OBJECT-ORIENTED PROGRAMMING

1st Homework Assignment

Due on: Thursday, July 13, 2006 17:00

You will implement two classes, namely CVector and CMatrix, whose declarations are given below:

```
class CVector {
 private:
  int numberOfElements;
  double *hold;
 public :
  CVector();
  ~CVector();
  CVector(int,double=0.0);
  CVector(const CVector&);
  CVector& operator+(const CVector&) const;
  CVector& operator-(const CVector&) const;
  CVector& operator-() const;
  double operator*(const Vector&) const ; // inner product
  CVector& operator/(double) const ;
  double& operator[](int) const ;
  CVector& clone() const ;
  double max() const;
  double min() const ; //
  friend ostream& operator << (ostream&, const CVector &);
};
class CMatrix {
 private:
  int numberOfRows;
  CVector *rows;
 public :
  CMatrix();
  ~CMatrix();
  CMatrix(int,int,double=0.0);
  CMatrix(const Cmatrix&);
  CMatrix& operator+(const CMatrix&) const;
  CMatrix& operator-(const CMatrix&) const;
  CMatrix& operator-() const;
  CMatrix& operator*(const CMatrix&) const ;
  CMatrix& operator/(double) const;
  CVector& operator[](int) const ; // returns the column vector
```

```
CMatrix& operator~() const ; // returns transpose
double& operator()(int,int) const ;
CMatrix& clone() const ;
double max() const ;
double min() const ; //
friend ostream& operator << (ostream&, const CMatrix &);
```

};

- Before the submission make sure that g++ compiles the codes and the program runs smoothly.
- Make sure that you partition the declarations and the definitions into .h and .cpp files.
- Join to the group: <u>http://groups.yahoo.com/group/blg332ss</u> to ask questions or exchange information.
- Note that there is a **has-a** relation between CMatrix and CVector.
- You will write a test program (named as "TestApp.cpp") in which
 - o you will create CMatrix objects
 - o you will test each operator that you define
 - you will print the content of the matrices to the screen by using **cout** object.
- I suggest you to define CMatrix objects of size 3-by-3.
- You **cannot** change the declarations given above.

How to submit

- 1. Archive five files (i.e. TestApp.cpp, CMatrix.h, CMatrix.cpp, CVector.h, CVector.cpp) into a zip file named as *your_student_id.zip*
- 2. Use the following link to submit http://www.ce.itu.edu.tr/Members/kurt/blg332ehw1/assignment_submit_form

IMPORTANT

Academic dishonesty including but not limited to cheating, plagiarism, collaboration is unacceptable and subject to disciplinary actions. Any student found guilty will have grade F. Assignments are due in class on the due date. Late assignments will generally not be accepted. Any exception must be approved. Approved late assignments are subject to a grade penalty.