Name :- Aniket.P.Waghmare Roll No :- 304D065 Batch :- D4

**PROGRAM :**

clear all;

clc;

disp('Study of linear Block code (Aniket Waghmare - 304D065)');

m=[ 1 1 1 1]

P=[1 1 1;1 0 1;0 1 1;1 0 1]

disp(P,"Parity Matrix P");

k=length(m);

I=eye(k,k);

disp(I,"Identity Matrix I");

G =[I P];

disp(G,"generator matrix G");

//C= m\*G

C=modulo(m\*G,2)

disp(C,"Code word Message C");

Er=[1 1 1 1 1 0 1];

disp(Er,"one bit error contaning codeword Error\_codeword");

n=length(Er);

z=eye(n-k,n-k)

disp(z,"Identity Matrix z");

H=[P'z];

disp(H,"Parity matrix H");

S=modulo(Er\*H',2)

disp(S,"Syndrome Matrix S");

HT=H';

if(S==0)

disp("correct");

else

disp("received code vector is with error");

for i=1:n

if(S==HT(i,:))

e =[zeros(1,i-1) 1 zeros(1,n-i)];

disp(e)

end

end

end

disp("correct code word is");

CC=modulo(Er+e,2);

disp(CC);

OUTPUT :

Study of linear Block code (Aniket Waghmare - 304D065)"

1. 1. 1.

1. 0. 1.

0. 1. 1.

1. 0. 1.

"Parity Matrix P"

1. 0. 0. 0.

0. 1. 0. 0.

0. 0. 1. 0.

0. 0. 0. 1.

"Identity Matrix I"

1. 0. 0. 0. 1. 1. 1.

0. 1. 0. 0. 1. 0. 1.

0. 0. 1. 0. 0. 1. 1.

0. 0. 0. 1. 1. 0. 1.

"generator matrix G"

1. 1. 1. 1. 1. 0. 0.

"Code word Message C"

1. 1. 1. 1. 1. 0. 1.

"one bit error contaning codeword Error\_codeword"

1. 0. 0.

0. 1. 0.

0. 0. 1.

"Identity Matrix z"

1. 1. 0. 1. 1. 0. 0.

1. 0. 1. 0. 0. 1. 0.

1. 1. 1. 1. 0. 0. 1.

"Parity matrix H"

0. 0. 1.

"Syndrome Matrix S"

"received code vector is with error"

0. 0. 0. 0. 0. 0. 1.

"correct code word is"

1. 1. 1. 1. 1. 0. 0.