Problem 2B

```
clear all
clc

H = [0,0,0,0,0,0,0,0,0,0,0,0,0,0,0;
    0.11,0.17,0,0,0,0,0,0,0,0,0,0,0,0,0;
    0.11,0.17,0,0,0,0,0,0,0,0,0,0,0,0,0;
    0.11,0,0,0.33,0,0,0,0,0,0,0,0,0,0,0;
    0.11,0,0,0,0,0.2,0,0,0,0,0,0,0,0,0;
    0.11,0,0,0,0,0.2,0.2,0,0,0,0,0,0,0,0;
    0.11,0.17,0,0.33,0,0,0,0,0,0,0,0,0.25,0.17,0;
    0.11,0,0,0,0,0,0,0,0.5,0.33,0,0,0,0,0;
    0.11,0.17,0,0,0,0,0,0.5,0,0.33,0,0,0,0,0;
    0.11,0.17,0.33,0,0,0.2,0.2,0.5,0.5,0.33,0.25,0,0,0.17,0;
    0,0.17,0.33,0.33,1,0.2,0.2,0,0,0,0.25,0.25,0.25,0.17,0.33;
    0,0,0.33,0,0,0.2,0,0,0,0,0.25,0.25,0.25,0.17,0.33;
    0,0,0,0,0,0,0.2,0,0,0,0.25,0.25,0.25,0.17,0.33;
    0,0,0,0,0,0,0.2,0,0,0,0,0,0,0.17,0;
    0,0,0,0,0,0,0,0,0,0,0,0.25,0,0,0];
n = 15;
alpha = 0.8;
G = alpha * H + (1 - alpha)/n * ones(15,15);

I = zeros(15,1);
I(1) = 100;
a = [0 0 0 0 0 00 0 0 0 0 0  0 0 0 0]';
for ii = 1:4000
    I = G * I;
    a(:,ii+1) = I;

    if abs(a(:,ii+1) - a(:,ii)) < 0.00005
        break
    end
end

I_inf = a(:,3788);

diary vj_problem2b.txt
echo on

% H Matrix
H

% Google Matrix
G

%Final State I_inf
I_inf

echo off
```

```
% H Matrix
H

H =

  Columns 1 through 7

         0         0         0         0         0         0         0
    0.1100    0.1700         0         0         0         0         0
    0.1100    0.1700         0         0         0         0         0
    0.1100         0         0    0.3300         0         0         0
    0.1100         0         0         0         0    0.2000         0
    0.1100         0         0         0         0    0.2000    0.2000
    0.1100    0.1700         0    0.3300         0         0         0
    0.1100         0         0         0         0         0         0
    0.1100    0.1700         0         0         0         0         0
    0.1100    0.1700    0.3300         0         0    0.2000    0.2000
         0    0.1700    0.3300    0.3300    1.0000    0.2000    0.2000
         0         0    0.3300         0         0    0.2000         0
         0         0         0         0         0         0    0.2000
         0         0         0         0         0         0    0.2000
         0         0         0         0         0         0         0

  Columns 8 through 14

         0         0         0         0         0         0         0
         0         0         0         0         0         0         0
         0         0         0         0         0         0         0
         0         0         0         0         0         0         0
         0         0         0         0         0         0         0
         0         0         0         0         0         0         0
         0         0         0         0         0    0.2500    0.1700
         0    0.5000    0.3300         0         0         0         0
    0.5000         0    0.3300         0         0         0         0
    0.5000    0.5000    0.3300    0.2500         0         0    0.1700
         0         0         0    0.2500    0.2500    0.2500    0.1700
         0         0         0    0.2500    0.2500    0.2500    0.1700
         0         0         0    0.2500    0.2500    0.2500    0.1700
         0         0         0         0         0         0    0.1700
         0         0         0         0    0.2500         0         0

  Column 15

         0
         0
         0
         0
         0
         0
         0
         0
         0
         0
```

```
    0.3300
    0.3300
    0.3300
         0
         0


% Google Matrix
G

G =

  Columns 1 through 7

    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.1013    0.1493    0.0133    0.0133    0.0133    0.0133    0.0133
    0.1013    0.1493    0.0133    0.0133    0.0133    0.0133    0.0133
    0.1013    0.0133    0.0133    0.2773    0.0133    0.0133    0.0133
    0.1013    0.0133    0.0133    0.0133    0.0133    0.1733    0.0133
    0.1013    0.0133    0.0133    0.0133    0.0133    0.1733    0.1733
    0.1013    0.1493    0.0133    0.2773    0.0133    0.0133    0.0133
    0.1013    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.1013    0.1493    0.0133    0.0133    0.0133    0.0133    0.0133
    0.1013    0.1493    0.2773    0.0133    0.0133    0.1733    0.1733
    0.0133    0.1493    0.2773    0.2773    0.8133    0.1733    0.1733
    0.0133    0.0133    0.2773    0.0133    0.0133    0.1733    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.1733
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.1733
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133

  Columns 8 through 14

    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133
    0.0133    0.0133    0.0133    0.0133    0.0133    0.2133    0.1493
    0.0133    0.4133    0.2773    0.0133    0.0133    0.0133    0.0133
    0.4133    0.0133    0.2773    0.0133    0.0133    0.0133    0.0133
    0.4133    0.4133    0.2773    0.2133    0.0133    0.0133    0.1493
    0.0133    0.0133    0.0133    0.2133    0.2133    0.2133    0.1493
    0.0133    0.0133    0.0133    0.2133    0.2133    0.2133    0.1493
    0.0133    0.0133    0.0133    0.2133    0.2133    0.2133    0.1493
    0.0133    0.0133    0.0133    0.0133    0.0133    0.0133    0.1493
    0.0133    0.0133    0.0133    0.0133    0.2133    0.0133    0.0133

  Column 15

    0.0133
    0.0133
    0.0133
    0.0133
```

```
    0.0133
    0.0133
    0.0133
    0.0133
    0.0133
    0.0133
    0.2773
    0.2773
    0.2773
    0.0133
    0.0133


%Final State I_inf
I_inf

I_inf =

    0.0018
    0.0022
    0.0022
    0.0026
    0.0025
    0.0034
    0.0059
    0.0159
    0.0162
    0.0285
    0.0170
    0.0131
    0.0129
    0.0031
    0.0044


echo off
```

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