Assignment No. : A3- CRC

Title: Lab Assignment on Unit II: (Use C/C++)

Write a program for error detection and correction for 7/8 bits ASCII codes using Hamming Codes or CRC.
Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode

CODE :

```
#include <stdio.h>
#include <string.h>

int main() {

   int i,j,keylen,msglen;
   char input[100],
key[30],temp[30],quot[100],rem[30],key1[30],nmsg[20];

   printf("Enter Data : ");
   scanf("%s",input);

   printf("Enter Key: ");
   scanf("%s",key);

   keylen=strlen(key);
   msglen=strlen(input);
   strcpy(key1,key);

   for (i=0;i<keylen-1;i++) {
      input[msglen+i]='0';
   }
   for (i=0;i<keylen;i++)
   temp[i]=input[i];        //Dividend Part

   for (i=0;i<msglen;i++) {
      quot[i]=temp[0];
      if(quot[i]=='0') for
      (j=0;j<keylen;j++)
      key[j]='0'; else
            for (j=0;j<keylen;j++)
            key[j]=key1[j]; for
            (j=keylen-1;j>0;j--) {
               if(temp[j]==key[j])       //exOR operation perform
                  rem[j-1]='0';
               else rem[j-
                  1]='1';
               }
      rem[keylen-1]=input[i+keylen];
      strcpy(temp,rem);
   }

   strcpy(rem,temp);
```

```
   printf("\nQuotient is : ");
   for (i=0;i<msglen;i++)
   printf("%c",quot[i]);

   printf("\nRemainder is : ");
   for (i=0;i<keylen-1;i++)
   printf("%c",rem[i]);

   printf("\nFinal data is: "); int
   newmsglen = msglen+keylen-1;

   for(i=msglen;i<(msglen+keylen-1);i++) input[i]=rem[i-
      msglen];
   for (i=0;i<newmsglen;i++)
      printf("%c",input[i]);


//-------------------- receiver side code-----------------------------


   printf("\n\nENTER THE RECEIEVED DATA : ");
      scanf("%s",input); for
      (i=0;i<keylen;i++) temp[i]=input[i];

   for (i=0;i<msglen;i++)
   { quot[i]=temp[0];

      if(quot[i]=='0') for
         (j=0;j<keylen;j++)
         key[j]='0';
      else for
         (j=0;j<keylen;j++)
         key[j]=key1[j];

      for (j=keylen-1;j>0;j--)
      { if(temp[j]==key[j])
         rem[j-1]='0';
         else rem[j-
            1]='1';
      }

      rem[keylen-1]=input[i+keylen];
      strcpy(temp,rem);
   }

   int flag=0;

   strcpy(rem,temp);

   for(i=0;i<keylen-1;i++) {

   if(rem[i]=='0') continue;

      else
         flag=1;
```

```
   } if(flag==1)
printf("\n\tSinceRemainderIsNot0,HenceMessageTransmittedFrom Sender To
Receiver Contains Error.");

   else printf("\n\tSince Remainder Is 0 Hence Message Transmitted
From Sender To Receiver Is Correct\n");

    return 0;
}
```

OUTPUT

```
A:\Computer\SEMESTER 5\Computer Networks\Assignments\CNL!\A3-CRC>gcc
crc.c

A:\Computer\SEMESTER 5\Computer Networks\Assignments\CNL!\A3-CRC>a
Enter Data : 10110011
Enter Key: 1011

Quotient is : 10000011
Remainder is : 101
Final data is: 10110011101

ENTER THE RECEIEVED DATA : 10110011101

           SinceRemainderIs0HenceMessageTransmittedFromSenderToReceiver
Is Correct

A:\Computer\SEMESTER 5\Computer Networks\Assignments\CNL!\A3-CRC>a
Enter Data : 11001110
Enter Key: 1100

Quotient is : 10001011
Remainder is : 100
Final data is: 11001110100

ENTER THE RECEIEVED DATA : 10011100101

       Since Remainder Is Not 0, Hence Message Transmitted From Sender
To Receiver Contains Error.
A:\Computer\SEMESTER 5\Computer Networks\Assignments\CNL!\A3-CRC>
```

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