Task 2 : Construct Detecting error using Cyclic Redundancy Check (CRC)

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#include<stdio.h>
#include <string.h>
#define N strlen(g)
char t[28],cs[28],g[28];
int a,e,c,b;
void xo(){
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') xo();
for(c=0;c<N-1;c++) cs[c]=cs[c+1];
cs[c]=t[e++];
}while(e<=a+N);
}
int main()
{
int flag=0;
 do{
printf("\n 1.crc12\n 2.crc16\n 3.crc ccit \n 4.exit \n \n Enter your option.");
 scanf("%d",&b);
switch(b)
{
case 1:strcpy(g,"1100000001111");
 break;
case 2:strcpy(g,"11000000000000101");
 break;
case 3:strcpy(g,"10001000000100001");
```

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   break;
case 4:return 0;
}
printf("\n enter data:");
 scanf("%s",t);
printf("\n \n");
printf("\n generating polynomial:%s",g);
 a=strlen(t);
for(e=a;e<a+N-1;e++) t[e]='0';
printf("\n \n");
printf("modified data is:%s",t); printf("\n \n"); crc(); printf("checksum is:%s",cs); for(e=a;e<a+N-1;e++)
t[e]=cs[e-a];
printf("\n \n");
printf("\n final codeword is : %s",t); printf("\n \n");
printf("\ntest error detection 0(yes) 1(no)?:");
scanf("%d",&e); if(e==0)
{
do{
printf("\n\tenter 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 \n"); printf("\n\terroneous data:%s\n",t);
}
crc();
for(e=0;(e<N-1)&&(cs[e]!='1');e++);
if(e<N-1)
printf("error detected\n\n"); else printf("\n no error detected \n\n"); printf("\n ");
}while(flag!=1);
}
```