Object Oriented Programming A, B
FAST-NU, Lahore, Spring 2019

Homework 2

The myMatrix Class

Due Monday February 25 11:55 PM 100 pts.

Implement the methods in the following definition of the myMatrix class. Write a main program to test your code; however, during evaluations, we will supply our own main program to assess your code, so make sure that all the function have exactly the same headers as specified below.

Please read the comments to understand the purpose of a function.

```
class myMatrix{
private:
    int ** mat;
    int nrow, ncol;
public:
    //Constructors
    myMatrix();//default constructor, initialized an empty matrix
    myMatrix(int r,int c,int val=0);//allocates an r x c matrtix initialized by val
    myMatrix(const myMatrix&obj);//copy constructor

    //Class Methods
    myMatrix add(const myMatrix& obj);//matrix addition
    myMatrix mul(const myMatrix& obj);//matrix addition
    myMatrix mul(int scalar);//matrix multiplied by a number
    const myMatrix & mulAndUpdate(int scalar);//matrix itself updated and returned
    const myMatrix & pre_increment();//add 1 to each element of matrix and return updated matrix
    myMatrix post_increment();//matrix itself updated by the non-updated version returned by copy
    bool isIdentity();// returns true if the matrix is an identity matrix
    const myMatrix & negate();//negates every element of the matrix and returns itself
    const myMatrix & transpose();//transposes the matrix and returns itself
    const myMatrix & assign(const myMatrix & obj);//copies obj into self, and returns self
    bool submatrix(const myMatrix & obj); //returns true is obj is a submatrix of this matrix

    //Getters, Setters

    int getRows();// returns nrow
    int getCols(); //returns ncols
    int getElement(int r, int c); //returns the elements at mat[r][c]
    void setElement(int r, int c, int val); //sets the elements at mat[r][c] to val

    //Destructor
    ~myMatrix();
};

myMatrix readMatrix(string fname); //reads matrix from a file
void printMatrix(const myMatrix & obj);
```

THE END