```
clc;
clear all;
close all;
n=input('Enter n :');
k=input('Enter K:');
d=input('Enter data :');
G=input('Enter generator matrix:');
c=d*G;
C=rem(c,2);
disp('Data is :');
disp(d);
disp('Generator matrix is :');
disp(G);
disp('Code is :');
disp(C);
%Decoding of LBC
p=input('Enter parity matrix :');
h=horzcat(p.',eye(n-k));
ec1=vertcat(zeros(1,n), eye(n));
ec2=vertcat(zeros(1,n-k), h.');
disp('ERROR DECODING TABLE :');
ec=horzcat(ec1,ec2);
disp(ec);
r=input('Enter the received message :');
s=mod(r*h.',2);
disp('SYNDROME IS (S):');
disp(s);
if s==zeros(1,n-k)
```

```
   disp('NO ERROR IN RECEIVED MESSAGE');
else
   disp('ERROR IN BIT');
   d=find(ismember(ec2,s,'rows'));
   disp(d-1);
   r(d-1)=(r(d-1)+1);
   disp('CORRECTED CODEWORD IS :');
   R=rem(r,2);
   disp(R);
end
```

0utput :

```
Enter n : 7
Enter K: 4
Enter data : [1 1 0 0]
Enter generator matrix: [1,0,0,0,1,1,0;0,1,0,0,0,1,1;0,0,1,0,1,1,1;0,0,0,1,1,0,1]
Data is :
1 1 0 0

Generator matrix is :
1 0 0 0 1 1 0
0 1 0 0 0 1 1
0 0 1 0 1 1 1
0 0 0 1 1 0 1

Code is :
1 1 0 0 1 0 1

Enter parity matrix : [1,1,0;0,1,1;1,1,1;1,0,1]
ERROR DECODING TABLE :
   0   0   0   0   0   0   0   0   0   0
   1   0   0   0   0   0   0   1   1   0
   0   1   0   0   0   0   0   0   1   1
```

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

Enter the received message : [0 1 1 1 1 0 1]

SYNDROME IS (S):

```
1  0  0
```

ERROR IN BIT

```
5
```

CORRECTED CODEWORD IS :

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