Cycle II

LAB 13:

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

CYCLE II

1 Write a program for error detecting code using CRC-CC

```
#include <stdio.h>
#include <string.h>

void binaryXOR (char *result, const char *a,
                const char *b)
{
    for (int i=0; i<16; i++)
        result[i] = (a[i] == b[i]) ? '0' : '1';

    result[16] = '\0';
}

void CRC (const char *data, int length, char
          *checksum)
{
    char crc[17];
    for (int i=0; i<16; i++)
        crc[i] = '0';

    crc[16] = '\0';
    for (int i=0; i < length; i++)
    {
        for (int j=0; j<8; j++)
        {
            char msb = crc[0];
            for (int k=0; k<16; k++)
                crc[k] = crc[k+1];
```

```
        crc[15] = '0';
        if (msb == '1')
        {
            char temp[17];
            binaryXOR(temp, crc, "1000100000010001");
            strcpy(crc, temp);
        }
    }
    crc[15] = (data[i] == '1') ? '1' : '0';
}
strcpy(checksum, crc);
}

void main()
{
    char data[100];
    printf("Enter data in binary: ");
    scanf("%s", data);

    int datalength = strlen(data);
    char checksum[17];
    calculateCRC(data, datalength, checksum);

    char receivedChecksum[17];
    printf("Enter received CRC: ");
    scanf("%s", receivedChecksum);

    if (strcmp(receivedChecksum, checksum) == 0)
        printf("Data is error-free\n");

    else
        printf("Data contains errors.\n");
```

```
    return 0;
}
```

Output:

```
Enter data in binary : 1100101011100100 1
Calculated CRC : 1110100101110001
Entered received CRC = 1110100101110001
Data is error free.
```

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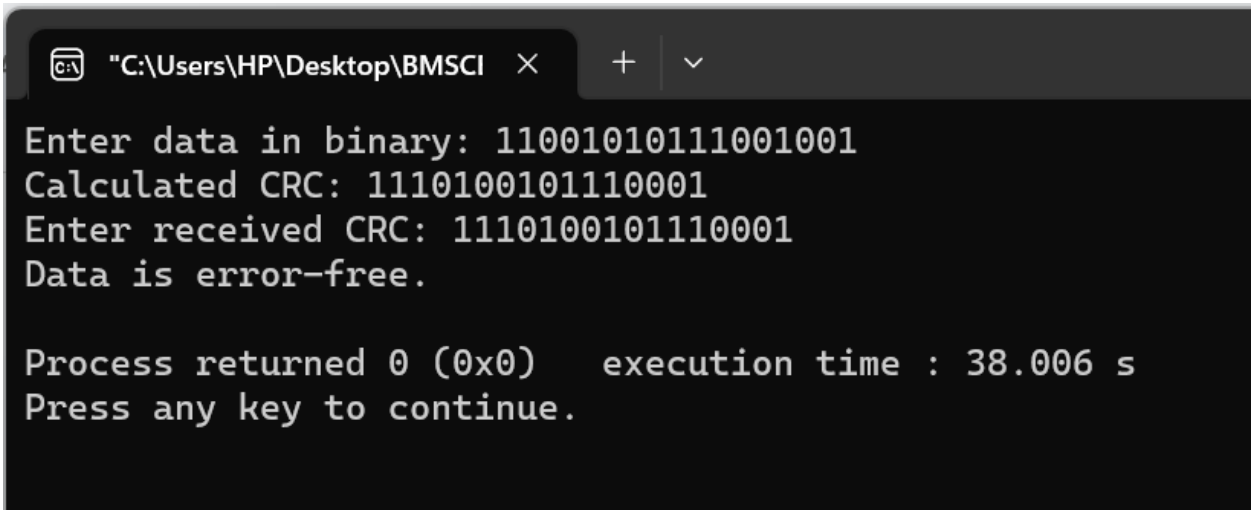
Output :


"C:\Users\HP\Desktop\BMSCI
Enter data in binary: 11001010111001001
Calculated CRC: 1110100101110001
Enter received CRC: 1110100101110001
Data is error-free.
Process returned 0 (0x0)   execution time : 38.006 s
Press any key to continue.