clear all;

close all;

clc;

x=[1 2 1 2];

n=length(x);

for k=1:n

X(k)=0;

for p=1:n

a=p-1;

b=k-1;

X(k)=X(k)+x(p)\*exp(-1\*1j\*2\*pi\*a\*b/n);

end

end

Y=fft(x);

figure(1);

subplot(2,2,1);

stem(x,'filled');

title('x(n)');

subplot(2,2,2);

stem(X,'filled');

title(' Discrete Fourier Transform of x(n) : {X(k)}');

subplot(2,2,3);

stem(Y,'filled');

title('DFT of x(n) using inbuilt function');