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Cycle-2

21/8/23 Experiment-1

Aim: Write a program for error detection code using CRC-CCITT (16 bits)

```
#include <stdio.h>
#include <string.h>
#define N strlen(divisor)
char data[30];
char rem[30];
char divisor[10];
int length, i, j;
void xor() {
    for (j=1; j<N; j++)
    rem[j] = ((rem[j] == divisor[j])?'0':'1');
}
void crc() {
    for (i=0; j<N; i++)
        rem[i] = data[i];
do {
    if (rem[0] == '1') xor();
    for (j=0; j<N-1; j++) rem[j] = rem[j+1];
    rem[j] = data[i+j]; }
void error while (i<length+N-1); }
void receiver() {
    printf ("Enter the data being received");
    scanf ("%s", data);
    printf ("Data received: %s", data);
    crc();
for (i=0; (i<N-1) && (rem[i]='1'); i++) {
    if (i<N-1) printf ("\n Error detected\n");
else
    printf ("\n No error \n")
}
}
```

```
int main () {
    printf ("Enter data to be transmitted");
    scanf ("%s", data);
    printf ("\nEnter the divisor");
    scanf ("%s", divisor);
    dlength = strlen (data);
for (i= dlength ; i< dlength +N-1; i++)
    {   data[i]='0'; }
printf ("\n Data provided with n-1 zeros %s", data
    crc ();
printf ("\n The remainder or CRC is %s", rem
    data[i]= rem[i-dlength];
printf ("\n Final data being sent %s", data);
    receiver ();
    return 0; }
```

Output:-

1) Enter data to be transmitted : 1001101
   Enter the Divisor : 1011
   Data padded with n-1 zeroes : 1001101000
   The remainder or CRC is : 101
   Final data being sent : 1001101101
   Enter the data being received : 1001101101
   Data received : 1001101101
   No error detected in data

2) Enter data to be transmitted : 1001101
   Enter the divisor : 1011
   Data padded with n-1 zeroes : 1001101000
   The remainder or CRC is : 101
   Enter the data being received : 1001100101
   Data received : 1001100101
   Error detected in data.