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<!--Exp7 : predefined object -->
<!DOCTYPE html>
<html>
<head>
  <title>JavaScript Pre-defined Objects</title>
  <script>
    function show() {
      let output = "";
      // a. Document Object
      output += "Document Title: " + document.title +
"<br>";
      output += "Document URL: " + document.URL +
"<br>";
      output +=
document.getElementById("output").innerHTML=
"Document.getElementById() method"+"<br><br>";
      // b. Window Object
      output += "Window Width: " + window.innerWidth +
"<br>";
      output += "Window Height: " + window.innerHeight
+ "<br><br>";
      // c. Array Object
      output += "Array Object Properties and
Methods:"+"<br>";
      let fruits = ["Apple", "Banana", "Mango"];
      output += "fruits:" + fruits+"<br>";
      output += "Number of Fruits: " + fruits.length +
"<br>";
      // output += "Fruits: " + fruits.join("|")
+"<br><br>";
      output += "Reverse:" + fruits.reverse() +
"<br><br>";
      // d. Math Object
      output += "Math Object Properties and
Methods:"+"<br>";
      output += "Math PI: " + Math.PI + "<br>";
      output += "Square root of 25: " + Math.sqrt(25) +
"<br><br>";
      // e. String Object
      output += "String Object Properties and
Methods:"+"<br>";
      let str = "JavaScript";
      output += "String: " + str + "<br>";
      // Property (the string itself)
      output += "Length of string: " + str.length +
"<br>"; // Property
      output += "Uppercase: " + str.toUpperCase() +
"<br><br>"; // Method
      // f. RegExp Object
      output += "RegExp Object Properties and
Methods:"+"<br>";
      let pattern = /javascript/i;
      let text = "HTML,CSS, JavaScript";
      output += "Contains 'javascript'? : " +
pattern.test(text) + "<br><br>";
      // g. Date Object
      output += "Date Object Properties and
Methods:"+"<br>";
      let today = new Date();

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        output += "Date : " + today + "<br>";
        output += "Current Date: " + today.toString()
+ "<br>";
        output += "Current Time: " +
today.toLocaleTimeString() + "<br>";
        document.getElementById("output").innerHTML =
output;
    }
</script>
</head>
<body>
    <h1>JavaScript Pre-defined Objects</h1>
    <button onclick="show()">Show</button>
    <p id="output"></p>
</body>
</html>

```

<!--7. h. Write a program to explain user-defined object by using properties, methods, accessors, constructors and display -->

```

<!DOCTYPE html>
<html>
<head>
    <title>User Defined Objects in JavaScript</title>
</head>
<body>
    <h2>Person - User Defined Object in JavaScript</h2>
    <button onclick="showPerson()">Show Person
Info</button>
    <!-- Paragraph to display output -->
    <p id="output" style="color: red;"></p>
    <script>
        // Person class
        class Person {
            _name;
            _age;
            constructor() {
                this._name = "";
                this._age = 0;
            }
            // Getter for name
            get name() {
                return this._name;
            }
            // Setter for name (at least 6 characters)
            set name(newName) {
                if (newName.length >= 6) {
                    this._name = newName;
                } else {

document.getElementById("output").innerHTML +=
"Invalid Name: Name must be at least 6
characters"+"<br>";
                }
            }
            // Getter for age
            get age() {
                return this._age;
            }
        }
    </script>

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    }
    // Setter for age (must be positive)
    set age(newAge) {
        if (newAge > 0) {
            this._age = newAge;
        } else {

document.getElementById("output").innerHTML += "Invalid
Age: Age must be positive";
        }
    }
    // Method to display info
    display() {
        return "Name: " + this._name +
"<br>Age: " + this._age;
    }
}
function showPerson() {
    const person = new Person();

    // Valid
    //person.name = "abcxyz";
    //person.age = 30;

//document.getElementById("output").innerHTML =
person.display();

    // Invalid
    person.name = "abc";    // invalid
    person.age = -5;        // invalid

}
</script>
</body>
</html>

```

<!--a. Write a program 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"

```

-->
<!DOCTYPE html>
<html>
<head>
    <title>Largest of Three Numbers</title>
</head>
<body>
    <h2>Largest of Three Numbers</h2>

    <input type="number" id="num1" placeholder="Enter
First Number"><br><br>
    <input type="number" id="num2" placeholder="Enter
Second Number"><br><br>
    <input type="number" id="num3" placeholder="Enter
Third Number"><br><br>

    <button onclick="findLargest()">Find Largest</button>

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<p id="result"></p>

<script>
    function findLargest() {
        let a =
parseInt(document.getElementById("num1").value);
        let b =
parseInt(document.getElementById("num2").value);
        let c =
parseInt(document.getElementById("num3").value);

        if (a === b && b === c) {
            document.getElementById("result").innerHTML =
"EQUAL NUMBERS";
        } else {
            let largest = a;
            if (b > largest) largest = b;
            if (c > largest) largest = c;
            document.getElementById("result").innerHTML =
largest + " LARGER NUMBER";
        }
    }
</script>
</body>
</html>

```

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<!-- 8.b. Write a program to display week days using
switch case-->
<!DOCTYPE html>
<html>
<head>
    <title>Weekdays using Switch Case</title>
</head>
<body>
    <h2>Display Weekdays</h2>

    <label>Enter a number (1-7): </label>
    <input type="number" id="numInput" min="1" max="7">
    <button onclick="showDay()">Show Day</button>

    <p id="result"></p>

    <script>
        function showDay() {
            let num =
parseInt(document.getElementById("numInput").value);
            let day;

            switch(num) {
                case 1: day = "Sunday"; break;
                case 2: day = "Monday"; break;
                case 3: day = "Tuesday"; break;
                case 4: day = "Wednesday"; break;
                case 5: day = "Thursday"; break;
                case 6: day = "Friday"; break;
                case 7: day = "Saturday"; break;
                default: day = "Invalid Day";
            }
        }
    </script>

```

```

        document.getElementById("result").innerHTML =
day;
    }
</script>
</body>
</html>
<!--8.c. Write a program to print 1 to 10 numbers using
for, while and do-while loops -->
<!-- loops_numbers.html -->
<!DOCTYPE html>
<html>
<head>
    <title>Print Numbers using Loops</title>
</head>
<body>
    <h2>Print Numbers 1 to 10 using Loops</h2>

    <button onclick="usingFor()">For Loop</button>
    <button onclick="usingWhile()">While Loop</button>
    <button onclick="usingDoWhile()">Do-While
Loop</button>

    <p id="output"></p>
    <p id="output1"></p>
    <p id="output2"></p>

    <script>
        // For loop
        function usingFor() {
            let result = "";
            for (let i = 1; i <= 10; i++) {
                result += i + " ";
            }
            document.getElementById("output").innerHTML =
"For Loop: " + result;
        }

        // While loop
        function usingWhile() {
            let i = 1, result = "";
            while (i <= 10) {
                result += i + " ";
                i++;
            }
            document.getElementById("output1").innerHTML =
"While Loop: " + result;
        }

        // Do-While loop
        function usingDoWhile() {
            let i = 1, result = "";
            do {
                result += i + " ";
                i++;
            } while (i <= 10);
            document.getElementById("output2").innerHTML =
"Do-While Loop: " + result;
        }
    </script>
</body>

```

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</html>
```

```
<!--8.d. Write a program to print data in object using  
for-in, for-each and for-of loops -->
```

```
<!-- object_loops.html -->
```

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
  <title>Object Data using Loops</title>
```

```
</head>
```

```
<body>
```

```
  <h2>Print Data using Loops</h2>
```

```
  <button onclick="showForIn()">For-In Loop</button>
```

```
  <button onclick="showForEach()">For-Each
```

```
Loop</button>
```

```
  <button onclick="showForOf()">For-Of Loop</button>
```

```
  <p id="output"></p>
```

```
  <p id="output1"></p>
```

```
  <p id="output2"></p>
```

```
  <script>
```

```
    // Object with key-value pairs
```

```
    let student = { name: "Ravi", age: 20, course:  
"B.Tech" };
```

```
    // Array for forEach and for-of
```

```
    let numbers = [10, 20, 30, 40, 50];
```

```
    // For-In Loop (object)
```

```
    function showForIn() {
```

```
      let result = "";
```

```
      for (let key in student) {
```

```
        result += key + ": " + student[key] + "<br>";
```

```
      }
```

```
      document.getElementById("output").innerHTML =
```

```
"For-In Loop:<br>" + result;
```

```
    }
```

```
    // For-Each Loop (array)
```

```
    function showForEach() {
```

```
      let result = "";
```

```
      numbers.forEach(function(value) {
```

```
        result += value + " ";
```

```
      });
```

```
      document.getElementById("output1").innerHTML =
```

```
"For-Each Loop:<br>" + result;
```

```
    }
```

```
    // For-Of Loop (array)
```

```
    function showForOf() {
```

```
      let result = "";
```

```
      for (let value of numbers) {
```

```
        result += value + " ";
```

```
      }
```

```
      document.getElementById("output2").innerHTML =
```

```
"For-Of Loop:<br>" + result;
```

```
    }
```

```
</script>
</body>
</html>
```

```
<!-- 8.e. Develop a program 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]-->
```

```
<!-- armstrong_number.html-->
<!DOCTYPE html>
<html>
<head>
  <title>Armstrong Number Check</title>
</head>
<body>
  <h2>Check Armstrong Number</h2>

  <label>Enter a number: </label>
  <input type="number" id="numInput">
  <button onclick="checkArmstrong()">Check</button>

  <p id="result"></p>

  <script>
    function checkArmstrong() {
      let num =
parseInt(document.getElementById("numInput").value);
      let original = num;
      let sum = 0;

      while (num > 0) {
        let digit = num % 10;
        sum += digit * digit * digit;
        num = Math.floor(num / 10);
      }

      if (sum === original) {
        document.getElementById("result").innerHTML =
original + " is an Armstrong Number";
      } else {
        document.getElementById("result").innerHTML =
original + " is Not an Armstrong Number";
      }
    }
  </script>
</body>
</html>
```

```
<!--9 b. Design a HTML having a text box and four
buttons names Factorial, Fibonacci, Prime, and
Palindrome. When a button is pressed an appropriate
function should be called to display
1.Factorail of that number
2.Fibonacci series up to that number
3. Prime numbers up to that number
4. Is it palindrome or not -->
<!DOCTYPE html>
<html>
<head>
```

```

<title>Factorial, Fibonacci, Prime and Palindrome
Operations</title>
</head>
<body>
  <h2>Factorial, Fibonacci, Prime and Palindrome
Operations in JavaScript</h2>
  <input type="number" id="num" placeholder="Enter a
number">
  <br><br>

  <button onclick="factorial()">Factorial</button>
  <button onclick="fibonacci()">Fibonacci</button>
  <button onclick="primeNumbers()">Prime</button>
  <button
onclick="checkPalindrome()">Palindrome</button>

  <p id="result"></p>
  <p id="result1"></p>
  <p id="result2"></p>
  <p id="result3"></p>

  <script>
    // Factorial
    function factorial() {
      let n =
parseInt(document.getElementById("num").value);
      let fact = 1;
      for(let i = 1; i <= n; i++) {
        fact = fact*i;
      }
      document.getElementById("result").innerHTML =
"Factorial of " + n + " is " + fact;
    }

    // Fibonacci series
    function fibonacci() {
      let n =
parseInt(document.getElementById("num").value);

      if (n < 0) {
        document.getElementById("result1").innerHTML =
"Please enter a non-negative number";
        return; // stop the function
      }

      let series = [];
      let a = 0, b = 1;

      for(let i = 0; i < n; i++) {
        series.push(a);
        let temp = a + b;
        a = b;
        b = temp;
      }

      document.getElementById("result1").innerHTML =
      "Fibonacci series up to " + n + ": " +
series.join(", ");
    }
  </script>

```



```

        function primeNumbers() {
            let n =
parseInt(document.getElementById("num").value);
            if (n < 2) {
                document.getElementById("result2").innerHTML =
"There are no prime numbers up to " + n;
                return;
            }

            let primes = [];
            for (let i = 2; i <= n; i++) {
                let count = 0; // count of divisors
                for (let j = 1; j <= i; j++) {
                    if (i % j === 0) {
                        count++;
                    }
                }

                if (count === 2) { // divisible by 1 and itself
                    primes.push(i);
                }
            }
            document.getElementById("result2").innerHTML = "Prime
numbers up to " + n + ": " + primes.join(", ");
        }

        function checkPalindrome() {
            let n =
parseInt(document.getElementById("num").value);

            if (n < 0) {
                document.getElementById("result3").innerHTML =
"Please enter a non-negative number";
                return;
            }

            let original = n;
            let reversed = 0;

            while (n > 0) {
                let digit = n % 10;          // get last digit
                reversed = reversed * 10 + digit; // build
reversed number
                n = Math.floor(n / 10);      // remove last digit
            }

            if (reversed === original) {
                document.getElementById("result3").innerHTML =
original + " is a Palindrome";
            } else {
                document.getElementById("result3").innerHTML =
original + " is Not a Palindrome";
            }
        }

    </script>
</body>
</html>

```