**Lab 9**

**Recursion and Arrays in C**

Marks: 5

**Question 01:**

Your ITC instructor has provided you the MID TERM marks of your section. Your task is to find:  
a) Who got highest and 2nd highest marks in ITC MID TERM?  
b) Who got lowest and 2nd lowest marks in ITC MID TERM?  
c) Sum of total marks of all the students.  
d) Sort the marks in ascending order.  
e) Sort the marks in descending order.  
f) Average of the marks.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 79 | 72 | 81 | 85 | 68 | 94 | 88 | 77 | 97 | 82 | 84 | 80 |

Out of 100

**Question 02:**

Dealing with Matrices is always a fun thing for students. Just for fun, a group of students has decided to play with the matrices and they have thought about a game in which two matrices are involved of **m x n** order. User can provide the values for the matrices and it will first check whether the given matrix is identity or not, if not then interchange the values at the diagonal. Your task is to make a C program that is able to solve and give the new matrix with interchanged values.

**Question 03:**

Mudassir has been practicing to solve matrices on paper for quite a long time now. Now, he has decided to implement the logic behind solving matrices in a program using C language. He wants to perform production of two matrices but he’s no good when it comes to programming. Fortunately, he has got you with him and programming is your forte especially when it comes to recursion. You are willing to help him with his program if he gives you permission to use recursion in your program. He’s so kind that you got his permission the moment you asked him.

**Question 04:**

Tahir is studying at FAST-NU and is student of 1st semester. He is participating in speed programming competition since he’s good at programming. You, his senior, told him that a question related to manipulation with the numbers always appear in the competition. So, Tahir decided to do some practice questions but he got stuck in a question in which it is asked to find those two numbers in an array whose sum is equal or very close to zero where array contains 10 elements