```
#include<stdio.h>
#include<conio.h>
#include<math.h>

void main()
{
int k,n,N;
float static X[100],real[100],imag[100],mag[100],phase[100];
printf("\nEnter N=");
scanf("%d",&N);
printf("Enter sequence x(n)\n");
for(n=0;n<N;n++)
{
scanf("%f",&X[n]);
}
for(k=0;k<N;k++)
 {
  real[k] = imag[k]=0.0;
    for(n=0;n<N;n++)
     {
       real[k]=real[k]+X[n]*cos((2*M_PI*k*(n-N))/N);
       imag[k]=imag[k]+X[n]*sin((2*M_PI*k*(n-N))/N);
     }
     imag[k]=imag[k]*(-1.0);
 }
printf("\nThe %d point DFT X(k) of given sequence is:\n",N);
for(k=0;k<N;k++)
   printf("\n%.2f + j %.2f",real[k],imag[k]);
for(k=0;k<N;k++){
    mag[k]=sqrt(pow(real[k],2)+pow(imag[k],2));
    phase[k]=atan(imag[k]/real[k]);
}
printf("\n");
printf("\n");
printf("\nMagnitude");
for(k=0;k<N;k++)
    printf("\n%.2f",mag[k]);
printf("\n");
printf("\nPhase:");
for(k=0;k<N;k++){
    printf("\n%.2f",(phase[k]*180)/M_PI);
}
}
```

```
C:\Users\Exam\Desktop\4dft.exe

Enter N=4
Enter sequence x(n)
1 2 3 4

The 4 point DFT X(k) of given sequence is:

10.00 + j -0.00
-2.00 + j 2.00
-2.00 + j -0.00
-2.00 + j -2.00

Magnitude
10.00
2.83
2.00
2.83

Phase:
-0.00
-45.00
0.00
45.00
Process returned 4 (0x4)   execution time : 16.889 s
Press any key to continue.
```