Assignment 2

Ques 1.

The test case was:
3
4 2 0 10
2 4 1 11.5
0 1 5 4.5

The output for **Gauss Elimination without pivoting** was:

X
1.5
2.0
0.5

The output for **Gauss Elimination with pivoting** was:

X
1.5
2.0
0.5

The output for **Doolittle Method** was:

L
1 0 0
0.5 1 0
0.0 0.333333333333 1

U
4.0 2.0 0.0
0 3.0 1.0
0 0 4.66666666667

X
1.5
2.0
0.5

The output for **Crout's Method** was:
L
4.0 0 0
2.0 3.0 0
0.0 1.0 4.66666666667

U
1 0.5 0.0
0 1 0.333333333333
0 0 1

X
1.5
2.0
0.5

The test case for **Cholesky Method** was:
3
9 3 -2 10
3 6 1 10
-2 1 9 8

The output was:
L
3.0 0 0
1.0 2.2360679775 0
-0.666666666667 0.4472135955 2.89059778516

U
3.0 1.0 -0.666666666667
0.0 2.2360679775 0.4472135955
0.0 0.0 2.89059778516

X
3.33333333333
4.472135955
2.76759362409

Ques2.
The test case was:
3
8.0 -1.0 -1.0
-1.0 4.0 -2.0
-1.0 -2.0 10.0

100
0.001
8.0

The output for **Power Method** was:
Eigenvalue
10.7787854916

Eigenvector
0.258582911457
0.237186445142
-0.936417357882

No. of Iterations
22

The output for **Inverse Power Method** was:
Eigenvalue
3.07494439383

Eigenvector
0.249630991067
0.920070358895
0.301918702604

No. of Iterations
8

The output for **Inverse Power Method with shift**
Eigenvalue
8.14613063004

Eigenvector
0.935578418242
-0.308524077317
0.171772864668

No. of Iterations
3

The output for **QR Method**
Eigenvalues
10.7788353377

8.1462234546
3.07494120772

No. of Iterations
23