

## SOOP Lab 2

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

### Exercises:

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*]

## Home Practice 2 on Loops (for, while and do while)

4. Write a program to find the sum of the following series up to  $n$  terms.
  - i.  $x^2/2! + x^3/3! - x^4/4! + \dots$
  - ii.  $1 + (1 + 2) + (1 + 2 + 3) + \dots + (1 + 2 + 3 + \dots + n)$
5. Write a program to determine all prime numbers within the range  $[a \dots b]$  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  $2 \times 3, 3 \times 4, 4 \times 5, \dots, (n+1) \times (n+2)$ . 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, ...]*