19/12/24

Lab - 7 - CRC - CCITT

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

Code -

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

using namespace std;

int crc (char *ip, char *op, char *poly, int mode)
{
    strcpy (op, ip);
    if (mode) {
        for(int i = 1 ; i< strlen(poly); i++) {
            strcat(op, "0"); }
    }

for(int i = 0 ; i< strlen(ip); i++) {
        if (op[i] == '1') {
            for (int j = 0 ; j< strlen(poly) ; j++) {
                if (op[i+j] == poly [j]).
                    op[i+j] = '0';
                else
                    op[i+j] = '1';
            }
        }
    }

for (int i = 0; i < strlen(op); i++)
        if (op[i] == '1')
            return 0;
```

```
    return 1;
}

int main()
{
    char ip[50], op[50], recv[50];
    char poly[] = "10001000000100001";

    cout << "\nEnter input message in binary " << endl;
    cin >> ip;
    crc(ip, op, poly, 1);
    cout << " The transmitted message is : " << ip << op+
    strlen(ip) << endl;
    cout << " Enter the received message in binary " << endl;
    cin >> recv;
    if (crc(recv, op, poly, 0))
        cout << "No error in data " << endl;
    else
        cout << " Error in data transmission has
                occured " << endl;
    return 0;
}
```

output :

output: Enter the input message in binary
1111

The transmitted message is: 11111111000111011110.

Enter the recieved message in binary
11111

No error in data.

checksum

output: Enter data to be transmitted : 1001
Enter generating polynomial : 1011
Data padded with n-1 zeros : 1001000
CRC : 110.
Final data to be ~~sent~~ sent : 1001110
Enter the recieved data : 1001110.
Data recieved : 1001110.
no error detected.

Sender:

```
      1010
1011 | 1001000
       1011
       ----
        0100
        0000
        ----
        1000
        1011
        ----
         0110
         0000
         ----
          110
```

data word - 1001110.

Reciever.

```
      1010
1011 | 1001110
       1011
       ----
        0111
        0000
        ----
        1011
        0000
        ----
         0000
         0000
         ----
          000
```

∴ No error.