

ACNW LAB 7 - Hamming Code

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Program in C:

```
#include<stdio.h>
int 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]);
    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=6;i>=0;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("\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]);
```

```

    if(dataatrec[7-c]==0)
        dataatrec[7-c]=1;
    else
        dataatrec[7-c]=0;
    for(i=0;i<7;i++)
    {
        if(data[7-i] != dataatrec[i])
        {
            printf("\n\n MORE THAN ONE BIT ERROR....!! \n");
            return;
        }
    }
    printf("\nError on position %d",c);
    printf("\n Correct message is \n");
    for (i=0;i<7;i++)
    {
        printf("%d",dataatrec[i]);
    }

    printf("\n\n      CORRECTED      DATA      MESSAGE      :      %d      %d      %d
%d",dataatrec[6],dataatrec[5],dataatrec[4],dataatrec[2]);
}
return 0;
}
OUTPUT:

```

```
D:\200948030\hamming\bin\Debug\hamming.exe
Enter 4 bits of data one by one
1 0 1 1
Encoded data is
1010101
Enter received data bits one by one
1 0 1 0 1 0 1
No error while transmission of data
Process returned 0 (0x0)   execution time : 12.969 s
Press any key to continue.
```

```
D:\200948030\hamming\bin\Debug\hamming.exe
Enter 4 bits of data one by one
1 0 1 1
Encoded data is
1010101
Enter received data bits one by one
1 0 1 0 1 0 0
Error on position 1
Data sent : 1010101
Data received : 1010100
Correct message is
1010101
Process returned 0 (0x0)   execution time : 11.847 s
Press any key to continue.
```

```
D:\200948030\hamming\bin\Debug\hamming.exe
Enter 4 bits of data one by one
0 0 0 0
Encoded data is
0000000
Enter received data bits one by one
1 1 1 0 0 0 0
Data sent : 0000000
Data received : 1110000
MORE THAN ONE BIT ERROR....!!
Process returned 0 (0x0)   execution time : 7.055 s
Press any key to continue.
```