**Assignment 3 rubric**

1. Check if you can input the following diagonal and square matrices and if they are getting stored as objects of their respective classes. [1(diagonal)+1(square)=2 marks ]

A diagonal matrix=[1 0 0;0 2 0; 0 0 3], A square matrix= [1 2 3; 2 4 3;0 5 4]

1. Check if (1x3) row and (3x1) column matrices can be created and stored as objects of their respective classes. [1(row)+1(col)=2 marks ]
2. The system shouldn’t allow changing the non-diagonal element of the diagonal matrix in (1). The system should allow changing any element of the square matrix in (1). [1(diagonal)+1(square)=2 marks]
3. Check if the diagonal matrix in (1) has diagonal & square matrix labels. Check if the row matrix in (2) has row & rectangular matrix labels. [1(diagonal)+1(row)=2 marks ]
4. Perform Addition, Subtraction, Multiplication and Division with the two matrices in (1).

[0.25x4=1 marks]

Did they try to make multiplication with an identity matrix efficient using method overloading? If they have made it efficient for any other case, then also you should give full marks. You should ask them if they did it for any other case. [1 mark ]

1. Perform element wise multiplication of matrices in (1).[1 mark]

Did they try to make element wise multiplication with a null matrix of the same size efficient using method overloading? If they have made it efficient for any other case, then also you should give full marks. You should ask them if they did it for any other case.

[1 mark]

1. Transpose the row matrix in (2). [1 mark]

Did they try to make the transpose operation efficient for symmetric matrices using method overloading? Enter the following symmetric matrix and check. [1 mark]

A symmetric matrix: [1 2;2 1]

1. Find the inverse of the matrix in (7). [1 mark]

Did they try to make the inverse of an Identity matrix efficient through method overloading? [0.5 mark]

Did they prevent computing the inverse of a non-square matrix, say row matrix in (2)? [0.5 marks]

1. Find all the types of means of the square matrix in (1). [0.5x3=1.5]

Did they try to make mean computation efficient for a Null matrix using method overloading? If they have made it efficient for any other case, then also you should give full marks. You should ask them if they did it for any other case. [0.5 marks]

1. Compute determinant of the matrix in (7). [1 mark]

Did they try to make determinant computation efficient for an identity matrix using method overloading? If they have made it efficient for any other case, then also you should give full marks. You should ask them if they did it for any other case. [1 marks]

1. Multiply the singleton matrix [100] to the square matrix in (1). [1 mark]

Did they try to make such an operation efficient for an identity matrix using method overloading? If they have made it efficient for any other case, then also you should give full marks. You should ask them if they did it for any other case. [1 marks]

1. Compute A+At for the square matrix in (1). [1 mark]

Did they try to make it efficient for a skew-symmetric matrix using method overloading? [1 mark]

1. Compute eigenvalues and eigenvectors of the symmetric matrix in (7). [1 mark]

Did they try to make the eigen value computation efficient for a diagonal (or identity) matrix using method overloading?

[1 mark]

1. Use the square matrix in (1) as A and column matrix in (2) as b to solve the set of linear equations Ax=b. [1 mark]

Did they try to make it efficient for an identity matrix using method overloading?

[1 mark]

1. Close the program and rerun the program inputting the following matrices:

[1 0 0;0 1 0;0 0 1], [1 0;0 1],[1 2;2 1].

Now ask to retrieve identity matrices. The answer must be the first two matrices only. Strict binary marking should be followed. [2 marks]