

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

```
#include <
```

```
#define N String (g)
```

```
char modif[28], checksum[28], gen[28];
```

```
int i, j, k, a, c;
```

```
void nor()
```

```
{
```

```
for (i = 1; i < N; i++)
```

```
{ checksum[i] = ((checksum[i] == gen[i]) ? '0' : '1');
}
```

```
}
```

```
void crc()
```

```
{
```

```
checksum[a] = modif[a];
```

```
do
```

```
{
```

```
if (checksum[0] == '1')
```

```
nor();
```

```
for (i = 0; i < N - 1; i++)
```

```
{
```

```
checksum[i] = checksum[i+1];
}
```

```
checksum[i] = modif[a++];
```

```
}
```

```
while (a <= a+N-1);
```

```
}
```

```
int main()
```

```
{
```

```
    int main()
```

```
{
```

```
    int flag = 0;
```

```
    strcpy (g, "11000000000000101");
```

```
    printf ("In enter data: ");
```

```
    scanf ("%s", modify);
```

```
    printf ("In generating polynomial: %s", g);
```

```
    i = strlen (modify);
```

```
    for (c=i; c<i+N-1; c++)
```

```
        modify [c] = '0';
```

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

```
    printf ("modified data is: %s", modify);
```

```
    crc()
```

```
    printf ("checksum is: %s", checksum);
```

```
    for (c=i ; c<i+N-1; c++)
```

```
        modify[c] = checksum [c-i];
```

```
    printf ("final codeword is: %s", modify);
```

```
    printf ("test error detection o/p: (no)? : ");
```

```
    scanf ("%d", &c);
```

```
    if (c==0)
```

```
{
```

```
do {
```

```
printf ("Enter the position where error is to  
be inserted ");
```

```
scanf ("%d", &c);
```

```
}
```

```
while (c == 0 || c > i + N - 1);
```

```
modif [c-1] = (modif [c-1] == '0') ? '1' : '0';
```

```
printf ("errorous data: %s", t);
```

```
}
```

```
cor(c)
```

```
for (c = 0; c < N - 1; ++c) {  
    if (checksum[c] != '1');
```

```
    if (c < N - 1)
```

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

```
        else  
            printf ("no error");
```

```
}
```

```
while (flag != 1);
```

```
}
```