INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM 695 547

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

09.04.2017 **Maximum Marks: 20** **Assignment Sheet 13**

---

a. Define a class *Matrix* to represent a $n \times m$ matrix $\mathbf{M}$. Include the following members:

   1. Private members
      i. number of rows n
      ii. number of columns m
      iii. the matrix $\mathbf{M}$ (allocate memory dynamically)
      iv. declare a static member `int` variable.
   2. Member functions
      i. write operator functions to add and multiply two matrices (overload the operators + and $*$) .
      ii. write an operator function to scale the matrix. (overload the multiplication operator).
      iii. Write a friend function to find the transpose of a matrix.
      iv. Use the static member variable to count the total number of operations made.

   Implement the above class effectively.

b. Define a class *Complex* to perform complex arithmetic calculations: $+, -, *, /$. Implement the class.

Program submission:

Name the programs as XXXA13Y.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 150A13a.cpp. Submit the programs using ftp to the server: 172.20.2.200