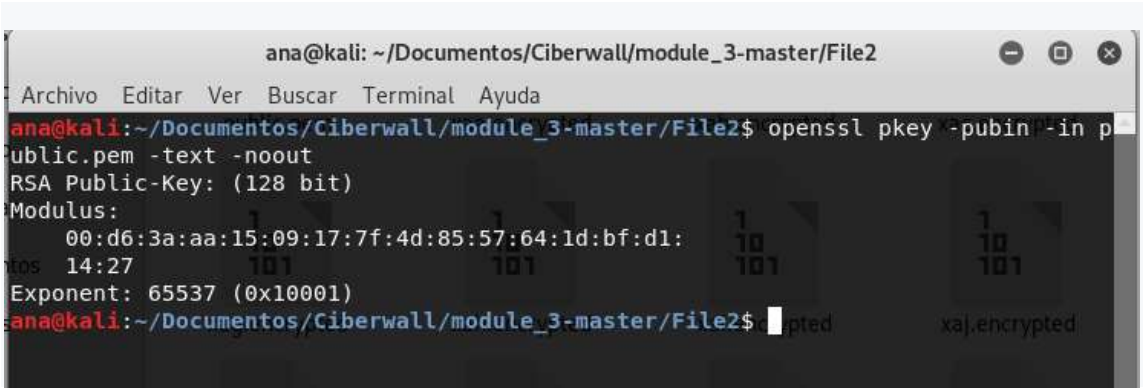
CLAVE PUBLICA 128 BITs

1. ¿Qué clase de clave es? Usamos el comando openssl pkey



Con el módulo obtenido (pasando a decimal con mobilefish) y usando la web wolfran se calcula la factorizacion de numeros primos, **p,q** de los que proviene el modulo.

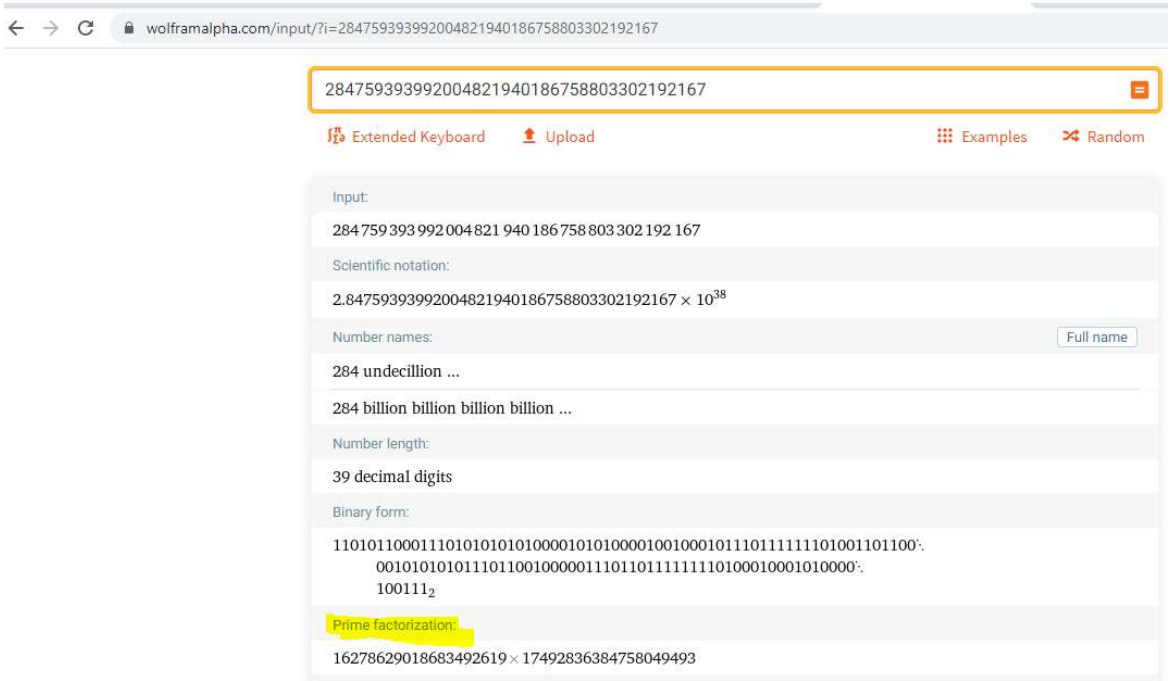
https://www.wolframalpha.com/

Modulo: `00:d6:3a:aa:15:09:17:7f:4d:85:57:64:1d:bf:d1:14:27`

https://www.mobilefish.com/services/big_number/big_number.php

Pasado a decimal: 284759393992004821940186758803302192167

Exponente: 65537



PRIME FACTORIZATION:

$$16278629018683492619 \times 17492836384758049493$$

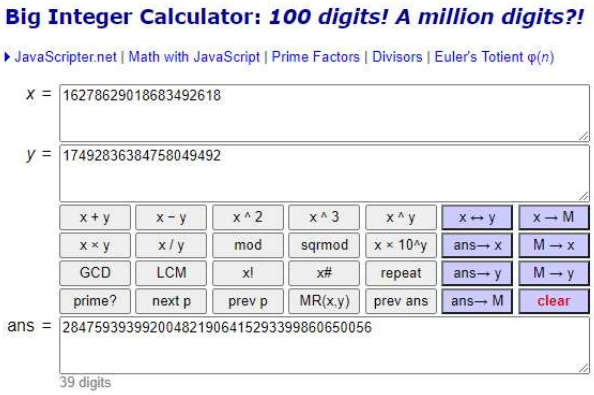
- p=16278629018683492619
- q=17492836384758049493
- e: 65537

RECUPERAR LA CLAVE PRIVADA

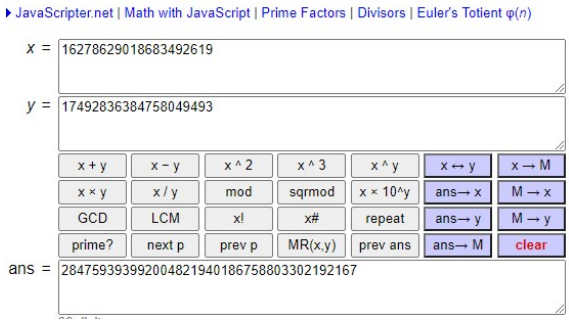
Necesitamos el resto de parametros de la clave privada, tenemos e,p,q, nos faltarían calcular ((p-1)(q-1)) , n = pq, d = e^{-1} mod ((p-1)(q-1))

((p-1)(q-1)) (usado para el exponente privado)

http://kourbatov.com/math/calculators/100digitbigintcalculator.htm

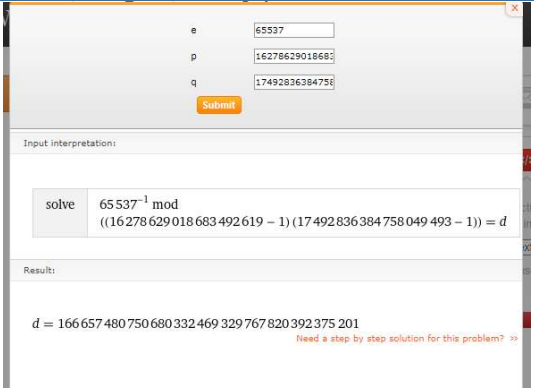


n = pq (factorizacion)



d = e^{-1} mod ((p-1)(q-1)) (exponente privado)

https://www.wolframalpha.com/widgets/view.jsp?id=d5bb63088eb2fb2e762f1c260d2b886d.



RESUMEN DE VALORES OBTENIDOS:

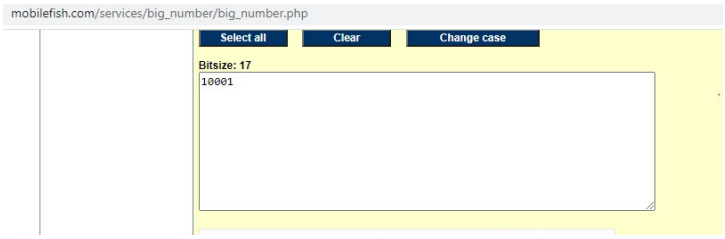
- e = 65537
- p = 16278629018683492619
- q = 17492836384758049493
- ((p-1)(q-1)) = 284759393992004821906415293399860650056
- n = pq = 2847593939920048219401867588033021921 67
- d = e^{-1} mod ((p-1)(q-1)) = 65537^-1 mod (16278629018683492618*17492836384758049492) = 166657480750680332469329767820392375201

DEF.ASN1

Generamos un fichero def.asn1 con la información previa de p, q, n, d y los exponentes, que tenemos que calcular. Pasamos los numeros a decimal con mobilefish.

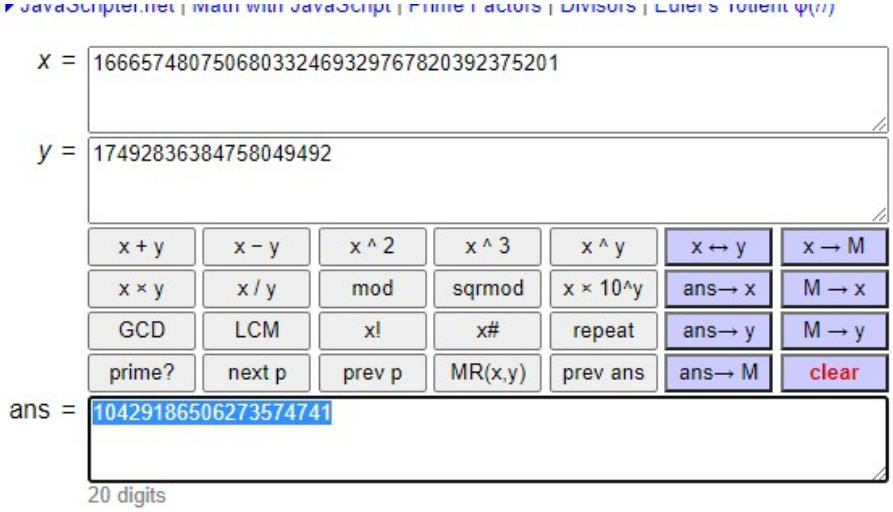
- **e** = 65537-> 10001
- **p** = 16278629018683492619 -> E1E94ED838FEC90B
- **q** = 17492836384758049493 -> F2C30A02CB882AD5
- **((p-1)(q-1))** = 284759393992004821906415293399860650056
- **n** = pq = 2847593939920048219401867588033021921 67-> -> D63AAA1509177F4D8557641DBFD11427
- **d** = e^{-1} mod ((p-1)(q-1)) = 65537^-1 mod (16278629018683492618*17492836384758049492) = 166657480750680332469329767820392375201-> 7D61103207842D084B798FB99A8BA3A1

https://www.mobilefish.com/services/big_number/big_number.php.

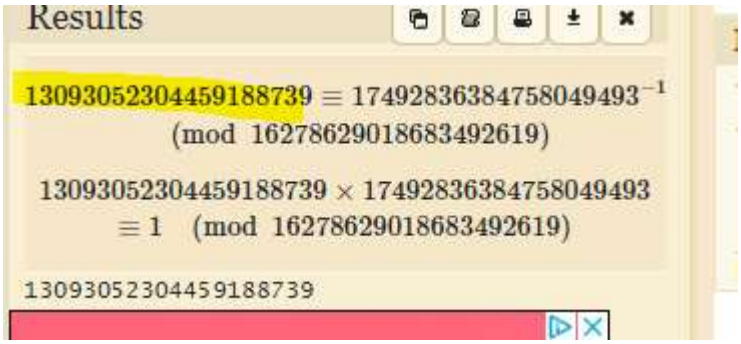


Calculamos los exponentes usando kourbatov y los pasamos a hexadecimal con mobilefish

- exp1 = d % (p-1) = 15794271684865453791-> DB30866A6E6A6EDF
- exp2 = d % (q-1) = 10429186506273574741 -> 90BBE9DF0ABBCF55



Calculamos el coeficiente con esta página dcode https://www.dcode.fr/modular-inverse



coeff = q.modInverse(p) = 17492836384758049493 modinverso(16278629018683492619) = 1309305230445918739

FICHERO MONTANDO ASN

```
ana@kali:~/Documentos/Ciberwall/module_3-master$ cat def.asn1
asn1=SEQUENCE:private_key
[private_key]
version=INTEGER:0

n=INTEGER:0xd63aaa1509177f4d8557641dbfd11427
e=INTEGER:0x10001
d=INTEGER:0x7d61103207842d084b798fb99a8ba3a1
p=INTEGER:0xe1e94ed838fec90b
q=INTEGER:0xf2c30a02cb882ad5
exp1=INTEGER:0xdb30866a6e6a6edf
exp2=INTEGER:0x90bbe9df0abbcf55
coeff=INTEGER:0xb5b3ddb370e64a03
```

GENERAR LA CLAVE (datos github)

Usamos los comandos siguientes:

- openssl asn1parse -genconf def.asn1 -out privkey.der -noout
- openssl rsa -inform DER -outform PEM -in privkey.der -out privkey.pem

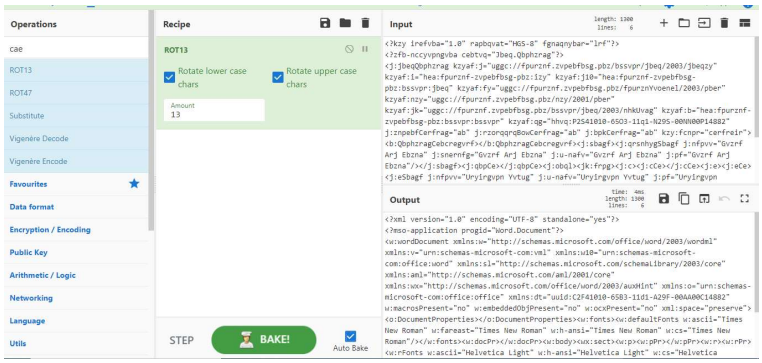
```
ana@kali:~/Documentos/Ciberwall/module_3-master$ openssl asn1parse -genconf def.
asn1 -out privkey.der -noout
ana@kali:~/Documentos/Ciberwall/module_3-master$ openssl rsa -inform DER -outfor
m PEM -in privkey.der -out privkey.pem
writing RSA key
ana@kali:~/Documentos/Ciberwall/module_3-master$
```

RECUPERAR INFORMACION DE LOS FICHEROS

Usamos este bucle for para desemcriptar los ficheros y generamos un fichero total.

for i in $(ls -1 File2/*.encrypted); do echo "$i"; openssl rsautl -decrypt -in "$i" -inkey privkey.pem >> **total_rot.xml**;done

LE PASAMOS CIBERCHEF CON ROT13



<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<?mso-application progid="Word.Document"?>

<w:wordDocument xmlns:w="http://schemas.microsoft.com/office/word/2003/wordml" xmlns:v="urn:schemas-microsoft-com:vml" xmlns:w10="urn:schemas-microsoft-com:office:word" xmlns:sl="http://schemas.microsoft.com/schemaLibrary/2003/core" xmlns:aml="http://schemas.microsoft.com/aml/2001/core" xmlns:wx="http://schemas.microsoft.com/office/word/2003/auxHint" xmlns:o="urn:schemas-microsoft-com:office:office" xmlns:dt="uuid:C2F41010-65B3-11d1-A29F-00AA00C14882" w:macrosPresent="no" w:embeddedObjPresent="no" w:ocxPresent="no" xml:space="preserve"><o:DocumentProperties></o:DocumentProperties><w:fonts><w:defaultFonts w:ascii="Times New Roman" w:fareast="Times New Roman" w:h-ansi="Times New Roman" w:cs="Times New Roman"/></w:fonts><w:docPr></w:docPr><w:body><wx:sect><w:p><w:pPr></w:pPr><w:r><w:rPr><w:rFonts w:ascii="Helvetica Light" w:h-ansi="Helvetica Light" w:cs="Helvetica Light"/><wx:font wx:val="Helvetica Light"/><w:sz w:val="24"/><w:sz-cs w:val="24"/></w:rPr><w:t>diKBVUfEaItQ5lE3Nitr6KOwuZTc/eR8</w:t></w:r></w:p><w:sectPr></w:sectPr></wx:sect></w:body></w:wordDocument>-----BEGIN PUBLIC KEY-----

MDQwDQYJKoZIhvcNAQEBBQADIwAwIAIZAL9LPyTM85vtJebljX3p+ORWj2gGwk/o

wQIDAQAB

-----END PUBLIC KEY-----