LAB 4 Ishaan Mehta E18CSE069
Client

```python
import socket
import math
#Ishaan Mehta E18CSE069 LabWeek4
#Vigenere Cipher

def ende(text,key,choice):
    #choice 2 for decrypt, 1 for encrypt
    text = text.upper()
    key = key.upper()

    #functions to change letter to respective int value and vice versa
    to_num = lambda x: ord(x)-65
    to_str = lambda x: chr(x+65)

    #converting key to list of numbers and extending it as much is
required for text
    key_list = list(map(to_num,list(key)))
    key_list = key_list * math.ceil(len(text)/len(key_list))

    #converting text to list of number(" " will become -33(32-65))
    text_list = list(map(to_num,list(text)))
    final_list = []
    counter = 0              #counter for key list

    for i in text_list:
        if(i == -33):        #for space(" ")
            appen = -33
        else:
            if(choice == 1):
                appen = (i + key_list[counter]) % 26      #encryption
formula
            else:
                appen = (i - key_list[counter] + 26) % 26  #decryption
formula

            counter += 1
        final_list.append(appen)
    return "".join(list(map(to_str,final_list)))    #joining final
list after converting all values to letter


key = "crypto"
client = socket.socket()

client.connect(("localhost", 9999))

print(client.recv(1024).decode())
```

```python
while True:
    txt = input("Enter something: ")
    enc = ende(txt, key, 1)

    client.send(bytes(enc,"utf-8"))
    dec = client.recv(1024).decode()
    print(f"Decrypted: {dec}")
    if(dec == "EXIT"):
        break
client.close()
```

Server

```python
import socket
import math
#Ishaan Mehta E18CSE069 LabWeek4 EB02
#Vigenere Cipher

def ende(text,key,choice):
    #choice 2 for decrypt, 1 for encrypt
    text = text.upper()
    key = key.upper()

    #functions to change letter to respective int value and vice versa
    to_num = lambda x: ord(x)-65
    to_str = lambda x: chr(x+65)

    #converting key to list of numbers and extending it as much is
required for text
    key_list = list(map(to_num,list(key)))
    key_list = key_list * math.ceil(len(text)/len(key_list))

    #converting text to list of number(" " will become -33(32-65))
    text_list = list(map(to_num,list(text)))
    final_list = []
    counter = 0                 #counter for key list

    for i in text_list:
        if(i == -33):           #for space(" ")
            appen = -33
        else:
            if(choice == 1):
                appen = (i + key_list[counter]) % 26       #encryption
formula
            else:
                appen = (i - key_list[counter] + 26) % 26  #decryption
formula

                counter += 1
        final_list.append(appen)
```

```python
    return "".join(list(map(to_str,final_list)))    #joining final
list after converting all values to letter


key = "crypto"

server = socket.socket() #ipv4 and tcp if not passed

#we now have to bind the socket with a port number
server.bind(("localhost", 9999)) #localhost coz we're doing in our pc
only


server.listen()
print("Waiting")
client, address = server.accept() #client's host & address
print(f"Client {address} appeared")
client.send(b"Hey, Welcome")

while True:
    enc = client.recv(1024).decode()
    print(f"Encrypted: {enc}")
    dec = ende(enc, key, 2)
    client.send(bytes(dec, "utf-8") )
    if(dec == "EXIT"):
        break
client.close()
```

Output

```
(base) C:\Users\Ishaan>cd Desktop\Academics\Semester 5\ECSE352L - Crypto and Network Security\LAB\LabWee
k4

(base) C:\Users\Ishaan\Desktop\Academics\Semester 5\ECSE352L - Crypto and Network Security\LAB\LabWeek4>
python Lab4_client.py
Hey, Welcome
Enter something: ISHAAN MEHTA
Decrypted: ISHAAN MEHTA
Enter something:
```

```
(base) C:\Users\Ishaan>cd Desktop\Academics\Semester 5\ECSE352L - Crypto and Network Security\LAB\LabWee
k4

(base) C:\Users\Ishaan\Desktop\Academics\Semester 5\ECSE352L - Crypto and Network Security\LAB\LabWeek4>
python Lab4_server.py
Waiting
Client ('127.0.0.1', 52261) appeared
Encrypted: KJFPTB OVFIT
```