INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM 695 547

First Year B. Tech. - Assignment Sheet
MA122-Computer Programming and Applications

26.02.2017 **Maximum Marks: 10** **Assignment Sheet 8**

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a. Write a program to find the determinant of a square matrix. Let **A** be a square matrix of order $n \leq 10$. Write $\mathbf{A} = (a_{i,j})$, where $a_{i,j}$ is the entry on the row number i and the column number j, for $i = 1, \cdots, n$ and $j = 1, \cdots, n$. For any i and j, the number $M_{i,j}$ (called the minor) to be the determinant of the square matrix of order (n-1) obtained from **A** by removing the row number i and the column number j. Then, the determinant (det) of the matrix **A** can be found from the following formula:

$$det(\mathbf{A}) = \sum_{j=1}^{n} (-1)^{i+j} a_{i,j} \, M_{i,j} \tag{1}$$

for any fixed i. In your program use $i = 1$.

b. Write a function that rotates 90^o clockwise a two-dimensional square array (of any size) of ints. For example, it would transform the array

11	22	33
44	55	66
77	88	99

into the array

77	44	11
88	55	22
99	66	33

Program submission:

Name the programs as XXXA8Y.cpp, where XXX is the last three digits of your student id and Y is program number. For example, if the student id is 'sc17b150' and your program number is 'a' then the file name should be 150A8a.cpp. Submit the programs using ftp to the server: 172.20.2.200