PSG COLLEGE OF TECHNOLOGY, COIMBATORE – 641 004
Department of Applied Mathematics and Computational Sciences
MSc SOFTWARE SYSTEMS – Semester II
18XW28 – Web Designing Lab
PROBLEM SHEET 5 – JavaScript Basics & Control Statements

Start Date: 11.02.2020 **Complete Date:** 20.02.2020

1. Write a JavaScript in a web page to display the current day and time.
2. Write a JavaScript to convert a temperature Celsius to Fahrenheit and a temperature in Fahrenheit to Celsius.
3. Write a JavaScript to compute Simple Interest and Compound Interest for a given Principal, Rate of Interest and Duration of years. Use input popup box to get the input from the user. The formula are

   $$\textbf{Simple Interest} = \frac{Principal * Years * Rate\ of\ Interest}{100}$$

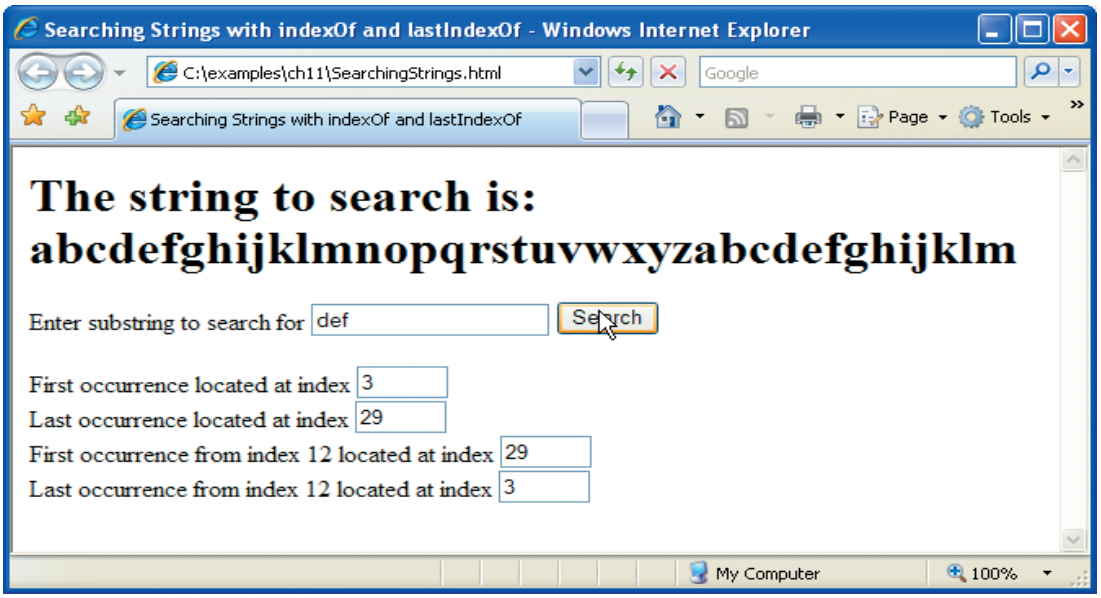
   $$\textbf{Compound Interest} = 1000 * \left[\left(1 + \frac{10}{100}\right)^{5}\right] - 1$$

4. Write a JavaScript program that accepts two points and determines the distance between them. Use input popup box to get the input and display the calculated value using alert popup box. The formula is $\textbf{Distance} = \sqrt{(x2 - x1)^2 + (y2 - y1)^2}$
5. Write a JavaScript program to compute the Area of a Triangle when the three sides are given. The formula is $\textbf{Area} = \sqrt{s(s-a)(s-b)(s-c)}$, where $\boldsymbol{S} = \frac{(a+b+c)}{2}$
6. Write a JavaScript that asks the user to enter two numbers, obtains the two numbers from the user and outputs text that displays the sum, product, difference and quotient of the two numbers.
7. Write a JavaScript that takes three integers from the user and displays the sum, average, product, smallest and largest of the numbers in an alert dialog.
8. Write a JavaScript that inputs five numbers and determines and outputs HTML text that displays the number of negative numbers input, the number of positive numbers input and the number of zeros input.
9. Write a JavaScript that reads in two integers and determines and outputs HTML text that displays whether the first is a multiple of the second.

10. Write a script that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in an HTML table format, as follows:

number	square	cube
0	0	0
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

11. Write a JavaScript that reads a five-letter word from the user and produces all possible three letter words that can be derived from the letters of the five-letter word. For example, the three-letter words produced from the word “bathe” include the commonly used words “ate,” “bat,” “bet,” “tab,” “hat,” “the” and “tea.” Output the results in an alert popup box.
12. Write a JavaScript program to find the first occurrence and last occurrence of a string in a given string. Also find it after the specified position as well. Use string object. The web form as shown below:



13. Dates are printed in several common formats. Write a JavaScript that reads a date from an HTML form and creates a **Date** object in which to store it. Then use the various methods of the **Date** object that convert Dates into strings to display the date in several formats.
14. Write a JavaScript that tests as many of the Math library functions as you can. Exercise each of these functions by having your program display tables of return values for several argument values in an HTML textarea.
15. The process of finding the largest value (i.e., the maximum of a group of values) is used frequently in computer applications. For example, a program that determines the winner of a sales contest would input the number of units sold by each salesperson. The salesperson who sells the most units wins the contest. Write a JavaScript program that inputs a series of 10 real numbers as strings, determines the largest of the numbers and outputs a message that displays the largest number.
16. A mail-order house sells five different products whose retail prices are as follows: product 1, $2.98; product 2, $4.50; product 3, $9.98; product 4, $4.49; and product 5, $6.87. Write a JavaScript that reads a series of pairs of numbers as follows:

    1. Product number
    2. Quantity sold for one day

    Your program should use a switch statement to determine each product's retail price and should calculate and output HTML that displays the total retail value of all the products sold last week. Use a ***prompt*** dialog to obtain the product number and quantity from the user. Use a sentinel-controlled loop to determine when the program should stop looping and display the final results. If the user inputs an invalid product number a proper ***alert*** window shall be displayed.
17. Develop a JavaScript program that will determine the gross pay for each of three employees. The company pays “straight time” for the first 40 hours worked by each employee and pays “time and a half” for all hours worked in excess of 40 hours. You are given a list of the employees of the company, the number of hours each employee worked last week and the hourly rate of each employee. Your program should input this information for each employee, determine the employee’s gross pay and output HTML text that displays the employee's gross pay. Use ***prompt*** dialogs to input the data.

18. A company wants to transmit data over the telephone, but it is concerned that its phones may be tapped. All of its data is transmitted as four-digit integers. It has asked you to write a program that will encrypt its data so that the data may be transmitted more securely. Your script should read a four-digit integer entered by the user in a ***prompt*** dialog and encrypt it as follows: Replace each digit by (the sum of that digit plus 7) modulus 10. Then swap the first digit with the third, and swap the second digit with the fourth. Then output HTML text that displays the encrypted integer.
19. Write a script that finds the smallest of several non-negative integers. Assume that the first value read specifies the number of values to be input from the user. Write a script that finds the smallest of several non-negative integers. Assume that the first value read specifies the number of values to be input from the user.
20. A palindrome is a number or a text phrase that reads the same backward and forward. For example, each of the following five-digit integers is a palindrome: 12321, 55555, 45554 and 11611. Write a script that reads in a five-digit integer and determines whether it is a palindrome. If the number is not five digits long, display an ***alert*** dialog indicating the problem to the user. Allow the user to enter a new value after dismissing the ***alert*** dialog.

Text Books:

1. ***P.J. Deitel and H.M.Deitel, "Internet & WWW How to Program", 2016***
2. ***Thomas Powell and Fritz Schneider, "JavaScript 2.0 – The Complete Reference", 2010***

Web Resources:

1. ***https://www.geeksforgeeks.org/javascript-tutorial/***
2. ***http://www.htmldog.com/guides/javascript/***
3. ***https://www.tutorialspoint.com/javascript/index.htm***
4. ***https://www.javatpoint.com/javascript-tutorial***