**Name :- Kaustubh Shrikant Kabra**

**CLass:- TE Computer**

**ERP :-38**

**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 KK29 aka Kaustubh**

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

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

MIIBojANBgkqhkiG9w0BAQEFAAOCAY8AMIIBigKCAYEAw8qQjL6tzlj4vyKlcR4e

uxT2jHLTi+pAZhiq0TcaNLwqs3hHKgQrAKCuLORvmjlbadFkUncZ2Nu13m9475or

cocC2EvSn3NhBuZpnfSp5t1EppYGeSDnFUDsNoTjfradFvPWWiQxwF9W+8cUfmSx

o2gsKyKGaxQmsYydj0SdsN7w23XQsmQ2MTa73Lgp78j9p+UfjWzTGv8qYw5r/Bav

mnsrUEKbFEOuGzYX7aKwyyft6FAa+r7GKl9PXqJ0bwu1notCqyxgxDYgRrqKwKrt

LBAvR4uGQ4IgkM9ZGbY3Q8AiChKDdZRRiVIgyLUmpnvBM0JOBlJoJPgvg6wX78o1

6UjwwwE1nl9K3n+L3wYmqG7yuw621326dH1+uCp7asU/uknWwPwtydFvPZcvp//F

VJt6nGW56lRmBznSq8wMIBeX1Qse95p1LWXVBCuXmNMyOyIkp1vnowxa8EwN7ud6

Cb/n5xAsdBNcJTxEX2mc/kL05M3mQqQ39O+GTj0BlwmdAgMBAAE=

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

Private key: (n=, d=)

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

MIIG4wIBAAKCAYEAw8qQjL6tzlj4vyKlcR4euxT2jHLTi+pAZhiq0TcaNLwqs3hH

KgQrAKCuLORvmjlbadFkUncZ2Nu13m9475orcocC2EvSn3NhBuZpnfSp5t1EppYG

eSDnFUDsNoTjfradFvPWWiQxwF9W+8cUfmSxo2gsKyKGaxQmsYydj0SdsN7w23XQ

smQ2MTa73Lgp78j9p+UfjWzTGv8qYw5r/BavmnsrUEKbFEOuGzYX7aKwyyft6FAa

+r7GKl9PXqJ0bwu1notCqyxgxDYgRrqKwKrtLBAvR4uGQ4IgkM9ZGbY3Q8AiChKD

dZRRiVIgyLUmpnvBM0JOBlJoJPgvg6wX78o16UjwwwE1nl9K3n+L3wYmqG7yuw62

1326dH1+uCp7asU/uknWwPwtydFvPZcvp//FVJt6nGW56lRmBznSq8wMIBeX1Qse

95p1LWXVBCuXmNMyOyIkp1vnowxa8EwN7ud6Cb/n5xAsdBNcJTxEX2mc/kL05M3m

QqQ39O+GTj0BlwmdAgMBAAECggGAOCbCoRLYjvr2T/7UOuZcAuSGtw4BfLmQgZdm

ef0XH3OtvW3r3vF2EcaDXW2gUjdL78O1RW9R8t9EQAhxQypQdpag6r6IJ+GzvIJd

XQc7qPHhi/Mv5RJaI77MX/BpvEAMOnZxDcYenKDbNfdI+dzQE2C/dhl/Ont7g2Uk

FOAlZ4Hwysf1tAvIfQHJDAqnQFVA5iNwkqNYwf/XPLR4pMIu15umduy7RCsK5lPz

tdv4XzNS6FL9AdevxpwyC56EzQoqqjMstXrmNlhWm2N9qiQSyNrTmD5U2cp6XUM4

acE2CTRAEFwxaGN1LglsyBItg5rc3AyhOn4wB8lFVXA8lXG/itosJjQWelZm0t7U

P8nPyhKPr+6T45rb1U7RMgywDRHOXCaaM0GVTJ66kSD4oVzF7HLNrBYE0mtfszEW

WeCJB48cPQ3vCq8IEkMiww45QebHtei1GcRO1iJRVv4z5A3VSZmnFAVagRASIp+B

kNGlHX1YO3jj+trG4uTXAvYvn6MzAoHBANPyKyB+qTMnuDP2IjZFA4FBWiy2O7a/

ka5lj23/M15OE6uAxzbw9zxsDBZ3tkU87KLX68/KKs9brrs+MALlIrpDVe0z7q1N

2dLRauXRwK1KMmfgGG7sp5/1nquN7/EaTk67yFEYj+tsOXEn/RU3MX+HuAEzVoqu

MaZZ0+dhpYFFl4Ijyai9y6qktGZ/badA5iIAAunAQn/DnzoDbtstDfmqy7fD9s2x

0IXfsNBgmqiZmjZ6e6lsFngQeMMQnxwtvwKBwQDsfMpOSOdnj7fYHfDIUchyxchO

v3TkxQ/psu0hqjOOBtOqHFToEActBp9GnrGFlgVjINZPhQ1X/aQqYqs+mu0iUWwO

2OEOYXAoFwtQy77xh5jQBaGIJhSNB2+Wolv8Efz9vC76VCBSLlTcj20pzLiQLsY8

z/8b2EVo4TosLuwgBvdrteyidJfJaeHilaNxEEiIrYBOfrbU1EX820lCTLn9/tvj

SmeQBbb641N6SePl9JG3WPzdBjrI/fHq6FtmV6MCgcAbJJNjWPVASODtPqNJAfOd

9QmgWkIxeD0m8Xi55InmlOct+pMItTlkco3lvrUIDvJbNH3NoZ1z6tDox+EMLd4R

rpfthc4WQbcYqZsgDYm4Z50m8msOoZ4h/Smx3L6SyQSoTqIryJJ92uFMXYuq0OO0

6mOlO7bkkcRoAm8B3d59PLVXhE/KHWxc0TUNP1qCpewTBJ9a4jVh+WKF4nSq+w0k

ITxvr1gHJbOHwYr6VLTZzLoUKgF2RBJok+tzR8ioqi8CgcEAjH7K1d18FMuORkfr

X6cutfkIurgF40+r14RkWua6ADvQDjUMwF2dVcOkZpkrEBkDlFPS3qVGOytGF6RM

5kG2dff3gY6ZjiiXMEoYf+S7yNRtFdDymWc+OFbdlZlZmpS5P6lII5JNLWW3Jt3S

1c15LLeNMF3Fyq4e9mMwY0VxJMnevk/ziMRJ1PAhsbKCyk4JOaISIxAm4KRH/CPv

DwN0UBDUY+E1S5wJjF33nyQ8z8YPt+SXPVxRGk28Jnnqqw+PAoHAMaRAgssQ05Ba

g16ht7Zu2aLqPxhfBe8XgBG3I+kzSFUmTGfXkFxS6XA+yEwj9hDFbqFxLYjX+I5p

qdPQBVXp6X9CgY4KMokEbAaTYGslTWqATx9V5u208Xmg47Kmbfjr2RzbOqNsPc5I

yTZe2Nxd3MvE7aCJxQlN/KaUrb5NlSGgetexRsKCFALgGwF4F41PJV0R5NdfqoVd

Je9N445Lv9bGWv1hX0dHYbZryao6WuFpZde7Y7WLoxsAKbftDFCj

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

**Encrypted:** b''

**Decrypted: b'Its KK29 aka Kaustubh'**

Process finished with exit code 0

