Programming Fundamentals (BSCS1N)

Assignment # 1

[Pseudo code, Flow Chart, Dry Run]

Deadline: October 01, 2021 (Friday) Maximum Marks: 100

Note that 1st and 2nd problems carry 10 marks each; all others are 20 marks each.

For the following problems,

- Identify input, output and other variables (if any).
- Write down the brief basic idea to solve the problem.
- Write down the pseudo-code.
- Draw the flowchart.
- Dry run your algorithm for some fixed values of the input variables.

Problem# 1: Write down an algorithm that prints all the odd numbers less than **n** (where the value of n will be provided by user at the start. (e.g., if n = 10, the algorithm will display **Odd numbers less than 10 are 1 3 5 7 9** only).

Problem# 2: Write down an algorithm that takes a number from the user and outputs a table of that number from 1 to 10. (e.g., if the entered number is 12, the output should seem like

12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
.
.
.
12 x 10 = 120

Problem# 3: Write down an algorithm that reads **n** positive numbers and displays the largest number and its index (i.e., its position in the list). (e.g., if n = 5 and these 5 numbers are 12, 18, 3, 27, 20, the algorithm will display **largest number = 27**, **index = 4**)

Problem# 4: Write down an algorithm that prompts and gets **n** positive integer numbers from the user and outputs the smallest number in the list with its frequency in the list (i.e., how many times the largest number is present in the list).
(e.g., if n = 6 and these 6 numbers are 12, 18, 3, 27, 3, 17, the algorithm will display **smallest number = 3**, **frequency = 2**)

Problem# 5: Write down an algorithm that takes an integer number from the user and outputs all the prime numbers less than that number. (e.g., if input number is 18, the algorithm will display **2, 3, 5, 7, 11, 13, 17**)

Problem# 6: Write pseudo code and draw a flow chart of an algorithm that prompts and accepts four integer numbers from the user and outputs GCD (Greatest Common Divisor) of these.
(e.g., if input numbers are 18 and 27, the algorithm will display **GCD = 9**)