LAB13

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

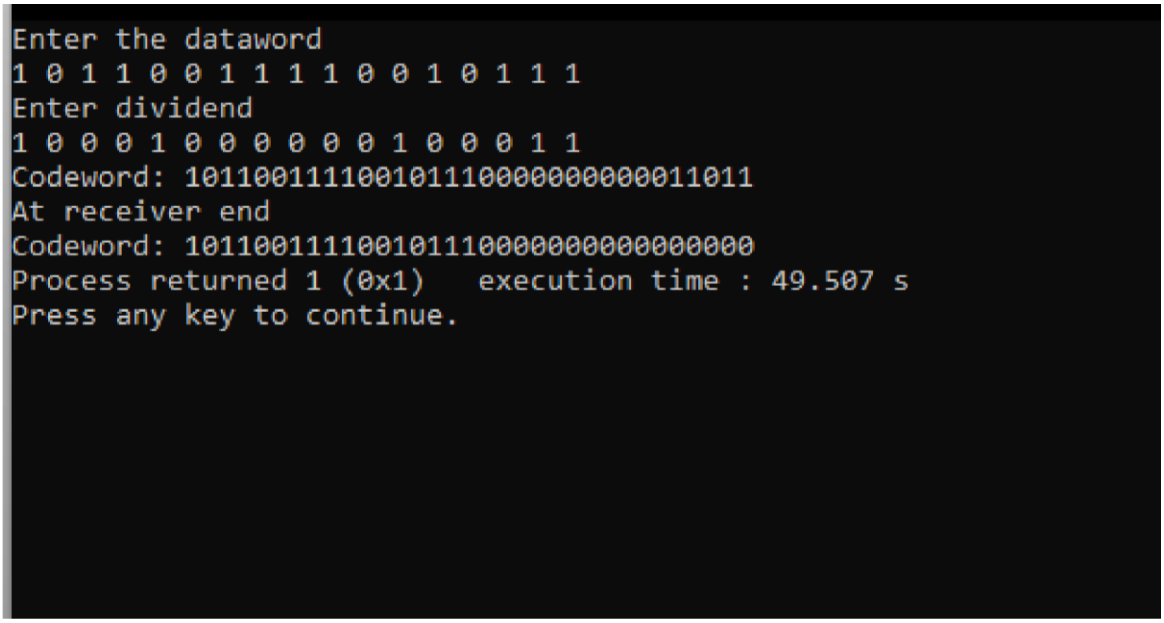
CODE:

```
#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++)
```

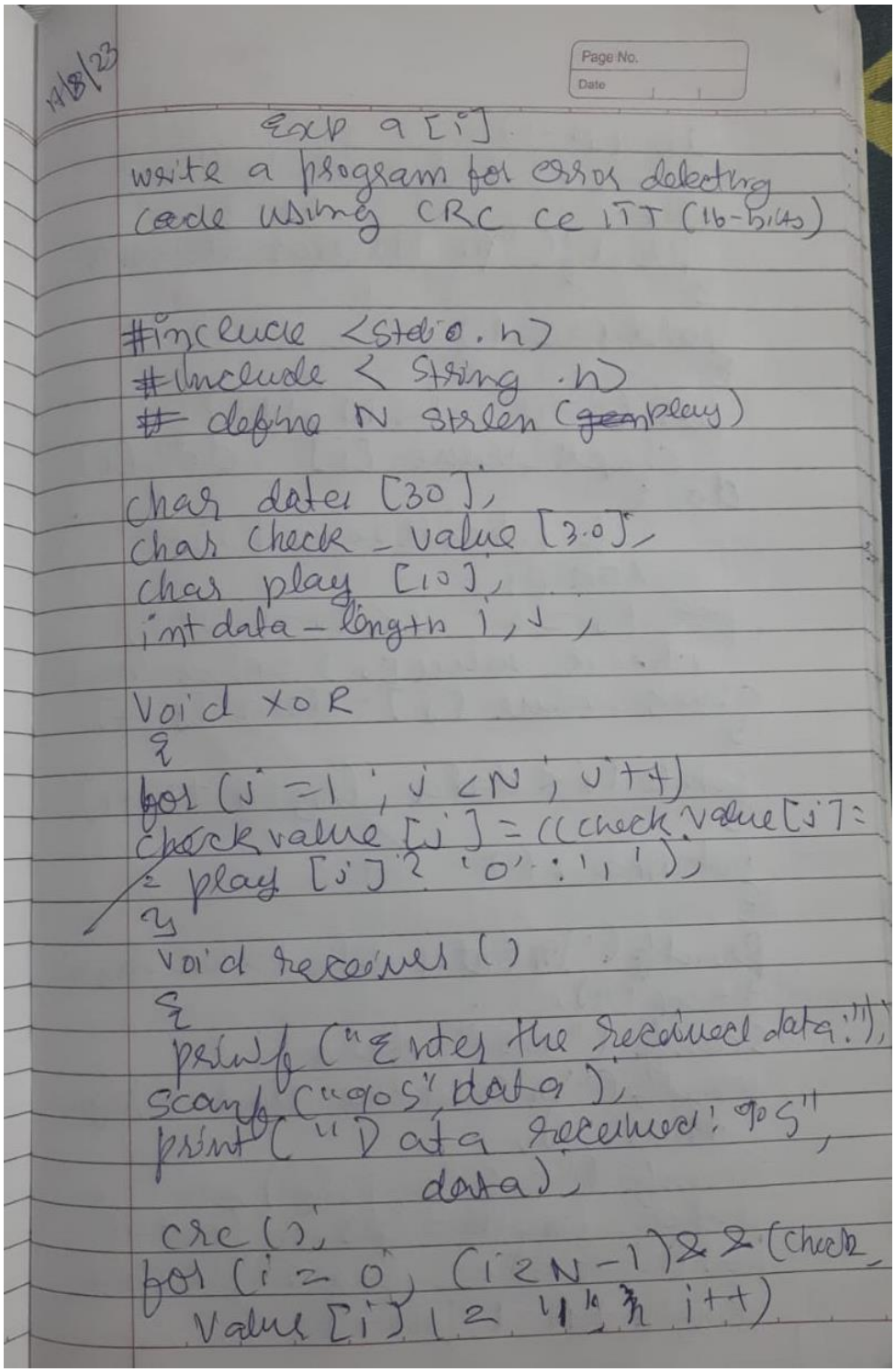
```
        arr[k++]=div[i];
while(i<33)
{ if(arr[0]==0)
        xor(arr,ze);
    else
        xor(arr,dd);

    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]);
}
```

OUTPUT:



OBSERVATION:



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

```
#include <stdio.h>
#include <string.h>
# define N strlen (~~gen~~play)

char data1 [30];
char check_value [30];
char play [10];
int data_length i, j;

Void XOR
{
for (j = 1; j < N; j++)
check value [j] = ((check value [j] ==
= play [j] ? '0' : '1');
}
Void receiver ()
{
printf ("Enter the received data:");
scanf ("%s", data);
printf ("Data received: %s",
        data);
crc ();
for (i = 0; (i < N-1) && (check_
  value [i] != '1'); i++)
```

```
if (N-1)
printf ("\n Error detected \n");
else
printf ("\n No error detected \n");
}
void crc ()
{
for (i=0 ; i<N ; i++)
  check_value [i] = data [i];
do {
    if (checkvalue [0] == '1')
    XOR ();
for (j=0 ; j<N-1 ; j++)
  check_value [j] = check_value [j+1];
check_value [j] = data [j++];
}
while (i < data_length +N+1);
}
int main ()
{
printf ("\n Enter data to be transmitted : ");
scanf ("%s", data);
printf ("\n Enter the divisor polynomial : ");
scanf ("%s", poly);
data_length = strlen (data);
for (i=data_length ; i< data_length +N-1 ; i++)
```

```
data[i] = 0;
printf("\n Data padded with
n-1 zeros : %s", data);
crc();
printf("\n CRC value is %s",
                check_value);
for(i = data_length,
    i < data_length
    + N - 1; i++)

data[i] - (check_value[i - data
                    _length];
printf("\n final data word to be
    sent : %s", data);
receive();
return 0;
}
```

Output

```
Enter data to be transmitted: 101010
Enter the divisor polynomial: 1011

Data padded with n-1 zeros: 101010
                            000
CRC value is: 001
Final codeword to be sent:
                            101010001
Enter the received data: 1000 1000
Error detected
Enter data to be transmitted:
Enter the divisor polynomial: 1001 10100
```

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Data padded with n-1 zeros:
10 1100000
CRC value is : 001
Final code word to be sent:
10 1100001
Enter the received data: 1011000
No error detected.

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