## **Write a C program to implement CRC**

Program

#include<stdio.h>

#include<string.h>

#include<math.h>

#include <stdlib.h>

#include<time.h>

char t[100],cs[100],g[25];

int a,e,c,N;

void xor(){

for(c = 1;c < N; c++)

cs[c] = (( cs[c] == g[c])?'0':'1');

}

void crc(){

for(e=0;e<N;e++)

cs[e]=t[e];

do{

if(cs[0]=='1')

xor();

for(c=0;c<N-1;c++)

cs[c]=cs[c+1];

cs[c]=t[e++];

}while(e<=a+N-1);

}

int main()

{

srand(time(NULL));

printf("\nEnter data : ");

scanf("%s",t);

printf("\n----------------------------------------");

printf("\n Enter length of generating Generatng polynomial : %s",g);

scanf("%d",&N);

for(c=0;c<N;c++){

g[c]= rand()%2 + '0';

//sprintf(g[c], "%d", rand()%2);

}

printf("\nGenerating polynomial is %s\n",g);

a=strlen(t);

for(e=a;e<a+N-1;e++)

t[e]='0';

printf("\n----------------------------------------");

printf("\nModified data is : %s",t);

printf("\n----------------------------------------");

crc();

printf("\nChecksum is : %s",cs);

for(e=a;e<a+N-1;e++)

t[e]=cs[e-a];

printf("\n----------------------------------------");

printf("\nFinal codeword is : %s",t);

printf("\n----------------------------------------");

printf("\nTest error detection 0(yes) 1(no)? : ");

scanf("%d",&e);

if(e==0)

{

do{

printf("\nEnter the position where error is to be inserted : ");

scanf("%d",&e);

}while(e==0 || e>a+N-1);

t[e-1]=(t[e-1]=='0')?'1':'0';

printf("\n----------------------------------------");

printf("\nErroneous data : %s\n",t);

}

crc();

for(e=0;(e<N-1) && (cs[e]!='1');e++);

if(e<N-1)

printf("\nError detected\n\n");

else

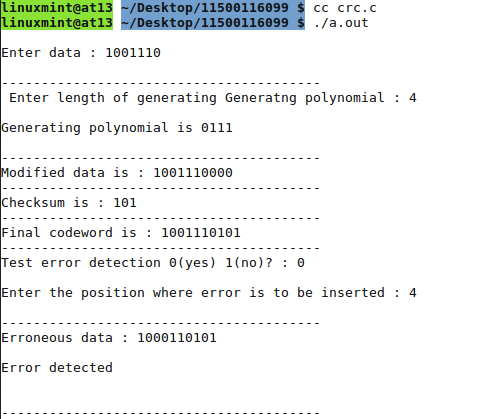
printf("\nNo error detected\n\n");

printf("\n----------------------------------------\n");

return 0;

}

**Output**

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