Assignment: 1

1. **Write a program to find whether a given year is a leap year or not.**

Sol: -
```
function isLeapYear(year) {
    // Leap years are divisible by 4, but not divisible by 100 unless also divisible by 400
        return (year % 4 === 0 && year % 100 !== 0) || year % 400 === 0;
}

// example usage:
console.log(isLeapYear(2020)); // true
console.log(isLeapYear(2021)); // false
console.log(isLeapYear(2000)); // true
console.log(isLeapYear(2100)); // false
```

2. **Write a JavaScript program to convert temperatures to and from Celsius,Fahrenheit.[Formula : c/5 = (f-32)/9 [where c = temperature in Celsius and f = temperature inFahrenheit]**
   Expected Output: 60°C is 140 °F and 45°F is 7.222222222222222°C

Sol: -
```
function celsiusToFahrenheit(celsius) {
        // convert celsius to fahrenheit using the formula: c/5 = (f-32)/9
        let fahrenheit = (celsius * 9/5) + 32;
        return fahrenheit;
}

function fahrenheitToCelsius(fahrenheit) {
        // convert fahrenheit to celsius using the formula: c/5 = (f-32)/9
        let celsius = (fahrenheit - 32) * 5/9;
        return celsius;
}

// example usage:
console.log ("60°C is " + celsiusToFahrenheit(60) + "°F"); // 60°C is 140°F
console.log ("45°F is " + fahrenheitToCelsius(45) + "°C"); // 45°F is 7.222222222222222°C
```

3. **Write a program to find the factorial of a number.**

Sol: -
```
function factorial(num) {
  if (num < 0) {
    // return error message for negative numbers
    return "Factorial is not defined for negative numbers";
  } else if (num === 0) {
    // the factorial of 0 is 1
    return 1;
  } else {
    // calculate the factorial recursively
    return num * factorial(num - 1);
  }
}

// example usage:
console.log(factorial(5)); // 120
console.log(factorial(0)); // 1
console.log(factorial(-3)); // Factorial is not defined for negative numbers
```