#include<stdio.h>

**void** main() {

**int** data[10];

**int** dataatrec[10],c,c1,c2,c3,i;

**printf**("Enter 4 bits of data one by one\n");

scanf("%d",&data[0]);

scanf("%d",&data[1]);

scanf("%d",&data[2]);

scanf("%d",&data[4]);

*//Calculation of even parity*

data[6]=data[0]^data[2]^data[4];

data[5]=data[0]^data[1]^data[4];

data[3]=data[0]^data[1]^data[2];

**printf**("\nEncoded data is\n");

**for**(i=0;i<7;i++)

**printf**("%d",data[i]);

**printf**("\n\nEnter received data bits one by one\n");

**for**(i=0;i<7;i++)

scanf("%d",&dataatrec[i]);

c1=dataatrec[6]^dataatrec[4]^dataatrec[2]^dataatrec[0];

c2=dataatrec[5]^dataatrec[4]^dataatrec[1]^dataatrec[0];

c3=dataatrec[3]^dataatrec[2]^dataatrec[1]^dataatrec[0];

c=c3\*4+c2\*2+c1 ;

**if**(c==0) {

**printf**("\nNo error while transmission of data\n");

}

**else** {

**printf**("\nError on position %d",c);

**printf**("\nData sent : ");

**for**(i=0;i<7;i++)

**printf**("%d",data[i]);

**printf**("\nData received : ");

**for**(i=0;i<7;i++)

**printf**("%d",dataatrec[i]);

**printf**("\nCorrect message is\n");

*//if errorneous bit is 0 we complement it else vice versa*

**if**(dataatrec[7-c]==0)

dataatrec[7-c]=1;

**else**

dataatrec[7-c]=0;

}

}