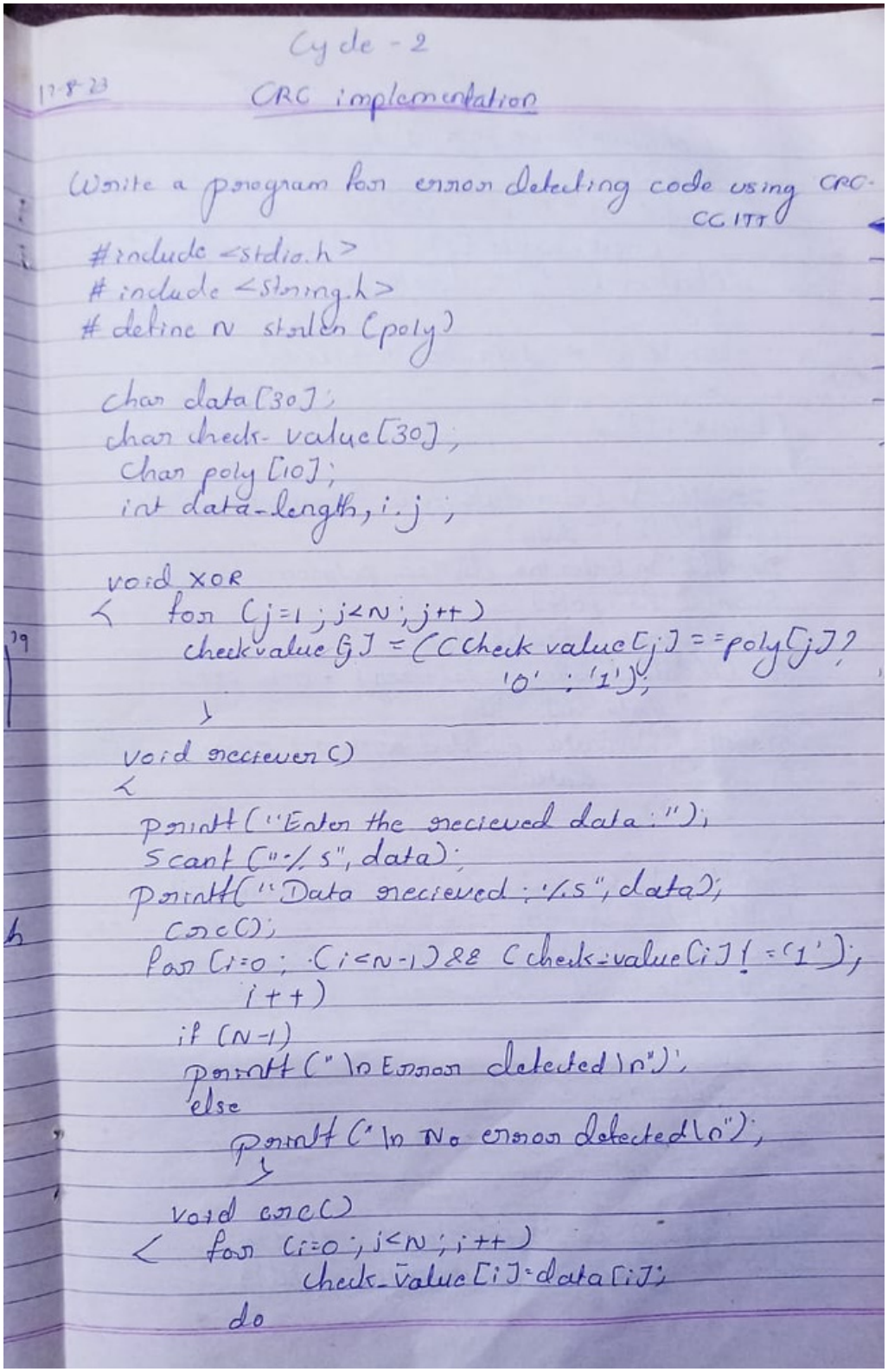
WEEK 13

Write a program for error detecting code using CRC



Cycle - 2

17-8-23

CRC implementation

Write a program for error detecting code using CRC-CCITT

```
#include <stdio.h>
#include <string.h>
#define N strlen(poly)

char data[30];
char check_value[30];
char poly[10];
int data_length, i, j;

void XOR
{
    for (j=1; j<N; j++)
        check_value[j] = (check_value[j] == poly[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("\nError detected\n");
    else
        printf("\nNo 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[i++];
    }
    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<datalength + N-1 ; i++)
        data[i] = '0';
    printf("\n Data padded with n-1 zeroes : %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 datawoard to be sent : %s",
                                    data);
    receiver();
    return 0;
}
```

Output

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

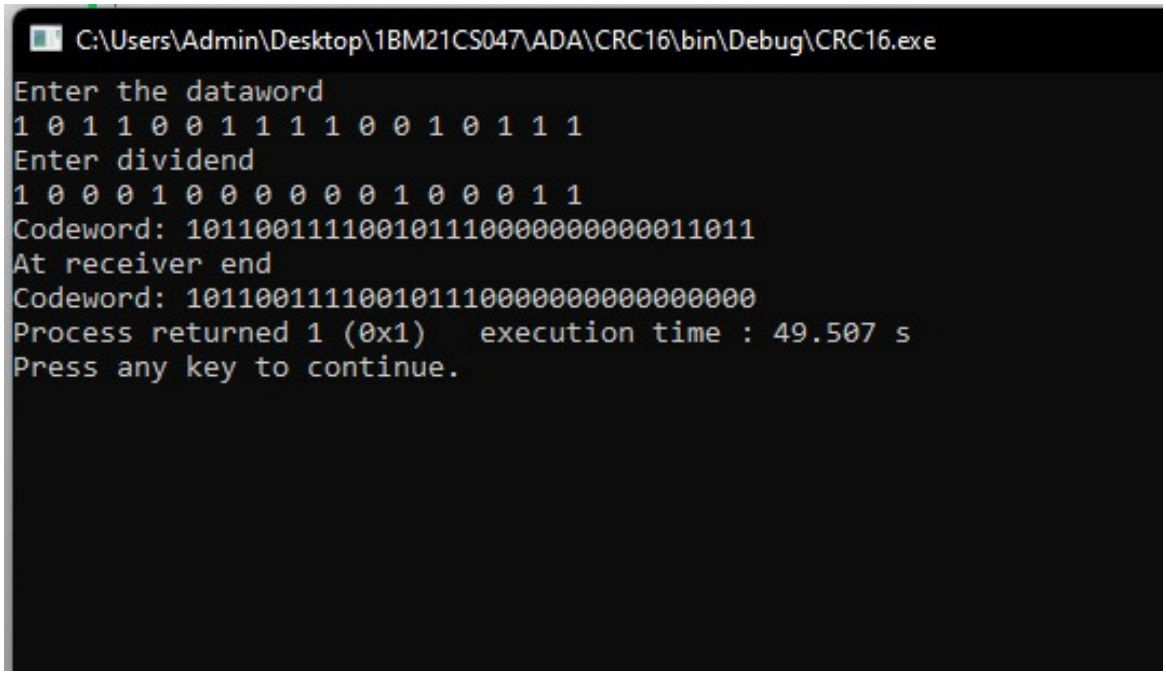
Data padded with n-1 zeroes : 101010000
CRC value is : 001
Final codeword to be sent : 101010001

Enter the received data : 10001000
Error detected

Enter data to be transmitted : 101100
Enter the divisor polynomial : 1001

Data padded with n-1 zeroes : 101100000
CRC value is : 001
Final codeword to be sent : 101100001

Enter the received data : 101100001
No error detected


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.