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Lab 9: WAP to encrypt and decrypt Plain text using Vigenere cipher.

Source Code:

Server:

```
import socket
import pickle


HOST : str = '127.0.0.1'
PORT : int = 3300


def generate_key(text: str,key: str) -> str:
    """
    makes length of key and text equal
    """
    return "".join(key for _ in range(int(len(text)/len(key)))) + key[:len(text)%len(key)]


def decrypt(data: dict) -> str:
    """
    Decrypts to plain text
    """
    text=data.get('text')
    key = data.get('key')
    key=generate_key(text,key)
    dc : str=""
    sub : int=ord('a' if text[0].islower() else 'A') # checks if text is all lower or all upper case
    for a,b in zip(text,key):
        dc+=chr((ord(a)-ord(b)+26)%26+sub) # decrypting text
    return dc
```

```
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.bind((HOST, PORT)) # binding socket
    s.listen()
    conn,addr = s.accept() # accepting connection and returning connection and address info
    with conn:
        print("connected to ",addr)
        data = conn.recv(1024) # recieving data from client
        print("client: "+decrypt(pickle.loads(data))) # printing decrypted message
        conn.sendall(b'recieved')
```

Client:

```
import socket
import pickle

HOST : str = '127.0.0.1'
PORT : int = 3300

def generate_key(text: str,key: str) -> str:
    """
    makes length of key and text equal
    """
    return "".join(key for _ in range(int(len(text)/len(key)))) + key[:len(text)%len(key)]

def encrypt(text: str, key : str) -> str:
    """
    Encrypts plain text
    """
    key=generate_key(text,key)
    ec : str=""
    sub : int=ord('a' if text[0].islower() else 'A') # checks if text is all lower or all upper case
    for a,b in zip(text,key):
        ec+=chr((ord(a)+ord(b)-2*sub)%26+sub) # encrypting text
```

```
    return ec


with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.connect((HOST, PORT)) # establishing connection with server
    text : str = encrypt(msg:=input("Enter the message you want to send... ")
          ,key:=input("Enter the key... ")) # encrypting text input
    print("text input: "+msg)
    print("text sent: "+text)
    s.sendall(pickle.dumps({"text":text,"key":key})) # send message to server
    data = s.recv(1024)
    print("server: "+data.decode())
```

Output:

```
PS D:\sem-5\CN lab\practice> python server.py
connected to  ('127.0.0.1', 52594)
client: tanmay
PS D:\sem-5\CN lab\practice>
```

```
PS D:\sem-5\CN lab\practice> python client.py
Enter the message you want to send... tanmay
Enter the key... vig
text input: tanmay
text sent: oithie
server: recieved
PS D:\sem-5\CN lab\practice>
```