**National University of Computer & Emerging Sciences, Karachi** **Fall 2023 (School of Computing)   
Assignment # 1**

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| **Course Code:** CS-1002 | **Course Name:** Programming Fundamentals | |
| **Course Instructors:** Mr. Muhammad Shahzad, Dr. Farooque Hassan Kumbhar, Dr. Abdul Aziz, Mr. Syed Zain Ul Hassan, Mr. Basit Ali, Ms. Sobia Iftikhar | | |
| **Open Date:** September 10, 2023 | | **Deadline:** September 18, 2023 (11:55 AM) |

**Important instructions:**

* You must never share your assignment with anyone. If any part of your assignment is found to be copied, then you will be awarded **0** marks as per the university policy.
* The assignment must be submitted before the deadline.
* Carefully read the submission instructions given below.

**Submission:**

* Create a separate folder for each of the tasks. You must write your solution by hand and then create its *pdf* file for submission.
* Create a main folder and rename it in the format “***k23-xxxx***” (replace **xxxx** it with your actual student ID). Then place all the separate folders for different tasks in this main folder.
* The main folder is to be submitted on Google Classroom.

**Marks distribution:**

* Task 1 (a): 5 points
* Task 1 (b): 5 points
* Task 2: 5 points
* Task 3: 15 points
* Task 4: 10 points
* Task 5: 10 points  
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  **Max points:** 50

**Task 1 (a):**

Create an algorithm and then write pseudocode for the following problems:

1. To find Greatest Common Divisor (GCD) of two given numbers.
2. To take 3 numbers A, B and C as input and find if the sum of numbers A and B is greater than the number C.
3. To find the smallest number in a given list of 10 numbers.
4. Given a list of 5 numbers, rearrange them in descending order.
5. To find the number of even integers in a given list of numbers.

**Task 1 (b):**

For each of the problems given in Part(a), draw a detailed flowchart.

**Task 2:**

For each of the following variables, write the most appropriate data type. Also provide a brief reason for selecting the data type.

1. Age
2. Temperature
3. Longitude
4. Third letter of your name
5. Wind speed

**Task 3:**

Mr. Rahim works at the cash counter of a retail store. For every customer he serves at the counter, he asks for their name and counts the items they bought. For each of these items he adds the price to the customer’s bill, with that bill also containing the customer’s name. If the bill exceeds 10k, Mr. Rahim is obliged to give the customer a 5% discount. Also, at the end of the day, Mr. Rahim should write the total revenue for the day i.e., the grand total of all the bills combined.

Draw a detailed flowchart for Mr. Rahim’s activities.

**Task 4:**

Write a program that takes an integer, as an input from its user and print its binary equivalent value on screen. You are required to write the pseudocode or algorithm or flowchart to show the pre-programming process along with the code written in C program.

**Task 5:**

Mr. Salman ran a small grocery business. He works on 15% profit on sale of each item. He also deduct 18% GST on each sale that he made. Write a program that prompt user to input price of five items individually and then print the sales receipt including all necessary details as shown below:

**OUTPUT:**

SALMAN grocery Store

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Description | Price

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Item 1 | 25

Item 2 | 165

Item 3 | 200

Item 4 | 350

Item 5 | 75

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Item Total | 815

G.S.T | 146.7

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Grand Total | 961.7

Total Profit Earned | 122.25

**Required:**

1. pseudocode or algorithm or flowchart
2. Code written in C program for the above given output. (Hint: you need to use format specifier, escape sequence and operators.)