CN Lab

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Program 1 : Data Link Layer can ensure error free transmission of message by utilising error detection techniques like Parity check, checksum, CRC.

$x^8 + x^2 + x^1 + 1$

: 1 0 0 0 0 0 1 1 1

2^8 2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0

```
#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");
  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[] = "100000111";
    cout << "Enter input message in binary" << endl;
    cin >> ip;
    crc(ip, op, poly, 1);
    cout << "The transmitted message is:" << ip <<
            op + strlen(ip) << endl;
    cout << "Enter 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;
}
```