```
clear
clc
%Problem 1
fprintf("-----Problem 1-----");
X=[6 3 9 2; 0 4 6 1; 0 0 8 8; 0 0 0 5] %Defining X
y=[1; 4; 6; 1]  %Defining y
b=backsub(X,y)  %Running the backsub function
%The backsub function is:
%       function b = backsub(X,y)
%       l = size(X);
%       n = l(2);
%       b(n, 1) = y(n, 1)/X(n, n);
%       for j = n - 1 : -1 : 1
%               b(j, 1) = (y(j, 1) - X(j, j + 1 : n) * b(j + 1 : n, 1))/X(j, j);
%       end

%Problem 2
fprintf("-----Problem 2-----");
x=[1.4 5.8 2.3 8.1 9]'   %Defining x
v=house(x)   %running the house function with v as output
%The house function is:
%       function v = house(x)
%       m = length(x);
%       mu = norm(x,2);
%       v = x;
%       if mu ~= 0
%               c = x(1) + sign(x(1))*mu;
%               v(2 : m, 1) = v(2 : m, 1)/c;
%       end
%       v(1) = 1;

%Problem 3
fprintf("-----Problem 3-----");
x=[1.4 5.8 2.3 8.1 9]';  %Defining x
v=house(x)   %running the house function
X=[1.4 4.5 6.5; 5.8 3.2 7.3; 2.3 -2.6 8.2; 8.1 -5.8 -8.0; 9.0 0.3 1.5]
XHouse=rowhouse(X,v)
```

```
-----Problem 1-----
X =

     6     3     9     2
     0     4     6     1
     0     0     8     8
     0     0     0     5


y =

     1
     4
     6
     1
```

```
b =

   -0.7875
    0.1250
    0.5500
    0.2000

-----Problem 2-----
x =

    1.4000
    5.8000
    2.3000
    8.1000
    9.0000


v =

    1.0000
    0.3843
    0.1524
    0.5367
    0.5963

-----Problem 3-----
v =

    1.0000
    0.3843
    0.1524
    0.5367
    0.5963


X =

    1.4000    4.5000    6.5000
    5.8000    3.2000    7.3000
    2.3000   -2.6000    8.2000
    8.1000   -5.8000   -8.0000
    9.0000    0.3000    1.5000


XHouse =

  -13.6931    1.8550   -1.3876
   -0.0000    2.1836    4.2689
         0   -3.0031    6.9980
         0   -7.2195  -12.2330
   -0.0000   -1.2772   -3.2034
```

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