## UDP

***Client UDP Code:***

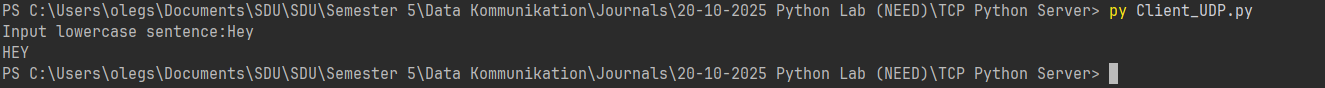
from socket import \*  
serverName = 'localhost'  
serverPort = 12000  
  
clientSocket = socket(AF\_INET, SOCK\_DGRAM)  
  
message = input('Input lowercase sentence:')  
  
#Send messages to sender server  
clientSocket.sendto(bytes(message,"utf-8"),(serverName, serverPort))  
  
#wait for server to reply  
modifiedMessage, serverAddress = clientSocket.recvfrom(2048)  
  
print (modifiedMessage.decode())  
clientSocket.close()

**Server UDP Code**

from socket import \*  
  
serverPort = 12000  
  
serverSocket = socket(AF\_INET, SOCK\_DGRAM)  
  
serverSocket.bind(( 'localhost', serverPort))  
print ('The server is ready to receive')  
while 1:  
 #Wait for messages  
 message, clientAddress = serverSocket.recvfrom(2048)  
  
 print('Received: ' + str(message.decode()))  
 modifiedMessage = message.upper()  
  
 #Send messages back to sender  
 serverSocket.sendto(modifiedMessage, clientAddress)

**Printouts:**

**Client**

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**Server**

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## TCP

***Client TCP Code:***

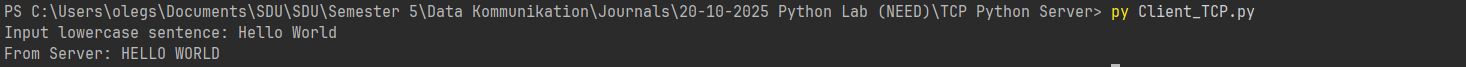
from socket import \*  
  
serverName = '10.126.74.252'  
serverPort = 11000  
  
# Create a TCP socket  
clientSocket = socket(AF\_INET, SOCK\_STREAM)  
  
# Connect to the server  
clientSocket.connect((serverName, serverPort))  
  
# Send message  
message = input('Input lowercase sentence: ')  
clientSocket.send(message.encode())  
  
# Receive response  
modifiedMessage = clientSocket.recv(2048)  
print('From Server:', modifiedMessage.decode())  
  
clientSocket.close()

**Server TCP Code**

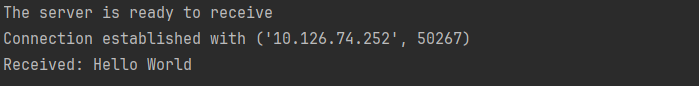
from socket import \*  
from time import sleep  
import time  
serverPort = 11000  
  
  
# Create a TCP socket  
serverSocket = socket(AF\_INET, SOCK\_STREAM)  
  
# Bind to address and port  
serverSocket.bind(('10.126.74.252', serverPort))  
  
# Listen for incoming connections (max 1 pending connection)  
serverSocket.listen(1)  
  
print('The server is ready to receive')  
  
while True:  
 # Accept a TCP connection  
 connectionSocket, clientAddress = serverSocket.accept()  
 print(f"Connection established with {clientAddress}")  
  
  
 # Receive data from the client  
 message = connectionSocket.recv(2048).decode()  
 print('Received:', message)  
  
 # Process the request with status updates  
  
  
 # Send final response  
 modifiedMessage = message.upper()  
 connectionSocket.send(modifiedMessage.encode())  
  
 # Close connection after response  
 connectionSocket.close()

**Printouts:**

**Client**

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**Server**

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