ID : _____ NAME : _____ Section : _____

UNIVERSITY OF CENTRAL PUNJAB, LAHORE

Final Term Exam (BSCS - BSSE)

Course Title: Programming Fundamentals

Course Instructor:

Semester: Fall 2021 **Date:** 14-Feb-2021

Total marks: 60 marks **Obtained Marks: _____**

Question 1: Output and errors

Part A) [10 Marks]

Given the following set of variable definitions:

int *ip1,ip2;

char ch,*cp;

Which of the following statements are correct or incorrect according to C++ language? Use your programming skills to answer.

(a) ip1="Smile Always";	(b) ch=NULL;
(c) ip1=NULL;	(d) cp=&'a';
(e) ip1=ip2;	(f) cp=NULL;
(g) ip2=99;	(h) cp=&ch;
(i) *ip=ip2;	(j) ip1 = &cp;

Part B) [10 marks]

Write the output of the following program:

```
#include <iostream>
using namespace std;
void fill(int **, int);
void print(int **, int);
int main()
{
   int SIZE = 3;
   int **arr = new int*[SIZE];
   for(int i=0; i<SIZE; i++)
   {
      arr[i] = new int[SIZE];
   }
   fill(arr, SIZE);
   print(arr, SIZE);
   for(int i=0; i<SIZE; i++)
```

```
    {
        delete []arr[i];
    }
    delete []arr;
    return 0;
}
void fill(int **arr, int SIZE)
{
    for(int i=0; i<SIZE; i++)
    {
        for(int j=0; j<SIZE; j++)
        {
            if(i<=j)
                arr[i][j] = 1;
            else
                arr[i][j] = 0;
        }
    }
}
void print(int **arr, int SIZE)
{
    for(int i=0; i<SIZE; i++)
    {
        for(int j=0; j<SIZE; j++)
        {
            cout<<arr[j][i]<<" ";
        }
        cout<<endl;
    }
}
```

Question 2: Maximum Caller Finder [20 marks]

You have been hired by a Call center where they provided you a text file of name "data.txt". The first line of this file will tell you total number of callers (**total rows**) whose data is present in the file. First number of each row is showing total number of calls that caller had. Each call of caller is represented in minutes. Now your task is to load this data in 2-Dimensional Dynamic array and process it to get that caller's row number which will have maximum call minutes. Make as many functions to get good marks.

data.txt
6
4 15 35 40 7
3 20 25 100
5 6 19 21 13 15
2 10 25
1 15
6 2 3 5 1 2 9

Sample Output: Second Caller has maximum number of call minutes: 145

Question 3: Array Regrow and Shrink [20 marks]

Suppose University of Central Punjab is organizing concert at **Etihad Town** where different celebrities are going to be invited. This event will be look after by department of student affairs (DSA). DSA is selling tickets of this event and write ticket number and student id number manually on their registers. You are a part of their organizing team and have studied dynamic arrays in your PF lectures. You are thinking to develop a simple c++ program which will store ticket numbers with respect to student id numbers in 2 different dynamic 1D-arrays with same size. You cannot fix the size of array because team can sell more tickets beyond your expectations. Your program should show following menu to user and perform the tasks shown in the menu.

Ticker Seller Software

1. Sell ticket (add id and ticket number)
2. Delete ticket by student id

```
               Ticker Seller Software
1.      Sell ticket (add id and ticket number)
2.      Delete ticket by student id
1
Enter the id : 12
Enter the ticket Number : 55
Sr. No                  Student ID              Ticket Number
   1                    12                         55
#####################################################
Press any key to continue . . .
               Ticker Seller Software
1.      Sell ticket (add id and ticket number)
2.      Delete ticket by student id
1
Enter the id : 65
Enter the ticket Number : 555
Sr. No                  Student ID              Ticket Number
   1                    12                         55
   2                    65                         555
#####################################################
Press any key to continue . . .
               Ticker Seller Software
1.      Sell ticket (add id and ticket number)
2.      Delete ticket by student id
1
Enter the id : 69
Enter the ticket Number : 452
Sr. No                  Student ID              Ticket Number
   1                    12                         55
   2                    65                         555
   3                    69                         452
#####################################################
```

```
               Ticker Seller Software
1.      Sell ticket (add id and ticket number)
2.      Delete ticket by student id
2
Enter the student id which you want to delete : 65
Data deleted successfully
Press any key to continue . . .
Sr. No                  Student ID              Ticket Number
   1                    12                         55
   2                    69                         452
#########################################################
```