clc;

clear all;

close all;

n=input('Enter the value of n: ');

k=input('Enter the value of k: ');

m=n-k;

G=cyclpoly(n,k,'max')

poly2sym(G)

d1=[1 0 0 0];

poly2sym(d1)

c1=poly2sym(d1)\*poly2sym(G)

d2=[0 1 0 0];

poly2sym(d2)

c2=poly2sym(d2)\*poly2sym(G)

d3=[0 0 1 0];

poly2sym(d3)

c3=poly2sym(d3)\*poly2sym(G)

d4=[0 0 0 1];

poly2sym(d4)

c4=poly2sym(d4)\*poly2sym(G)

s=[c1;c2;c3;c4]

d=[d1;d2;d3;d4]

c=d\*s

parmat=hammgen(m)

trt=syndtable(parmat)

recd=[0 1 0 1 0 0 0]

syndrome=rem(recd\*parmat',2)

syndrome\_de=bi2de(syndrome,'left-msb')

disp([syndrome,'left-msb'])

disp(['Syndrome=',num2str(syndrome\_de), '(decimal) ',num2str(syndrome\_de),'(binary)'])

Error=trt(1+syndrome\_de,:)

corrrctedcode= rem(Error+recd,2)

recd=[1 1 0 1 1 0 1]

syndrome=rem(recd\*parmat',2)

syndrome\_de=bi2de(syndrome,'left-msb');

disp(['Syndrome=',num2str(syndrome\_de), '(decimal)', num2str(syndrome\_de),'(binary)'])

Error=trt(1+syndrome\_de,:)

correctedcode=rem(Error+recd,2)

Output:

Enter the value of n:

7

Enter the value of k:

4

G =

1 1 0 1

ans =

x^3 + x^2 + 1

ans =

x^3

c1 =

x^3\*(x^3 + x^2 + 1)

ans =

x^2

c2 =

x^2\*(x^3 + x^2 + 1)

ans =

x

c3 =

x\*(x^3 + x^2 + 1)

ans =

1

c4 =

x^3 + x^2 + 1

s =

x^3\*(x^3 + x^2 + 1)

x^2\*(x^3 + x^2 + 1)

x\*(x^3 + x^2 + 1)

x^3 + x^2 + 1

d =

1 0 0 0

0 1 0 0

0 0 1 0

0 0 0 1

c =

x^3\*(x^3 + x^2 + 1)

x^2\*(x^3 + x^2 + 1)

x\*(x^3 + x^2 + 1)

x^3 + x^2 + 1

parmat =

1 0 0 1 0 1 1

0 1 0 1 1 1 0

0 0 1 0 1 1 1

trt =

0 0 0 0 0 0 0

0 0 1 0 0 0 0

0 1 0 0 0 0 0

0 0 0 0 1 0 0

1 0 0 0 0 0 0

0 0 0 0 0 0 1

0 0 0 1 0 0 0

0 0 0 0 0 1 0

recd =

0 1 0 1 0 0 0

syndrome =

1 0 0

syndrome\_de =

4

left-msb

Syndrome=4(decimal) 4(binary)

Error =

1 0 0 0 0 0 0

corrrctedcode =

1 1 0 1 0 0 0

recd =

1 1 0 1 1 0 1

syndrome =

1 1 0

Syndrome=6(decimal)6(binary)

Error =

0 0 0 1 0 0 0

correctedcode =

1 1 0 0 1 0 1