Fundamentals of Object Oriented Programming (CSN 103)　　　　**Assignment 2**

1　Write a JAVA program which asks the user to supply an alphabet in upper case from the key board. Then convert the alphabet in lower case.

2　Write a JAVA program to display the names of the Months of the year, depending upon the number entered by the user using:
　　　(i) if – else　　　　　　　(ii) switch – case

3　Read a positive integer value, and compute the following sequence: If the number is even, halve it; if it's odd, multiply by 3 and add 1. Repeat this process until the value is 1, printing out each value. Finally print out how many of these operations you performed. Write a JAVA Program.

4　Write a JAVA program to find the sum of the following series using
　　　　　(a) for loop (b) while loop and (c) do-while loop
　　I.　$\text{Sum} = 1 + 5 + 10 + 15 + ... + n$
　　II.　$\text{Sum} = 1 - \dfrac{1}{1!} + \dfrac{2}{2!} - \dfrac{3}{3!} + \dfrac{4}{4!} - .....$
　　III.　$\text{Sum} = x - \dfrac{x^3}{3!} + \dfrac{x^5}{5!} - \cdots - \dfrac{x^n}{n!}$
　　IV.　$\text{Sum} = 1^2 + 2^2 + 3^2 + \cdots + n^2$
　　V.　$\text{Sum} = 1^3 - 3^3 + 5^3 - \cdots n^3$

5　Write a JAVA program to simulate a calculator where the user enters two integer numbers and an operator (+, -, *, /, %). The program then carries out the specified operation and displays the result. Write using if statement as well as switch statement.

6　Write a JAVA program to display the table of a given number.

7　Write a JAVA program to check for palindromes for Integers as well as string using(For example *1221*, *57866875* and *avon sees nova* are some palindromes):
　　　(i) if – else　　　　　　　(ii) switch – case

8　Write a JAVA program to find the maximum and minimum of n numbers using:
　　　　　(a) for loop (b) while loop and (c) do-while loop

9　Write a JAVA program to check if given two numbers are relatively prime or not.

10　Write a JAVA program to find the perfect numbers between 1 to 100000. *m* is a perfect number if $\sigma(m) = 2m$, that is if *m* is the sum of all its positive divisors other than itself.

$\sigma(m)$ - sum of the positive divisors of *m*. For example $\sigma(12) = 1 + 2 + 3 + 4 + 6 + 12 = 28$ where 1, 2, 3, 4, 6 and 12 are the positive divisors of 12.
For example 28 is a perfect number $\sigma(28) = 1 + 2 + 4 + 7 + 14 + 28 = 56$

11　Write a JAVA program to generate Hemachandra series, 1, 2, 3, 5, 8, 13, 21...