#include <stdio.h>

#include <conio.h>

#define N strlen(g)

int a, e, c;

char t[50], cs[50], g[] = "10001000000100001";

void findXor(){

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')

findXor();

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

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

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

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

}

int main()

{

printf("Enter word : ");

scanf("%s", t);

printf("Received Word : %s \n", t);

a = strlen(t);

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

t[e] = '0';

printf("Appended Word : %s \n", t);

crc();

printf("Checksum : %s \n", cs);

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

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

printf("Transmitted Word : %s \n", t);

printf("Enter 0 if no error required else the position of the error : ");

int x;

scanf("%d", &x);

if(x != 0)

{

if(t[x -1] == '0')

t[x-1] = '1';

else

t[x-1] = '0';

printf("Erraneous Data : %s \n", t);

}

crc();

printf("Checksum : %s \n", cs);

int flag = 0;

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

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

{

flag = 1;

break;

}

if(flag == 1)

printf("Error during transmission");

else

printf("No error");

return 0;

}