SOOP Lab 2

Topic: Loops (for loop, while loop and do while loop)

Exercises:

- **Print second largest of a series of natural numbers (at least two) given as input. STOP when the user enters 0. Natural numbers are 1, 2, 3, 4……**

1. Write a program to calculate and display the sum and average of first *n* odd natural numbers.
2. Write a program to input an integer through the keyboard until the user chooses to quit upon the appearance of options. Every time a number is entered. The program should display whether it is greater than, less than or equal to the previous integer. [Assume initial integer value is 15]

Sample Input and Output
Enter an integer: 23
It is greater than 15.
Do you want to continue (y/n)? y
Enter an integer: 17
It is less than 23.
Do you want to continue (y/n)? y
Enter an integer: 17
It is equal to 17.
Do you want to continue (y/n)? n

3. Write a program to check whether a given integer is palindrome or not. [*121 is palindrome but 123 is not*]

4. Write a program to find the sum of the following series up to *n* terms.
   i. $x^2/2! + x^3/3! - x^4/4! + \ldots$
   ii. $1 + (1 + 2) + (1 + 2 + 3) + ... + (1 + 2 + 3 + ... + n)$

5. Write a program to determine all prime numbers within the range [a ...b] where a & b are input through keyboard.
6. Write a program to determine the GCD (greatest common divisor) and LCM (least common multiple) of 3 numbers.
7. Write a program to find, first using a 'while' loop and then a 'for' loop, the sum of first n terms ($n \geq 1$) of the series 2×3, 3×4, 4×5, …, (n+1)×(n+2). You need to verify that you get the same result in both the cases.
8. Write a program to check whether a given integer is palindrome or not. [*121 is palindrome but 123 is not*]
9. Write a program to print the Fibonacci series up to n terms where n is user input. *[Fibonacci Series: 0, 1, 1, 2, 3, 5, …]*