Scilab Assignment 2

Name: Krishnaraj Thadesar

Division: 09

Roll No: 109054

Q1)

1)

```
--> A= [1 1 0;0 1 1;1 0 1]
 A = 1.   1.   0.
        0.   1.   1.
        1.   0.   1.

--> B= [-2;1;1]
 B =   -2.
           1.
           1.

--> A\B
 ans = -1.
           -1.
            2.
```

2)

```
--> A= [1 1 1;1 -1 2 ;2 3 -1]
 A =   1.   1.   1.
         1.  -1.   2.
         2.   3.  -1.


--> B= [4;3;6]
 B =    4.
          3.
          6.

--> A\B
 ans =2.
         1.
         1.
```

3)

```
--> A= [1 3 -1 8;1 1 1 6;3 1 1 11;4 -2 0 0]
 A = 1.   3.  -1.   8.
       1.   1.   1.   6.
       3.   1.   1.   11.
       4.  -2.   0.   0.
```

```
-->  B= [13;13;25;6]
 B  =    13.
            13.
            25.
            6.


-->  A\B
 ans = 1.0000000
           -1.0000000
            1.0000000
            2.0000000
```

4)

```
--> A= [1 1 1;2 -1 3;4 1 5;3 -2 1]
 A = 1.   1.   1.
        2.  -1.   3.
        4.   1.   5.
        3.  -2.   1.

--> B= [3;1;2;4]
 B = 3.
        1.
        2.
        4.
```

```
--> A\B
 ans = 2.0151515
           0.4545455
          -1.1363636
```

Q2)

1)

```
--> A= [0 0 0 1;0 0 1 2;0 1 2 3;1 2 3 4]
 A =   0.   0.   0.   1.
          0.   0.   1.   2.
          0.   1.   2.   3.
          1.   2.   3.   4.

--> [v,e]=spec(A)
 v = 0.4589356    0.5205747     -0.7111656     0.1123542
       0.6674381   -0.6806645    -0.0199182      0.3013725
       0.2809054     0.493401       0.6267614      0.5336833
      -0.5147782   -0.1491753    -0.3178316      0.7821338

 e =   -1.1216783   0.          0.          0.
            0.         -0.2865588   0.          0.
            0.          0.          0.4469163   0.
            0.          0.          0.          6.9613208

--> x=poly(0,'x')
 x = x

--> p=det(x*eye(4,4)-A)
 p = 1 +2x -7x² -6x³ +1
```

2)

```
--> D= [3 1 3;3 4 0;1 4 2]
 D =    3.   1.   3.
           3.   4.   0.
           1.   4.   2.

--> [v,e]=spec(D)
 v = -0.5773503 + 0.i    -0.2737854 - 0.5477605i       -
0.2737854 + 0.5477605i
       -0.5773503 + 0.i    -0.0864586 + 0.4833181i      -
0.0864586 - 0.4833181i
       -0.5773503 + 0.i     0.6196197 + 0.i
0.6196197 + 0.i

 e = 7. + 0.i          0. + 0.i                   0. + 0.i
        0. + 0.i         1. + 2.236068i     0. + 0.i
        0. + 0.i         0. + 0.i                   1.  -
2.236068i

--> x=poly(0,'x')
 x = x

--> p=det(x*eye(3,3)-D)
 p =   -42 +20x -9x² +x³
```

3)

```
--> E= [2 0 3;0 2 0;0 0 2]
 E =    2.   0.   3.
          0.   2.   0.
          0.   0.   2.

--> x=poly(0,'x')
 x = x

--> p=det(x*eye(3,3)-E)
 p = -8 +12x -6x² +x³

--> [v,e]=spec(E)
 v =  1. + 0.i       0. + 0.i      -1.         + 0.i
        0. + 0.i       1. + 0.i       0.         + 0.i
        0. + 0.i       0. + 0.i       1.480D-16 + 0.i

 e =    2. + 0.i    0. + 0.i    0. + 0.i
          0. + 0.i    2. + 0.i    0. + 0.i
          0. + 0.i    0. + 0.i    2. + 0.i
```

4)

```
--> F= [1 0 3;1 2 1;0 0 2]


 F =    1.   0.   3.
          1.   2.   1.
          0.   0.   2.
```

```
--> x=poly(0,'x')
 x = x


--> p=det(x*eye(3,3)-F)
 p = -4 +8x -5x² +x³


--> [v,e]=spec(F)

 v = 0. + 0.i       0.7071068 + 0.i       3.331D-16 + 0.i
       1. + 0.i     -0.7071068 + 0.i       -1.        + 0.i
       0. + 0.i       0.         + 0.i                1.110D-16
+ 0.i

 e = 2. + 0.i     0. + 0.i        0. + 0.i
        0. + 0.i     1. + 0.i       0. + 0.i
        0. + 0.i     0. + 0.i       2. + 0.i
```