/\* C program for the Implementation Of RSA Algorithm \*/  
  
#include< stdio.h>  
#include< conio.h>  
  
int phi,M,n,e,d,C,FLAG;  
  
int check()  
{  
int i;  
for(i=3;e%i==0 && phi%i==0;i+2)  
{  
FLAG = 1;  
return;  
}  
FLAG = 0;  
}  
  
void encrypt()  
{  
int i;  
C = 1;  
for(i=0;i< e;i++)  
C=C\*M%n;  
C = C%n;  
printf("\n\tEncrypted keyword : %d",C);  
}  
  
void decrypt()  
{  
int i;  
M = 1;  
for(i=0;i< d;i++)  
M=M\*C%n;  
M = M%n;  
printf("\n\tDecrypted keyword : %d",M);  
}  
  
void main()  
{  
int p,q,s;  
clrscr();  
printf("Enter Two Relatively Prime Numbers\t: ");  
scanf("%d%d",&p,&q);  
n = p\*q;  
phi=(p-1)\*(q-1);  
printf("\n\tF(n)\t= %d",phi);  
do  
{  
printf("\n\nEnter e\t: ");  
scanf("%d",&e);  
check();  
}while(FLAG==1);  
d = 1;  
do  
{  
s = (d\*e)%phi;  
d++;  
}while(s!=1);  
d = d-1;  
printf("\n\tPublic Key\t: {%d,%d}",e,n);  
printf("\n\tPrivate Key\t: {%d,%d}",d,n);  
printf("\n\nEnter The Plain Text\t: ");  
scanf("%d",&M);  
encrypt();  
printf("\n\nEnter the Cipher text\t: ");  
scanf("%d",&C);  
decrypt();  
getch();  
}