District Suraksha

List of Departments in the case study with the purpose

Department Name	Purpose	Network Details (No of nodes,servers,Protocols)
RECEIVING DEPARTMENT	It used to receive the complaints from the citizens in a district.	No.of Nodes : 18 No.of Servers :5 No.of Protocols :5
VERIFICATION DEPARTMENT	It is used to verify the details of the complaints.	No.of Nodes : 16 No.of Servers :4 No.of Protocols :5
EXECUTION DEPARTMENT	It is used to execute the complaints which is verified by the verification department.	No.of Nodes : 18 No.of Servers :2(DNS,FTP,SMTP) No.of Protocols :5

Group Member Roll No	Name	Department
CB.EN.U4CSE19105	AVVLN BALARAM	RECEIVING DEPARTMENT
CB.EN.U4CSE19137	P.S.V.AKASH	VERIFICATION DEPARTMENT
CB.EN.U4CSE19154	T. SAI JAYANTH	EXECUTION DEPARTMENT

Case study

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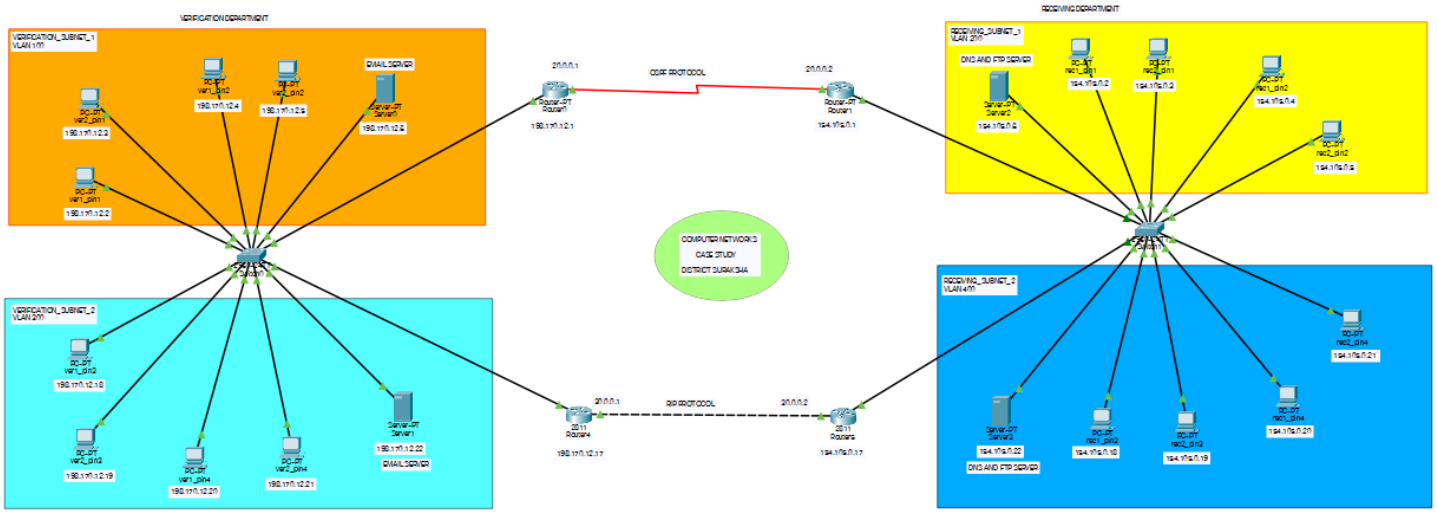
Problem Statement:

In olden days most of the people write complaints in the form of letters and post it to the certain officials about their problem and the issues that are facing by them due to that. As the time grows, we need to develop our standards So, why don't we transform that into digital.

Objective of the Case Study:

Our objective is to resolve the problems by taking the complaints digitally and solving it done by the government as early as possible with a verified details of each and every complaint.

Network Architecture Diagram for Verification Dept:



List of Network performance parameters:

Normally the performance of a network is used to measure the service quality of a network as perceived by the user. To measure the performance of a network there are different ways depending on design of the network.

Parameters	Definition	Formula
Bandwidth	The maximum amount of data transmitted over an internet connection in a given amount of time. It determines how rapidly the web server is able to upload the requested information. Digital Devices: bps(bytes per second) Analog Devices: cps(cycles per second) It is a potential measurement of a link.	Expressed as bits per second (bps), modern network links have greater capacity, which is typically measured in millions of bits per second (megabits per second, or Mbps) or billions of bits per second (gigabits per second, or Gbps).
Throughput	The number of messages successfully transmitted per unit time. The maximum throughput of a network may be consequently higher than the actual throughput achieved in every day consumption. It is an actual measurement of how fast we can send the data.	R = I/T R : Rate(Throughput) I : Inventory T : Time
Transmission time	The time required for transmission of a message depends on the size of the message and the bandwidth of the channel.	Transmission time=Message size / Bandwidth
Propagation Time	Propagation time measures the time required for a bit to travel from the source to the destination. The propagation time is calculated by dividing the distance by the propagation speed.	Propagation time = Distance /Propagation speed
Processing Delay	Time taken by the processor to process the data packet is called processing delay.	

Queuing Delay	Time spent by the data packet waiting in the queue before it is taken for execution is called queuing delay.	
Packet Loss	Packet loss occurs when one or more packets of data travelling across a computer network fail to reach their destination. Due to network congestion	Efficiency = 100% * (transferred - retransmitted) / transferred Network Loss = 100 - Efficiency
Latency	The time required to successfully send a packet across the network. The total time taken for a complete message to arrive at the destination, starting with the time when the first bit of the message is sent out from the source and ending with the time when the last bit of the message is delivered at the destination. Here Latency is also known as ping rate and measured in milliseconds.	Latency = Propagation Time + Transmission Time + Queuing Time + Processing Delay. Propagation Time = Distance / Propagation Speed
Jitter	Jitter is nothing but Packet delay Variance. The variation in the delay of received packets. It is considered as a problem when different packets of data face different delays in a network and the data at the receiver application is time sensitive i.e., audio or video data. It is measured in MilliSeconds(ms)	Latency=sum of all delays To measure Jitter, we take the difference between samples, and then divide by the number of samples.

Department Details in the case study with description:

Here we use networks in order to communicate between multiple departments. Also, verification department will communicate with various other offices in order to execute the received problems. So, we need networking here for Receiving, Verification, Execution.

Subnet IP Scheme:

SUBNET CALCULATION

***

IP address → 198.170.12.0/27

Let the no.of required subnets be 2

Since the number of required subnets are 2 we need 1 bit to identify each subnet.

So, the subnet mask becomes

⇒ 27+1

⇒ 28

= 198.170.12.0/28

As 28 bits are reserved for the network part of the ip address only 4 bits will be reserved for the host.

∴ $2^{32-28} \Rightarrow 2^4 \Rightarrow 16$ ip address can be used in each subnet

Subnet-1 — 0

Subnet-2 — 1

Subnet-1

Here first 28 bits are fixed

Next 1 bit is (0) - which is used to identify the Subnet-1

Since there are 16 addresses. To point to the 1st address all the 4 non fixed bits should be 0.

So, the 1st address of Subnet 1 is

198.170.12.00000000/28

Fixed ↙ To identify Subnet

∴ 198.170.12.0/28 — Starting IP addr for Sub-1

Since 16 addresses are possible (16-1) gives the last address. ↱ (15)

∴ 198.170.12.(0+15)

⇒ 198.170.12.15/28 — Last IP addre for sub2

Subnet - 2

First 27 bits are fixed

Next 1 bit is (1) - which is used to identify Subnet - 2

The First IP address for Subnet 2 is

$\Rightarrow$ 198.170.12.00010000/28

Fixed — used to identify Subnet-2

$\therefore$ 198.170.12.16/28 $\rightarrow$ First IP address for 2nd subnet

Since 16 addresses are possible then we can add 15 to the first IP address.

$\Rightarrow$ 198.170.12.(16+15)

$\therefore$ 198.170.12.31/28 $\rightarrow$ Last IP address for 2nd Subnet.

***

IP address – 154.105.0.0/27

Let the no. of required subnets be 2

Since the no. of required subnets are 2 we need 1 bit to identify each bit subnet.

So the subnet mask will become

$\Rightarrow 27+1$

$\Rightarrow 28$

$= 154.105.0.0/28$

As 28 bits are reserved for the network part of the ip address only 4 bits will be reserved for the host.

$\therefore 2^{32-28} \Rightarrow 2^4 \Rightarrow 16$ - IP addresses can be used in an each subnet.

Subnet 1 – 0

Subnet 2 – 1

Subnet - 1

1st 27 bits are fixed

next 1 bit is (0) → which is used to identify the Subnet - 1

→ Since there are 16 addresses. To point to the 1st ip address all the 4 non fixed bits should be 0.

So the first address of subnet-1 is

∴ 154.105.0.000 0000 /28

Fixed ↙ ↓ used to identify the subnet 1

∴ 154.105.0.0 /28 — Subnet-1 starting IP address

→ Since 16 addresses are possible adding 15 will gives us an last IP address.

154.105.0.(0+15)

∴ 154.105.0.15 /28 — Subnet-1 Last IP address

Subnet - 2

First 27 bits are fixed

Next 1 bit is (1) - which is used to identify Subnet 2

The First ip address for Subnet - 2 is

154.105.0.00010000

Fixed — used to identify Subnet 2

∴ 154.105.0.16/28 — Subnet 2 First IP address

Last IP address can be found by adding 15 to an Last ip address.

154.105.0.(16+15)

⇒ 154.105.0.31

∴ 154.105.0.31/28 — Subnet 2 Last IP address.

IP address — 198.170.12.0/27

Subnet	Starting Address	Last Address
1	198.170.12.0	198.170.12.15
2	198.170.12.16	198.170.12.31

IP address — 154.105.0.0/27

Subnet	Starting address	Last address
1	154.105.0.0	154.105.0.15
2	154.105.0.16	154.105.0.31

Socket Programming:

File Handling Operations using Socket Programming

a. Description of the text file

We are having 7 columns in an csv file. Which is very important to validate and whenever the code got run in cmd prompt it will be reflected in an excel sheet also .

Name	Phone No	District	Pin code	Area	Problem	Verification

b. List of operations completed with the File:

VIEW
UPDATE
MODIFY

c. Client-Side program with output for each operation

```
import socket


def client_program():
    print("V - VIEW")
    print("M - MODIFY")
    print("U - UPDATE")
    print("exit")

    client_socket = socket.socket()
    host = socket.gethostname()
    port = 1574
    print('WAITING FOR CONNECTION RESPONSE')
```

```
    try:
        client_socket.connect((host,port))
    except socket.error as e:
        print(str(e))

    result = input(" => ")

    while result.lower().strip()!="exit":
        client_socket.send(result.encode())
        data = client_socket.recv(4048).decode()

        print("RECEIVED FROM SERVER : \n"+ data)

        result = input('=>')

    client_socket.close()

if __name__== "__main__":
    client_program()
```

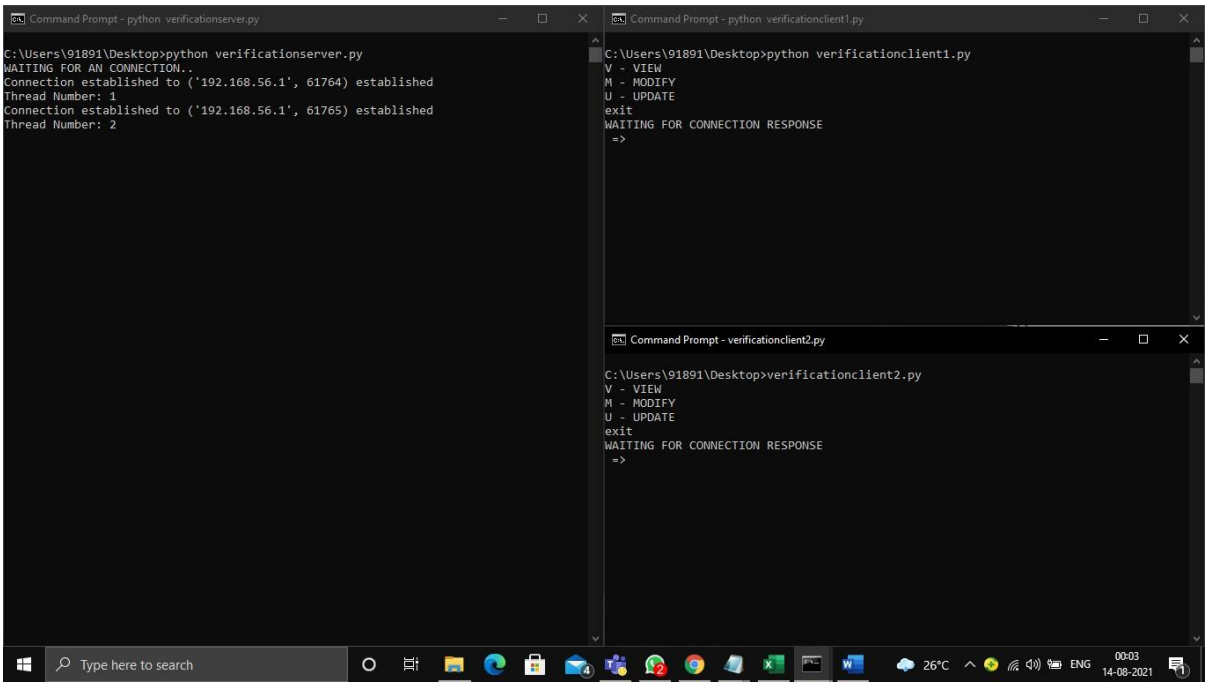
d. Server-Side program with output for each operation

```
import socket
import os
from _thread import *
import pandas as pd

connection = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
ThreadCount = 0
try:
    connection.bind((socket.gethostname(), 1574))
except socket.error as e:
    print(str(e))

print('WAITING FOR AN CONNECTION..')
connection.listen(5)

col_names =
["Name","Phone_No","District","Pincode","Area","Problem","Verification"]
filename = "problem.csv"
df = pd.read_csv(filename)
df.columns = col_names

def showData(df,column_name,value):
    g = df.groupby(column_name)
    return g.get_group(value)
```

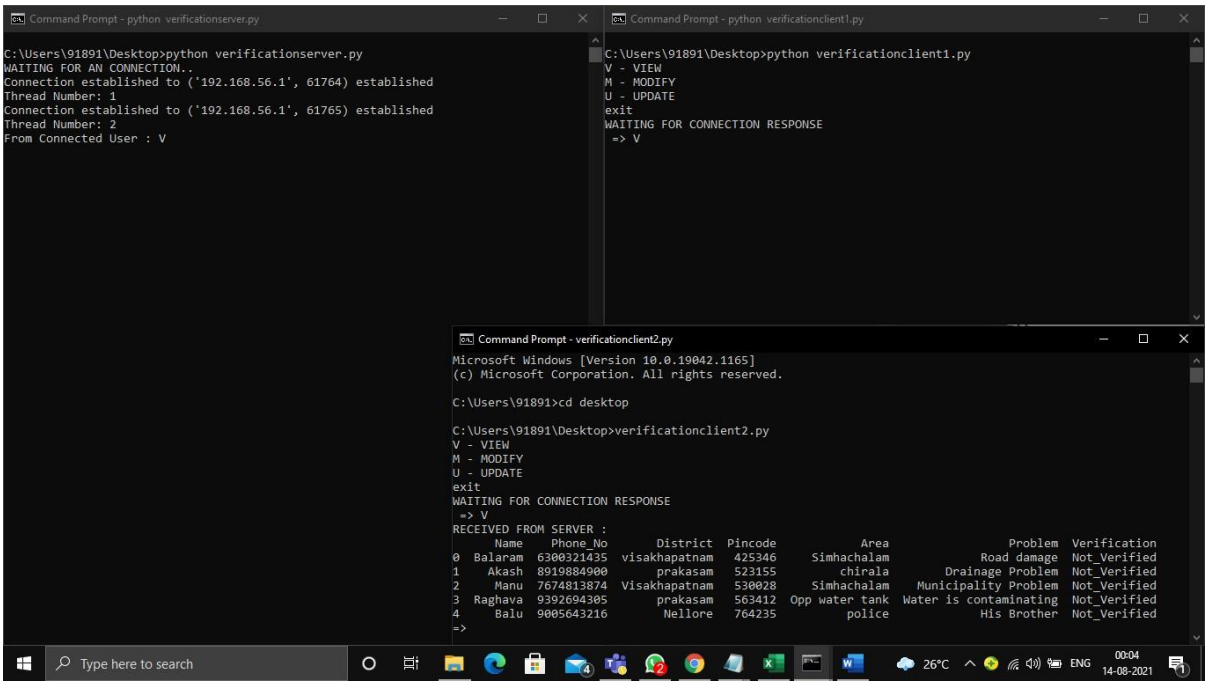
```
def getUserData(df,Name):
    df = df.iloc[Name]
    print(df)
    return df

def modifyData(df, Name, new_value):
    for index in df.index:
        if df.loc[index,"Name"] == Name:
            df.loc[index,"Verification"] = new_value
    return df

def update(df):
    df["Verification"] = df["Verification"].fillna("NotVerified")
    return df

def threaded_client(connection):

    while True:
        data = connection.recv(4048).decode('utf-8')

        if not data:
            break
        data = str(data)
        print("From Connected User : "+data)
```

```
            if data == "V":
                showData = df.to_string()
                connection.send(showData.encode())
            elif data.find("M") != -1:
                split_data = data.split()
                showData =
modifyData(df,split_data[1],split_data[2]).to_string()
                connection.send(showData.encode())
                df.to_csv("problem.csv",index=False)
            elif data.find("U") != -1:
                showData = update(df).to_string()
                connection.send(showData.encode())
                df.to_csv("problem.csv",index=False)



    connection.close()


while True:
    clt, adr = connection.accept()
    print(f"Connection established to {adr} established")
    start_new_thread(threaded_client, (clt,))
    ThreadCount += 1
    print('Thread Number: ' + str(ThreadCount))


connection.close()
```

OUTPUT FOR BOTH CLIENTS AND SERVER



VIEW


Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 61764) established
Thread Number: 1
Connection established to ('192.168.56.1', 61765) established
Thread Number: 2
From Connected User : V
Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V
Command Prompt - verificationclient2.py
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.
C:\Users\91891>cd desktop
C:\Users\91891\Desktop>verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Not_Verified
=>
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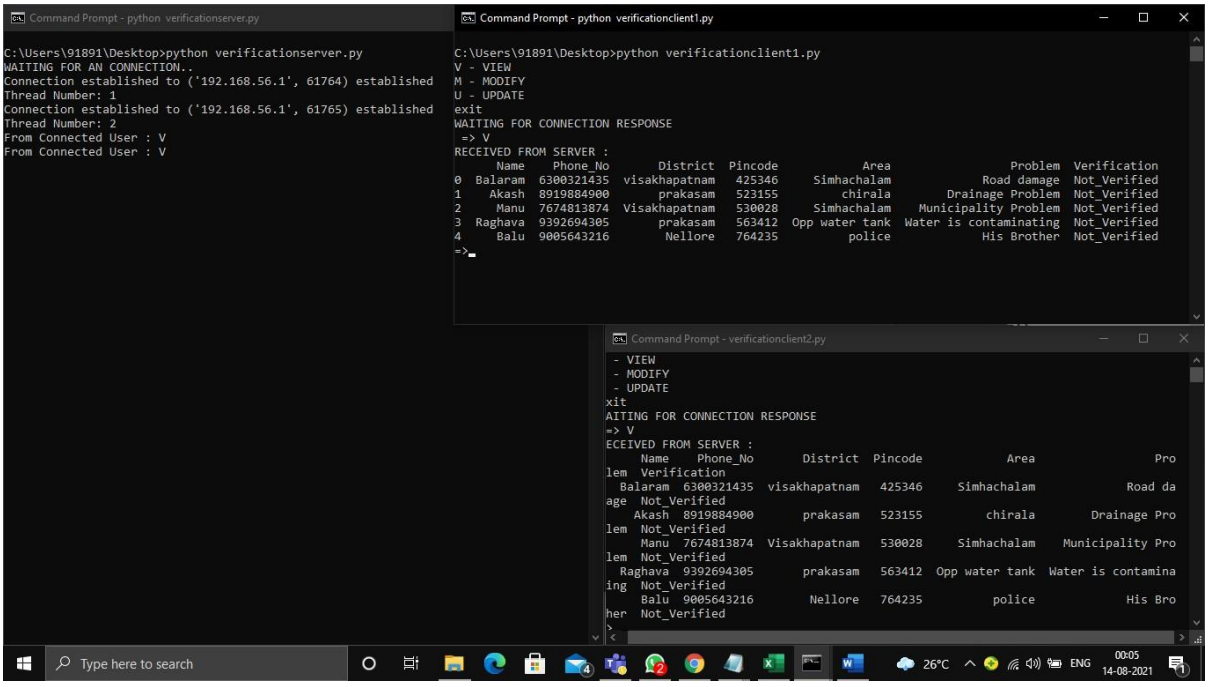
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 61764) established
Thread Number: 1
Connection established to ('192.168.56.1', 61765) established
Thread Number: 2
From Connected User : V
From Connected User : V
Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> V
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
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3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Not_Verified
=>
Command Prompt - verificationclient2.py
- VIEW
- MODIFY
- UPDATE
xit
AITING FOR CONNECTION RESPONSE
=> V
ECEIVED FROM SERVER :
Name Phone_No District Pincode Area Pro
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Akash 8919884900 prakasam 523155 chirala Drainage Pro
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Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Pro
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Raghava 9392694305 prakasam 563412 Opp water tank Water is contamina
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Balu 9005643216 Nellore 764235 police His Bro
her Not_Verified
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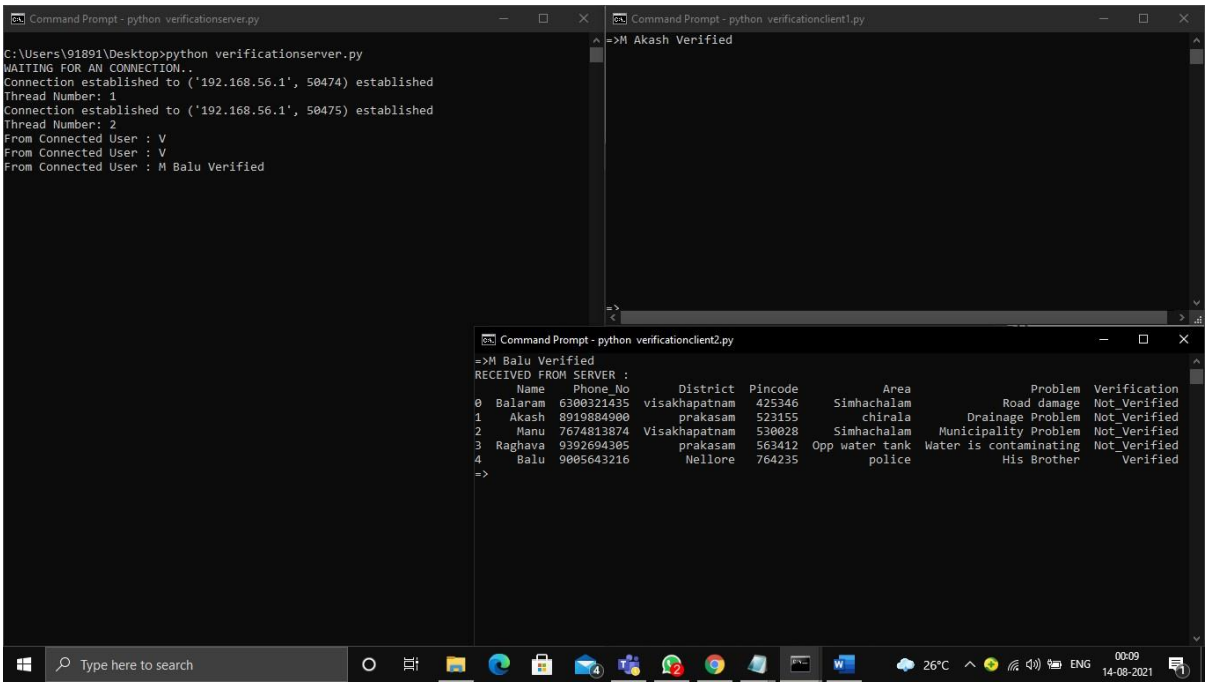
MODIFY


Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
Command Prompt - python verificationclient1.py
=>M Akash Verified
Command Prompt - python verificationclient2.py
=>M Balu Verified
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
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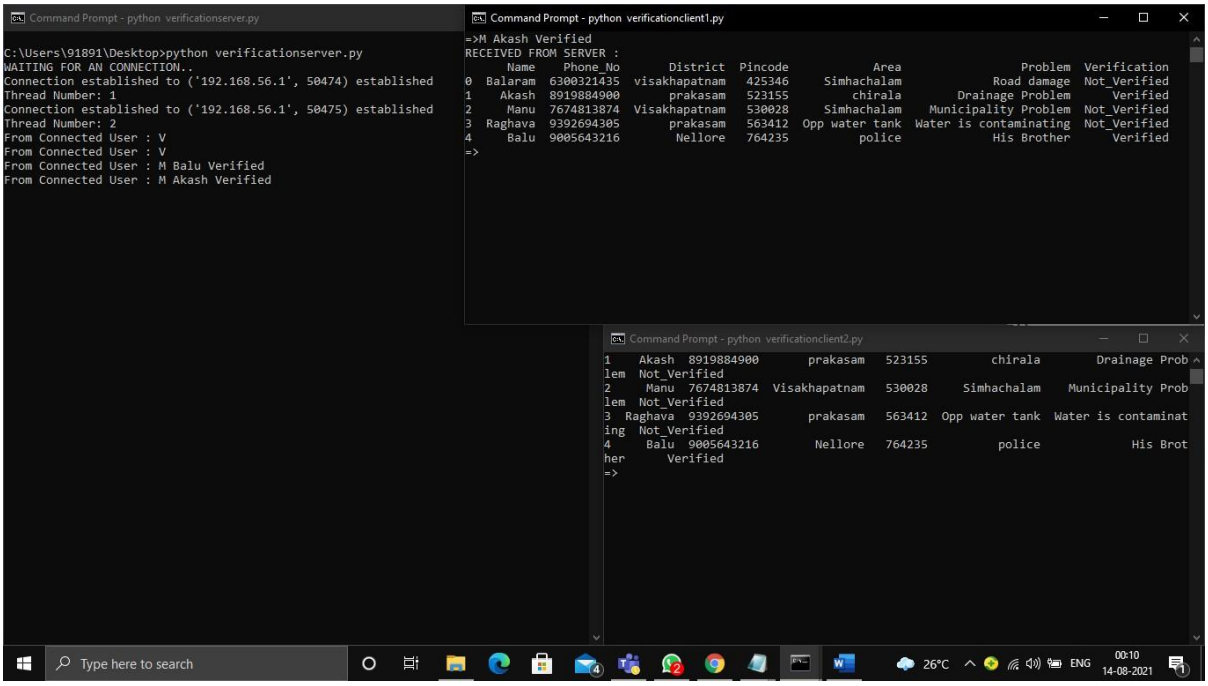
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
From Connected User : M Akash Verified
Command Prompt - python verificationclient1.py
=>M Akash Verified
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>
Command Prompt - python verificationclient2.py
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Not_Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
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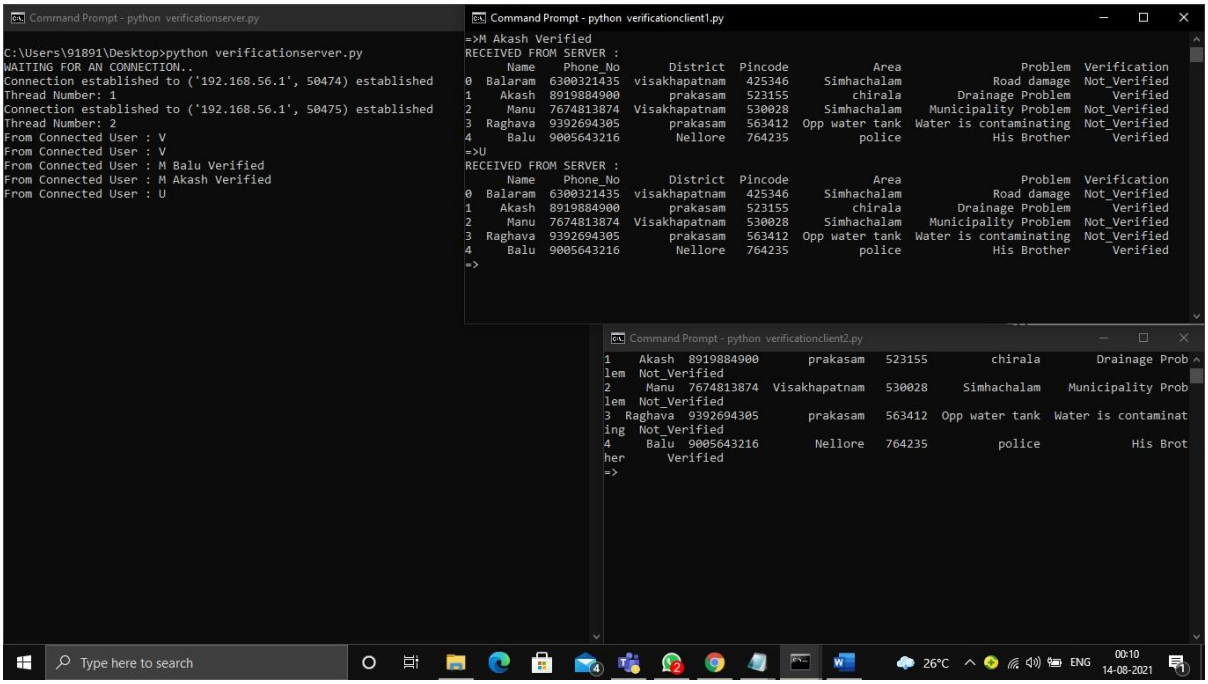
UPDATE


Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
From Connected User : M Akash Verified
From Connected User : U
Command Prompt - python verificationclient1.py
=>M Akash Verified
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
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=>U
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4 Balu 9005643216 Nellore 764235 police His Brother Verified
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3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminat
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4 Balu 9005643216 Nellore 764235 police His Brot
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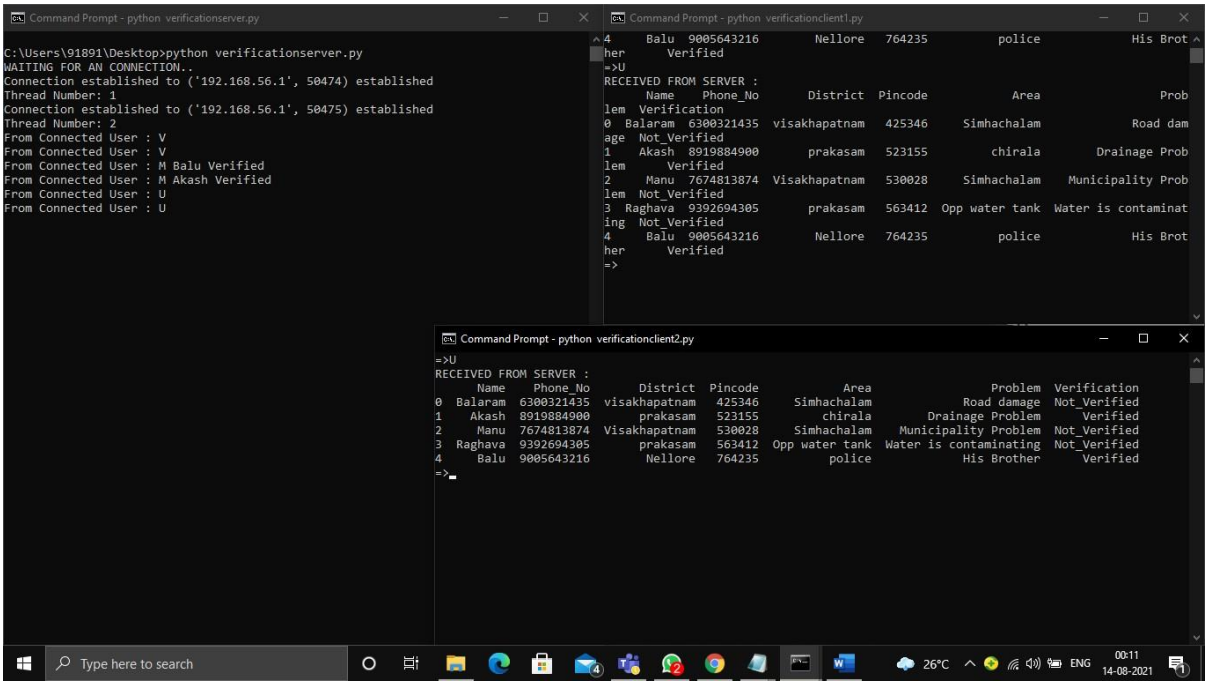
Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 50474) established
Thread Number: 1
Connection established to ('192.168.56.1', 50475) established
Thread Number: 2
From Connected User : V
From Connected User : V
From Connected User : M Balu Verified
From Connected User : M Akash Verified
From Connected User : U
From Connected User : U
Command Prompt - python verificationclient1.py
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=>U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Prob
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1 Akash 8919884900 prakasam 523155 chirala Drainage Prob
lem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Prob
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3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminat
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4 Balu 9005643216 Nellore 764235 police His Brot
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Command Prompt - python verificationclient2.py
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RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
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2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
=>
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ENG
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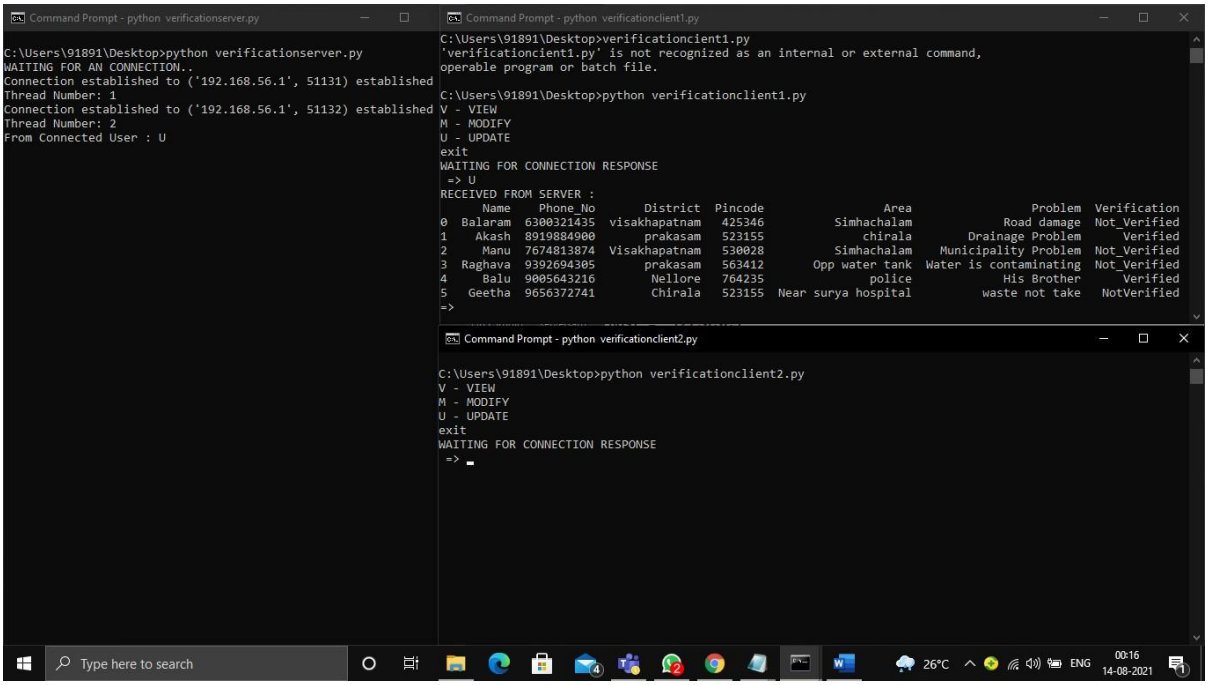
14-08-2021


Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 51131) established
Thread Number: 1
Connection established to ('192.168.56.1', 51132) established
Thread Number: 2
From Connected User : U
Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>verificationcient1.py
'verificationcient1.py' is not recognized as an internal or external command,
operable program or batch file.
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
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3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
5 Geetha 9656372741 Chirala 523155 Near surya hospital waste not take NotVerified
=>
Command Prompt - python verificationclient2.py
C:\Users\91891\Desktop>python verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=>
Type here to search
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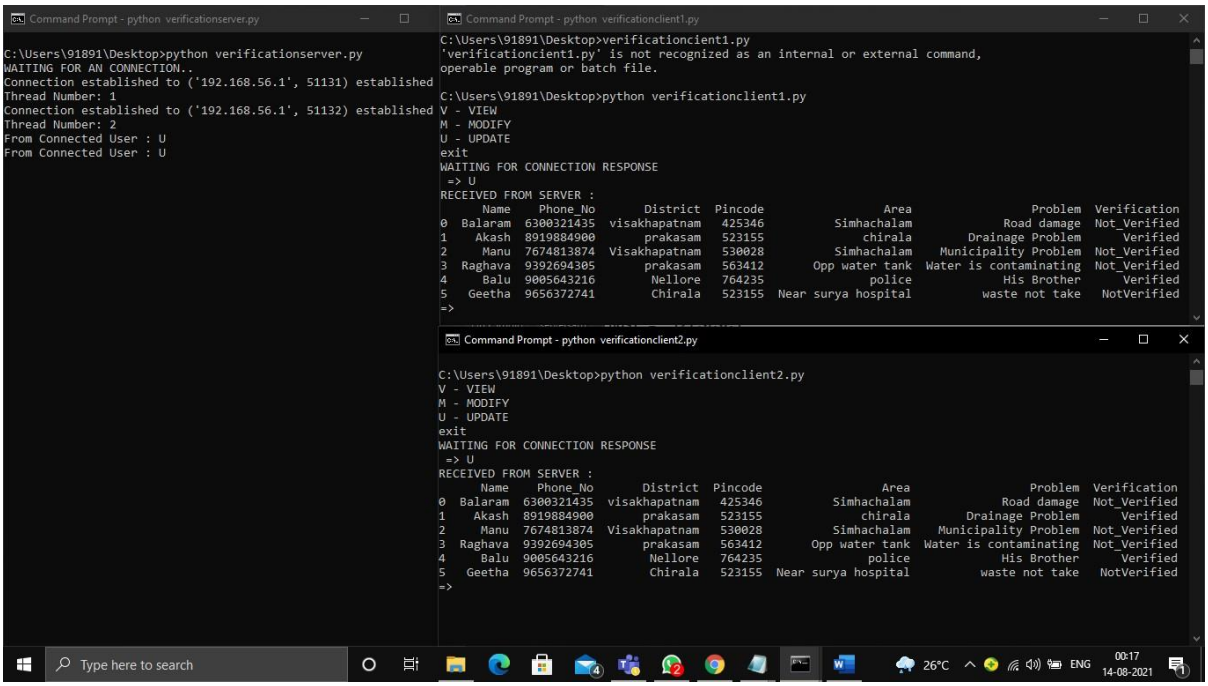
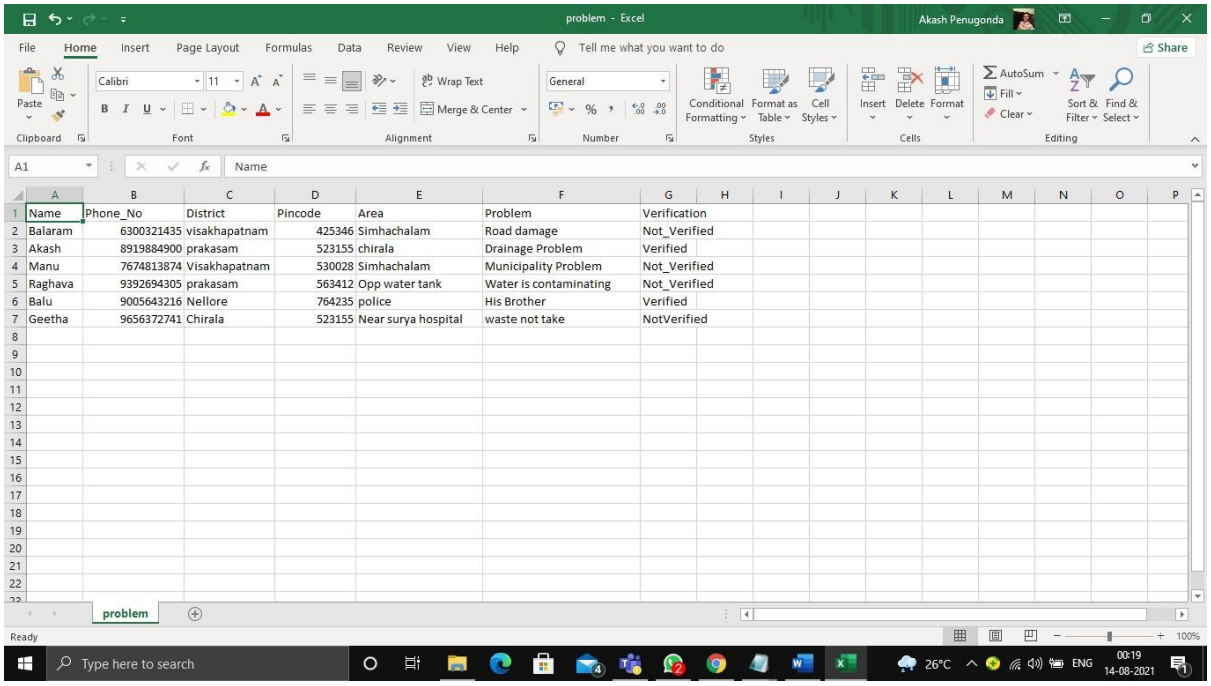
ENG
00:16
14-08-2021


Command Prompt - python verificationserver.py
C:\Users\91891\Desktop>python verificationserver.py
WAITING FOR AN CONNECTION..
Connection established to ('192.168.56.1', 51131) established
Thread Number: 1
Connection established to ('192.168.56.1', 51132) established
Thread Number: 2
From Connected User : U
From Connected User : U
Command Prompt - python verificationclient1.py
C:\Users\91891\Desktop>verificationcient1.py
'verificationcient1.py' is not recognized as an internal or external command,
operable program or batch file.
C:\Users\91891\Desktop>python verificationclient1.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
5 Geetha 9656372741 Chirala 523155 Near surya hospital waste not take NotVerified
=>
Command Prompt - python verificationclient2.py
C:\Users\91891\Desktop>python verificationclient2.py
V - VIEW
M - MODIFY
U - UPDATE
exit
WAITING FOR CONNECTION RESPONSE
=> U
RECEIVED FROM SERVER :
Name Phone_No District Pincode Area Problem Verification
0 Balaram 6300321435 visakhapatnam 425346 Simhachalam Road damage Not_Verified
1 Akash 8919884900 prakasam 523155 chirala Drainage Problem Verified
2 Manu 7674813874 Visakhapatnam 530028 Simhachalam Municipality Problem Not_Verified
3 Raghava 9392694305 prakasam 563412 Opp water tank Water is contaminating Not_Verified
4 Balu 9005643216 Nellore 764235 police His Brother Verified
5 Geetha 9656372741 Chirala 523155 Near surya hospital waste not take NotVerified
=>
Type here to search
26°C
ENG
00:17
14-08-2021



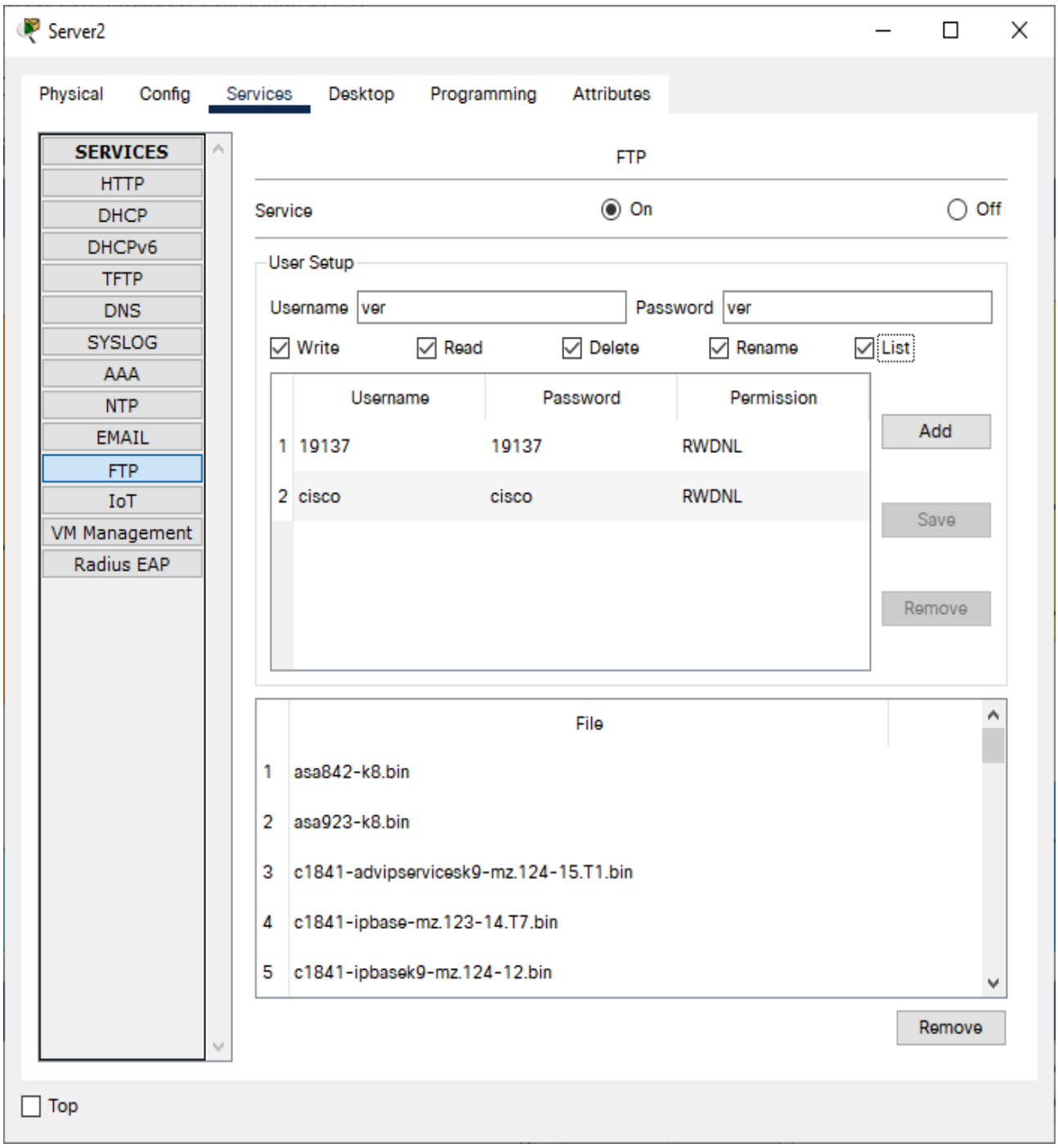
problem - Excel

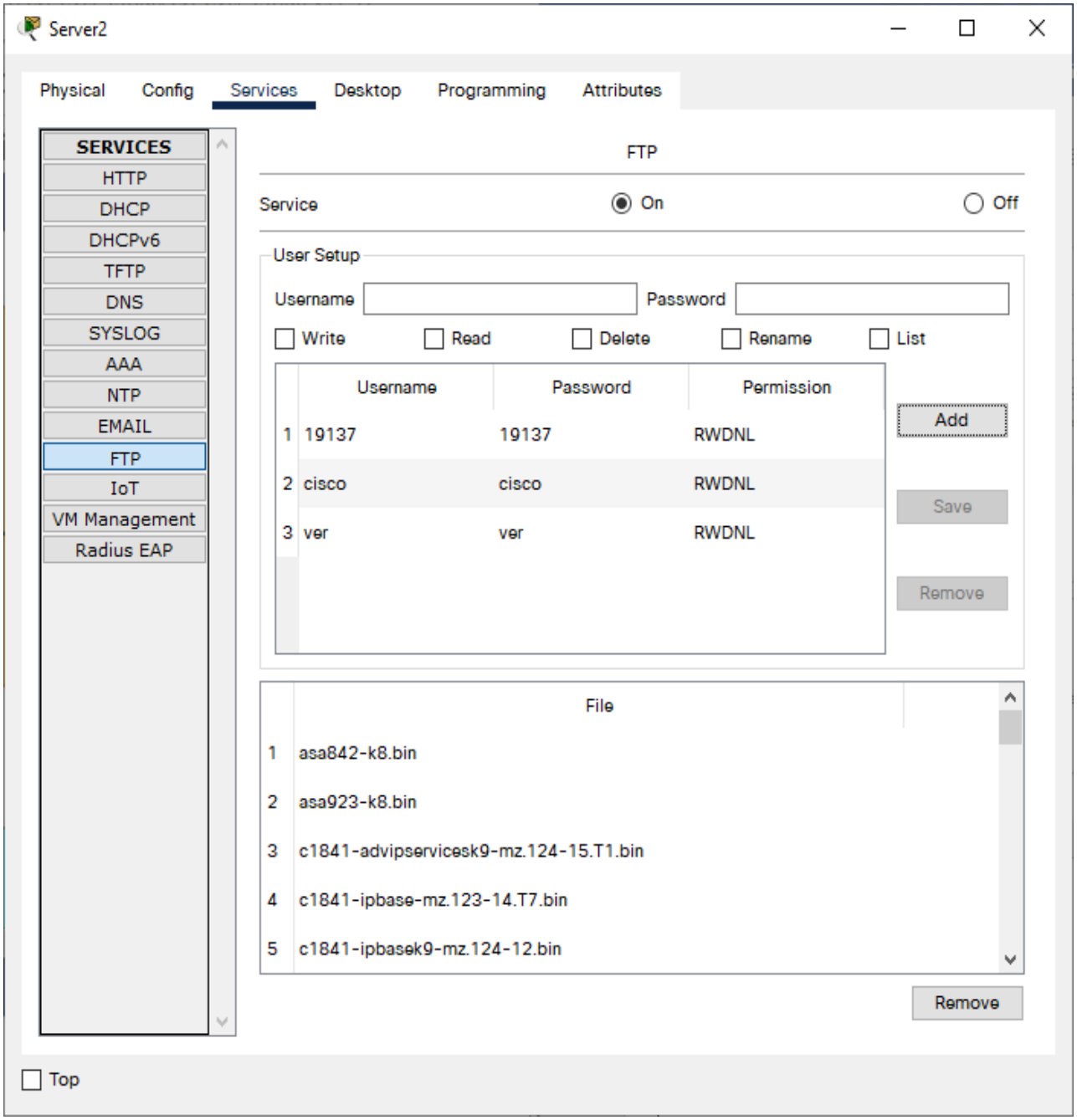
Akash Penugonda

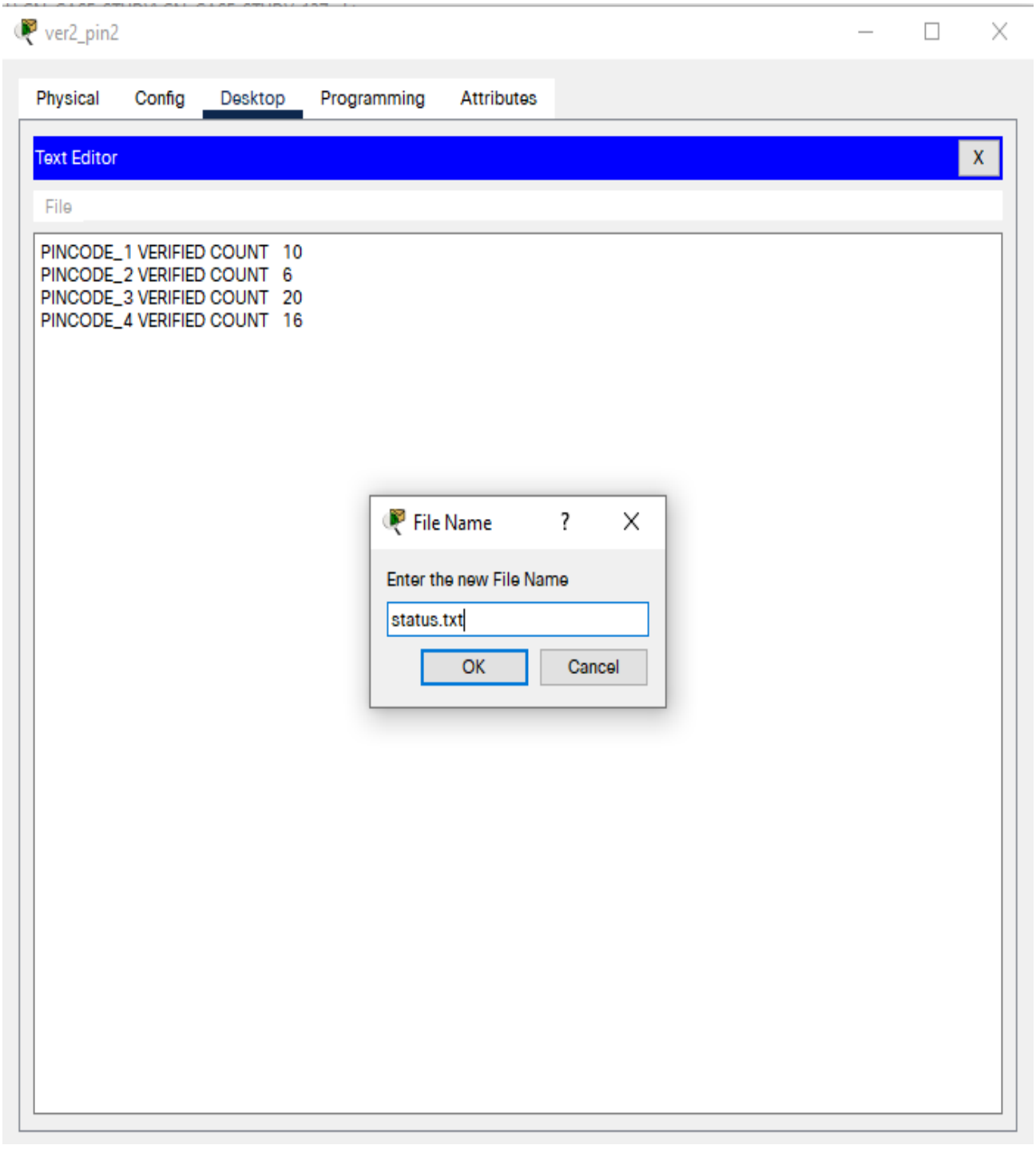
Name	Phone_No	District	Pincode	Area	Problem	Verification
Balaram	6300321435	visakhapatnam	425346	Simhachalam	Road damage	Not_Verified
Akash	8919884900	prakasam	523155	chirala	Drainage Problem	Verified
Manu	7674813874	Visakhapatnam	530028	Simhachalam	Municipality Problem	Not_Verified
Raghava	9392694305	prakasam	563412	Opp water tank	Water is contaminating	Not_Verified
Balu	9005643216	Nellore	764235	police	His Brother	Verified
Geetha	9656372741	Chirala	523155	Near surya hospital	waste not take	NotVerified

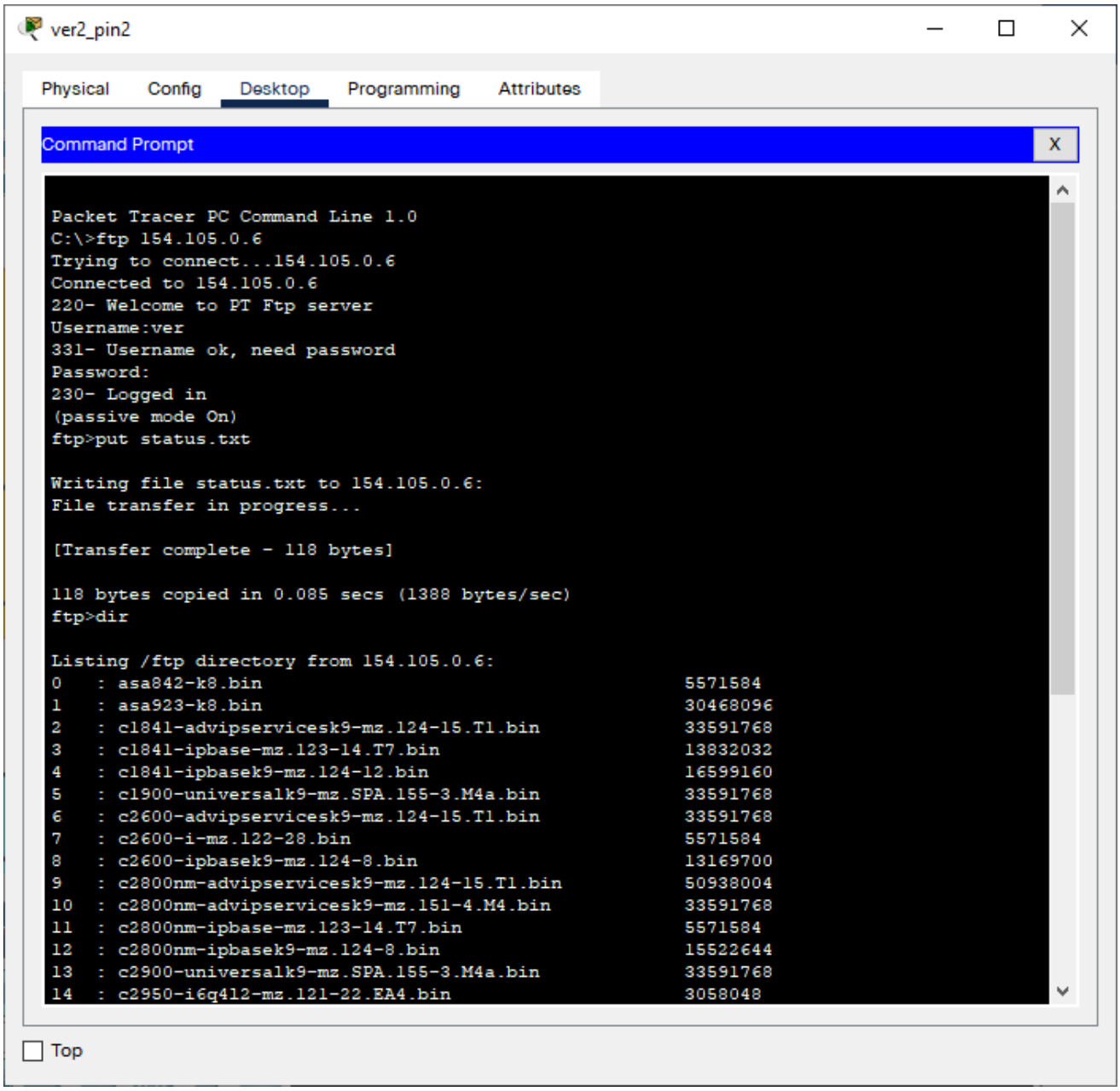
Cisco packet tracer – Application layer protocols

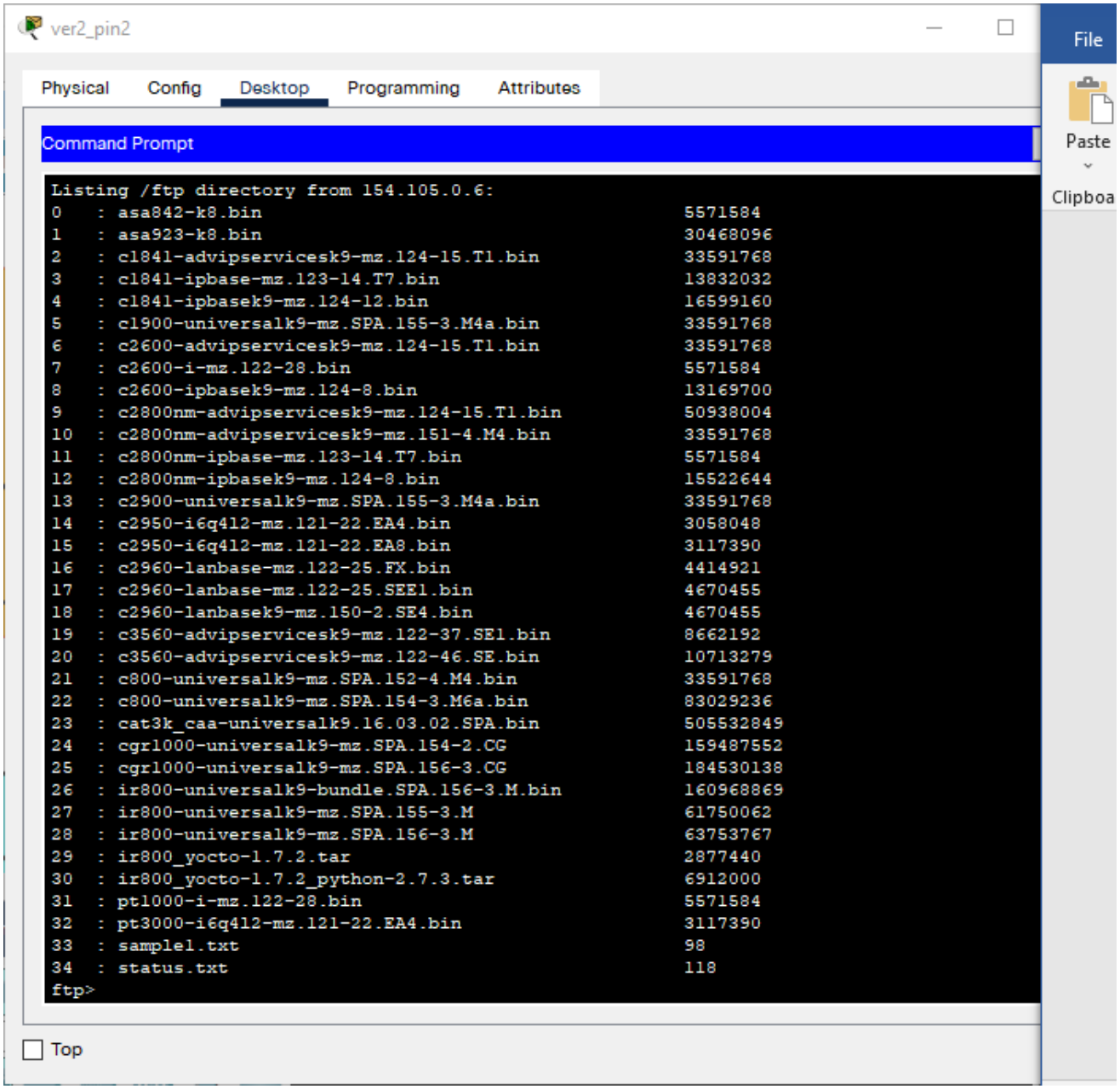
FTP:

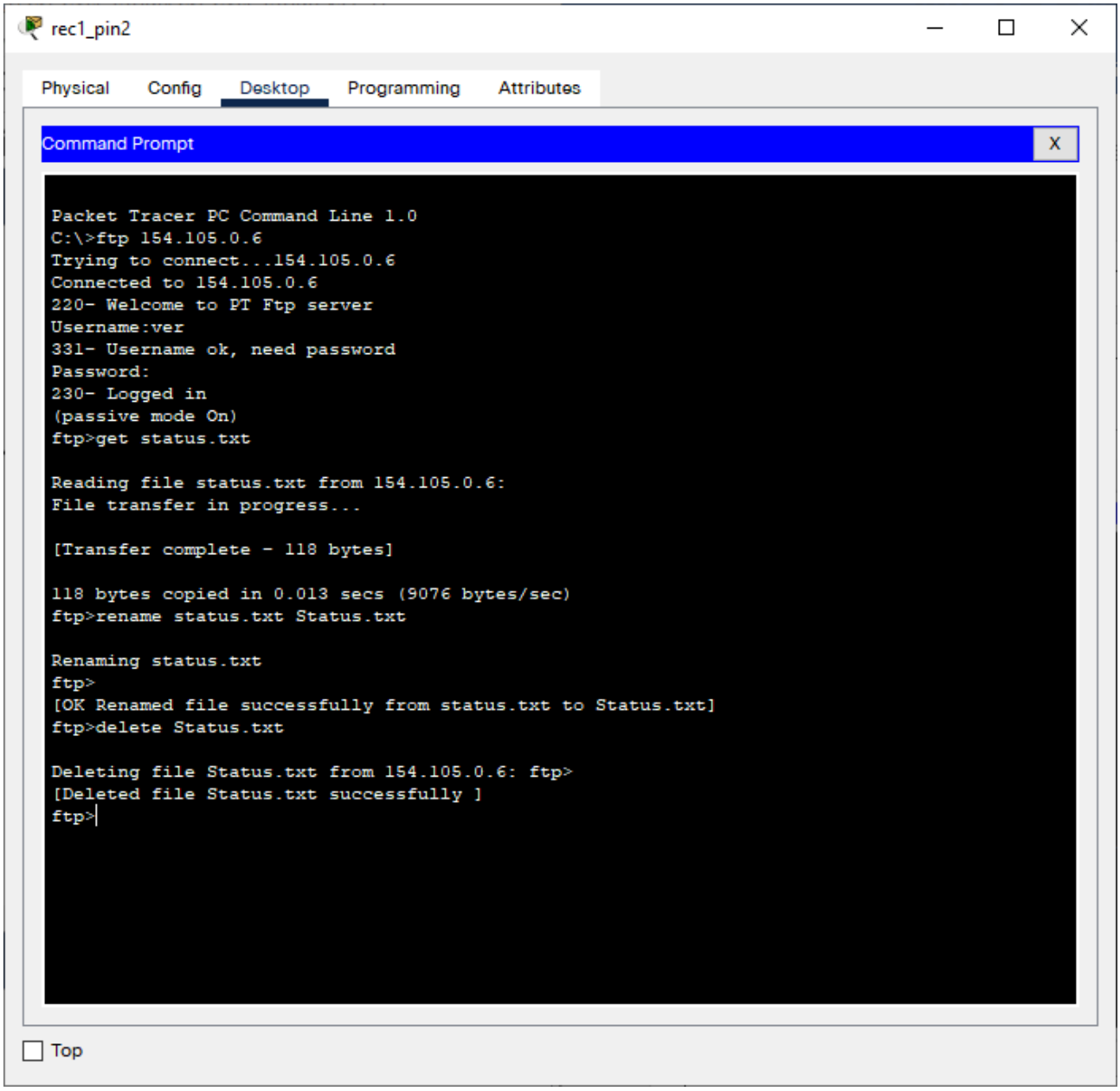



Server2
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
FTP
Service
On
Off
User Setup
Username
Password
Write
Read
Delete
Rename
List
Username
Password
Permission
1 19137 19137 RWDNL
2 cisco cisco RWDNL
3 ver ver RWDNL
Add
Save
Remove
File
1 asa842-k8.bin
2 asa923-k8.bin
3 c1841-advipservicesk9-mz.124-15.T1.bin
4 c1841-ipbase-mz.123-14.T7.bin
5 c1841-ipbasek9-mz.124-12.bin
Remove
Top

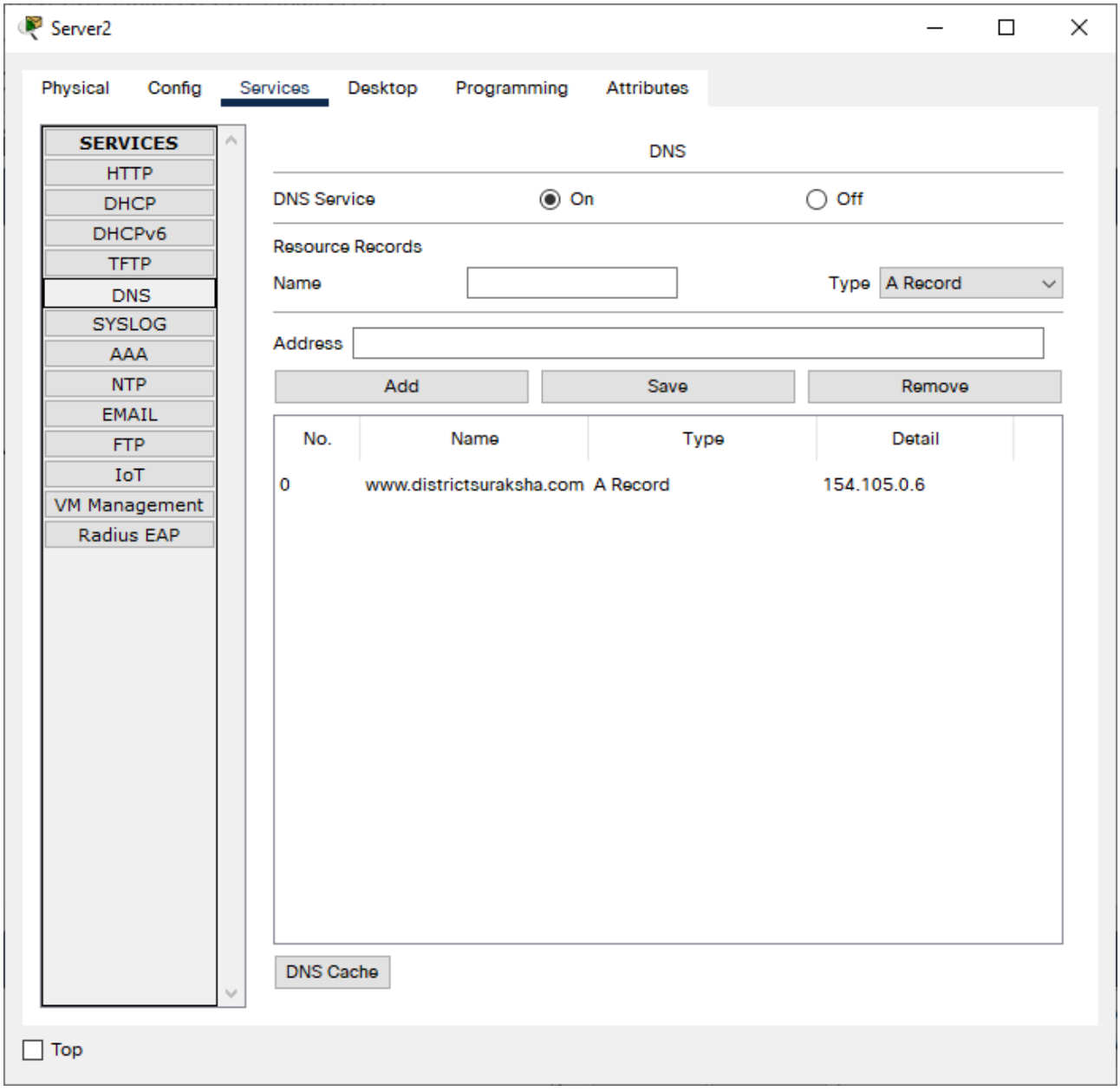

ver2_pin2
Physical
Config
Desktop
Programming
Attributes
Text Editor
X
File
PINCODE_1 VERIFIED COUNT 10
PINCODE_2 VERIFIED COUNT 6
PINCODE_3 VERIFIED COUNT 20
PINCODE_4 VERIFIED COUNT 16
File Name
?
Enter the new File Name
status.txt
OK
Cancel

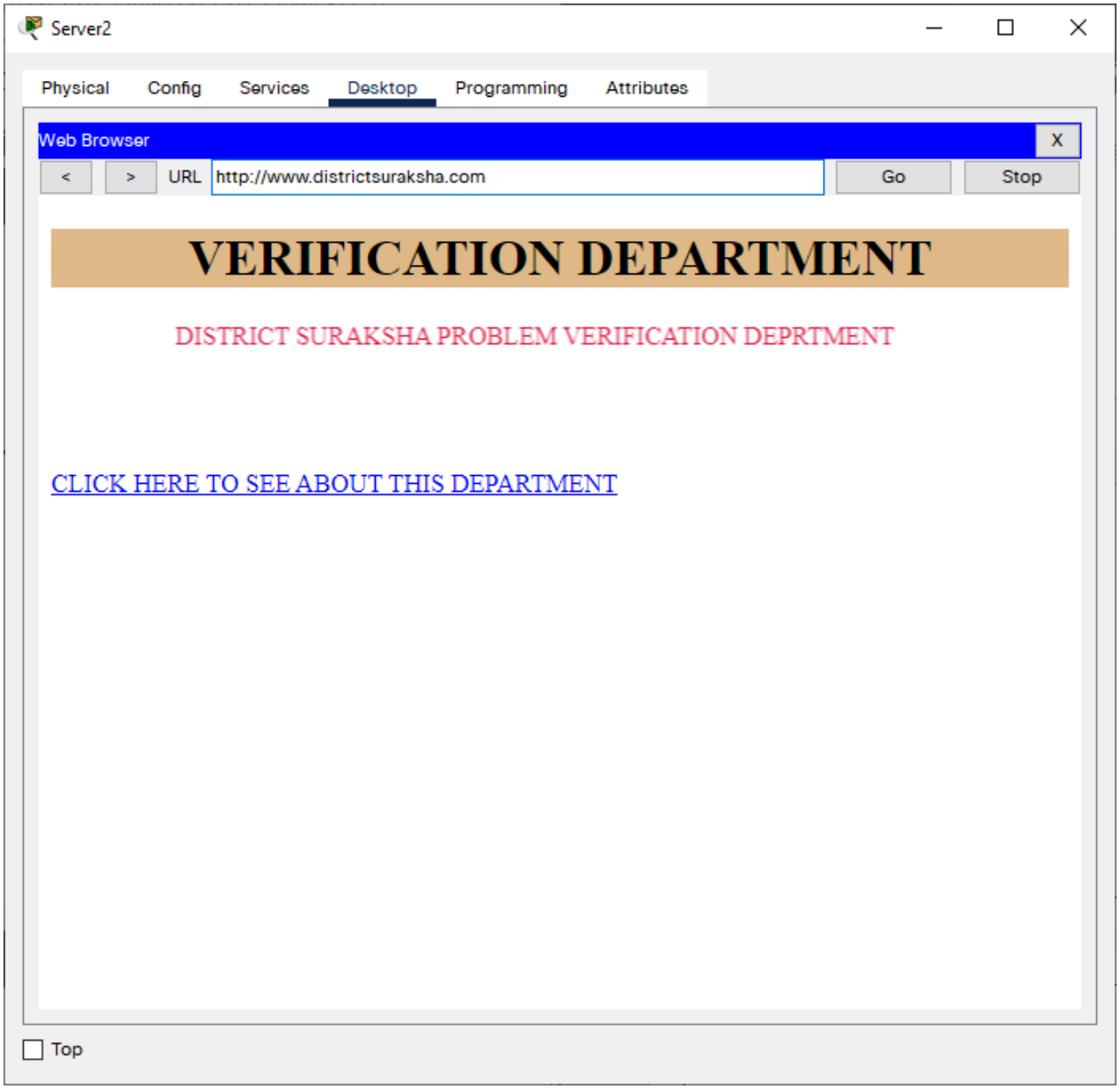

ver2_pin2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ftp 154.105.0.6
Trying to connect...154.105.0.6
Connected to 154.105.0.6
220- Welcome to PT Ftp server
Username:ver
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>put status.txt
Writing file status.txt to 154.105.0.6:
File transfer in progress...
[Transfer complete - 118 bytes]
118 bytes copied in 0.085 secs (1388 bytes/sec)
ftp>dir
Listing /ftp directory from 154.105.0.6:
0 : asa842-k8.bin 5571584
1 : asa923-k8.bin 30468096
2 : c1841-advipservicesk9-mz.124-15.T1.bin 33591768
3 : c1841-ipbase-mz.123-14.T7.bin 13832032
4 : c1841-ipbasek9-mz.124-12.bin 16599160
5 : c1900-universalk9-mz.SPA.155-3.M4a.bin 33591768
6 : c2600-advipservicesk9-mz.124-15.T1.bin 33591768
7 : c2600-i-mz.122-28.bin 5571584
8 : c2600-ipbasek9-mz.124-8.bin 13169700
9 : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
10 : c2800nm-advipservicesk9-mz.151-4.M4.bin 33591768
11 : c2800nm-ipbase-mz.123-14.T7.bin 5571584
12 : c2800nm-ipbasek9-mz.124-8.bin 15522644
13 : c2900-universalk9-mz.SPA.155-3.M4a.bin 33591768
14 : c2950-i6q412-mz.121-22.EA4.bin 3058048
Top

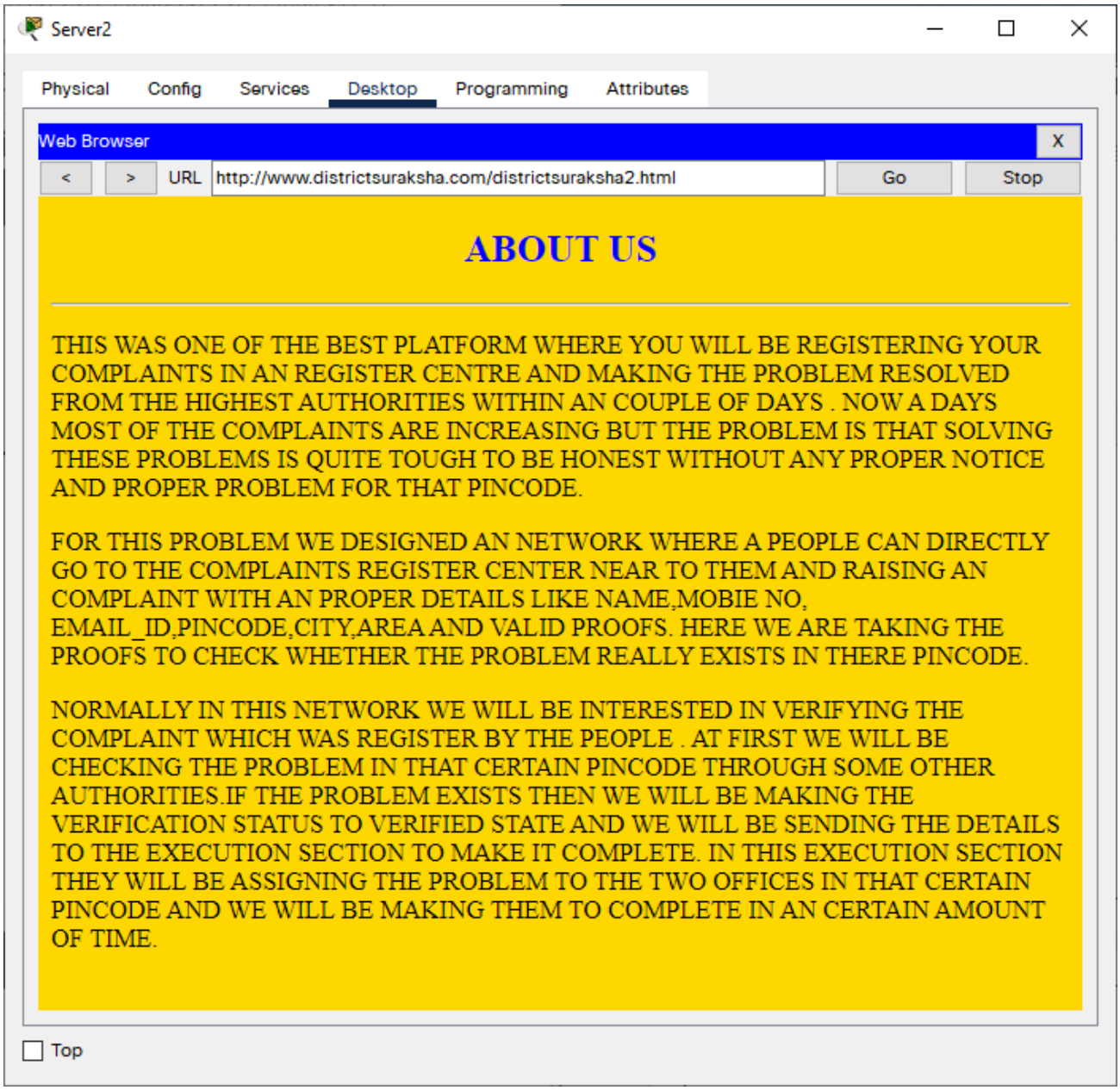

ver2_pin2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Listing /ftp directory from 154.105.0.6:
0 : asa842-k8.bin 5571584
1 : asa923-k8.bin 30468096
2 : c1841-advipservicesk9-mz.124-15.T1.bin 33591768
3 : c1841-ipbase-mz.123-14.T7.bin 13832032
4 : c1841-ipbasek9-mz.124-12.bin 16599160
5 : c1900-universalk9-mz.SPA.155-3.M4a.bin 33591768
6 : c2600-advipservicesk9-mz.124-15.T1.bin 33591768
7 : c2600-i-mz.122-28.bin 5571584
8 : c2600-ipbasek9-mz.124-8.bin 13169700
9 : c2800nm-advipservicesk9-mz.124-15.T1.bin 50938004
10 : c2800nm-advipservicesk9-mz.151-4.M4.bin 33591768
11 : c2800nm-ipbase-mz.123-14.T7.bin 5571584
12 : c2800nm-ipbasek9-mz.124-8.bin 15522644
13 : c2900-universalk9-mz.SPA.155-3.M4a.bin 33591768
14 : c2950-i6q412-mz.121-22.EA4.bin 3058048
15 : c2950-i6q412-mz.121-22.EA8.bin 3117390
16 : c2960-lanbase-mz.122-25.FX.bin 4414921
17 : c2960-lanbase-mz.122-25.SEE1.bin 4670455
18 : c2960-lanbasek9-mz.150-2.SE4.bin 4670455
19 : c3560-advipservicesk9-mz.122-37.SE1.bin 8662192
20 : c3560-advipservicesk9-mz.122-46.SE.bin 10713279
21 : c800-universalk9-mz.SPA.152-4.M4.bin 33591768
22 : c800-universalk9-mz.SPA.154-3.M6a.bin 83029236
23 : cat3k_caa-universalk9.16.03.02.SPA.bin 505532849
24 : cgr1000-universalk9-mz.SPA.154-2.CG 159487552
25 : cgr1000-universalk9-mz.SPA.156-3.CG 184530138
26 : ir800-universalk9-bundle.SPA.156-3.M.bin 160968869
27 : ir800-universalk9-mz.SPA.155-3.M 61750062
28 : ir800-universalk9-mz.SPA.156-3.M 63753767
29 : ir800_yocto-1.7.2.tar 2877440
30 : ir800_yocto-1.7.2_python-2.7.3.tar 6912000
31 : pt1000-i-mz.122-28.bin 5571584
32 : pt3000-i6q412-mz.121-22.EA4.bin 3117390
33 : sample1.txt 98
34 : status.txt 118
ftp>
Top
File
Paste
Clipboa


rec1_pin2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ftp 154.105.0.6
Trying to connect...154.105.0.6
Connected to 154.105.0.6
220- Welcome to PT Ftp server
Username:ver
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get status.txt
Reading file status.txt from 154.105.0.6:
File transfer in progress...
[Transfer complete - 118 bytes]
118 bytes copied in 0.013 secs (9076 bytes/sec)
ftp>rename status.txt Status.txt
Renaming status.txt
ftp>
[OK Renamed file successfully from status.txt to Status.txt]
ftp>delete Status.txt
Deleting file Status.txt from 154.105.0.6: ftp>
[Deleted file Status.txt successfully]
ftp>
Top

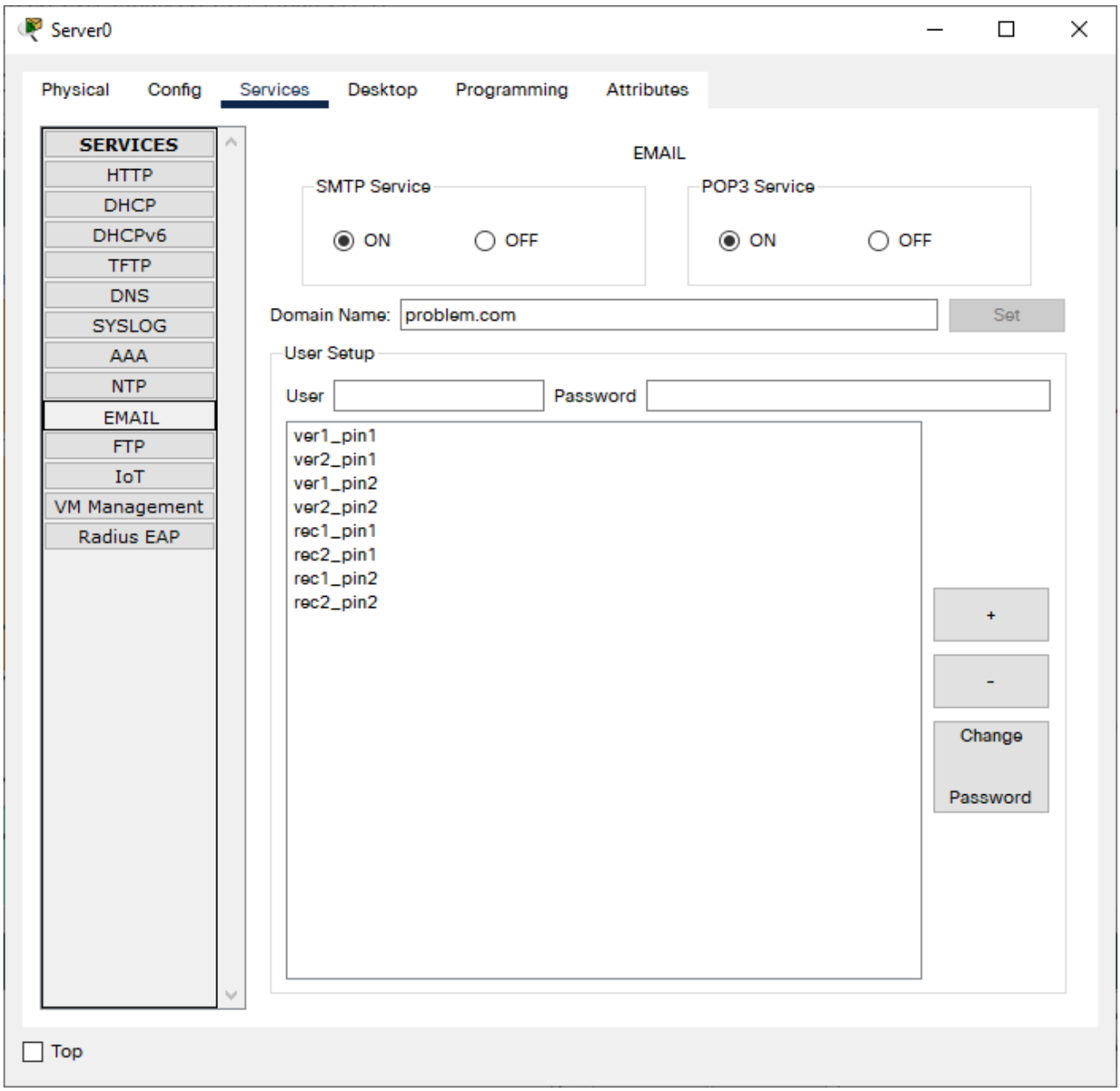
DNS:

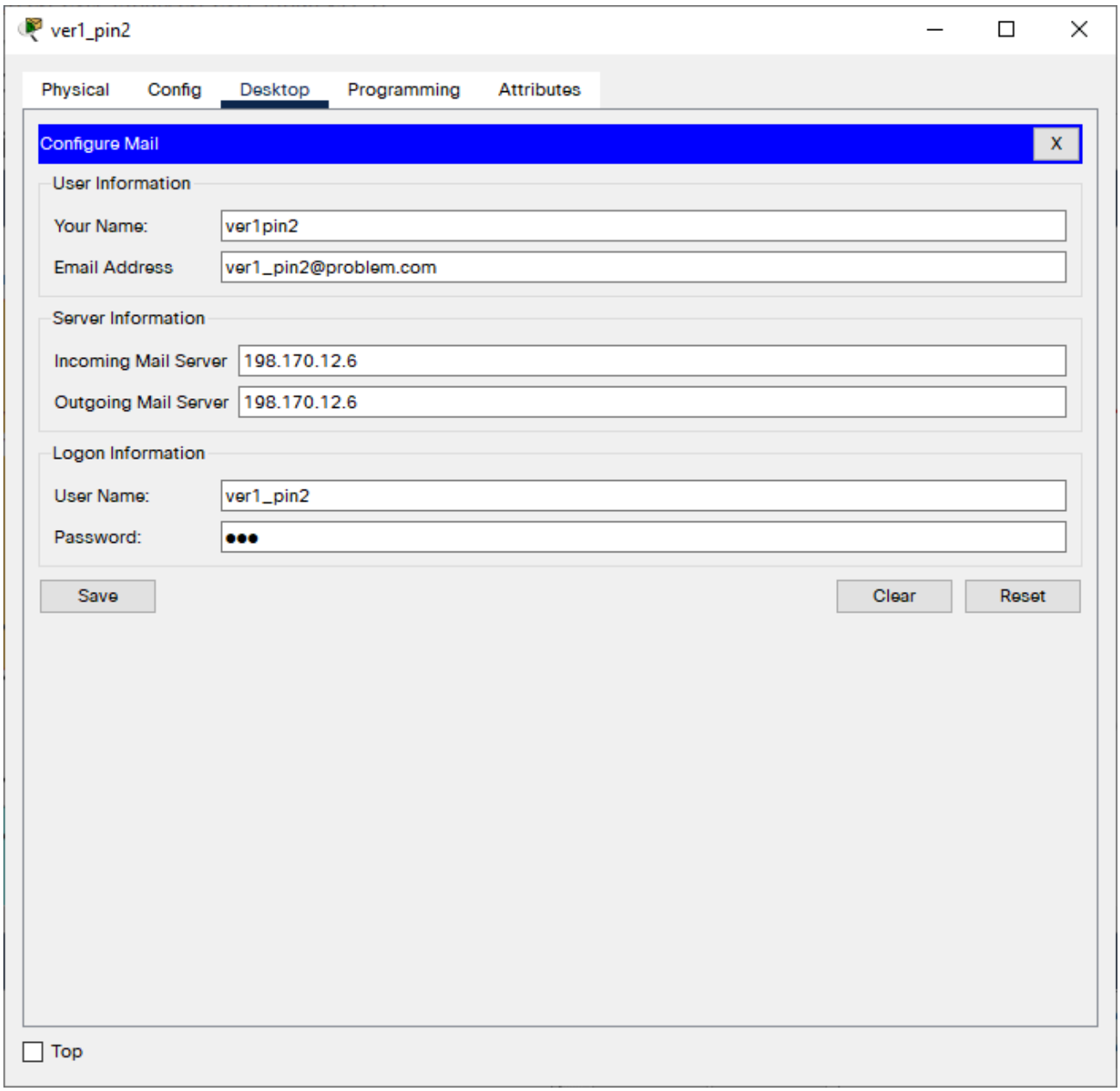

Server2
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
Type
A Record
Address
Add
Save
Remove
No.
Name
Type
Detail
0
www.districtsuraksha.com
A Record
154.105.0.6
DNS Cache
Top

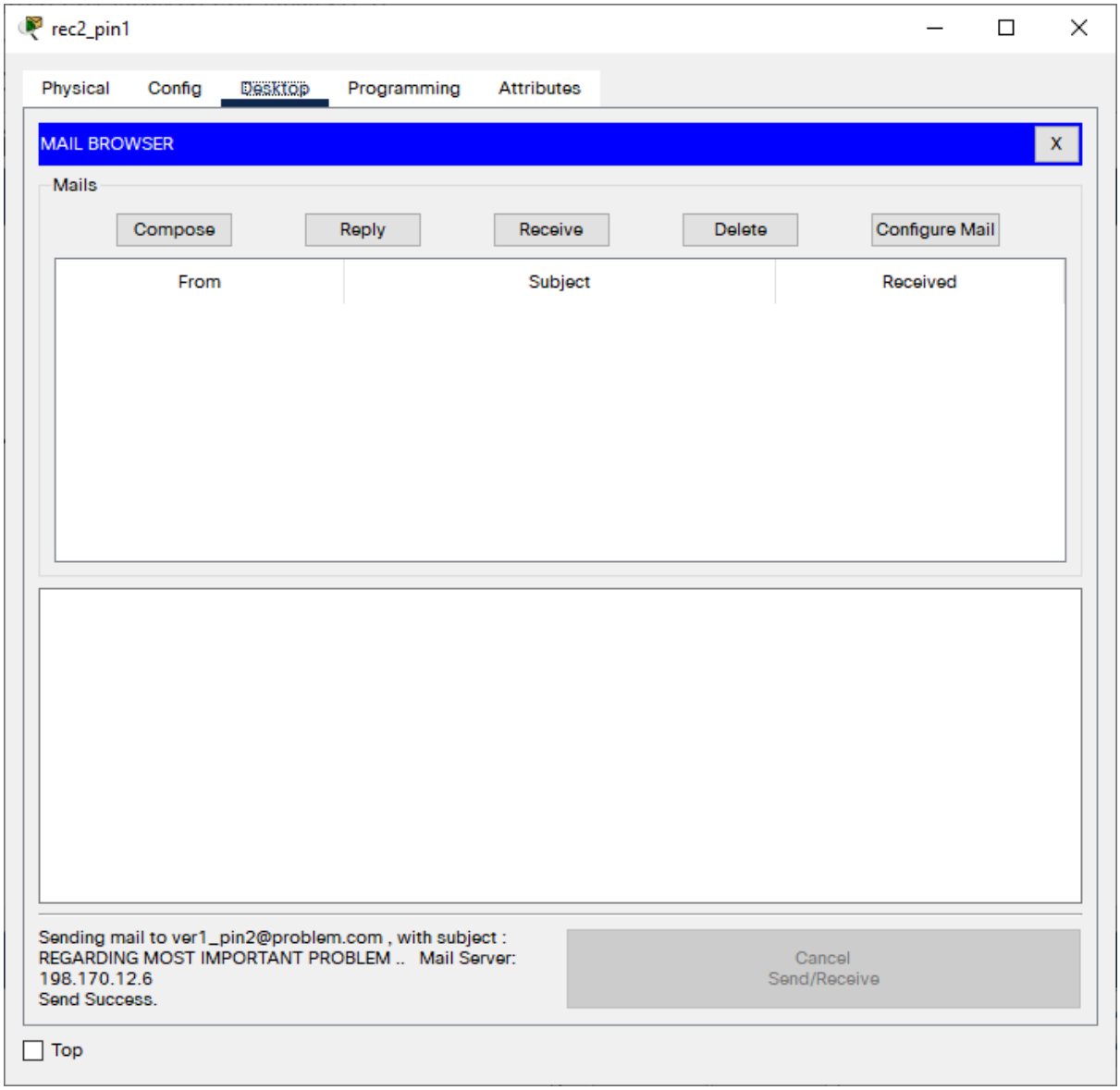

Server2
Physical
Config
Services
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://www.districtsuraksha.com
Go
Stop
VERIFICATION DEPARTMENT
DISTRICT SURAKSHA PROBLEM VERIFICATION DEPRTMENT
CLICK HERE TO SEE ABOUT THIS DEPARTMENT
Top

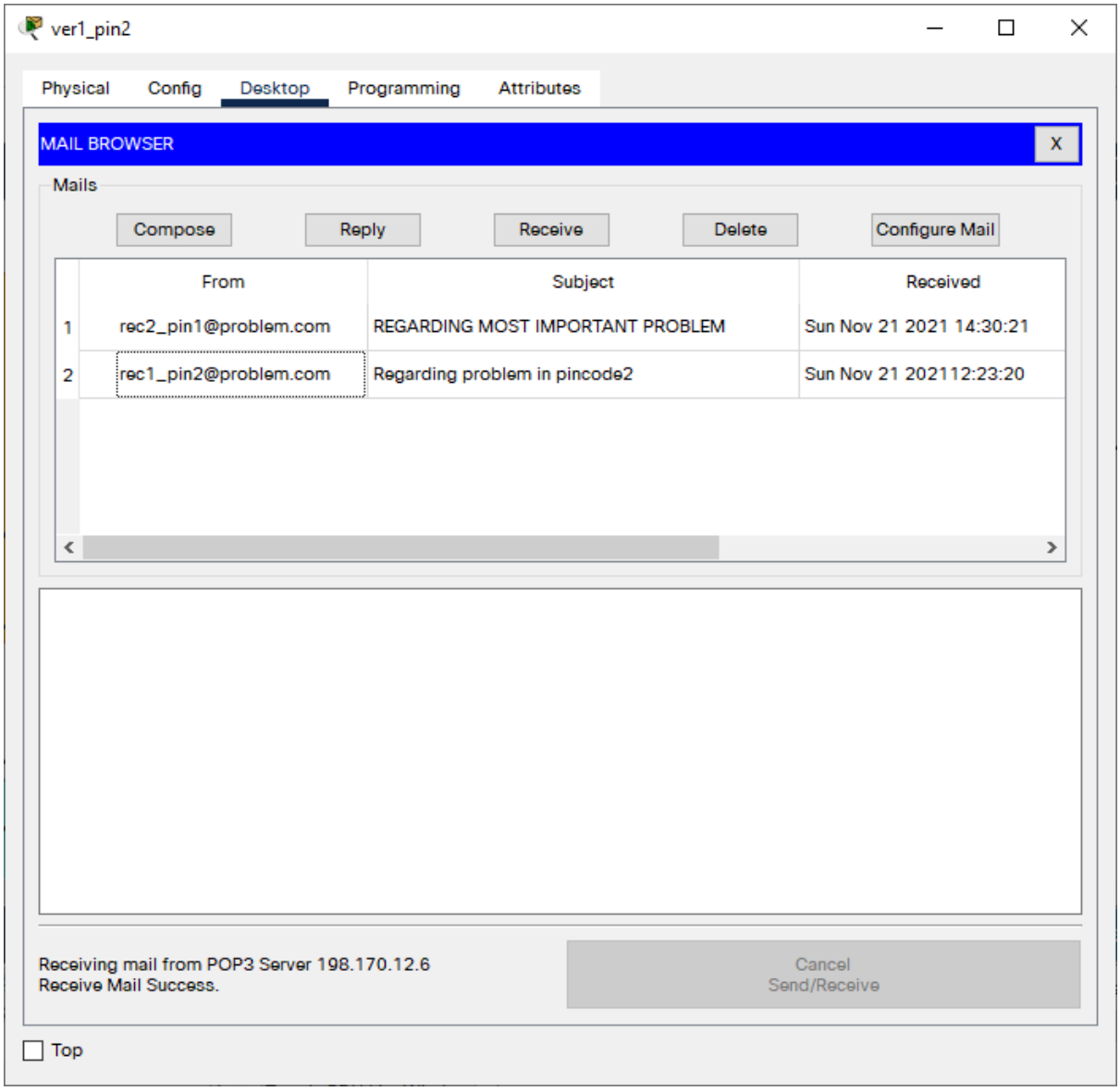

Server2
Physical
Config
Services
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://www.districtsuraksha.com/districtsuraksha2.html
Go
Stop
ABOUT US
THIS WAS ONE OF THE BEST PLATFORM WHERE YOU WILL BE REGISTERING YOUR COMPLAINTS IN AN REGISTER CENTRE AND MAKING THE PROBLEM RESOLVED FROM THE HIGHEST AUTHORITIES WITHIN AN COUPLE OF DAYS . NOW A DAYS MOST OF THE COMPLAINTS ARE INCREASING BUT THE PROBLEM IS THAT SOLVING THESE PROBLEMS IS QUITE TOUGH TO BE HONEST WITHOUT ANY PROPER NOTICE AND PROPER PROBLEM FOR THAT PINCODE.
FOR THIS PROBLEM WE DESIGNED AN NETWORK WHERE A PEOPLE CAN DIRECTLY GO TO THE COMPLAINTS REGISTER CENTER NEAR TO THEM AND RAISING AN COMPLAINT WITH AN PROPER DETAILS LIKE NAME,MOBIE NO, EMAIL_ID,PINCODE,CITY,AREA AND VALID PROOFS. HERE WE ARE TAKING THE PROOFS TO CHECK WHETHER THE PROBLEM REALLY EXISTS IN THERE PINCODE.
NORMALLY IN THIS NETWORK WE WILL BE INTERESTED IN VERIFYING THE COMPLAINT WHICH WAS REGISTER BY THE PEOPLE . AT FIRST WE WILL BE CHECKING THE PROBLEM IN THAT CERTAIN PINCODE THROUGH SOME OTHER AUTHORITIES.IF THE PROBLEM EXISTS THEN WE WILL BE MAKING THE VERIFICATION STATUS TO VERIFIED STATE AND WE WILL BE SENDING THE DETAILS TO THE EXECUTION SECTION TO MAKE IT COMPLETE. IN THIS EXECUTION SECTION THEY WILL BE ASSIGNING THE PROBLEM TO THE TWO OFFICES IN THAT CERTAIN PINCODE AND WE WILL BE MAKING THEM TO COMPLETE IN AN CERTAIN AMOUNT OF TIME.
Top

SMTP:


Server0
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
EMAIL
SMTP Service
ON
OFF
POP3 Service
ON
OFF
Domain Name:
problem.com
Set
User Setup
User
Password
ver1_pin1
ver2_pin1
ver1_pin2
ver2_pin2
rec1_pin1
rec2_pin1
rec1_pin2
rec2_pin2
+
-
Change
Password
Top

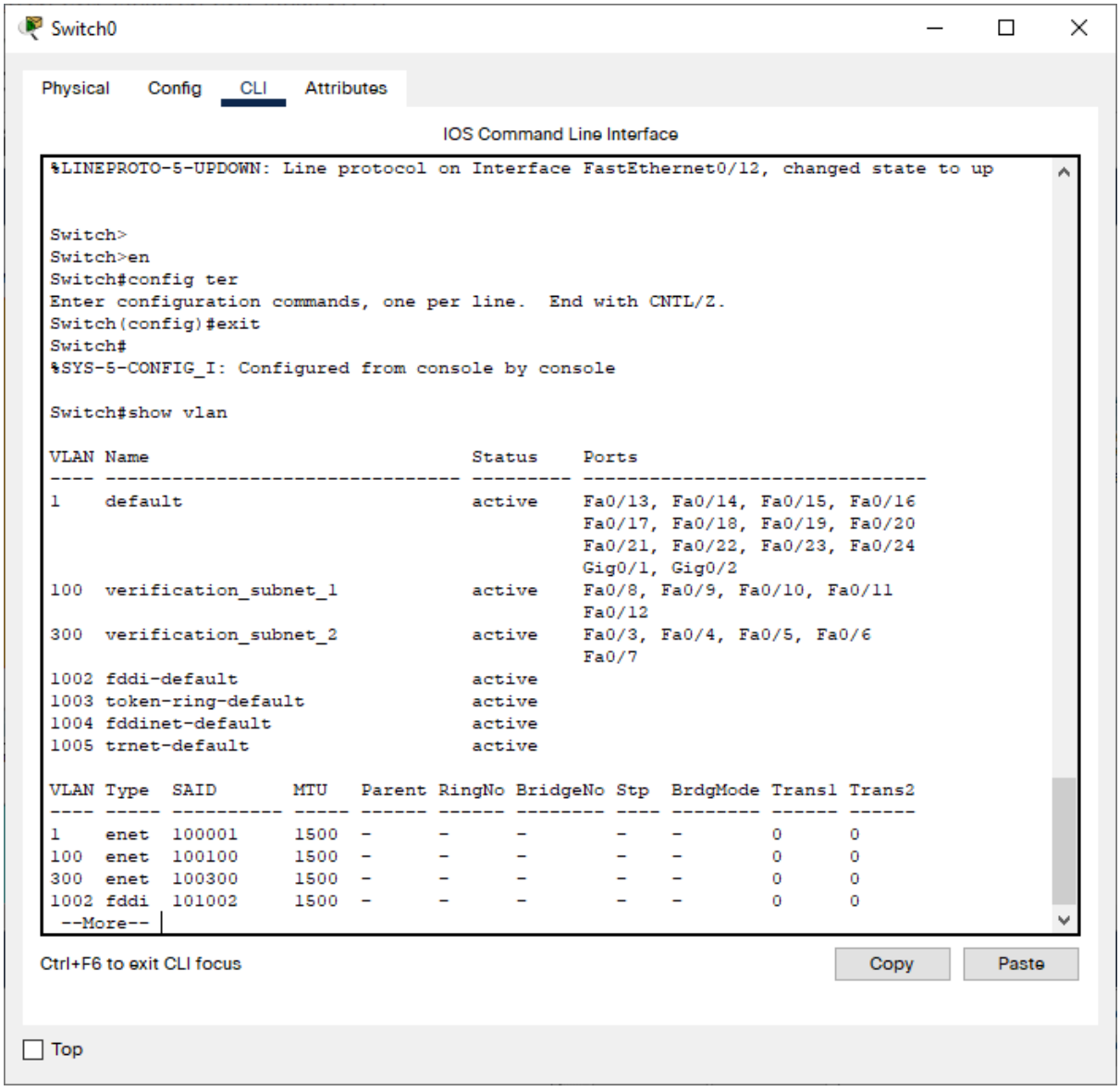

ver1_pin2
Physical
Config
Desktop
Programming
Attributes
Configure Mail
X
User Information
Your Name:
ver1pin2
Email Address
ver1_pin2@problem.com
Server Information
Incoming Mail Server
198.170.12.6
Outgoing Mail Server
198.170.12.6
Logon Information
User Name:
ver1_pin2
Password:
Save
Clear
Reset
Top

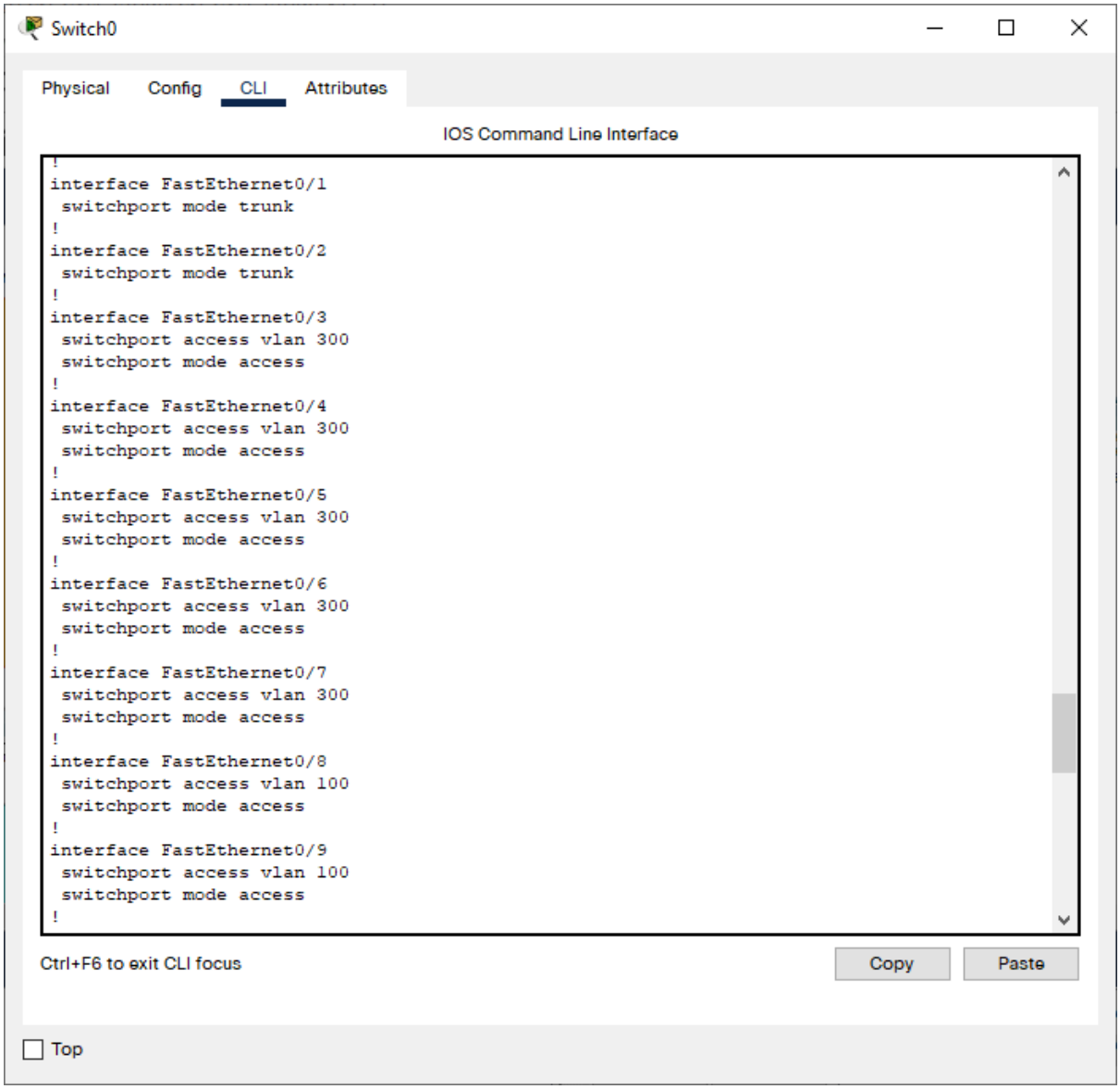

rec2_pin1
Physical
Config
Desktop
Programming
Attributes
MAIL BROWSER
X
Mails
Compose
Reply
Receive
Delete
Configure Mail
From
Subject
Received
Sending mail to ver1_pin2@problem.com , with subject :
REGARDING MOST IMPORTANT PROBLEM .. Mail Server:
198.170.12.6
Send Success.
Cancel
Send/Receive
Top

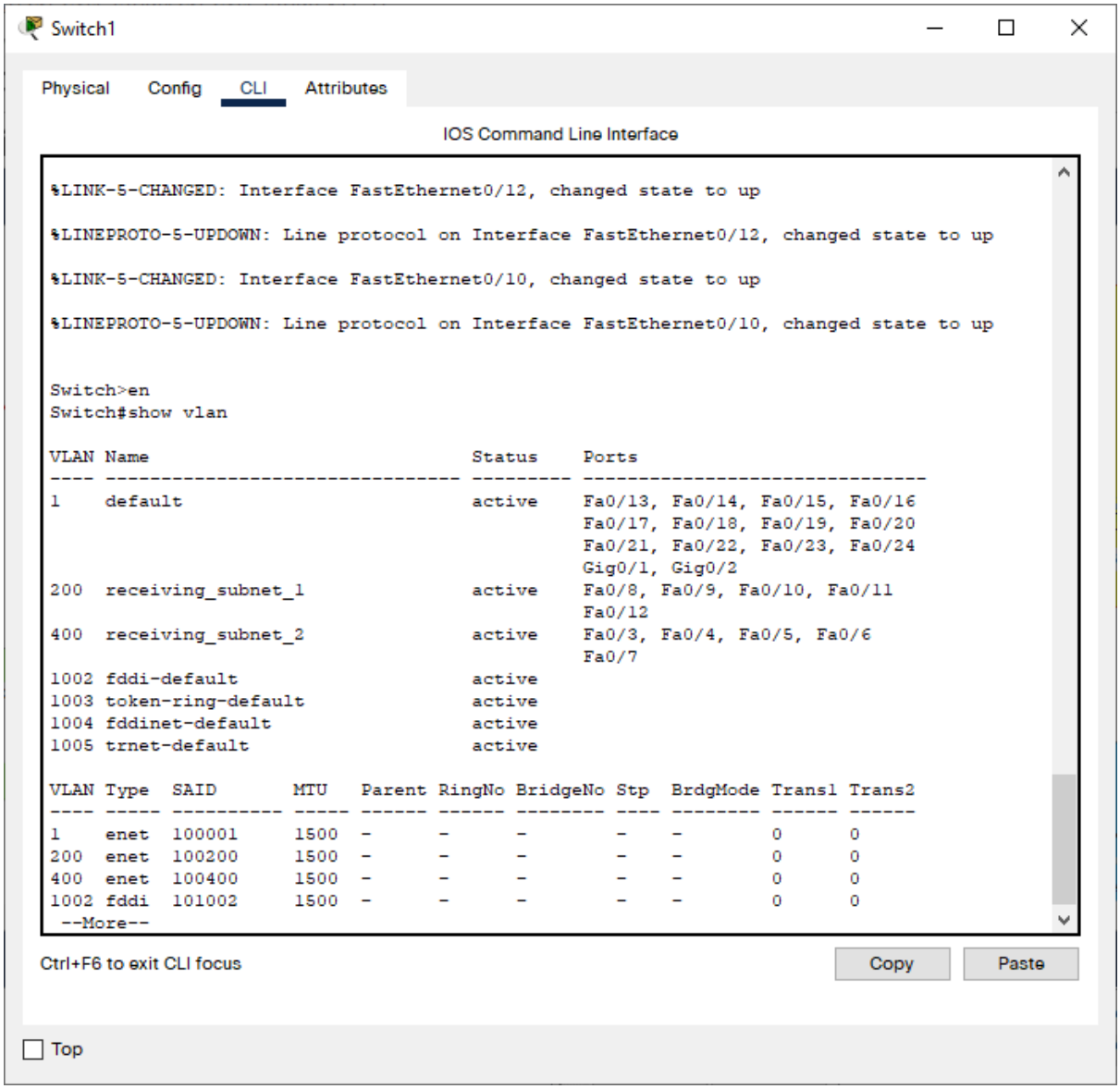

ver1_pin2
Physical
Config
Desktop
Programming
Attributes
MAIL BROWSER
X
Mails
Compose
Reply
Receive
Delete
Configure Mail
From
Subject
Received
1
rec2_pin1@problem.com
REGARDING MOST IMPORTANT PROBLEM
Sun Nov 21 2021 14:30:21
2
rec1_pin2@problem.com
Regarding problem in pincode2
Sun Nov 21 202112:23:20
Receiving mail from POP3 Server 198.170.12.6
Receive Mail Success.
Cancel
Send/Receive
Top

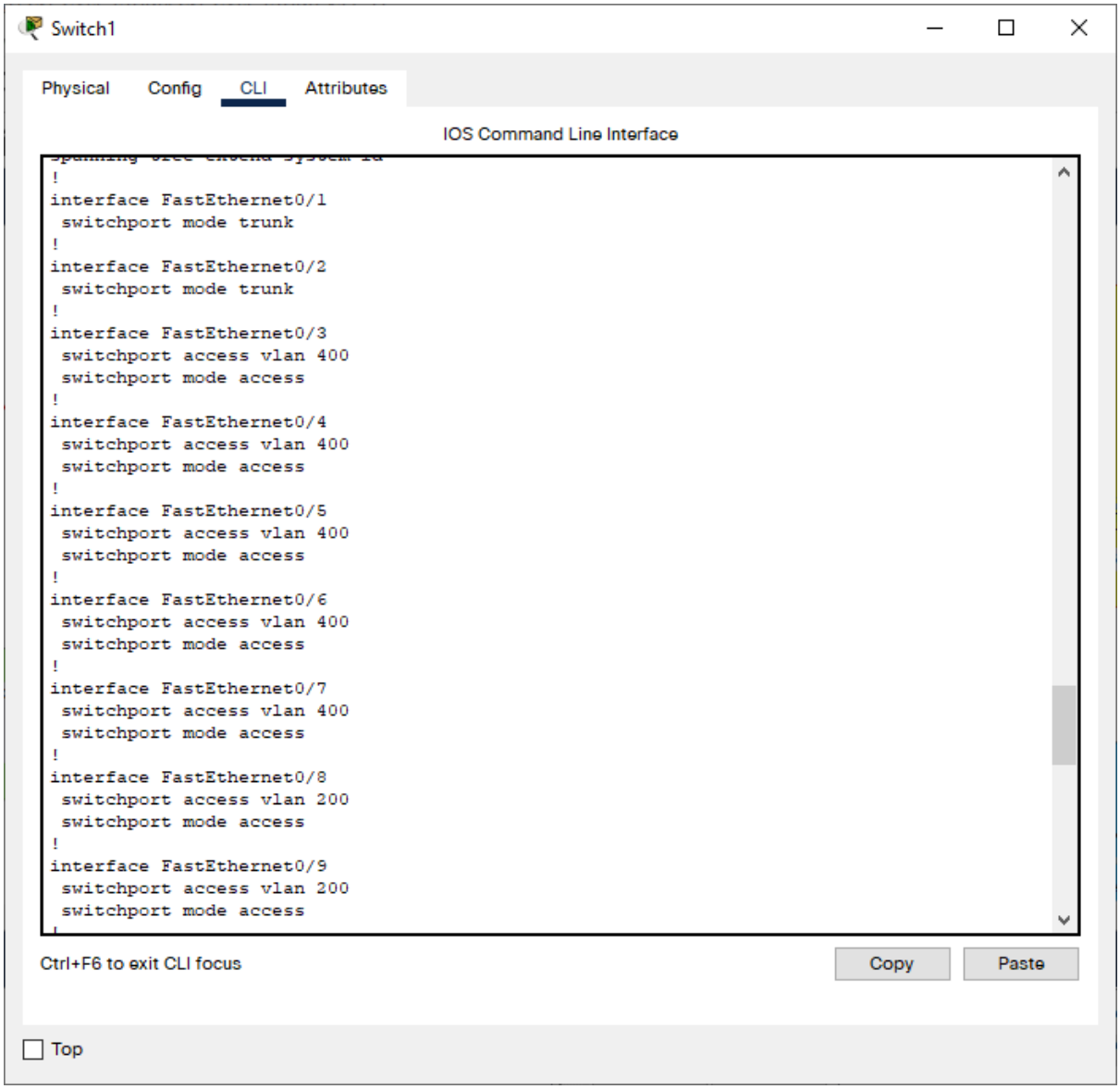
Cisco packet tracer – Virtual Local Area Network

VLAN:



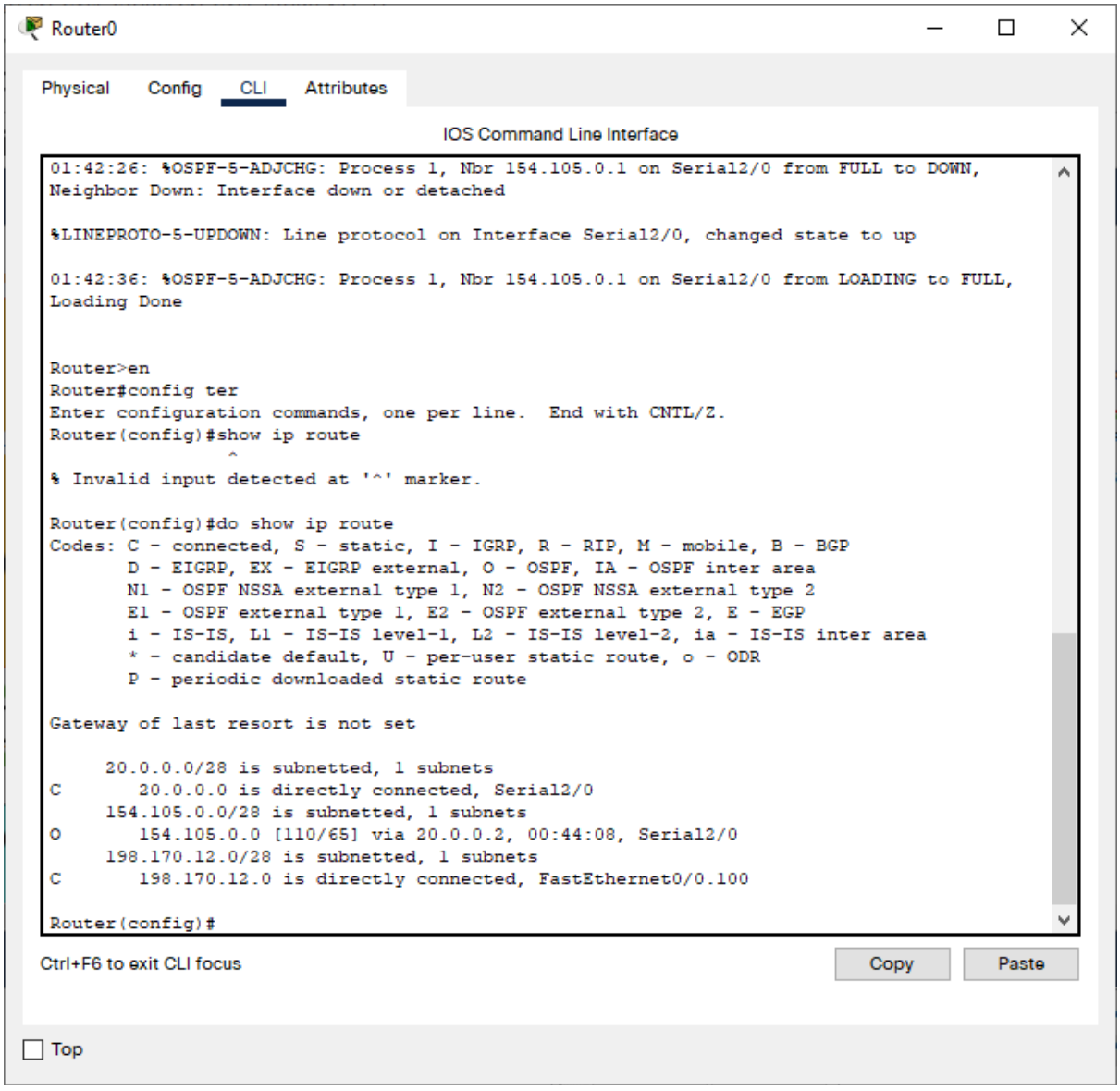

Switch0
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport access vlan 300
 switchport mode access
!
interface FastEthernet0/4
 switchport access vlan 300
 switchport mode access
!
interface FastEthernet0/5
 switchport access vlan 300
 switchport mode access
!
interface FastEthernet0/6
 switchport access vlan 300
 switchport mode access
!
interface FastEthernet0/7
 switchport access vlan 300
 switchport mode access
!
interface FastEthernet0/8
 switchport access vlan 100
 switchport mode access
!
interface FastEthernet0/9
 switchport access vlan 100
 switchport mode access
!
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

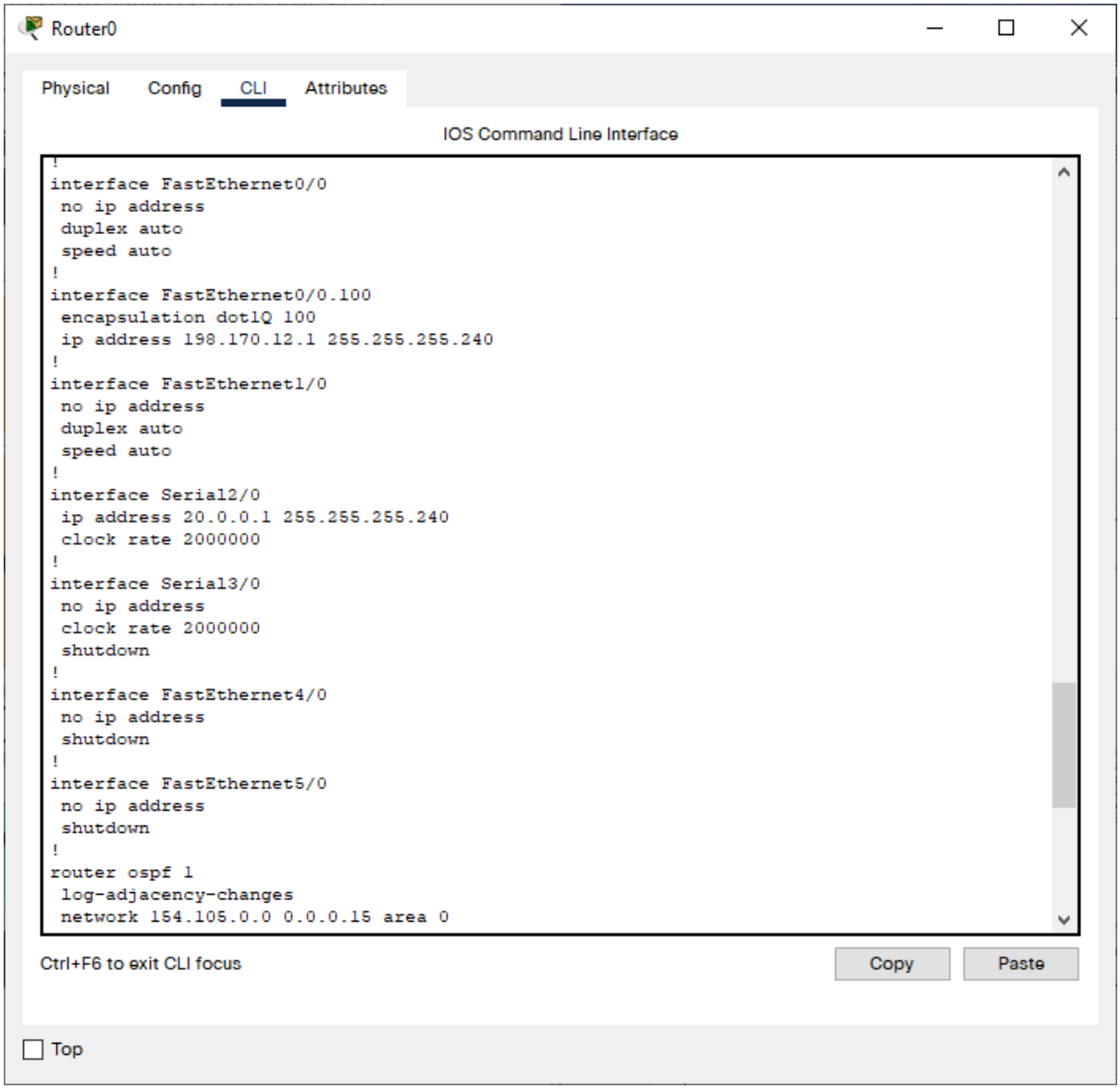

Switch1
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up
Switch>en
Switch#show vlan
VLAN Name Status Ports
---- -------------------------------- --------- -------------------------------
1 default active Fa0/13, Fa0/14, Fa0/15, Fa0/16
Fa0/17, Fa0/18, Fa0/19, Fa0/20
Fa0/21, Fa0/22, Fa0/23, Fa0/24
Gig0/1, Gig0/2
200 receiving_subnet_1 active Fa0/8, Fa0/9, Fa0/10, Fa0/11
Fa0/12
400 receiving_subnet_2 active Fa0/3, Fa0/4, Fa0/5, Fa0/6
Fa0/7
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1 enet 100001 1500 - - - - - 0 0
200 enet 100200 1500 - - - - - 0 0
400 enet 100400 1500 - - - - - 0 0
1002 fddi 101002 1500 - - - - - 0 0
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

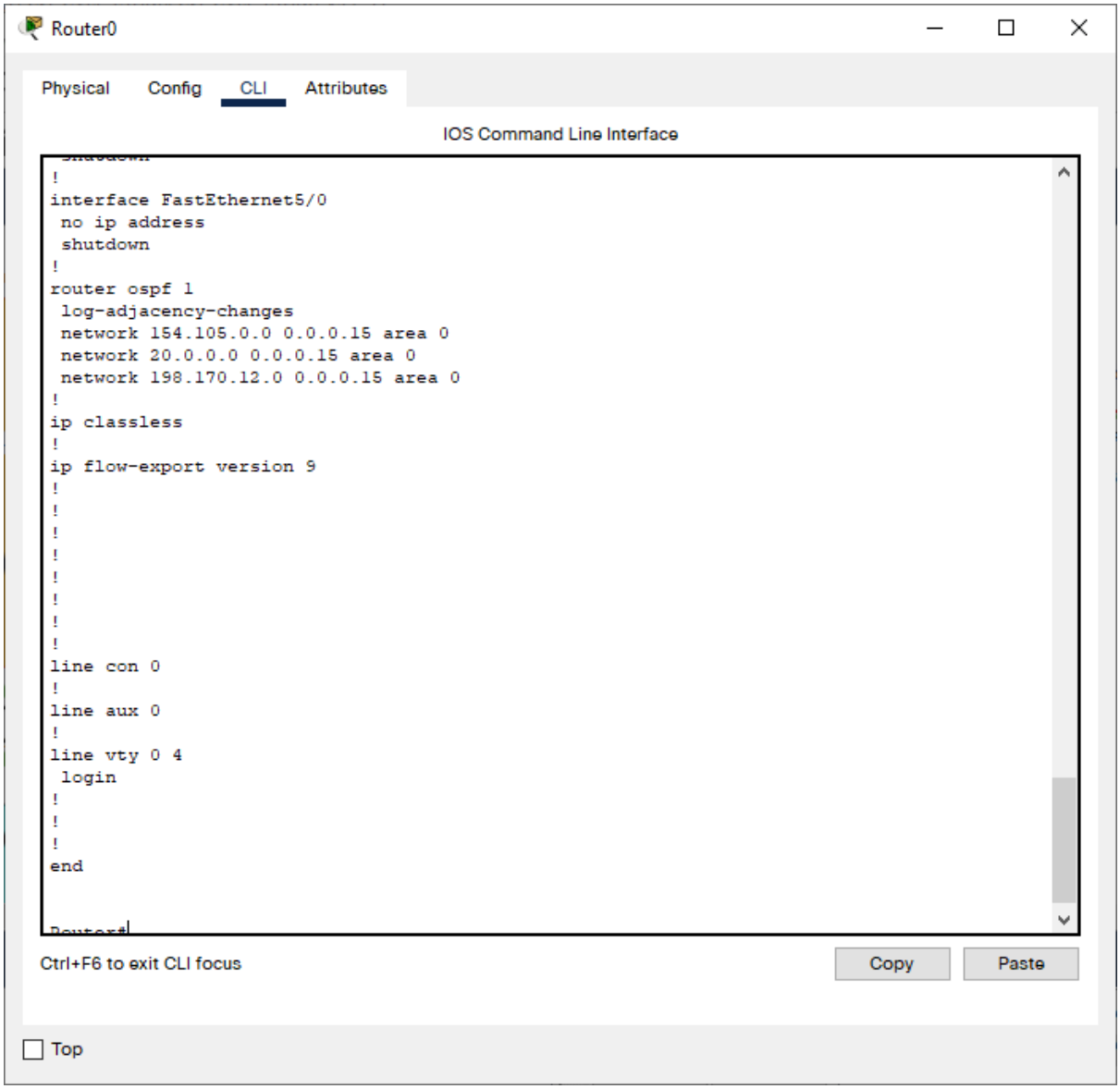

Switch1
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
interface FastEthernet0/1
 switchport mode trunk
!
interface FastEthernet0/2
 switchport mode trunk
!
interface FastEthernet0/3
 switchport access vlan 400
 switchport mode access
!
interface FastEthernet0/4
 switchport access vlan 400
 switchport mode access
!
interface FastEthernet0/5
 switchport access vlan 400
 switchport mode access
!
interface FastEthernet0/6
 switchport access vlan 400
 switchport mode access
!
interface FastEthernet0/7
 switchport access vlan 400
 switchport mode access
!
interface FastEthernet0/8
 switchport access vlan 200
 switchport mode access
!
interface FastEthernet0/9
 switchport access vlan 200
 switchport mode access
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

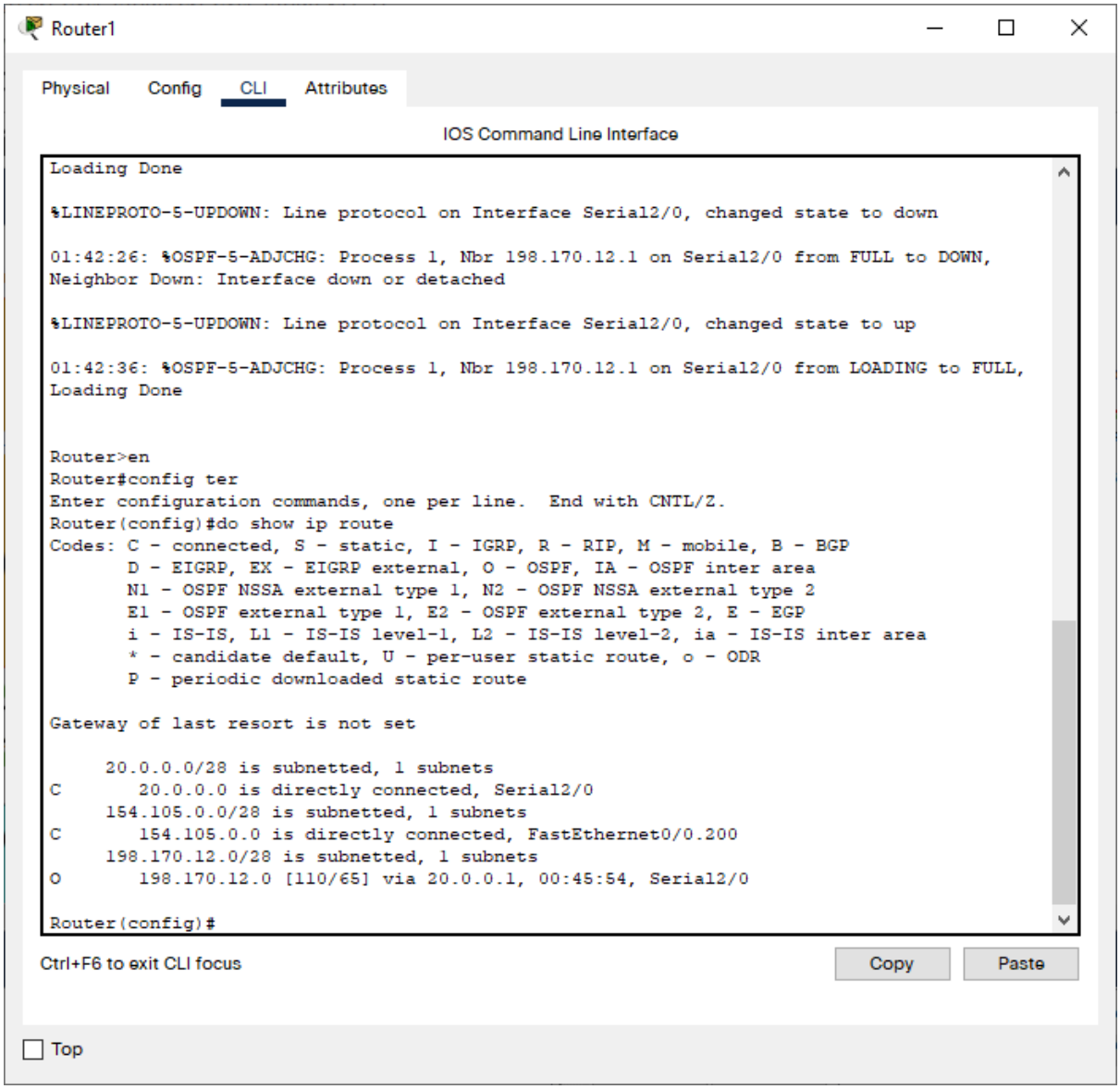
Cisco packet tracer – OSPF

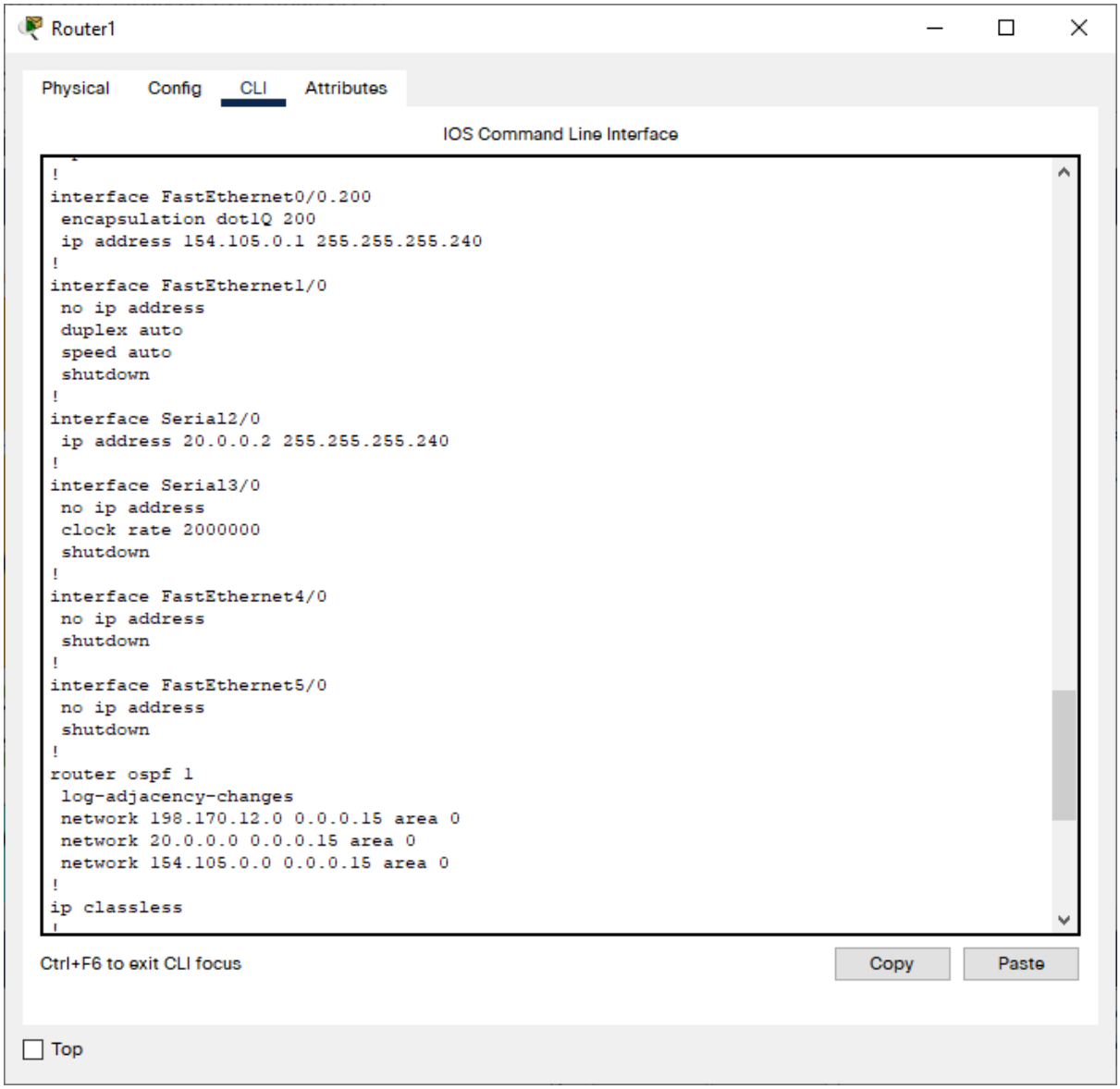
OSPF:




Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
!
interface FastEthernet0/0.100
 encapsulation dot1Q 100
 ip address 198.170.12.1 255.255.255.240
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
!
interface Serial2/0
 ip address 20.0.0.1 255.255.255.240
 clock rate 2000000
!
interface Serial3/0
 no ip address
 clock rate 2000000
 shutdown
!
interface FastEthernet4/0
 no ip address
 shutdown
!
interface FastEthernet5/0
 no ip address
 shutdown
!
router ospf 1
 log-adjacency-changes
 network 154.105.0.0 0.0.0.15 area 0
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

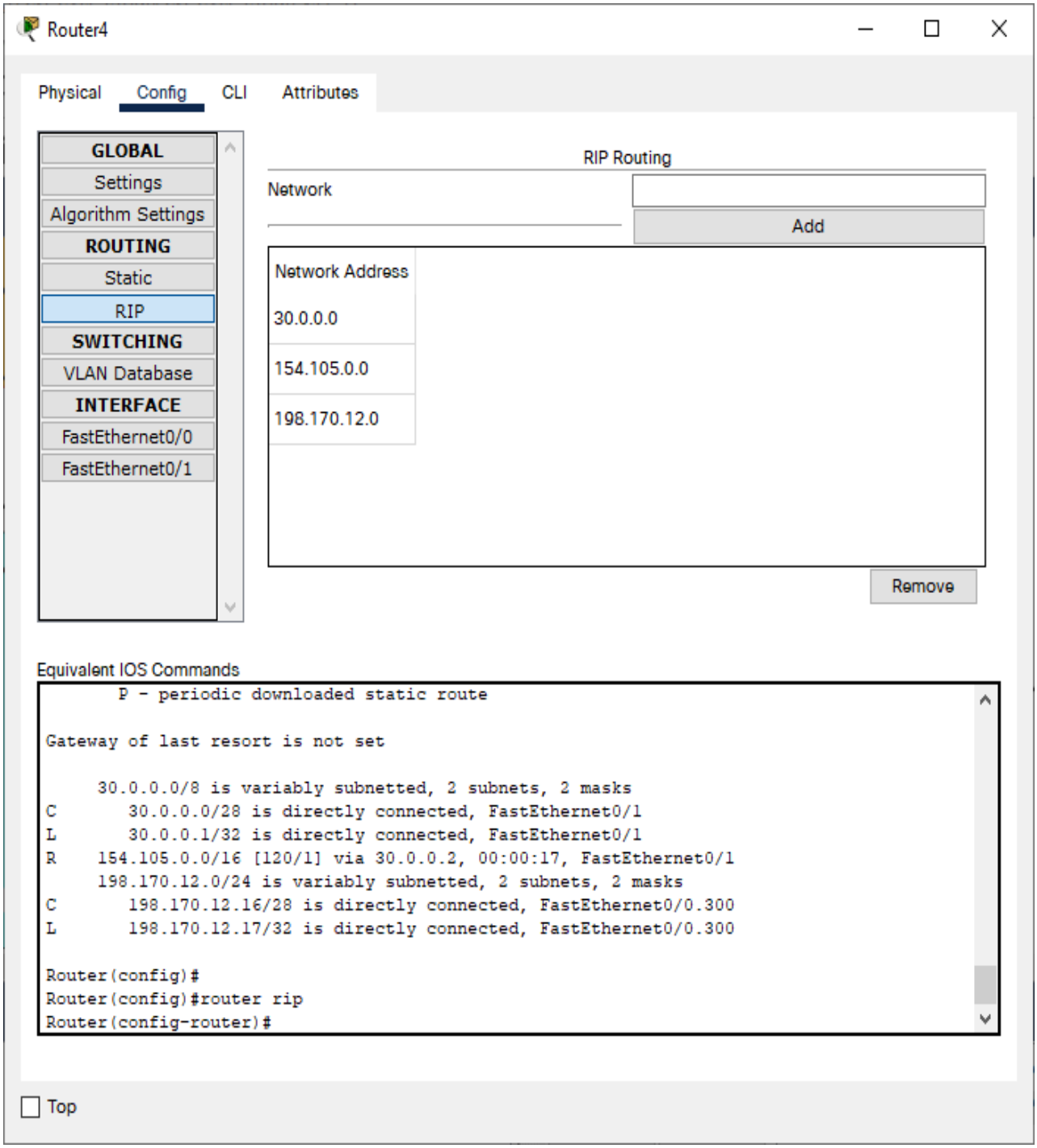

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
interface FastEthernet5/0
 no ip address
 shutdown
!
router ospf 1
 log-adjacency-changes
 network 154.105.0.0 0.0.0.15 area 0
 network 20.0.0.0 0.0.0.15 area 0
 network 198.170.12.0 0.0.0.15 area 0
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

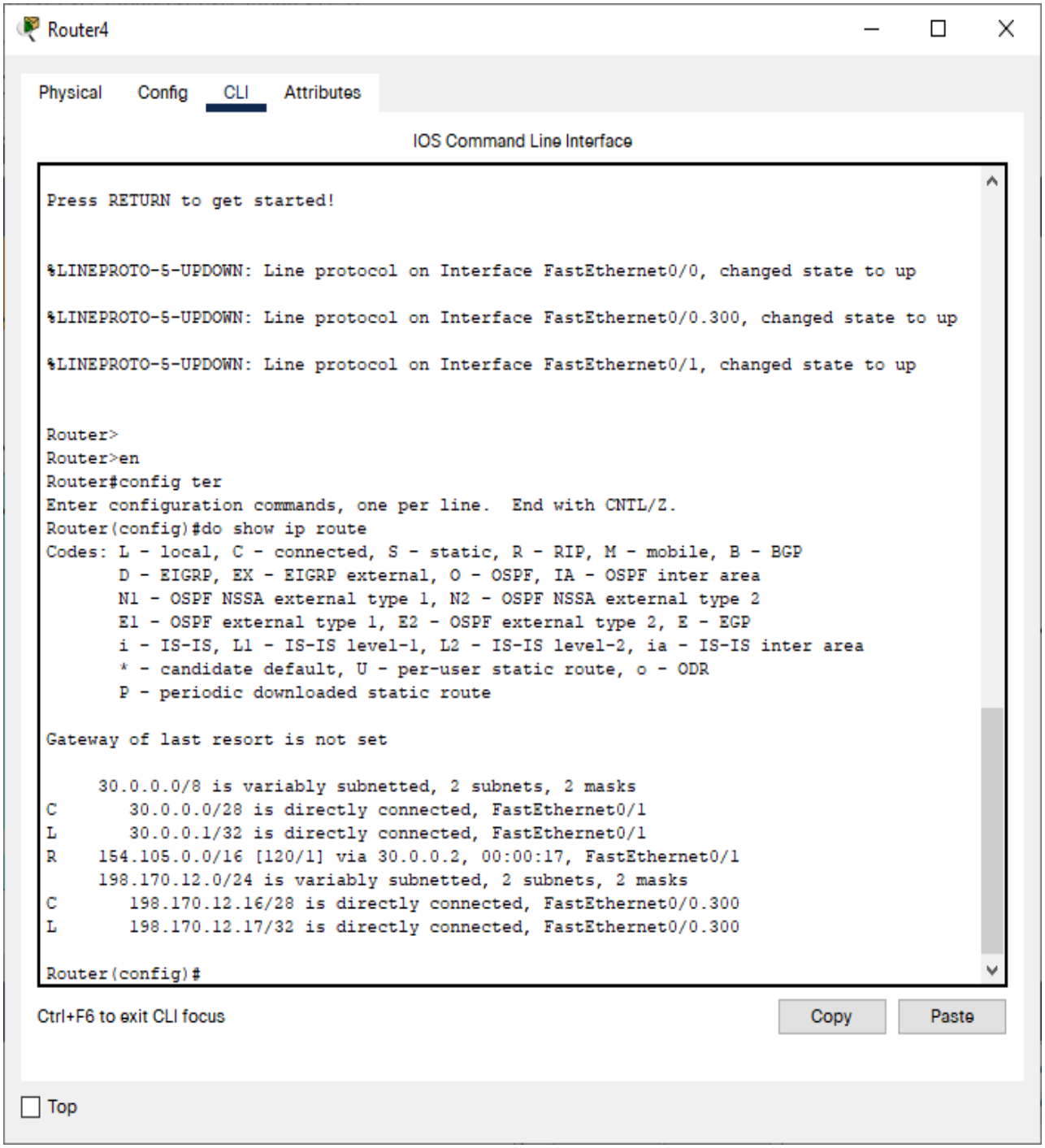

Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Loading Done
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
01:42:26: %OSPF-5-ADJCHG: Process 1, Nbr 198.170.12.1 on Serial2/0 from FULL to DOWN,
Neighbor Down: Interface down or detached
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
01:42:36: %OSPF-5-ADJCHG: Process 1, Nbr 198.170.12.1 on Serial2/0 from LOADING to FULL,
Loading Done
Router>en
Router#config ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#do show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
20.0.0.0/28 is subnetted, 1 subnets
C 20.0.0.0 is directly connected, Serial2/0
154.105.0.0/28 is subnetted, 1 subnets
C 154.105.0.0 is directly connected, FastEthernet0/0.200
198.170.12.0/28 is subnetted, 1 subnets
O 198.170.12.0 [110/65] via 20.0.0.1, 00:45:54, Serial2/0
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

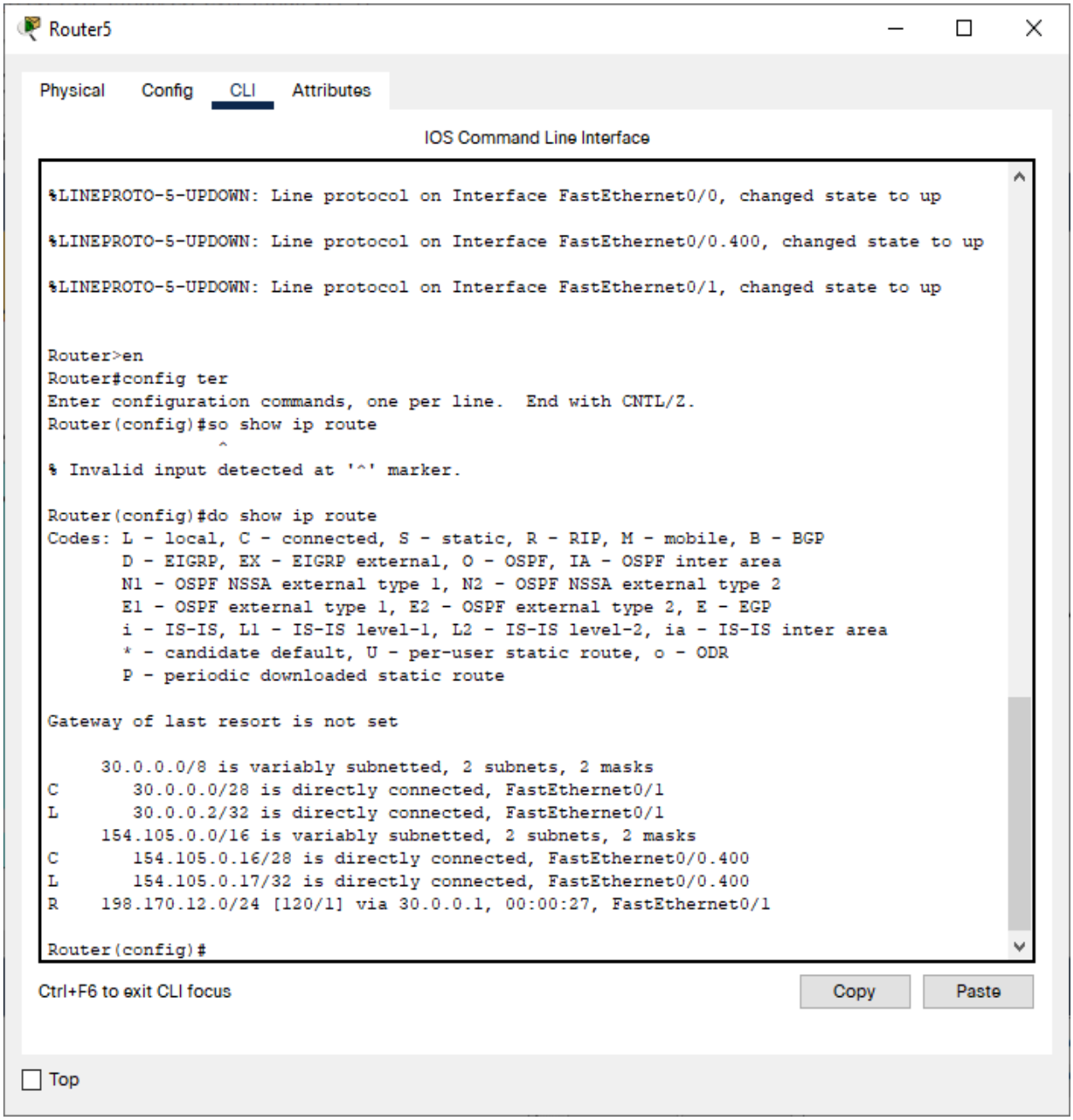

Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
!
interface FastEthernet0/0.200
 encapsulation dot1Q 200
 ip address 154.105.0.1 255.255.255.240
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial2/0
 ip address 20.0.0.2 255.255.255.240
!
interface Serial3/0
 no ip address
 clock rate 2000000
 shutdown
!
interface FastEthernet4/0
 no ip address
 shutdown
!
interface FastEthernet5/0
 no ip address
 shutdown
!
router ospf 1
 log-adjacency-changes
 network 198.170.12.0 0.0.0.15 area 0
 network 20.0.0.0 0.0.0.15 area 0
 network 154.105.0.0 0.0.0.15 area 0
!
ip classless
!
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Cisco packet tracer – RIP

RIP:




Router4
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started!
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.300, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Router>
Router>en
Router#config ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#do show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/28 is directly connected, FastEthernet0/1
L 30.0.0.1/32 is directly connected, FastEthernet0/1
R 154.105.0.0/16 [120/1] via 30.0.0.2, 00:00:17, FastEthernet0/1
198.170.12.0/24 is variably subnetted, 2 subnets, 2 masks
C 198.170.12.16/28 is directly connected, FastEthernet0/0.300
L 198.170.12.17/32 is directly connected, FastEthernet0/0.300
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Router5
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.400, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Router>en
Router#config ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#so show ip route
^
% Invalid input detected at '^' marker.
Router(config)#do show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/28 is directly connected, FastEthernet0/1
L 30.0.0.2/32 is directly connected, FastEthernet0/1
154.105.0.0/16 is variably subnetted, 2 subnets, 2 masks
C 154.105.0.16/28 is directly connected, FastEthernet0/0.400
L 154.105.0.17/32 is directly connected, FastEthernet0/0.400
R 198.170.12.0/24 [120/1] via 30.0.0.1, 00:00:27, FastEthernet0/1
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Go Back N PROTOCOL

SERVER.JAVA

```
import java.io.*;
import java.net.*;
import java.util.*;

class goback_server{
public static void main(String args[])throws IOException{

System.out.println("...Server...");
System.out.println("...Waiting...");
InetAddress address = InetAddress.getByName("Localhost");
ServerSocket ss = new ServerSocket(500);

Socket s1 = new Socket();
s1 = ss.accept();
BufferedInputStream in = new BufferedInputStream(s1.getInputStream());
DataOutputStream out = new DataOutputStream(s1.getOutputStream());

System.out.println("received request for sending frames");
int n = in.read();

boolean[] array = new boolean[n];

int pc = in.read();
System.out.println("...Sending...");
```

```
if(pc==0){
for(int i=0;i<n;i++){
System.out.println("Sending frame => "+i);
out.write(i);
out.flush();
System.out.println("..Waiting for acknowledge..");
try{
Thread.sleep(5000);
}
catch (Exception e){}
int a = in.read();
System.out.println("received acknowledgment for frame => " +i+ " as "+a);
}
out.flush();
}
else{
for(int i=0;i<n;i++){
if(i==3) {
System.out.println("Sending frame number => " +i);
}
else{
System.out.println("sending frame no => " +i);
out.write(i);
out.flush();
System.out.println("Waiting for acknologment ");
```

```
try {
Thread.sleep(7000);
}
catch(Exception e){}
int a = in.read();
if(a!=255){
System.out.println("received ack for frame num =>"+i+" as "+a);
array[i]=true;
}
}
}
for(int a=0;a<n;a++){
if(array[a]==false){
System.out.println("Resending frame => " +a);
out.write(a);
out.flush();
System.out.println("waiting for ack ");
try {
        Thread.sleep(5000);
        }
catch(Exception e){}

int b = in.read();
System.out.println("receiving ack for frame num => "+a+" as "+b);
```

```
array[a]=true;
}
}
out.flush();
}
in.close();
System.out.println("Quiting");
}
}
```

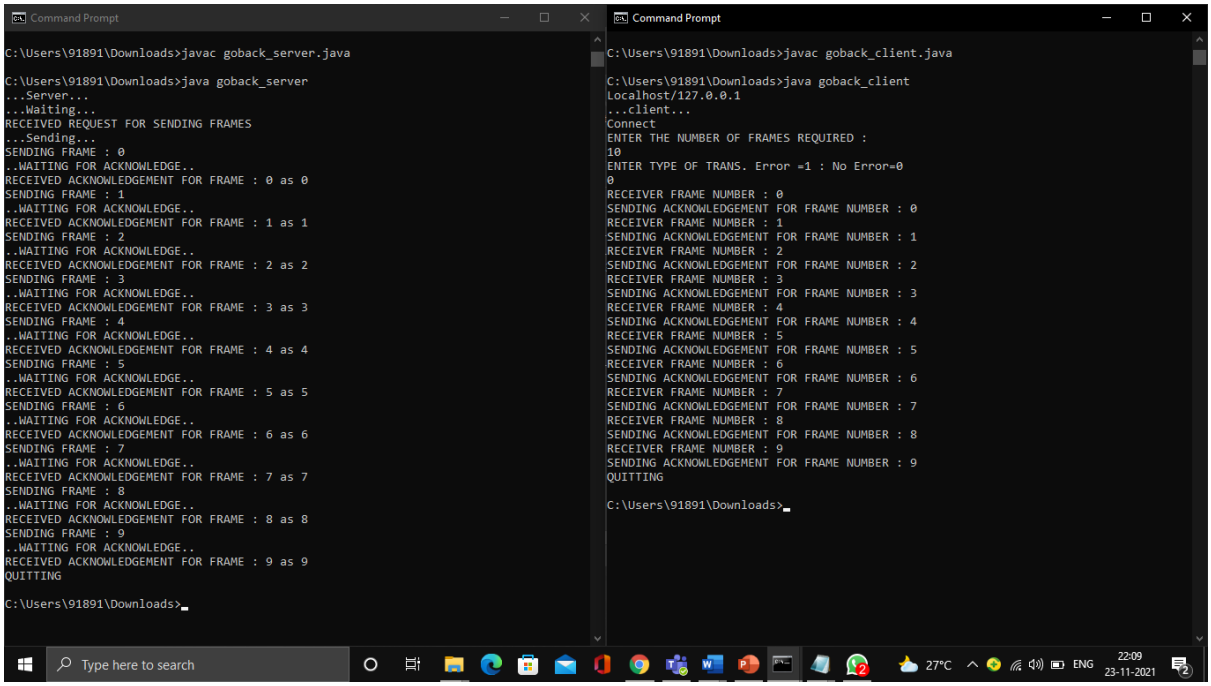
CLIENT.JAVA

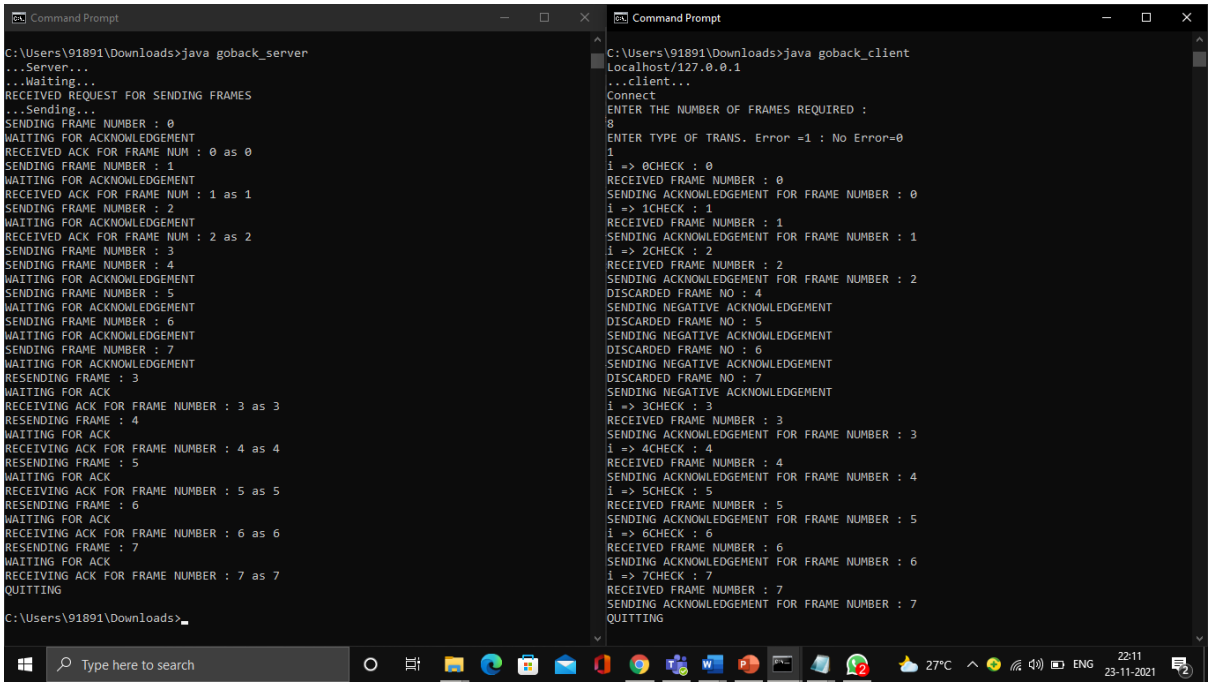
```
import java.io.*;
import java.net.*;
import java.math.*;
import java.util.*;

class goback_client{

public static void main(String args[]) throws IOException{
InetAddress address = InetAddress.getByName("Localhost");
System.out.println(address);
Socket s1 = new Socket(address,500);
BufferedInputStream in = new
BufferedInputStream(s1.getInputStream());
DataOutputStream out = new
DataOutputStream(s1.getOutputStream());
```

```
Scanner sc = new Scanner(System.in);


System.out.println("...client...");
System.out.println("Connect");
System.out.println("Enter the num of frames to be request to
server");
int c = sc.nextInt();


out.write(c);
out.flush();


System.out.println("Enter type of trans. Error =1 : No Error=0");
int choice = sc.nextInt();
out.write(choice);


int i=0,j=0,check =0;
if(choice==0){
        for(j=0;j<c;j++){
                i = in.read();
                System.out.println("receiver frame number => " +i);
                System.out.println("Sending acknowlwdgement for frame
number=> "+i);
                out.write(i);
                out.flush();
```

```
        }
out.flush();
}
else{
        for(j=0;j<c;j++){
                i = in.read();
                if(i==check){
                        System.out.println("i => " +i+ "check => " +check);
                        System.out.println("received frame number => "+i);
                        System.out.println("sending acknowledgement for
frame num => " +i);
                        out.write(i);
                        check++;
                }
                else{
                        j--;
                        System.out.println("Discarded frame no => " +i);
                        System.out.println("Sending negative ack ");
                        out.write(-1);
                }
                out.flush();
        }
}
in.close();
```

```
out.close();
System.out.println("Quiting");
}
}
```





SELECTIVE REPEAT PROTOCOL

SERVER.JAVA

```
import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.IOException;
import java.net.ServerSocket;
import java.net.Socket;
import java.net.SocketException;

class selective_server
{
	static ServerSocket Serversocket;
	static DataInputStream dis;
	static DataOutputStream dos;

	public static void main(String[] args) throws SocketException
	{

		try
		{
			int a[] = { 30, 40, 50, 60, 70, 80, 90, 100 };
			Serversocket = new ServerSocket(8011);
			System.out.println("WAITING FOR CONNECTION");
			Socket client = Serversocket.accept();
```

```
                dis = new DataInputStream(client.getInputStream());
                dos = new
DataOutputStream(client.getOutputStream());
                System.out.println("THE NUMBER OF PACKETS SENT
IS :" + a.length);
                int y = a.length;
                dos.write(y);
                dos.flush();

                for (int i = 0; i < a.length; i++)
                {
                        dos.write(a[i]);
                        dos.flush();
                }

                int k = dis.read();

                dos.write(a[k]);
                dos.flush();

        }
        catch (IOException e)
        {
                System.out.println(e);
```

```
            }
            finally
            {
                try
                {
                    dis.close();
                    dos.close();
                }
                catch (IOException e)
                {
                    e.printStackTrace();
                }

            }
        }
}
```

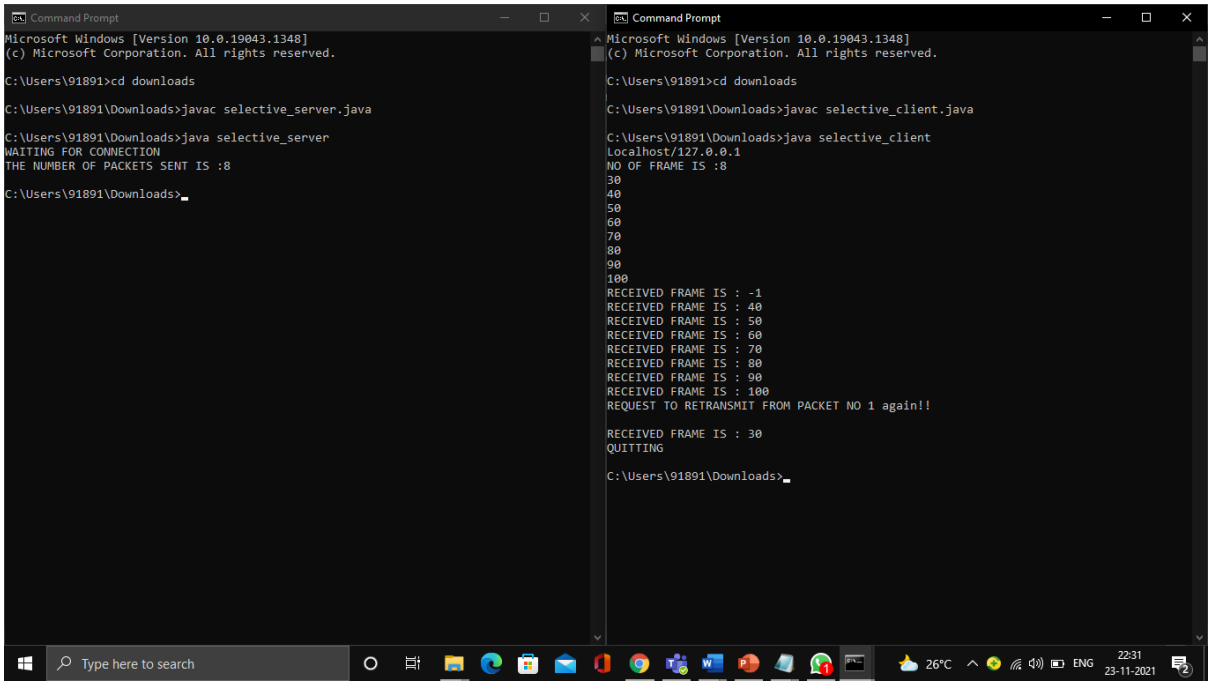
CLIENT.JAVA

```
import java.lang.System;
import java.net.*;
import java.io.*;
import java.text.*;
import java.util.Random;
import java.util.*;
```

```
class selective_cient {
	static Socket connection;

	public static void main(String a[]) throws SocketException {
		try {
			int v[] = new int[10];
			int n = 0;
			Random rands = new Random();
			int rand = 0;

			InetAddress addr =
InetAddress.getByName("Localhost");
			System.out.println(addr);
			connection = new Socket(addr, 8011);
			DataOutputStream out = new DataOutputStream(
					connection.getOutputStream());
			DataInputStream in = new DataInputStream(
					connection.getInputStream());
			int p = in.read();
			System.out.println("NO OF FRAME IS :" + p);

			for (int i = 0; i < p; i++) {
				v[i] = in.read();
				System.out.println(v[i]);
```

```
                //g[i] = v[i];
            }
            rand = rands.nextInt(p);
            v[rand] = -1;
            for (int i = 0; i < p; i++)
             {
            System.out.println("RECEIVED FRAME IS: " + v[i]);

            }
            for (int i = 0; i < p; i++)
                if (v[i] == -1) {
                    System.out.println("REQUEST TO
RETRANSMIT FROM PACKET NO "+ (i+1) + " again!!");
                    n = i;
                    out.write(n);
                    out.flush();
                }
            System.out.println();
                v[n] = in.read();
                System.out.println("RECEIVED FRAME IS: " +
v[n]);
```

```
                System.out.println("QUITTING");
            } catch (Exception e) {
                System.out.println(e);
            }

        }
}
```



Cloud Concepts:

cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet to offer faster innovation.

Cloud networking is a sort of IT infrastructure in which a company's network capabilities and resources are hosted in a public or private cloud platform, or by a service provider, and available on demand. Companies can establish a private cloud network using on-premises cloud networking resources, or use public cloud networking services, or a hybrid cloud mix of the two. Virtual routers, firewalls, bandwidth and network management software are just a few of the network resources available, with additional tools and functions available as

needed. Cloud refers to software and services that run on the internet, instead of locally on your computer now a days cloud is very useful because there is a vast amount of data in our day-to-day life. Not only that now a days keeping personal servers are quite hard in terms of cost. Due to that we are moving to use the cloud as an infrastructure service. Virtualization in cloud computing allows a provider to virtualize servers, storage, or other physical hardware or data center resources, which can then, in turn, allow them to provide numerous services such as infrastructure, software, and platforms.

Virtualization is a capability that allows different organisations or users to share the physical instance of a single application or resource. This strategy involves giving all of those physical resources a logical name and providing a reference to those physical resources based on demand.

We usually establish a virtual machine on top of an existing operating system and hardware, and then run additional operating systems or applications on top of it. Hardware virtualization is the term for this. The virtual machine creates a different environment that is logically separate from the hardware it runs on. The host machine is the system or machine, and the virtual machine is the guest machine. The firmware, referred to as a hypervisor, is in charge of managing this virtual environment.

Virtualization is an important part of cloud technology and its operation. In most cases, what happens in the cloud is that users not only share data stored in cloud-like applications, but they also share their infrastructures via virtualization. Virtualization is mostly utilised to provide cloud clients with standard versions of apps. The providers can efficiently supply the latest version of an application to the cloud and its users with the release of the latest version of that programme, and this is feasible using simply virtualization.

By utilising the virtualization idea, all servers and software that other cloud providers require are maintained by a third-party, who is paid on a monthly or yearly basis by the cloud provider. In truth, most hypervisors today employ a combination of hardware virtualization techniques. Virtualization primarily refers to the ability to run several systems on a single machine while sharing all resources (hardware) and assisting in the sharing of IT resources for business purposes.

The system uses the cloud to manage network devices deployed on-premises at different locations. The solution requires Cisco Meraki cloud-managed devices, which provide full visibility of the network.

Cloud Networking is when all of an organization's networking resources are hosted in the cloud. It can be either public or private, where a company can host. Cloud networking services are unique in relation to customary undertaking network plans. It is an application-based software infrastructure that stores data on serves that can be accessed through the internet using various front and back end data storage.

TYPES

We need to identify the type of cloud-managed networking on which our cloud will be implemented. These are different types of cloud networking.

Public Cloud - which provides both services and infrastructure which is shared by all customers.

Private Cloud – which is utilized by a single organization.

Hybrid Cloud - This is a combination of both public and private cloud networks. It allows two platforms to interact for smooth functioning with data stored safely behind the firewalls.

MERAKI CLOUD

The Meraki cloud solution is a centralized management service that allows users to manage all of their Meraki network devices via a single simple and secure platform. Once a user makes a configuration change, the change request is sent to the Meraki cloud and is then pushed to the relevant device.

The data (configuration, monitoring, etc.) flows from Meraki devices (wireless access points, switches, etc.) to the Meraki cloud over a secure internet connection. User data does not flow through the Meraki cloud, instead flowing directly to their destination on the LAN or across the WAN.

Meraki data centres contain active Meraki device configuration data and historical network usage data. These data centre house multiple compute servers, which are where customers' management data is contained.

COMMUNICATION

If a device is offline, it will continue to attempt to connect to the Meraki cloud until it gains connectivity. Once the device comes online, it automatically receives the most recent configuration settings from the Meraki cloud. If changes are made to the device configuration while the device is online, the

device RECEIVES and updates these changes automatically. These changes are generally available on the device quickly. However, large quantities of changes may take longer time to reach. If no configuration changes are made by the user, the device continues to periodically check for updates to its configuration on its own. As the device runs on the network, it will communicate device and network usage analytics back to the Meraki cloud.

FEATURES

· Consistent and replicable configuration

· Automatic firmware upgrades

· Secure Site-to-Site VPN without previous IPsec knowledge - AutoVPN will automatically build secure IPsec tunnels between them.

· Layer 7 traffic visibility – Meraki devices can filter or report traffic on your network based on application level.

· Virtual Stacking – All Meraki switches support Virtual Stacking which lets us manage all switchports as if there were all on a single switch. This rapidly reduces configuration effort.

· Intelligent WAN traffic optimisation – Select internet uplink based on the current performance of the line.

Automatic Network Topology Map – Meraki Dashboard builds a dynamic topology map of your networks

It is used to

Create cloud native applications

Store, back up and recover data

Stream audio and video

Not only these there are so many uses of cloud as requirement increases the usage of cloud will also increase in a vast number of applications.

How cloud is related to application:

Normally in our application cloud will be helpful in storing the information like data, files, images, audio and videos. Here the data can be an description about complaints and their proof for a problem. It can be accessed by any authoritative to know the status of the complaints and their execution.