
};
document.getElementById("demo").innerHTML = person.fullName();
</script>
</body>
</html>
```

Output:



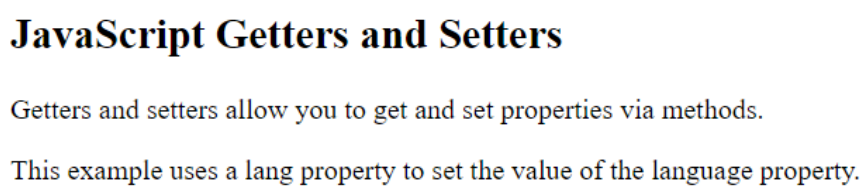
OBJECT ACCESSORS

SETTER:

Program:

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript Getters and Setters</h2>
<p>Getters and setters allow you to get and set properties via methods.</p>
<p>This example uses a lang property to set the value of the language property.</p>
<p id="demo"></p>
<script>
// Create an object:
const person = {
firstName: "John",
lastName: "Doe",
language: "NO",
set lang(value) {
this.language = value;
}}; // Set a property
using set:
person.lang = "en";
// Display data from the object:
document.getElementById("demo").innerHTML = person.language;
</script>
</body>
</html>
```

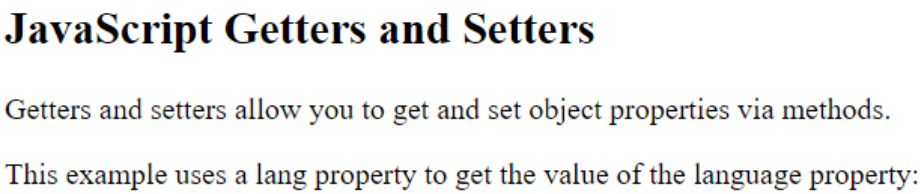
Output:



GETTER:

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript Getters and Setters</h2>
<p>Getters and setters allow you to get and set object properties via methods.</p>
<p>This example uses a lang property to get the value of the language property:</p>
<p id="demo"></p>
<script>
// Create an object:
const person = {
firstName: "John",
lastName: "Doe",
language: "en",
get lang() {     return
this.language; }};
// Display data from the object using a getter:
document.getElementById("demo").innerHTML = person.lang;
</script>
</body>
</html>
```

Output:



CONSTRUCTORS:
Program:

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript Object Constructors</h2>
<p id="demo"></p>
<script>
// Constructor function for Person objects function
Person(first, last, age, rollnumber) {
this.firstName = first;
this.lastName = last;
this.age = age;
this.rollnumber=rollnumber;
}
// Create a Person object
const student= new Person("John", "Doe", 50,"20a91a5201");
// Display age
document.getElementById("demo").innerHTML =
"firstname is: " + student.firstName +"<br>"+ " lastname is:
"+student.lastName+"<br>"+"age is: "+student.age+"<br>"+" rollnumber is:
"+student.rollnumber;
</script>
</body>
</html>
```

Output:

JavaScript Object Constructors

firstname is: John
lastname is: Doe
age is: 50
rollnumber is: 20a91a5201

Experiment-12: Events

a. Design a HTML having a text box and four buttons named Factorial, Fibonacci, Prime, and Palindrome. When a button is pressed an appropriate javascript function should be called to display

i. Factorial of that number

ii. Fibonacci series up to that number

iii. Prime numbers up to that number

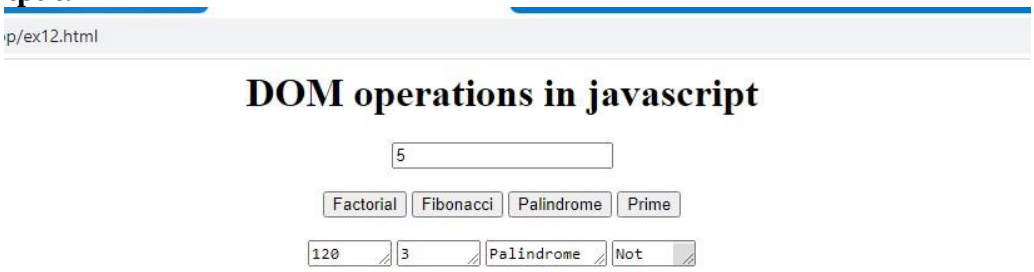
iv. Is it palindrome or not

Program:

```
 <html>
<head>
<title>Math Operations</title>
<script type="text/javascript">
function fact(){
   var str=document.getElementById("val").value;
   var num=parseInt(str);
var i,fact=1;
   for(i=1;i<=num;i++){
fact=fact*i;
   }
   document.getElementById("first").innerHTML=fact;
}
function fibo(){
    var str=document.getElementById("val").value;
    var num=parseInt(str);
var a=0,b=1,c=3;
while(c<=num){
if(c>num){
break;
    }
    var d=a+b;
a=b;
b=d;
c+=1;
}
    document.getElementById("second").innerHTML=b;
}
function palin(){
  var str=document.getElementById("val").value;
  var num=parseInt(str);
var temp=num,rev=0,r;
while(num!=0){
r=num%10;
rev=(rev*10)+r;
    num=Math.floor(num/10);
  }
  if(temp==rev){
    document.getElementById("third").innerHTML="Palindrome";
```

```
  }
else{
    document.getElementById("third").innerHTML="Not Palindrome";
  } }
function prime(){
  var str=document.getElementById("val").value;
  var num=parseInt(str);
var i,ft=0;
for(i=2;i<num;i++){
   if(num%i==0){
     fl=1;
break;
    }   }
if(fl==0){
    document.getElementById("fourth").innerHTML="Prime";
  }
else{
     document.getElementById("fourth").innerHTML="Not Prime";
  }
}
</script>
</head>
<body>
<center>
<h1>DOM operations in javascript</h1>
<input id="val" placeholder="Number"/>
<br><br>
<div class ="buttons">
<button class="bt" id="val" onclick="fact()">Factorial</button>
<button class="bt" id="val" onclick="fibo()">Fibonacci</button>
<button class="bt" id="val" onclick="palin()">Palindrome</button>
<button class="bt" id="val" onclick="prime()">Prime</button>
</div>
<br>
<div>
<textarea id="first" class="bt" rows="1" cols="6"></textarea>
<textarea id="second" class="bt" rows="1" cols="6"></textarea> <textarea id="third"
class="bt" rows="1" cols="10"></textarea>
<textarea id="fourth" class="bt" rows="1" cols="6"></textarea>
</div>
</center>
</body>
</html>
```

Output:

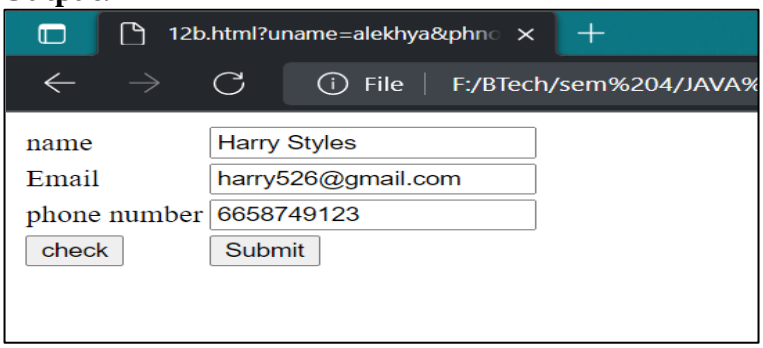


b. Write a JavaScript to validate the following fields in a registration page created in Experiment 2
i. Name (start with alphabet and followed by alphanumeric and the length should not be less than 6 characters)
ii. Mobile (only numbers and length 10 digits)
iii. E-mail (should not contain invalid email addresses)
Program:

```
<html>
<head></head>
<body>
<form name='form1'>
<table border=0>
<tr>
<td><label >name</td>
<td><input type='text' value='enter name'
name='uname'></td>
</tr>
<tr>
<td><label name='email'>Email</label></td>
<td><input type='email' value='@gmail.com'></td>
</tr>
<tr>
<td><label>phone number</td>
<td><input type='number' name='phno'></td>
</tr>
<tr>
<td>
<input type='button' value='check' onclick="fun1()" >
</td>
<td><p id='one'></p>
</tr>
</table>
</form>
<script>
var flag=1;
function fun1() {
        var x=document.form1.uname.value;
if(x.length<6){ document.form1.uname.value=null;
flag=0;
```

```
 }
 if(/[a-zA-Z]/.test(x[0]) == false)
 {
 flag=0; document.form1.uname.value=null;
 }
 var y=document.form1.phno.value; y=y.toString();
 if(y.length != 10){
 document.form1.phno.value=null;
 flag=0; }
 if(flag==1)
 document.getElementById('one').innerHTML="<input type='submit'>";
 else
 window.alert('your fields doesnot meet constraints');
 }
 </script>
 </body>
 </html>
```

Output:



Failure: