

LAB 6

Write a program for error detecting code using CRC-CCITT (16-bits).

CODE:

```
#include <stdio.h>
#include <string.h>
#define N strlen(gen)
char modif[28],checksum[28],gen[28];
int a,e,c,b;
void xor()
{
for(c=1;c<N;c++)
checksum[c]=((checksum[c]==gen[c])?'0':'1');
}
void crc()
{
for(e=0;e<N;e++)
checksum[e]=modif[e];
do
{
if(checksum[0]=='1')
xor();
for(c=0;c<N-1;c++)
checksum[c]=checksum[c+1];
checksum[c]=modif[e++];
}while(e<=a+N-1);
}
int main()
{
int flag=0;
```

```

strcpy(gen,"10001000000100001");
printf("\n enter data:");
scanf("%s",modif);
printf("\n-----\n");
printf("\n generating polynomial:%s",gen);
a=strlen(modif);
for(e=a;e<a+N-1;e++)
modif[e]='0';
printf("\n-----\n");
printf("mod-ified data is:%s",modif);
printf("\n-----\n");
crc();
printf("checksum is:%s",checksum);
for(e=a;e<a+N-1;e++)
modif[e]=checksum[e-a];
printf("\n-----\n");
printf("\n final codeword is : %s",modif);
printf("\n-----\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);
modif[e-1]=(modif[e-1]=='0')?'1':'0';
printf("\n-----\n");
printf("\nnerroneous data:%s\n",modif);
}

```

```

crc();
for(e=0;(e<N-1)&&(checksum[e]!='1');e++);
if(e<N-1)
printf("error detected\n\n");
else
printf("\n no error detected \n\n");
printf("\n-----");
}

```

OUTPUT:

```

enter data:1011101
-----

generating polynomial:10001000000100001
-----
mod-ified data is:101110100000000000000000
-----
checksum is:1000101101011000
-----

final codeword is : 10111011000101101011000
-----

test error detection 0(yes) 1(no)? :0

enter the position where error is to be inserted:3
-----

erroneous data:10011011000101101011000
error detected

-----

...Program finished with exit code 0

```