# National University of Computer and Emerging Sciences, Lahore Campus

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| **Course:** | **Programming Fundamentals** | **Course Code:** | **CS-1002** |
| **Program:** | **BS (CS)** | **Semester:** | **Fall 2024** |
| **Date:** | **11 September 2024** | **Total Marks:** | **15** |
| **Section:** | **BCS- 1E** | **Name:** | |
| **Exam:** | **Quiz-1** | **Roll Number:** | |
| **Time:** | **20 Minutes** | | |

**Instruction/Notes: Do not write anything on the back side of this sheet. (Penalty: -5)**
**Any form of plagiarism will result into negative penalty.**

**Q#1:** Determine the output of the program. (Assume that there is no syntax error)

```
int main(){
   int a = 4, b = 8, c = 2, r = 3, q = 5;
   if (a++ % b > b / c--)
   {
      r = (++a + b--) / (c + 1) * --r - (q - 1);
   }
   else
   {
      c = a + c;
      a = c - a;
      b = ++c - a++;
   }
   cout << "a = " << c << ", b = " << a << ", c = " << b <<
               ", q = " << r << endl;
   return 0;
}
```

**Working (**show the working of instructions that will execute in this program.**)**

**Output:**

**Attempt the programming question on Answer sheet**

**Q#2:** Write a program that prompts the user to enter a 3-digit positive integer. You can take the assumption that user will always enter distinct digits, must contains either 0 or 1 exactly once. The digits (0 and 1) in the number will be used for special purpose i.e., 0 indicates the addition and 1 indicates subtraction (subtraction of smallest from largest). You need to provide the logic to calculate the sum and difference accordingly. Keep in mind that the position of 0 and 1 could be any like (067, 607, 670) similarly for 1. Your task is to process the input for addition and subtraction to display a valid output. Your program must be generic for any three-digit positive integer.

**Input validation:** 3-digit positive integer.

Check the sample output for clarity.

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| **Sample Input and output:**<br>Enter a three-digit positive integer: 068<br>Sum = 14 //since 0 indicates addition | **Sample Input and output:**<br>Enter a three-digit positive integer: 719<br>difference = 2<br>//since 1 indicates subtraction of largest from smallest i.e., (9-7 = 2) |
| **Sample Input and output:**<br>Enter a three-digit positive integer: 9876<br>Invalid input | **Sample Input and output:**<br>Enter a three-digit positive integer: 910<br>// **don't worry about this case**. system will accept an input that contains either 0 or 1 at-least once so it will be automatically handled. |