**Name :- Harsh Shah**

**CLass:- TE Computer**

**ERP :-67**

**Subject :-LP2(IS) (RSA)**

**Code:-**

from Crypto.PublicKey import RSA  
from Crypto.Cipher import PKCS1\_OAEP  
import binascii  
  
msg = (input("Enter Message to Encrypt and Decrypt : "))  
msg = bytes(msg, 'utf-8')  
  
keyPair = RSA.generate(3072)  
  
pubKey = keyPair.publickey()  
print(f"Public key: (n={hex(pubKey.n)}, e={hex(pubKey.e)})")  
pubKeyPEM = pubKey.exportKey()  
print(pubKeyPEM.decode('ascii'))  
  
print(f"Private key: (n={hex(pubKey.n)}, d={hex(keyPair.d)})")  
privKeyPEM = keyPair.exportKey()  
print(privKeyPEM.decode('ascii'))  
  
# msg = input()  
encryptor = PKCS1\_OAEP.new(pubKey)  
encrypted = encryptor.encrypt(msg)  
print("Encrypted:", binascii.hexlify(encrypted))  
  
decryptor = PKCS1\_OAEP.new(keyPair)  
decrypted = decryptor.decrypt(encrypted)  
print('Decrypted:', decrypted)

**Output:-**

**Enter Message to Encrypt and Decrypt : Its Lonewolf aka Harsh**

**Public key:**  (n=, e=0x10001)

**-----BEGIN PUBLIC KEY-----**

MIIBojANBgkqhkiG9w0BAQEFAAOCAY8AMIIBigKCAYEAjAOi9pMVgnWShBp06Ehd

eGfT4rhY3042jvzqz26QEsElhcNOibQbJI6001BNrM9C+GEyW6ie3mRxaeagg8em

p6LHjhFO3Mzxy3voh1pQDbVzaNWVUAYSyUO+o20hQJm0fEMaaoi2jxDwNmMmVz0f

qtfwpT4aFu/gfrAa0PwR4CMs2Es2UA+4oITjZCqZzSKAwifkMdYz0uNhVY6qRi41

dMoBX0VYTu5o4mX0eu97HLjiT058kCFLZ57HrtiAGMGGd3D3SRnFT1rwv6qUjayP

76sl4CMtHkaizvfivThrxZh14zStAKxBMQkJsqdxtC/XwNqv0+EQ8Dil1+/0zM5f

DoRMOYGtihuyxs/s1l+9Pzrfkn/xJOfy6jAb1q0T3KvFr8Aa4wUORjv6oxU94Q5p

QKseBP5/1sikAmiiaIlxooG+VhQsbNdHfalGUIb4yjqBikEngVyTxl+EBwFXyFDm

soZRw2tpi791tSqJpJ2T26z0ZknPNMTeaTg+yIxUYzT5AgMBAAE=

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

**Private key:** (n=, d=)

**-----BEGIN RSA PRIVATE KEY-----**

MIIG5AIBAAKCAYEAjAOi9pMVgnWShBp06EhdeGfT4rhY3042jvzqz26QEsElhcNO

ibQbJI6001BNrM9C+GEyW6ie3mRxaeagg8emp6LHjhFO3Mzxy3voh1pQDbVzaNWV

UAYSyUO+o20hQJm0fEMaaoi2jxDwNmMmVz0fqtfwpT4aFu/gfrAa0PwR4CMs2Es2

UA+4oITjZCqZzSKAwifkMdYz0uNhVY6qRi41dMoBX0VYTu5o4mX0eu97HLjiT058

kCFLZ57HrtiAGMGGd3D3SRnFT1rwv6qUjayP76sl4CMtHkaizvfivThrxZh14zSt

AKxBMQkJsqdxtC/XwNqv0+EQ8Dil1+/0zM5fDoRMOYGtihuyxs/s1l+9Pzrfkn/x

JOfy6jAb1q0T3KvFr8Aa4wUORjv6oxU94Q5pQKseBP5/1sikAmiiaIlxooG+VhQs

bNdHfalGUIb4yjqBikEngVyTxl+EBwFXyFDmsoZRw2tpi791tSqJpJ2T26z0ZknP

NMTeaTg+yIxUYzT5AgMBAAECggGAEksFVybnaAiZcHYOcSzHPYx/M/926RIMcckc

mqZs325pyxy13arw4ulcOcGjrGDV9KKqVCxnOVIxOS9fKGiE3yEW5npfbdy++KGD

Q2/qxqe+4OMK444vlSkrNqny7sBGQvf3cxTSmUWSxOBWaY58XTNiZwyClx2XHKZA

kq5kXX7rBIVrHrG3Iw3JsdQZDSKlZPiWSWadlb+Mf4OovouaA1zDKiHixElE3dOJ

SiiQ0rNbKhZskt4uvmaR20fBELrz95XTrygBAfVQBTgK40peFuGbNjdJ51Npjt3t

Df4M5xs9tUqKbUuk4v8cGNM1lcgewolhiJk9fdnULwzJo0BoLRSqP9axnnZxJVPJ

4oNusorTaO4iPQzVf4KqxuEM9Yat+ZYGR2+vNz1nTEb+QiKrcCP9K+21GGVS+0gH

S+oOIwore/bA1YstmfRnH5OdvrufenFqSlrFw91EcVa2RRdStXjWdb5cjLhdsRY/

cCIDoc9YLAtkvr6Jku+nTPEaQ6tjAoHBALbx/mrsACpwMF4pfw0T/2j4acNtZDJb

dfIgdpXZVVNeTD8IqEWqbwq9XWds1njRRGUlyQAKBytxKjEuF5xNpXjYVf+KW1xI

f0for8ca9U+LxtOSh+jJjrvoUXouwJCFL0oIvBEJwWGAmsgouN0bVhJog/NErFZE

E/k7B6aZU5fzta54fX7mX0YLsKm5P2ggIh03LgyaYiSeMWWJqUqs0TtsTCtv0dBO

KXB3CM3S0w3GZn377LFjKnV1ci6rinDslwKBwQDD7OnMxcupvk8csUqATeX7SzX7

HrFUKbHt8YpiBx3Thnt8T4umNggviLyLlvp06qVG+7ZomnKSnbb45wGmD0ek+/GM

HK35vb8JI0RYfm7AeYGazz04Qn3So4IkSm14f/8yN6LS8ICxlpGwfX41t3EJHUPc

gusLIGD1ZoM+oZbXKpAlyOUUmTo5FJcpetKmwJkoGQk0RGFcD/mINtR7WdqDTG58

2xmXRMwz1zNVIGradVjISB7uvHpmUpIaaWLCzO8CgcEAqCAUs6ZXMKkRijeQbzBl

lM5WRCcP4cdzySRUVrn4VDlg0LzgB8Xtbm1AnX/EShvnQx1KbyLIHABPygqV4Crr

WvdVcRZxh4mIj0kj4VLBBm1qN51+EUzKQ53o4uR8S1RadSs5yl6wvS43EKN74Jby

rtAmEzaVOmIuCOlaypw12ns6CDDrA+gqvnCX1iJMRyDguQCw7Rwj/Yrz0mCEl//h

+T45ceG9bDWol5aNHLoXA53FKxqOFycPKgrY+FLlU4nZAoHAOxH/v4RXDhtZoM33

J03VK/mWEdtEHZrgkVvEnB+HJ5IhQu58rSUXPLWeGvvvETb5k7gqW8lNB9VTKCIF

xjpPIHfxcIvpDCXgJfIjFgcwfwljQPiAfajWZJ51i1mBPdZha5OInM50DpbV3/9G

AQ4In3XaUu6JzPX7JaG9qjFv1/l2Ml4qaxZzjmgd1xy3zBy/UG6T7tU7AVWzpxTY

5UPG9NUjbrNkOM4+PtcAHAdFEA5XMTNFWDctNBJrCFmDtDWzAoHBALVHem1UIWPF

gDdoX0Q+E6uwtA4N5nnRRIkBhl4Jl+EFcSiamwrhsAuaJrkclrtkLvnIpeWWgxJc

F6KwpjmEHggczkYDCjJsA3IhxC3UIXfApXkPdqexKS/y16PCHmzFePOQTwk9Ycwm

yyE0VeDZlE2qmVnPqmjF9QghJwiQR6vBKL5WVA8xfN4pPP0RWfDlDE2VbiLLlzcO

6eGUxOVOuBNsGbykjofOXnkcBJ7zpK495nptnFeXlMDaTIIPBwGJyA==

**-----END RSA PRIVATE KEY-----**

**Encrypted:** b''

**Decrypted: b'Its Lonewolf aka Harsh'**

Process finished with exit code 0