Ex.No.4: Programs using Java Script – Part I

4.a. Write a JavaScript program to prompt the user for the radius and call function Sphere_Volume to calculate and display the volume of the sphere. Also invoke the function Circle_Area to calculate and display the area of the circle. The user should input the radius through an XHTML text field in a form and click an XHTML button to initiate the calculation.

4.b. Write a function Compute_Distance that calculates the distance between two points (x1, y1) and (x2, y2). All numbers and return values should be floating-point values. Incorporate this function into a Java script that enables the user to enter the Coordinates of the points through an XHTML form.

4.c. Write a function Integer_Power(base, exponent) that returns the value of **Base** $^{\textbf{exponent}}$. Assume that exponent and base are integers. Function Integer_Power should use a for or while statement to control the calculation. Do not use any math library functions.

Incorporate this function into a Java script that reads integer values from an XHTML form for base and exponent and performs the calculation with the Integer_Power function. The XHTML form should consist of two text fields and a button to initiate the calculation. The user should interact with the program by typing numbers in both text fields and then clicking the button.

4.d.
a) Write a function that determines whether a number is prime or Not.

b) Use this function in a Java script that determines and prints all the prime numbers between 1 and 1000. How many of these 1000 numbers do you really have to test before being sure that you have found all the primes? Display the results in a <textarea>.

c) Initially, you might think that n/2 is the upper limit for which you must test to see whether a number is prime, but you only need go as high as the square root of n. Why? Rewrite the program, and run it both ways. Estimate the performance improvement.

4.e. Write a function that determines whether a number is Armstrong or Not. Use this function in a Java script that determines and prints all the Armstrong numbers between 100 and 5000.

4.f. Write a user defined function in Java script to design and simulate a Scientific Calculator that includes all the arithmetic and scientific operations.
