```
close all;
clear all;

%Complete Pivoting
fprintf('no4b.\n\n')
n = 12;
A = vandermonde(n);

b = A(:,n);

[LU,p,q,gf,L,U]= lucp(A);
P = eye(n); P=P(p,:);
Q = eye(n); Q = Q(:,q);
yc = forsub(L,P*b);
zc = backsub(U,yc);

fprintf('Compute pivoting solution \n')
xc = Q*zc

x = A\b
residual = norm(b - A*xc);
fprintf('The value of the max-norm of the residual = %f\n\n',residual);

fprintf('no4c.\n\n')
%Gaussian Elimination with Partial pivoting
[Lp,Up,P1,g] = lupp(A);
yp = forsub(Lp,P1*b);

fprintf('Partial pivoting solution \n')
xp = backsub(Up,yp)

residual_xp = norm(b - A*xp);
fprintf('The value of the max-norm of the residual = %f\n\n',residual_xp);

fprintf('Results from part (b), are exactly the same as the exact solution x, since even the residual\n is zero. But for part(c), the solution doesnot

function A = vandermonde(n)

    t = zeros(n,n);
    for i = 1:n
        for j = 1:n
            t(j,i) = j^(n-i);
        end
    end

    %fliping the vandermonde matrix t to form A
    A = fliplr(t);

end
```

```
no4b.

Compute pivoting solution

xc =

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

Warning: Matrix is close to singular or badly scaled. Results may be inaccurate.
RCOND =  8.296438e-17.

x =

     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
     0
     1
```

```
The value of the max-norm of the residual = 0.000000

no4c.

Partial pivoting solution

xp =

   -0.0080
    0.0233
   -0.0279
    0.0184
   -0.0075
    0.0020
   -0.0004
    0.0000
   -0.0000
    0.0000
   -0.0000
    1.0000

The value of the max-norm of the residual = 0.000236

Results from part (b), are exactly the same as the exact solution x, since even the residual
 is zero. But for part(c), the solution doesnot properly approximate the actual solution, according to the residual computed.
```