**Program -CRC(Error Detection)**

Aim of the program:

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

Code:

#include <iostream>

#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");

    }

    // Perform XOR on the message with the selected polynomial

    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';

            }

        }

    }

    // Check for errors. Return 0 if error detected

    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 << "Enter the 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 occurred" << endl;

    return 0;

}

OUTPUT:





