

10/2/22

Lab - 7 - CRC-CCITT

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

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++) {
```

```
strcpy(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 << "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 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 :

output: Enter the input message in binary
1111

The transmitted message is: 111111100011101110.

Enter the received message in binary
1111

No error in data.

check of P

output: Enter data to be transmitted: 1001

Enter generating polynomial: 1011.

Data padded with $n-1$ zeros: 10010000

CRC: 110.

Final data to be sent: 1001110

Enter the received data: 1001110.

Data received: 1001110.

no error detected.

Sender:

Receiver:

$$\begin{array}{r}
 1010 \\
 1011 \overline{) 10010000} \\
 \underline{1001} \\
 0100 \\
 \underline{0000} \\
 1000 \\
 \underline{1011} \\
 0110 \\
 \underline{0000} \\
 110
 \end{array}$$

data word - 1001110.

∴ No error.

$$\begin{array}{r}
 1010 \\
 1011 \overline{) 1001110} \\
 \underline{1011} \\
 0101 \\
 \underline{0000} \\
 1011 \\
 \underline{0000} \\
 0000 \\
 \underline{0000} \\
 000
 \end{array}$$