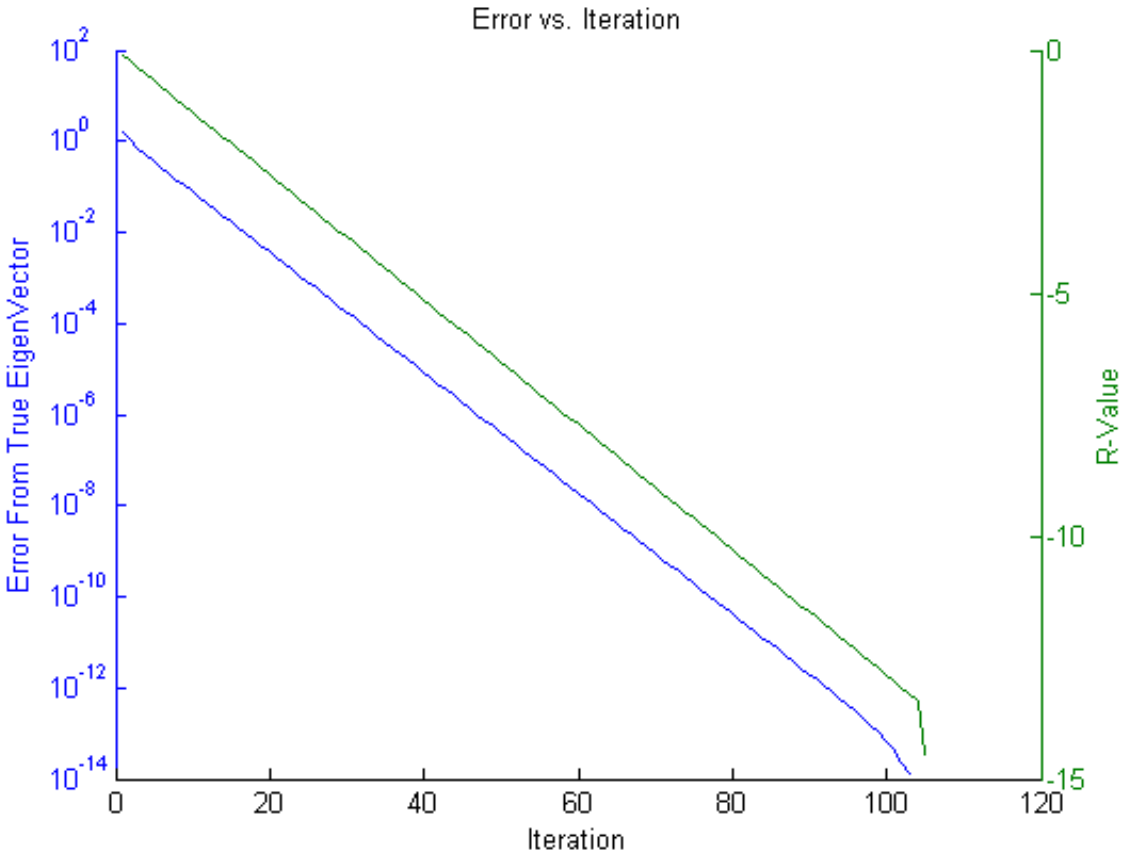
```
%Question 4
                %1, 2, 3, 4, 5, 6,
bookAdjacency = [0, 0, 0, 0, 1, 0;%1
                 0, 0, 0, 0, 1, 1;%2
                 0, 1, 0, 0, 0, 1;%3
                 1, 0, 1, 0, 1, 0;%4
                 1, 1, 0, 1, 0, 0;%5
                 1, 1, 1, 0, 0, 0]%6
[v,e]=eigs(bookAdjacency, 1)

%Create student matrix
load('student_adjacency.txt')
studentMatrix = zeros(33, 33);
addedZeros = zeros(30,1);
addedZeros2 = zeros(1, 33);
student_adjacency = horzcat(student_adjacency, addedZeros);
student_adjacency = horzcat(student_adjacency, addedZeros);
student_adjacency = horzcat(student_adjacency, addedZeros);
student_adjacency = vertcat(student_adjacency, addedZeros2);
student_adjacency = vertcat(student_adjacency, addedZeros2);
student_adjacency = vertcat(student_adjacency, addedZeros2);
studentMatrix = student_adjacency + studentMatrix;

%add connections
%mary
studentMatrx(1,31)= 1;
studentMatrix(31,1) = 1;
studentMatrix(2,31) = 1;
studentMatrix(31,2) = 1;
studentMatrix(2,31) = 1;
studentMatrix(31,3) = 1;
studentMatrix(3,31) = 1;
studentMatrix(31,4) = 1;
studentMatrix(4,31) = 1;
studentMatrix(31,5) = 1;
studentMatrix(5,31) = 1;
studentMatrix(31,6) = 1;
studentMatrix(6,31) = 1;
studentMatrix(31,7) = 1;
studentMatrix(7,31) = 1;
studentMatrix(31,8) = 1;
studentMatrix(8,31) = 1;
studentMatrix(31,9) = 1;
studentMatrix(9,31) = 1;

%Fred
studentMatrix(32,10) = 1;
studentMatrix(10,32) = 1;
studentMatrix(32,11) = 1;
studentMatrix(11,32) = 1;
studentMatrix(32,12) = 1;
studentMatrix(12,32) = 1;
studentMatrix(32,13) = 1;
studentMatrix(13,32) = 1;
studentMatrix(32,14) = 1;
```

```
studentMatrix(14,32) = 1;

%Veronica
studentMatrix(33,15) = 1;
studentMatrix(15,33) = 1;
studentMatrix(33,16) = 1;
studentMatrix(16,33) = 1;
studentMatrix(33,17) = 1;
studentMatrix(17,33) = 1;
studentMatrix(33,18) = 1;
studentMatrix(18,33) = 1;
studentMatrix(33,19) = 1;
studentMatrix(19,33) = 1;

%Use Power Method
[domV, domGamma, bkVec] = powerMethod(studentMatrix);
%Find error at iteration k
[row, col] = size(bkVec);
for k = 1:1:row;
    ekVec(k,1) = k;
    ekVec(k,2) = norm(transpose(bkVec(k,:))-domV);
end

rateConv = ekVec(51,2)/ekVec(50,2)
for i = 1:1:row;
    rval(i, 1) = (log(rateConv)/log(10))*i;
end
[hAx,hLine1,hLine2] = plotyy(ekVec(:,1),ekVec(:,2),ekVec(:,1),rval,'semilogy','plot');
xlabel('Iteration')
ylabel(hAx(1),'Error From True EigenVector')
ylabel(hAx(2),'R-Value')
title('Error vs. Iteration');
for(i=1:1:33)
    vert(i,1) = i;
end
sortedRows = horzcat(domV, vert);
sortedPeople = sortrows(sortedRows, 1)
```

```
bookAdjacency =

     0     0     0     0     1     0
     0     0     0     0     1     1
     0     1     0     0     0     1
     1     0     1     0     1     0
     1     1     0     1     0     0
     1     1     1     0     0     0


v =

   -0.2132
   -0.4072
   -0.3738
   -0.4725
   -0.4827
```

```
    -0.4391


e =

    2.2640


rateConv =

    0.7437


sortedPeople =

         0   25.0000
    0.0353   29.0000
    0.1051   23.0000
    0.1070   24.0000
    0.1367   20.0000
    0.1367   27.0000
    0.1415   11.0000
    0.2290   21.0000
    0.2387   22.0000
    0.4000   19.0000
    0.4050   18.0000
    0.4136   16.0000
    0.4176   28.0000
    0.4209   15.0000
    0.4283   14.0000
    0.4433   10.0000
    0.4619   26.0000
    0.5276    1.0000
    0.5312   32.0000
    0.5317   12.0000
    0.5463   33.0000
    0.5473    4.0000
    0.5473    7.0000
    0.5482   17.0000
    0.5825   13.0000
    0.6057   30.0000
    0.9169    8.0000
    0.9925    5.0000
    1.0110    9.0000
    1.0554    2.0000
    1.2439    3.0000
    1.3879    6.0000
    2.0551   31.0000
```



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