Week 13

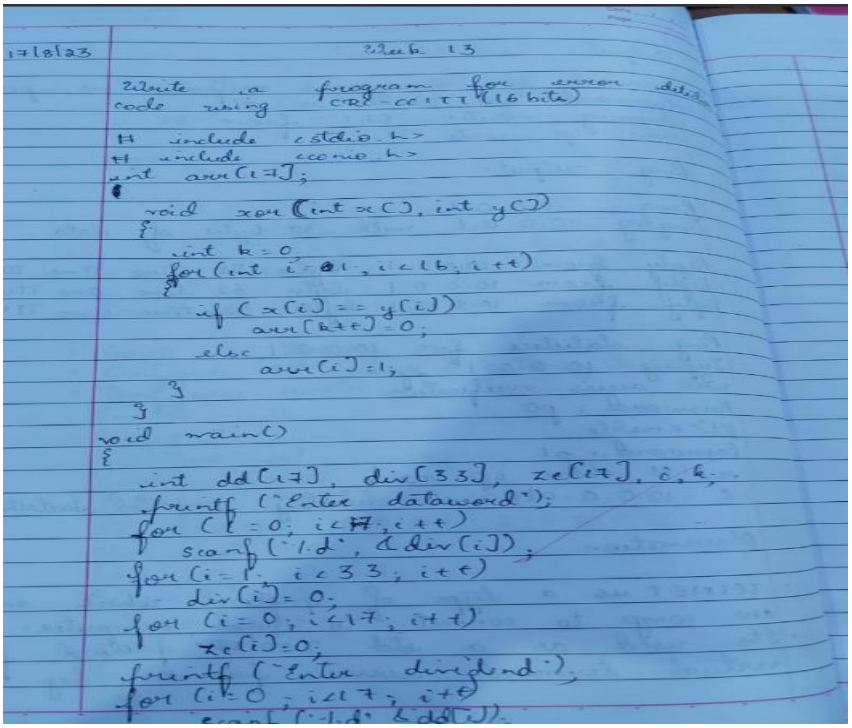
Write a program for error detecting code using CRC-CCITT (16-bits).

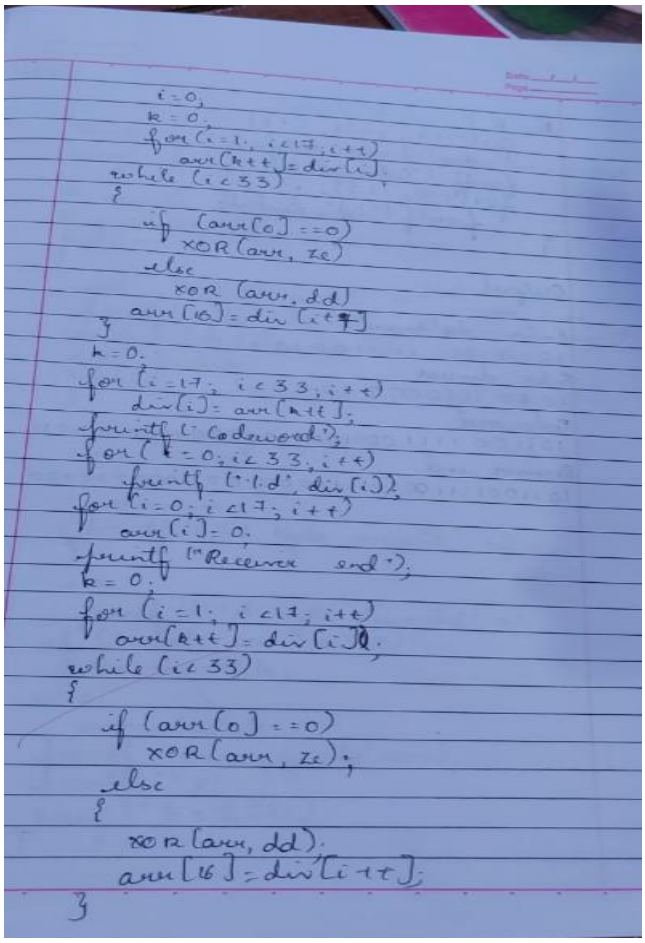
Code:

```
#include<stdio.h>
int arr[17];
void xor(int x[], int y[])
{
    int k=0;
    for(int i=1;i<16;i++)
    {
        if(x[i]==y[i])
            arr[k++]=0;
        else
            arr[i]=1;
    }
}
void main()
{
    int dd[17],div[33],ze[17],i,k;

    printf("Enter the dataword \n");
    for(i=0;i<17;i++)
        scanf("%d",&div[i]);

    for(i=i;i<33;i++)
        div[i]=0;

    for(i=0;i<17;i++)
        ze[i]=0;
    printf("Enter dividend \n");
    for(i=0;i<17;i++)
        scanf("%d",&dd[i]);
    i=0;
    k=0;
        for(i=i;i<17;i++)
            arr[k++]=div[i];
    while(i<33)
    {
        if(arr[0]==0)
            xor(arr,ze);
        else
            xor(arr,dd);

        arr[16]=div[i++];

    }
```

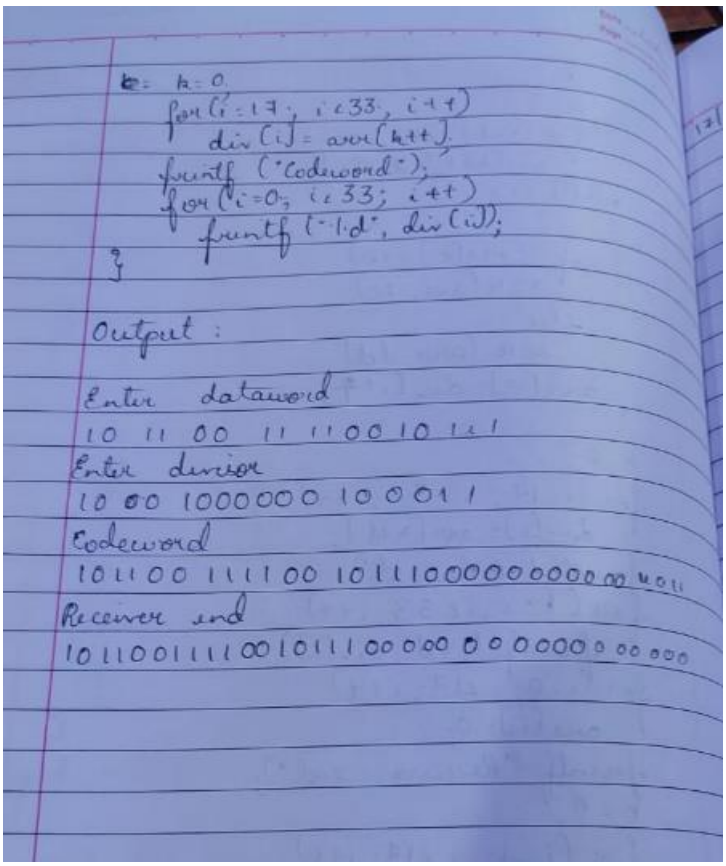
```
    k=0;
    for(i=17;i<33;i++)
        div[i]=arr[k++];
    printf("Codeword: ");
        for(i=0;i<33;i++)
            printf("%d",div[i]);
    for(i=0;i<17;i++)
        arr[i]=0;
    printf("\nAt receiver end \n");

     k=0;
        for(i=i;i<17;i++)
            arr[k++]=div[i];
    while(i<33)
    {
        if(arr[0]==0)
            xor(arr,ze);
        else
            xor(arr,dd);

        arr[16]=div[i++];

    }
    k=0;
    for(i=17;i<33;i++)
        div[i]=arr[k++];

    printf("Codeword: ");
        for(i=0;i<33;i++)
            printf("%d",div[i]);
}
```

Observation :





```
    i=0,
    k=0,
    for(i=1; i<17; i++)
        arr[k++]=div[i];
    while (i<33)
    {
        if (arr[0]==0)
            XOR(arr, ze)
        else
            XOR (arr, dd)
        arr[16]=div[i++];
    }
    k=0.
    for(i=17; i<33; i++)
        div[i]=arr[k++];
    printf("Codeword");
    for(i=0; i<33; i++)
        printf("%d", div[i]);
    for(i=0; i<17; i++)
        arr[i]=0.
    printf("Receiver end");
    k=0.
    for(i=1; i<17; i++)
        arr[k++]=div[i];
    while(i<33)
    {
        if(arr[0]==0)
            XOR(arr, ze);
        else
        {
            XOR(arr, dd);
            arr[16]=div[i++];
    }
```

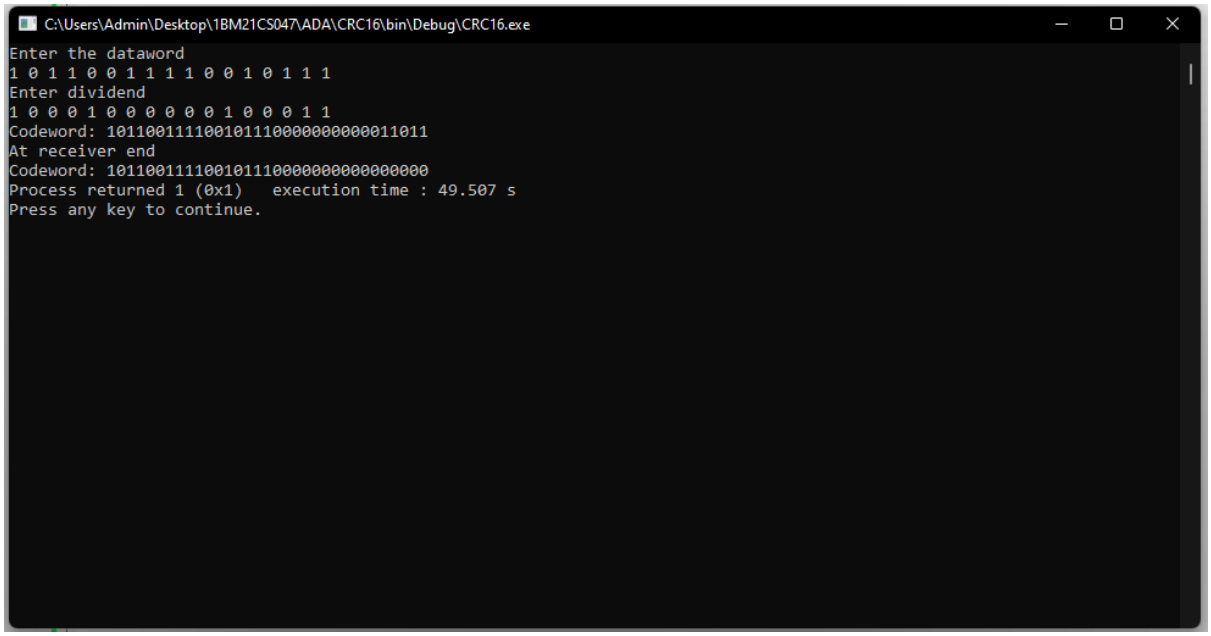


```
    k=0
    for(i=17; i<33; i++)
        div[i]=arr[k++];
    printf("Codeword");
    for(i=0; i<33; i++)
        printf("%d", div[i]);
}
```

Output :

```
Enter dataword
10 11 00 11 1100 10 101
Enter divisor
10 00 1000000 10 001 1
Codeword
10110 0 1111 00 10111000000000 00 011
Receiver end
10110011110010111 00000 0 0 00000 0 00 000
```

Output :


C:\Users\Admin\Desktop\1BM21CS047\ADA\CRC16\bin\Debug\CRC16.exe
Enter the dataword
1 0 1 1 0 0 1 1 1 1 0 0 1 0 1 1 1
Enter dividend
1 0 0 0 1 0 0 0 0 0 0 1 0 0 0 1 1
Codeword: 10110011110010111000000000011011
At receiver end
Codeword: 10110011110010111000000000000000
Process returned 1 (0x1)   execution time : 49.507 s
Press any key to continue.