Experiment No. 8

```
% Name: Prajwal Dhopre
% Roll No.: 53
% Batch: A3

% Aim: To Study Linear Block Code

% Objective: Calculate code vector for (7,4) generator matrix


clc;
k=4;                                        % message bit length
n=7;                                        % block length
q=n-k;                                      % no. of parity bits
I=eye(k,k)                                  % identity matrix
P=[1,1,0;0,1,1;1,1,1;1,0,1]                 % coefficient matrix
G=[I P]                                     % generator matrix
H=[P' eye(k-1,k-1)]                         % parity check matrix
m=[0,0,0,0;0,0,1,0;0,0,1,1;0,1,0,0];
c=mod(m*P,2)                                %check vector
Code_Vector=[m c]
```

```
I =

     1     0     0     0
     0     1     0     0
     0     0     1     0
     0     0     0     1


P =

     1     1     0
     0     1     1
     1     1     1
     1     0     1


G =

     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


H =

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

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

```
c =
```

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

```
Code_Vector =
```

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

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