


## National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Programming Fundamentals	Course Code:	CS
	Program:	CS	Semester:	Fall 2020
	Due Date:	13-11-2020	Total Marks:	50
	Open Date:	10-11-2020	Weight	
	Section:	H	Page(s):	3
	Exam Type:	Activity # 3	Submission:	On Google Classroom

Question # 1: What is the output of the following program:

<pre>int GuessWhat(int&amp;a, int&amp;b) {     int c = 0;     a = c + 1;     b = c + 2;     return a + b; }</pre>	<pre>int GuessAgain(int&amp;a, int&amp;b, int c, int d) {     int i;     c = c + 5;     d = d * 2;      for (i = 0; i &lt; c; i++)         a = a + d;     b = c + d;     return i; }</pre>
<pre>void main() {     int a = 0, b = 0, c = 0, d = 0, e = 0;     e = GuessWhat(a, b);     cout&lt;&lt;"The 1st Value of E is" &lt;&lt; e;      e = GuessWhat(d, c);     cout&lt;&lt;"\nThe 2nd Value of E is" &lt;&lt; e;      e = GuessAgain(a, b, c, d);     cout&lt;&lt;"\nThe 3rd Value of E is" &lt;&lt; e;      e = GuessAgain(d, c, b, a);     cout&lt;&lt;"\nThe 4th Value of E is" &lt;&lt; e;     _getch(); }</pre>	<p><b>Output:</b></p>

## Question # 2:

In this problem, we will develop a calculator. The program begins with the following menu:

\*\*\*\*\*Wecome To XYZs Calulator!!!! \*\*\*\*\*

1. Add
2. Subtract
3. Divide
4. Multipliy
5. Square
6. Convert
7. Exit

Based on the input, the program will perform the corresponding task. For example, if the user presses 1, this means the user wants to add two numbers. In this case, the program must ask for two numbers as input. Call the **ADD FUNCTION** that adds these two numbers. Display the result, followed by the statement: "Press any key to return to the menu". On key press, the menu reappears, and the program waits for user to enter a choice. The calculator terminates when the user enters 7.

For this program you will need to develop these functions:

- i. Display menu
- ii. Function for addition
- iii. Function for subtraction
- iv. Function for division
- v. Function for multiplication
- vi. Function to find square
- vii. Function for conversions (inches → feet;)

## Question # 3:

Write a function **FindMinMax** which keeps taking integers from user until user enters -1 (-1 is not a part of input data it is just stopping criteria). On receiving -1 your function should return Minimum and Maximum value entered. Update your Main function for option 5 and display Minimum and Maximum value entered by the user. How will you return two values from **FindMinMax**?

(Hint: Recall the concept of Parameter Pass by Reference)

Prototype of FindMinMax:

**void FindMinMax(int&min, int&max);**

Question # 4:

We have 3 stones. The weight of each stone is an integer value. The total weight of these stones is 20. What are the possible weights of the three stones? For example one possibility is 1,1,18. You don't have to repeat the numbers in a combination, e.g., 1,1,18 can be treated in a similar manner as 18,1,1. The other possibility is 1,5,14,.

Implement a function: **OutputWeightCombinations**

that outputs all possible combinations. What should be its parameters? Now generalize your function, so that it takes as parameter the sum of the weight of stones and outputs the possible combinations.