#include <stdio.h>  
 #include <string.h>  
 int main() {  
 int i,j,keylen,msglen;  
 char input[100], key[30],temp[30],quot[100],rem[30],key1[30],nmsg[20];  
 printf("Enter Data: ");  
 scanf("%s",input);  
 printf("Enter Key: ");  
 scanf("%s",key);  
 keylen=strlen(key);  
 msglen=strlen(input);  
 strcpy(key1,key);  
 for (i=0;i<keylen-1;i++) {  
 input[msglen+i]='0';  
 }  
 for (i=0;i<keylen;i++)  
 temp[i]=input[i]; //Dividend Part  
 for (i=0;i<msglen;i++) {  
 quot[i]=temp[0];  
 if(quot[i]=='0')  
 for (j=0;j<keylen;j++)  
 key[j]='0'; else  
 for (j=0;j<keylen;j++)  
 key[j]=key1[j];  
 for (j=keylen-1;j>0;j--) {  
 if(temp[j]==key[j])//exOR opration perform  
 rem[j-1]='0'; else  
 rem[j-1]='1';  
 }  
 rem[keylen-1]=input[i+keylen];  
 strcpy(temp,rem);  
 }  
 strcpy(rem,temp);  
 printf("\nQuotient is ");  
 for (i=0;i<msglen;i++)  
 printf("%c",quot[i]);  
 printf("\nRemainder is ");  
 for (i=0;i<keylen-1;i++)  
 printf("%c",rem[i]);  
 printf("\nFinal data is: ");  
 int newmsglen;  
 newmsglen=msglen+keylen-1;  
 for(i=msglen;i<(msglen+keylen-1);i++)  
 input[i]=rem[i-msglen];  
 for (i=0;i<newmsglen;i++)  
 printf("%c",input[i]);  
   
   
//----------------------receiver side code--------------------------------------   
 printf("\nENTER THE RECEIEVED DATA : ");  
 scanf("%s",input);  
 for (i=0;i<keylen;i++)  
 temp[i]=input[i];  
 for (i=0;i<msglen;i++)   
 {  
 quot[i]=temp[0];  
   
 if(quot[i]=='0')  
 for (j=0;j<keylen;j++)  
 key[j]='0';   
 else  
 for (j=0;j<keylen;j++)  
 key[j]=key1[j];  
 for (j=keylen-1;j>0;j--)   
 {  
 if(temp[j]==key[j])  
 rem[j-1]='0'; else  
 rem[j-1]='1';  
 }  
 rem[keylen-1]=input[i+keylen];  
 strcpy(temp,rem);  
 }  
 int flag=0;  
 strcpy(rem,temp);  
 for(i=0;i<keylen-1;i++)  
 {  
 if(rem[i]=='0')  
 continue;  
 else  
 flag=1;  
 }  
 if(flag==1)  
 printf("\n\tSince Remainder Is Not 0 Hence Message Transmitted From Sender To Receriver Contains Error");  
   
 else  
 printf("\n\tSince Remainder Is 0 Hence Message Transmitted From Sender To Receriver Is Correct\n");  
   
 return 0;  
}