

Program:-

```
#include<stdio.h>

int main() {
    int data[10];
    int dataatrec[10],c,c1,c2,c3,i;

    printf("Enter 4 bits of data consecutively:-\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("\nThe Encoded data is:-\n");
    for(i=0;i<7;i++)
        printf("%d",data[i]);

    printf("\n\nEnter received data bits consecutively:-\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 ;

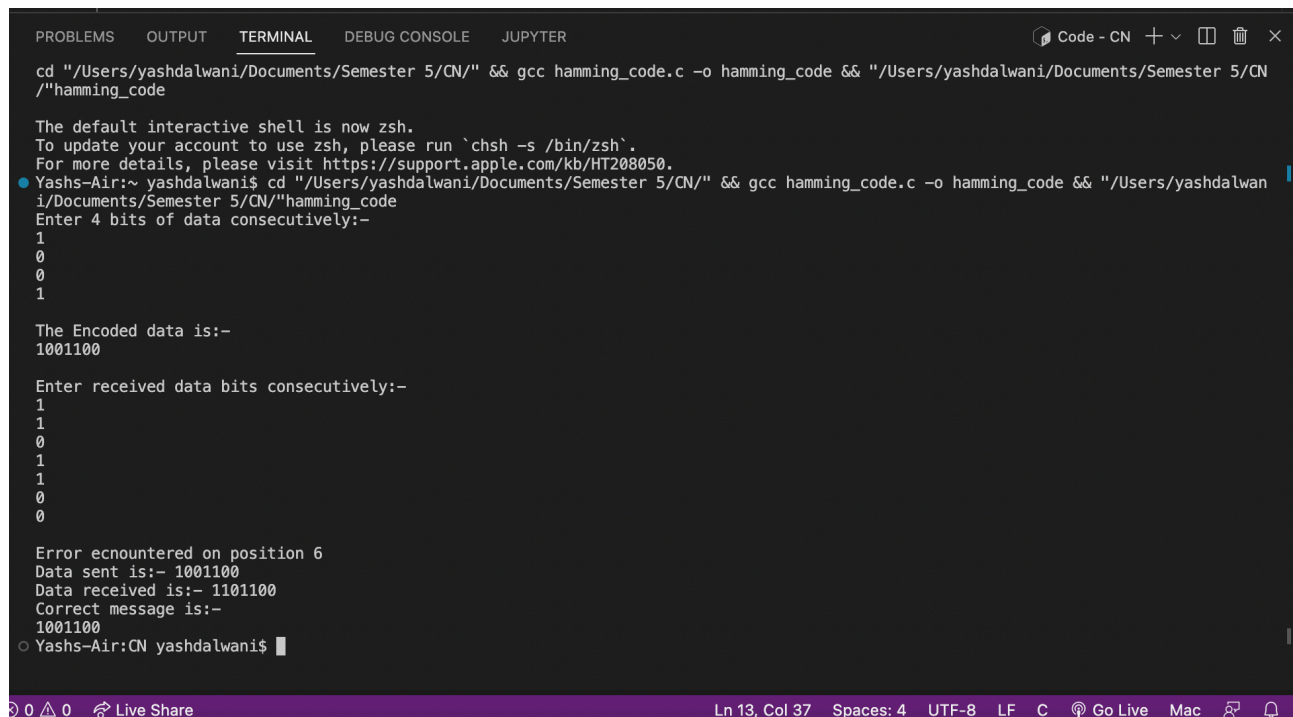
    if(c==0) {
        printf("\nNo error encountered while transmission of data\n");
    }
    else {
        printf("\nError encountered on position %d",c);

        printf("\nData sent is:- ");
        for(i=0;i<7;i++)
            printf("%d",data[i]);

        printf("\nData received is:- ");
        for(i=0;i<7;i++)
            printf("%d",dataatrec[i]);
        printf("\nCorrect message is:-\n");
    }
}
```

```
if(dataatrec[7-c]==0)
dataatrec[7-c]=1;
    else
dataatrec[7-c]=0;
for (i=0;i<7;i++) {
printf("%d",dataatrec[i]);
}
printf("\n");}
}
```

Output:-



```
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE JUPYTER
Code - CN + - [] X

cd "/Users/yashdalwani/Documents/Semester 5/CN/" && gcc hamming_code.c -o hamming_code && "/Users/yashdalwani/Documents/Semester 5/CN/"hamming_code

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Yashs-Air:~ yashdalwani$ cd "/Users/yashdalwani/Documents/Semester 5/CN/" && gcc hamming_code.c -o hamming_code && "/Users/yashdalwani/Documents/Semester 5/CN/"hamming_code
Enter 4 bits of data consecutively:-
1
0
0
1

The Encoded data is:-
1001100

Enter received data bits consecutively:-
1
1
0
1
1
0
0

Error encountered on position 6
Data sent is:- 1001100
Data received is:- 1101100
Correct message is:-
1001100
Yashs-Air:CN yashdalwani$
```