**NETWORK AND COMMUNICATION LAB**

**HAMMING CODE – ERROR DETECTION AND CORRECTION**

**NAME : ARIHANT CHORDIYA**

**REG NO : 15BCE0295**

**CODE** :

#include<stdio.h>

#include<stdlib.h>

int main()

{int i,a[4],r[3],q[3],b[4],s[3];

printf("\nEnter the 4 bit data word : ");

for(i=3;i>=0;i--)

{scanf("%d",&a[i]);}

r[0]=(a[0]+a[1]+a[2])%2;

r[1]=(a[1]+a[2]+a[3])%2;

r[2]=(a[0]+a[3]+a[1])%2;

printf("\nHamming Code Word : ");

for(i=3;i>=0;i--)

{printf("%d",a[i]);}

for(i=2;i>=0;i--)

{printf("%d",r[i]);}

printf("\nEnter the 4 bit received code : ");

for(i=3;i>=0;i--)

{scanf("%d",&b[i]);}

s[0]=(b[0]+b[1]+b[2]+r[0])%2;

s[1]=(b[1]+b[2]+b[3]+r[1])%2;

s[2]=(b[0]+b[3]+b[1]+r[2])%2;

printf("\nSyndrome is : ");

for(i=2;i>=0;i--)

{printf("%d",s[i]);}

if(s[2]==0 && s[1]==0 && s[0]==0)

printf("\nNo Error");

if(s[2]==0 && s[1]==0 && s[0]==1)

printf("\nError in q[0]");

if(s[2]==0 && s[1]==1 && s[0]==0)

printf("\nError in q[1]");

if(s[2]==0 && s[1]==1 && s[0]==1)

printf("\nError in b[2]");

if(s[2]==1 && s[1]==0 && s[0]==0)

printf("\nError in q[2]");

if(s[2]==1 && s[1]==0 && s[0]==1)

printf("\nError in b[0]");

if(s[2]==1 && s[1]==1 && s[0]==0)

printf("\nError in b[3]");

if(s[2]==1 && s[1]==1 && s[0]==1)

printf("\nError in b[1]");

return 1;}

OUTPUT :



