MIDTERM EXAM 20211

*(Any kind of documents IS NOT allowed)*

**Course:** C Programming (Introduction) – IT3220 **Class:** 127080

**Date:** 16/01/2022 **Duration:** 120 minutes

Writing a C program with the following functions:

1. Input 2 natural numbers m and n from stdin, finding and print out to stdout the greatest common divisor of m and n.
2. Input a natural number n (n <= 10) from stdin, print out to stdout a table n x n like belows (n = 3):

+-----+-----+-----+

| 1| 2| 3|

+-----+-----+-----+

| 4| 5| 6|

+-----+-----+-----+

| 7| 8| 9|

+-----+-----+-----+

Note:

* Fill values (1, 2, ..., n2) to the cells from left to right, top to bottom.
* Each cell occupies 5 spaces. Align values to the right.

1. Input a positive integer N (N>=1), and a series of real values x1, x2, …, xN (from stdin). Calculate the standard deviation of the series as the following formula:



Print out (to stdout) that value.

1. Input a string (spaces not included), count the occurrences of each character appeared in the string.

Example:

Input:

abaabc

Output:

a: 3

b:2

c:1

Guidance:

* Use the program template from Files/Midterm
* Implement the solutions in the corresponding functions:
  + problem1()
  + problem2()
  + problem3()
  + problem4()