17/8/23

CRC implementation

Write a program for error detecting code using CRC- CCITT

C-code

```
#include<stdio.h>
#include<string.h>
#define N strlen(poly)

char data[30];
char check_value[30];
char poly[10];
int data_length, i, j;

void XOR()
{
  for (j=1; j<N; j++)
  checkvalue[j] = ((check_value[j] == poly[j] ?
                    '0' : '1');
}

void receiver()
{
  printf("Enter the received data:");
  scanf("%s", data);
  printf("Data received : %s", data);
  crc();
  for (i=0; (i<N-1) && (check_value[i]!='1'
       ; i++)
```

```
        if (c<N-1)
            printf("\n Error detected\n");
        else
            printf("\n No error detected\n");
}

void crc()
{
    for(i=0; i<N; i++)
        check_value[i] = data[i];
    do{
        if(checkvalue[0]=='1')
            XOR();
        for(j=0; j<N-1; j++)
            check_value[j] = check_value[j+1];
        check_value[j] = data[j++];
    }while(i<=data_length+N+1);
}

int main()
{
    printf("\n Enter data to be transmitted:");
    scanf("%s", data);
    printf("\n Enter the divisor polynomial:");
    scanf("%s", poly);
    data_length = strlen(data);
    for(i=data_length; i<datalength+N-1; i++)
        data[i] = '0';
    printf("\n Data padded with n-1 zeroes:%s",
        data);
    crc();
```

```
    printf("\n CRC value is %s",
                                check_value);
    for(i=data_length; i<data_length+N-1; i++)
        data[i] = check_value[i-data_length];
    printf("\n Final dataword to be sent : %s"
                                data);

    receiver();
    return 0;
}
```

Output -

```
Enter data to be transmitted : 101010
Enter the divisor polynomial : 1011

Data padded with n-1 zeroes : 101010000
CRC value is : 001
Final codeword to be sent : 101010001

Enter the received data : 10001000
Error detected

Enter data to be transmitted : 101100
Enter the divisor polynomial : 1001

Data padded with n-1 zeroes : 101100000
CRC value is : 001
Final codeword to be sent : 101100001

Enter the received data : 101100001
No error detected
```

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