EED364 : Grpah Signal Processing [Lab-1]

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Objective:

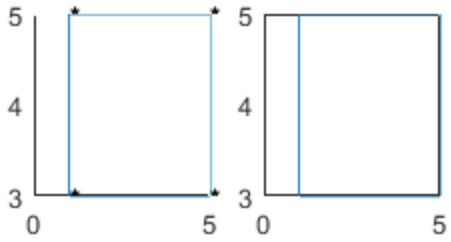
Eigen spectrum with respect to Adjacency matrix of a Graph

Program:

```
clc;
clear all;
close all;
```

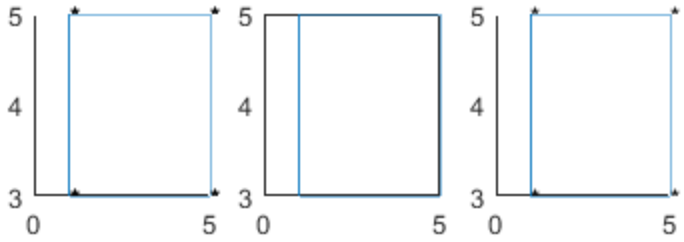
MATLAB function to plot (2D) the graph for the given adjacency matrix A

```
A=[0,1,1,0;1,0,0,1;1,0,0,1;0,1,1,0];
B=[1,5;5,5;1,3;5,3];
figure(1);
subplot(3,4,1);
my2dgplot(A,B);
% Verification
[m,n]=size(A);
for i=1:m
    text(B(i,1),B(i,2),'*');
end
hold on;
subplot(3,4,2);
gplot(A,B);
```



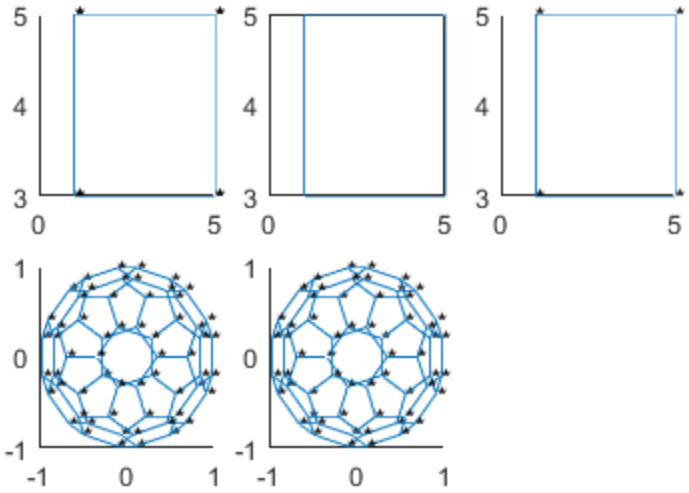
3d Plot

```
C=[1,5,6;5,5,4;1,3,3;5,3,7];
subplot(3,4,3);
my3dgplot(A,C);
```



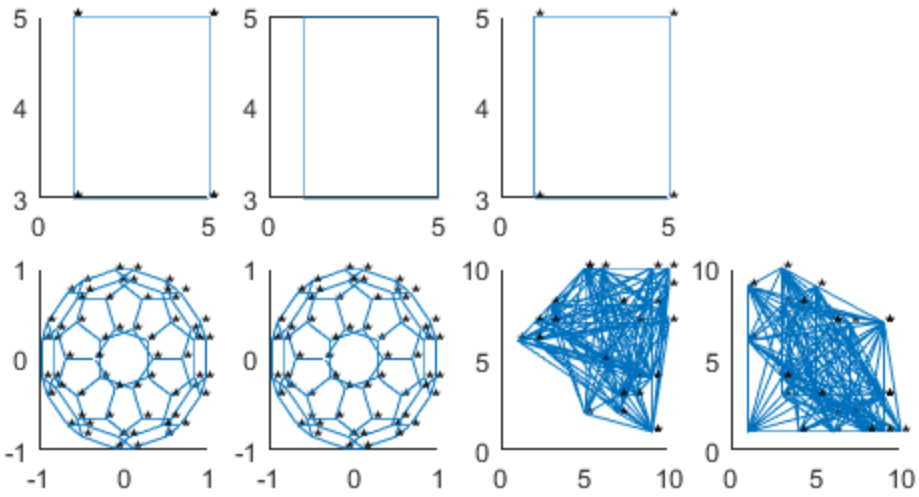
Bucky ball example:

```
[Bu,XY]= bucky;
subplot(3,4,5);
my2dgplot(Bu,XY);
subplot(3,4,6);
my3dgplot(Bu,XY);
```



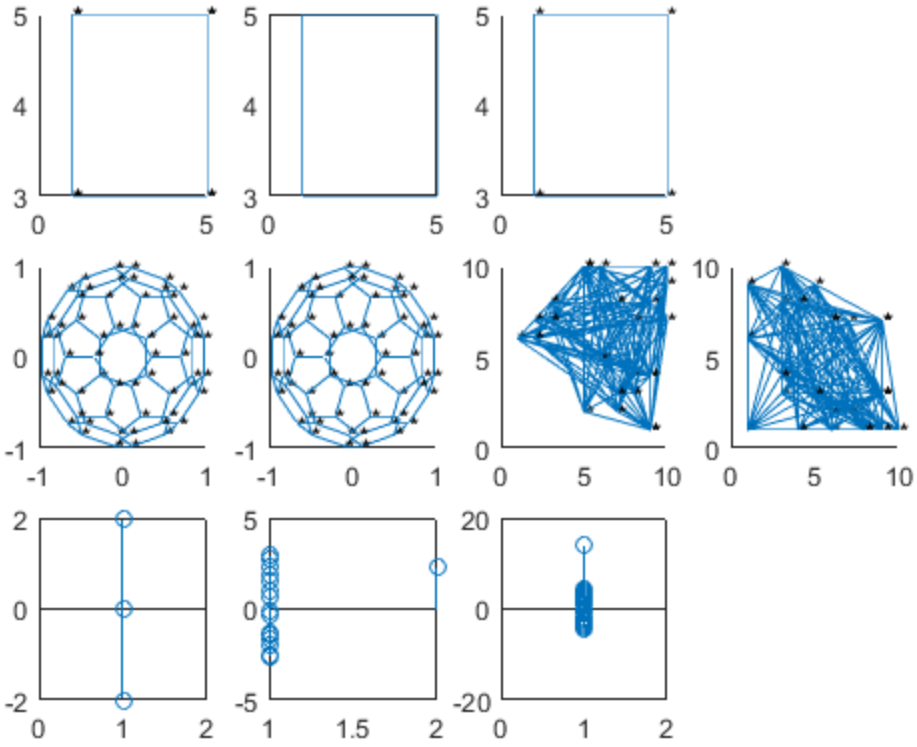
4 adjacency matrix of size N nodes. And plotting the graph

```
R=round(triu(rand(randi(100))));
R=R+triu(R, 1)';
[m n]=size(R);
B=randi(10,m,2);
C=randi(10,m,3);
subplot(3,4,7);
my2dgplot(R,B);
subplot(3,4,8);
my3dgplot(R,C);
```



Calculating the Eigen spectrum of all plotted graphs?

```
subplot(3,4,9);
eigspectrum(A);
subplot(3,4,10);
eigspectrum(Bu);
subplot(3,4,11);
eigspectrum(R);
```



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