INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Assignment Submission

Regional Centre Delhi-1

For Term End Exam (DEC/ 2024)

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4. **Course Code** :- **BCSL-058**
5. **Course Title** :- **Computer oriented Numerical techniques Lab**
6. **Assignment Number** :- **BCA(V)/L-058/Assignment/2024-25**
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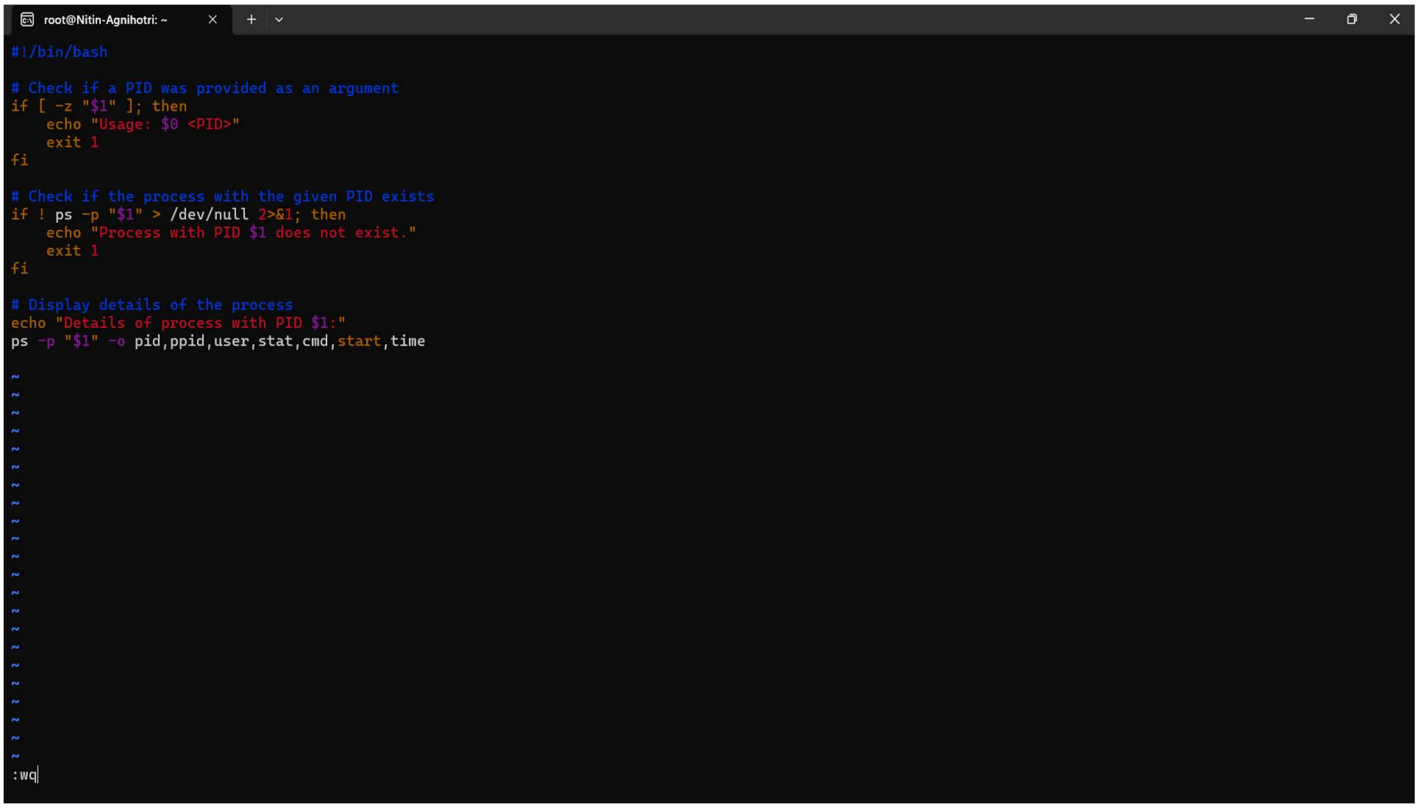
10. **Above information is cross checked and it is correct:- Yes**

Date of Submission: 18/11/2024 **(Signature of the student)**

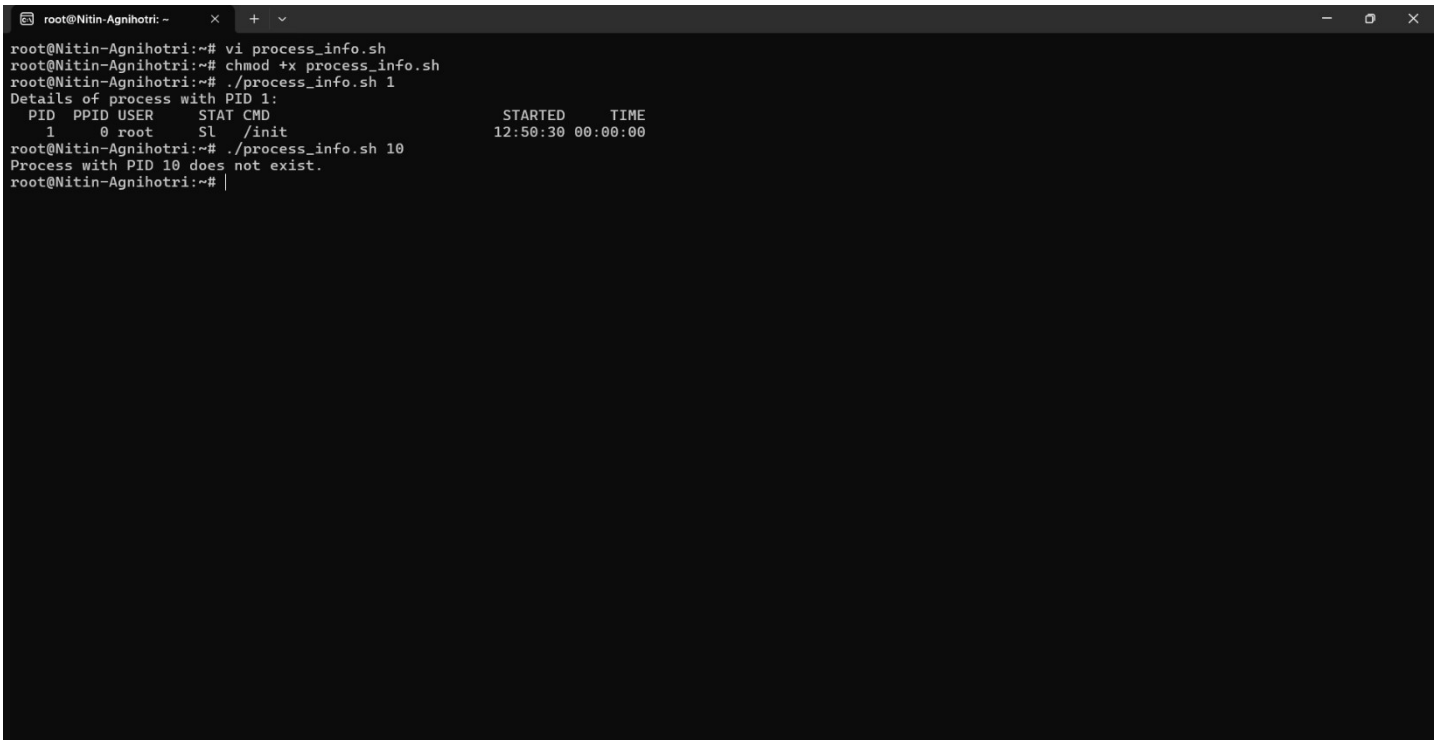
Q1. (a) Write a shell script which will accept the PID of a process and display the details of that process.

Answer:

← Shell Script →



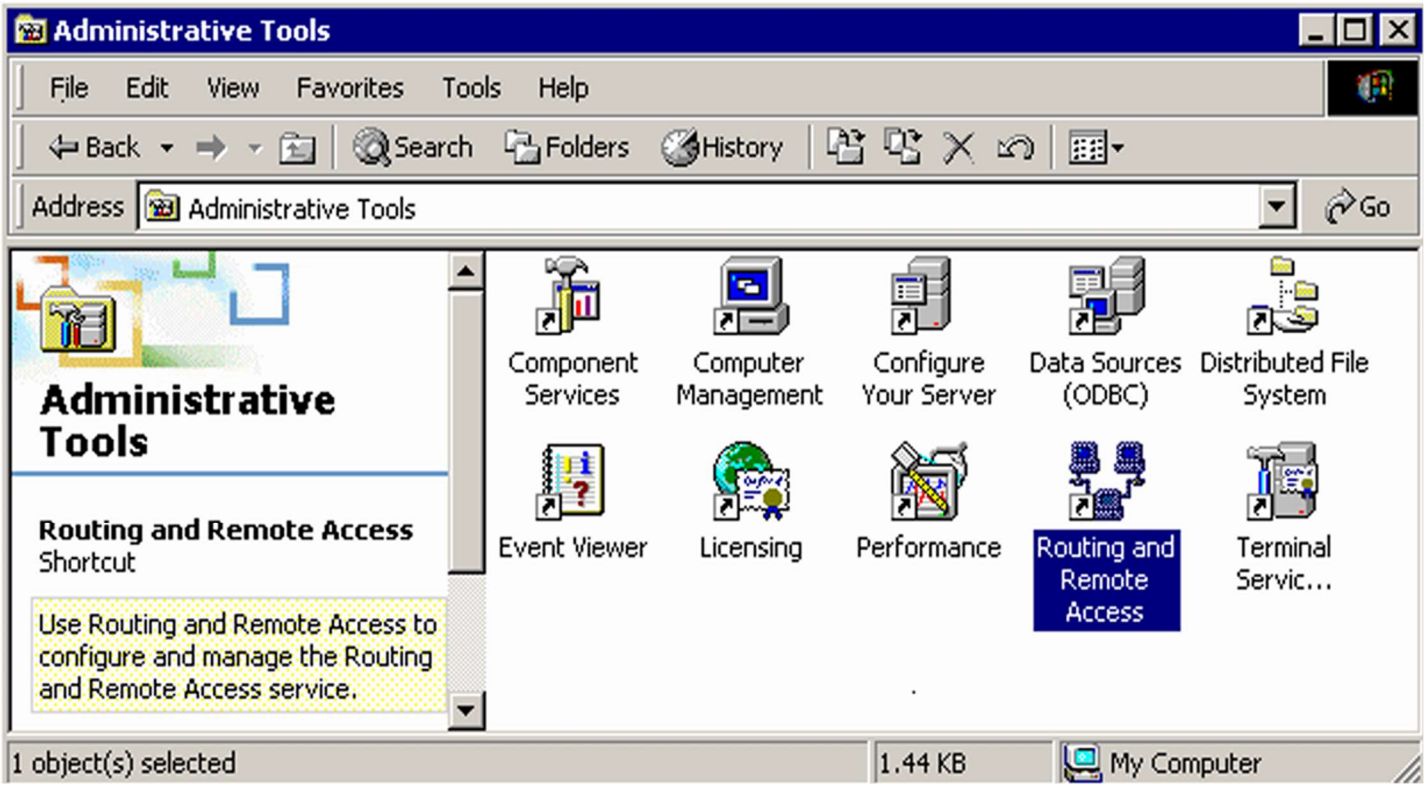
← Display the Details of Process →

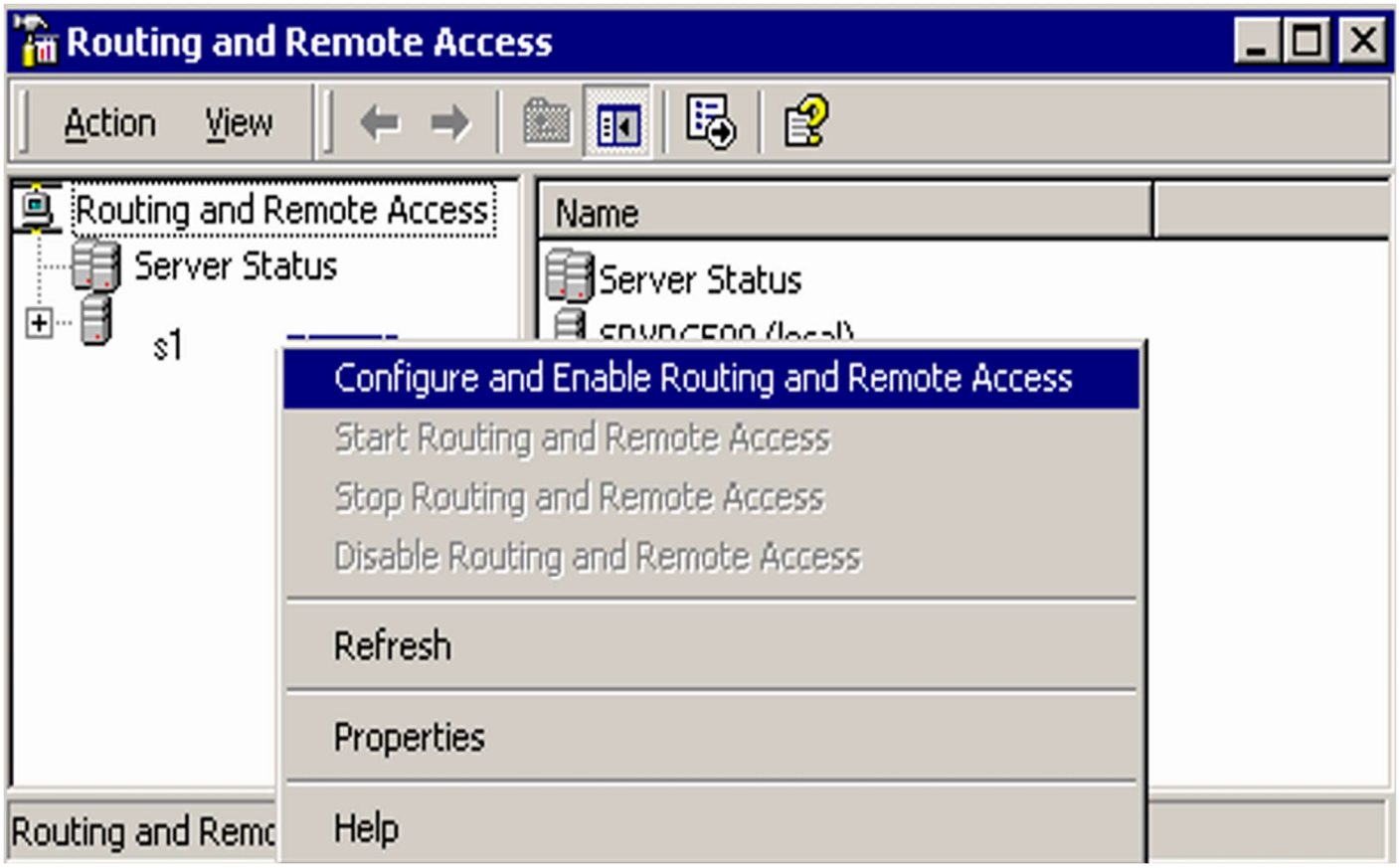


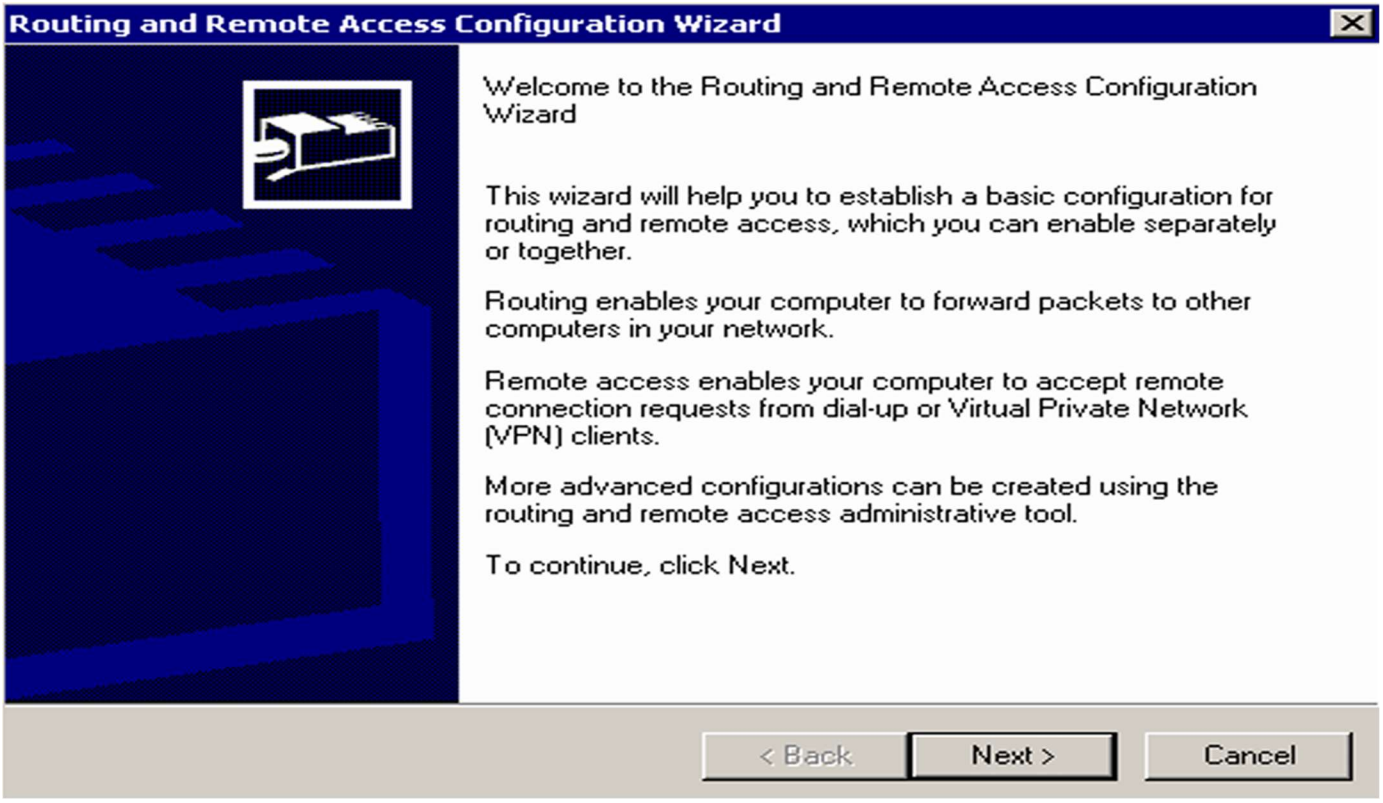
Q:1(b) Create Remote Access Policy. Show how you can change to Remote Access Logging setting in Windows 2000.

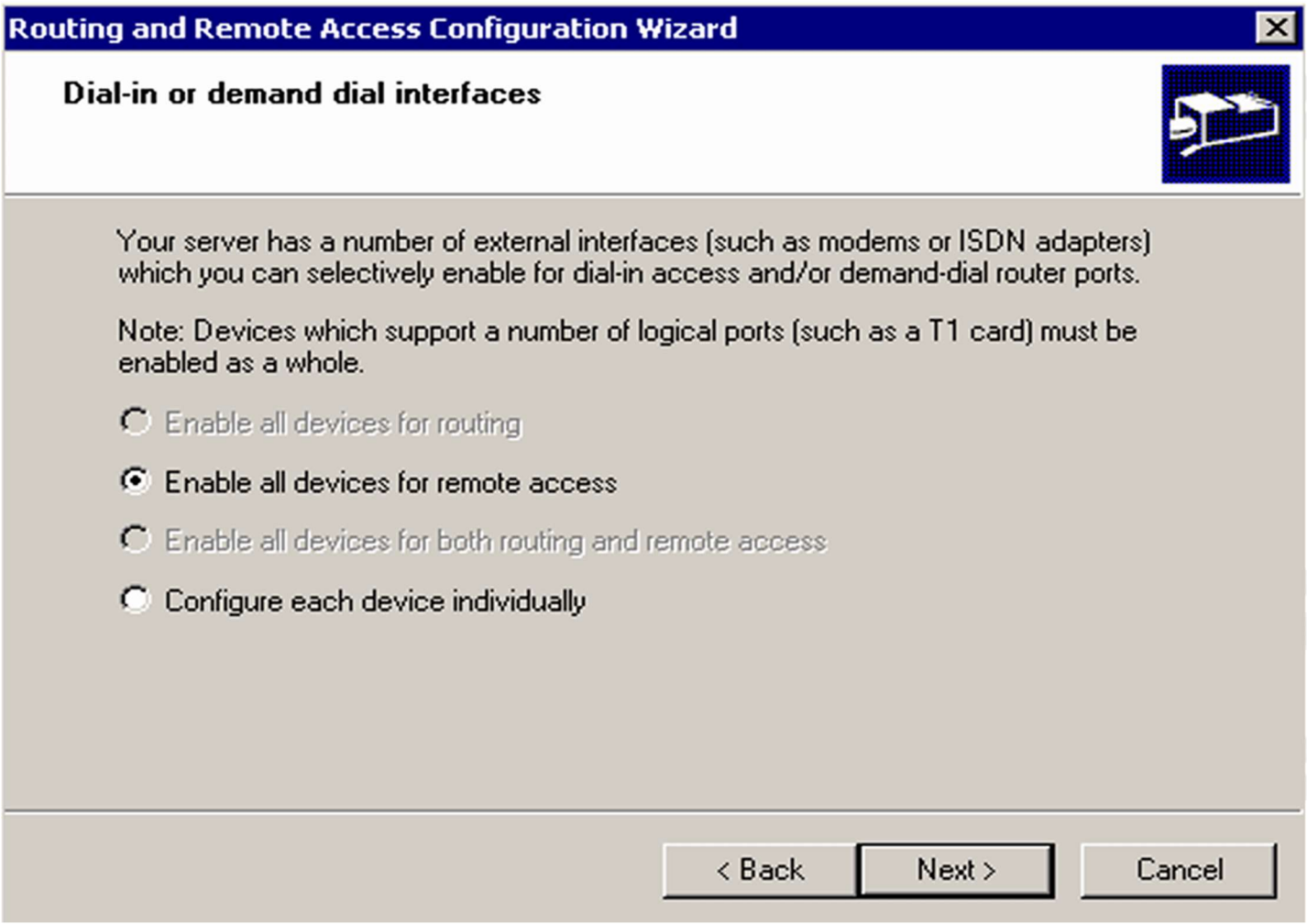
Answer :

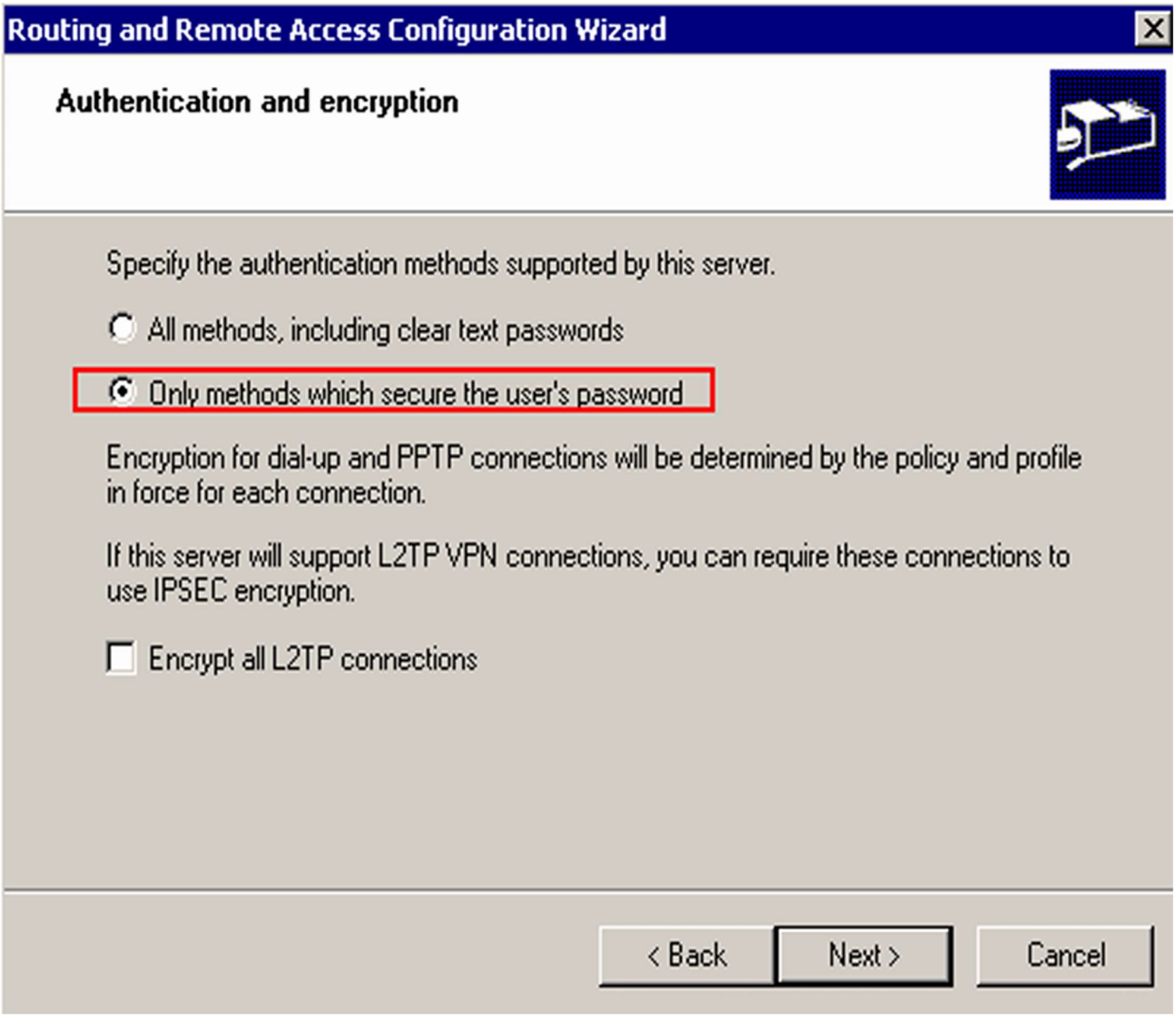
← Remote Access Policy →

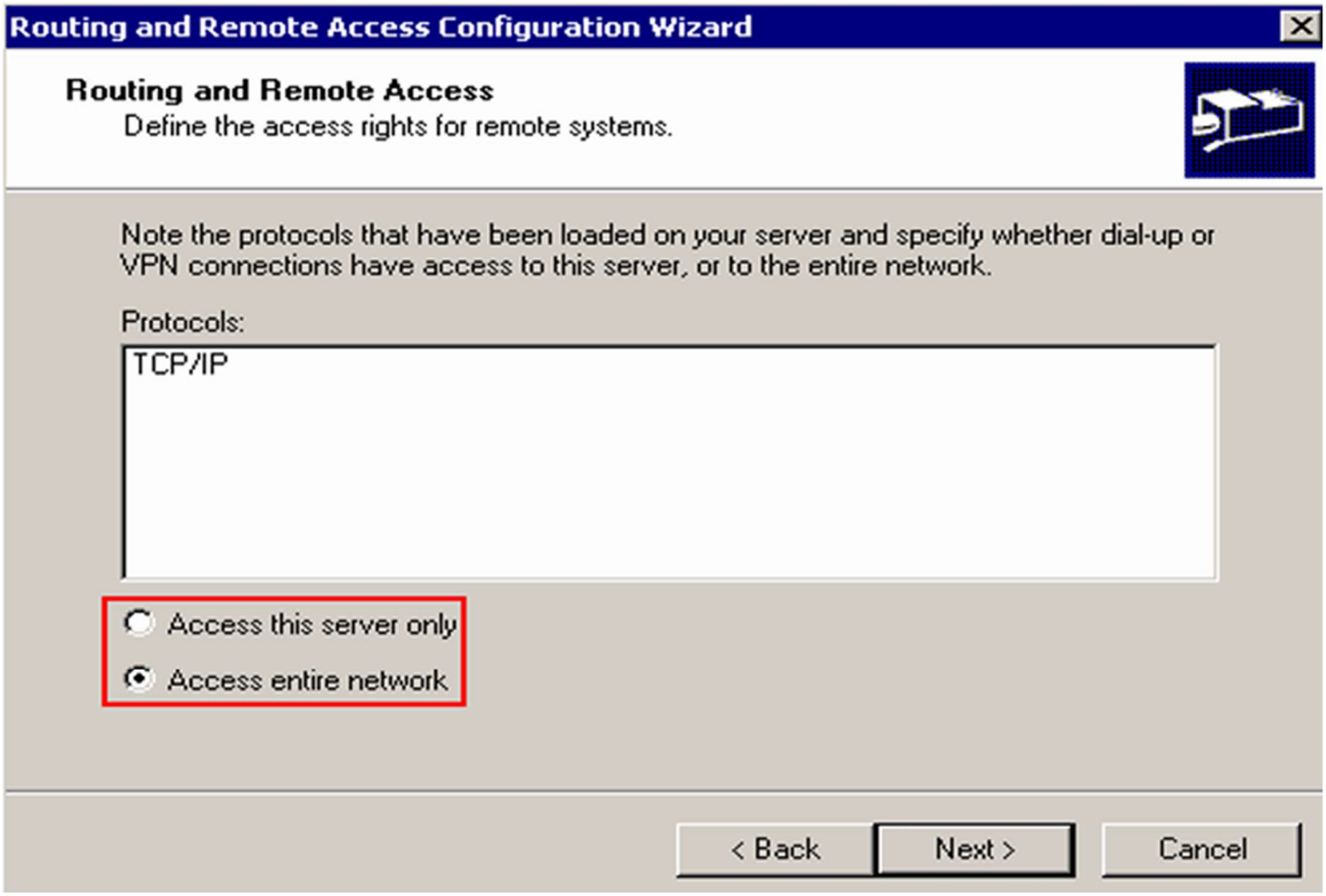


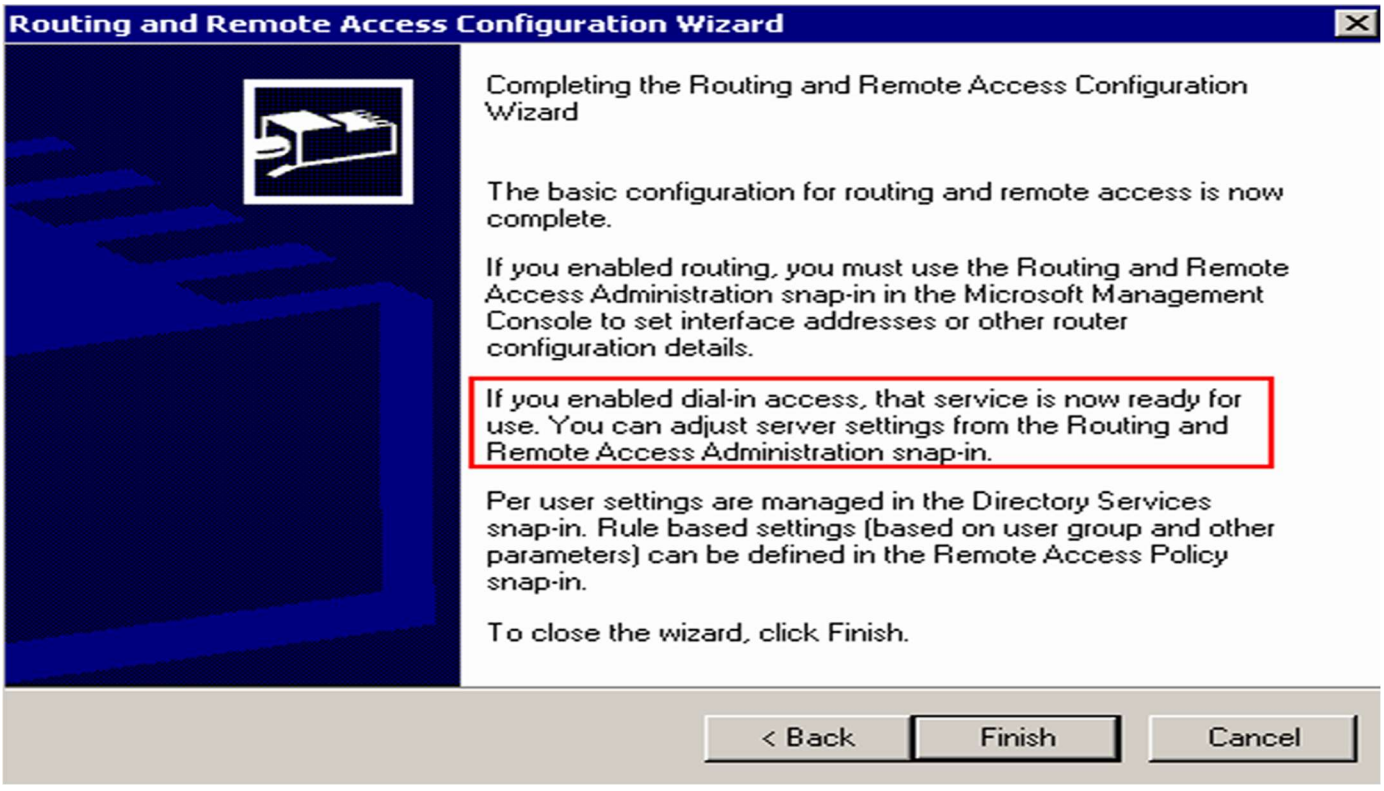

Routing and Remote Access
Action View
Routing and Remote Access
Server Status
s1
Name
Server Status
Configure and Enable Routing and Remote Access
Start Routing and Remote Access
Stop Routing and Remote Access
Disable Routing and Remote Access
Refresh
Properties
Help
Routing and Remc

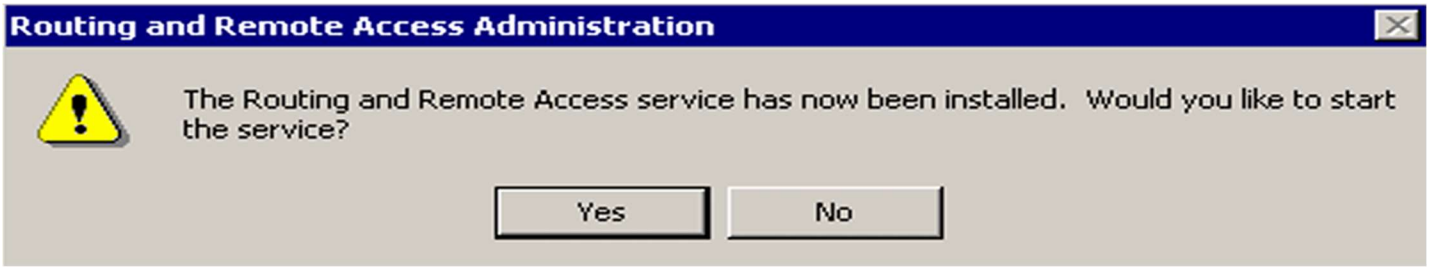

Routing and Remote Access Configuration Wizard
Welcome to the Routing and Remote Access Configuration Wizard
This wizard will help you to establish a basic configuration for routing and remote access, which you can enable separately or together.
Routing enables your computer to forward packets to other computers in your network.
Remote access enables your computer to accept remote connection requests from dial-up or Virtual Private Network (VPN) clients.
More advanced configurations can be created using the routing and remote access administrative tool.
To continue, click Next.
< Back
Next >
Cancel

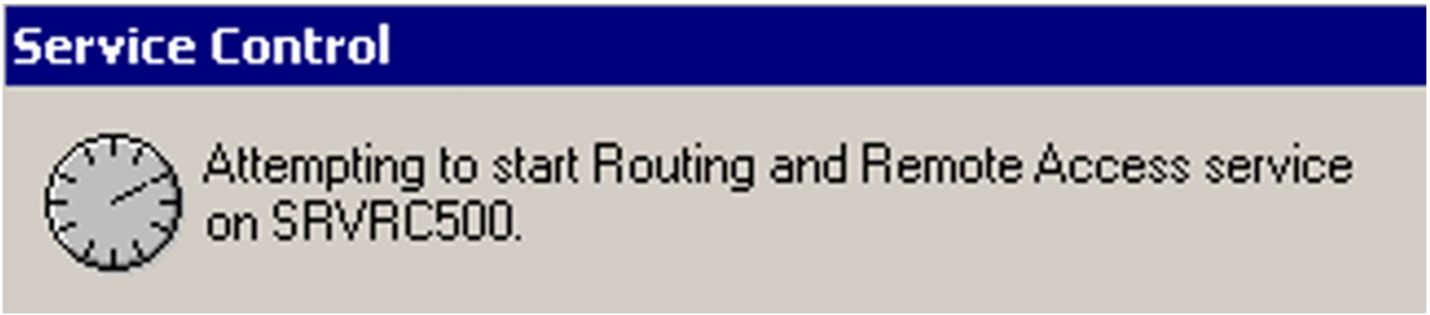

Routing and Remote Access Configuration Wizard
Dial-in or demand dial interfaces
Your server has a number of external interfaces (such as modems or ISDN adapters) which you can selectively enable for dial-in access and/or demand-dial router ports.
Note: Devices which support a number of logical ports (such as a T1 card) must be enabled as a whole.
Enable all devices for routing
Enable all devices for remote access
Enable all devices for both routing and remote access
Configure each device individually
< Back
Next >
Cancel

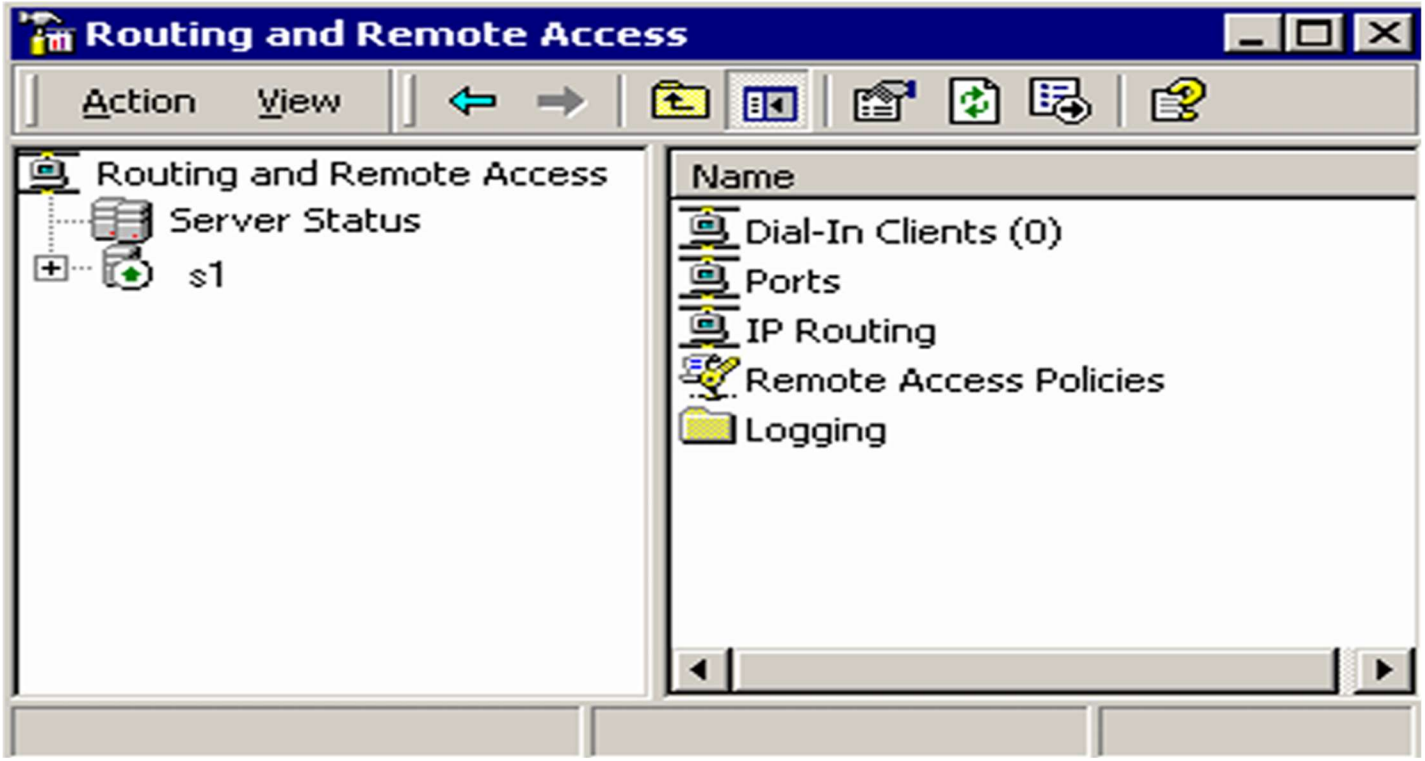

Routing and Remote Access Configuration Wizard
Authentication and encryption
Specify the authentication methods supported by this server.
All methods, including clear text passwords
Only methods which secure the user's password
Encryption for dial-up and PPTP connections will be determined by the policy and profile in force for each connection.
If this server will support L2TP VPN connections, you can require these connections to use IPSEC encryption.
Encrypt all L2TP connections
< Back
Next >
Cancel

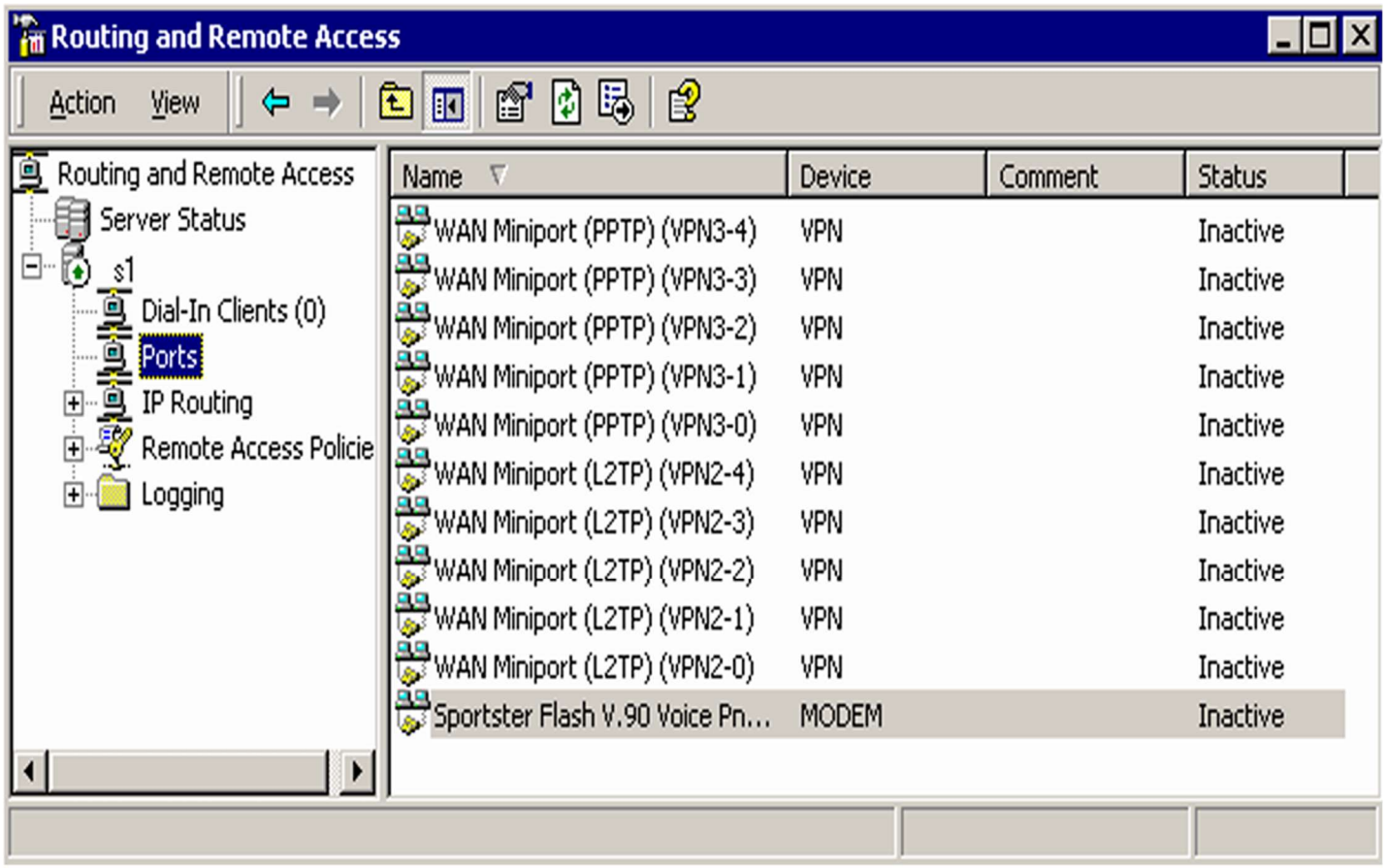

Routing and Remote Access Configuration Wizard
Routing and Remote Access
Define the access rights for remote systems.
Note the protocols that have been loaded on your server and specify whether dial-up or VPN connections have access to this server, or to the entire network.
Protocols:
TCP/IP
Access this server only
Access entire network
< Back
Next >
Cancel


Routing and Remote Access Configuration Wizard
Completing the Routing and Remote Access Configuration Wizard
The basic configuration for routing and remote access is now complete.
If you enabled routing, you must use the Routing and Remote Access Administration snap-in in the Microsoft Management Console to set interface addresses or other router configuration details.
If you enabled dial-in access, that service is now ready for use. You can adjust server settings from the Routing and Remote Access Administration snap-in.
Per user settings are managed in the Directory Services snap-in. Rule based settings (based on user group and other parameters) can be defined in the Remote Access Policy snap-in.
To close the wizard, click Finish.
< Back
Finish
Cancel


Routing and Remote Access Administration
The Routing and Remote Access service has now been installed. Would you like to start the service?
Yes
No


Service Control
Attempting to start Routing and Remote Access service on SRVRC500.

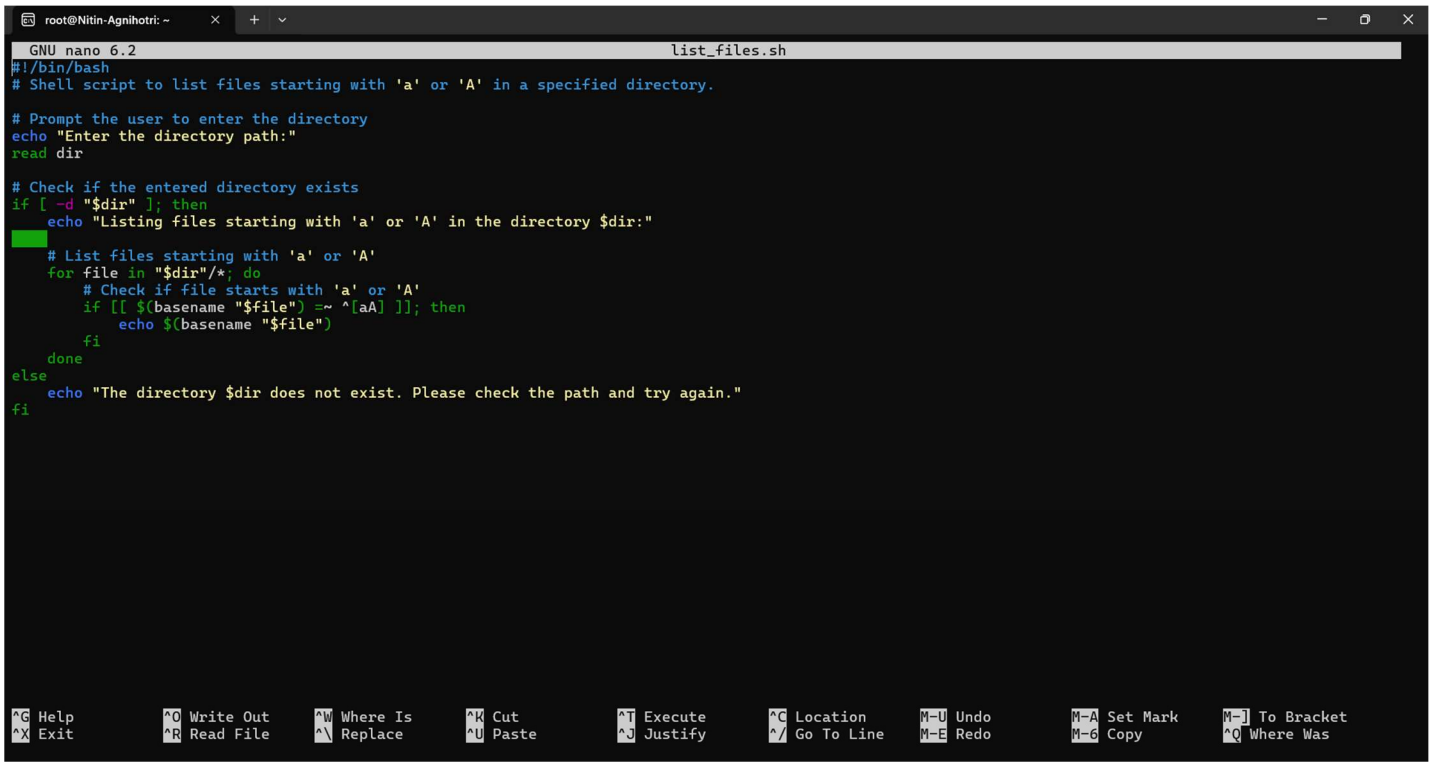

Routing and Remote Access
Action
View
Routing and Remote Access
Server Status
s1
Name
Dial-In Clients (0)
Ports
IP Routing
Remote Access Policies
Logging

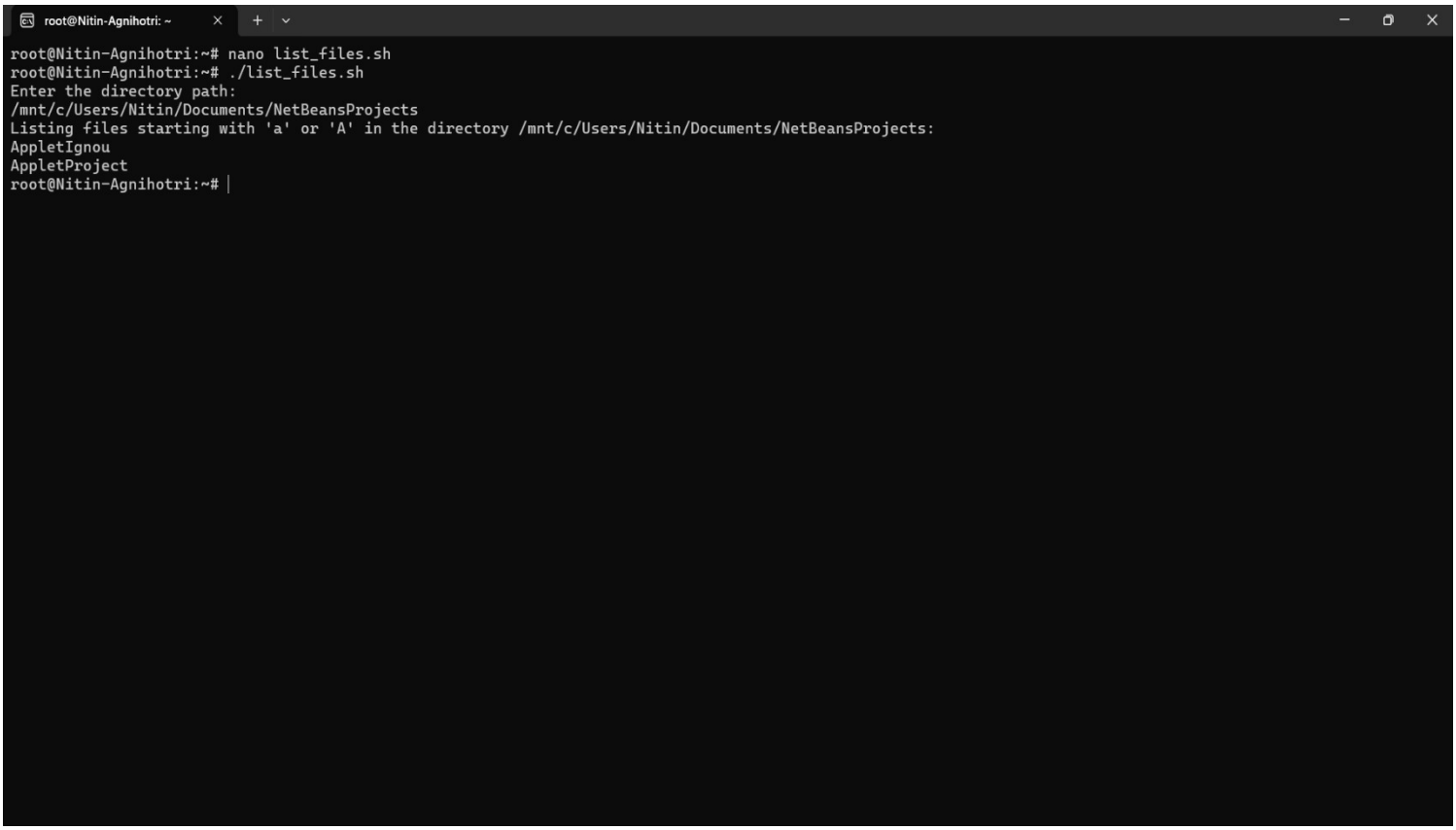

Routing and Remote Access
Action
View
Routing and Remote Access
Server Status
s1
Dial-In Clients (0)
Ports
IP Routing
Remote Access Policie
Logging
Name
Device
Comment
Status
WAN Miniport (PPTP) (VPN3-4) VPN Inactive
WAN Miniport (PPTP) (VPN3-3) VPN Inactive
WAN Miniport (PPTP) (VPN3-2) VPN Inactive
WAN Miniport (PPTP) (VPN3-1) VPN Inactive
WAN Miniport (PPTP) (VPN3-0) VPN Inactive
WAN Miniport (L2TP) (VPN2-4) VPN Inactive
WAN Miniport (L2TP) (VPN2-3) VPN Inactive
WAN Miniport (L2TP) (VPN2-2) VPN Inactive
WAN Miniport (L2TP) (VPN2-1) VPN Inactive
WAN Miniport (L2TP) (VPN2-0) VPN Inactive
Sportster Flash V.90 Voice Pn... MODEM Inactive

Q2:(a) Write a shell program to scan all the files in a particular directory and list only those files which start (file_name) with "a" or "A".

Answer:

←Shell Program→



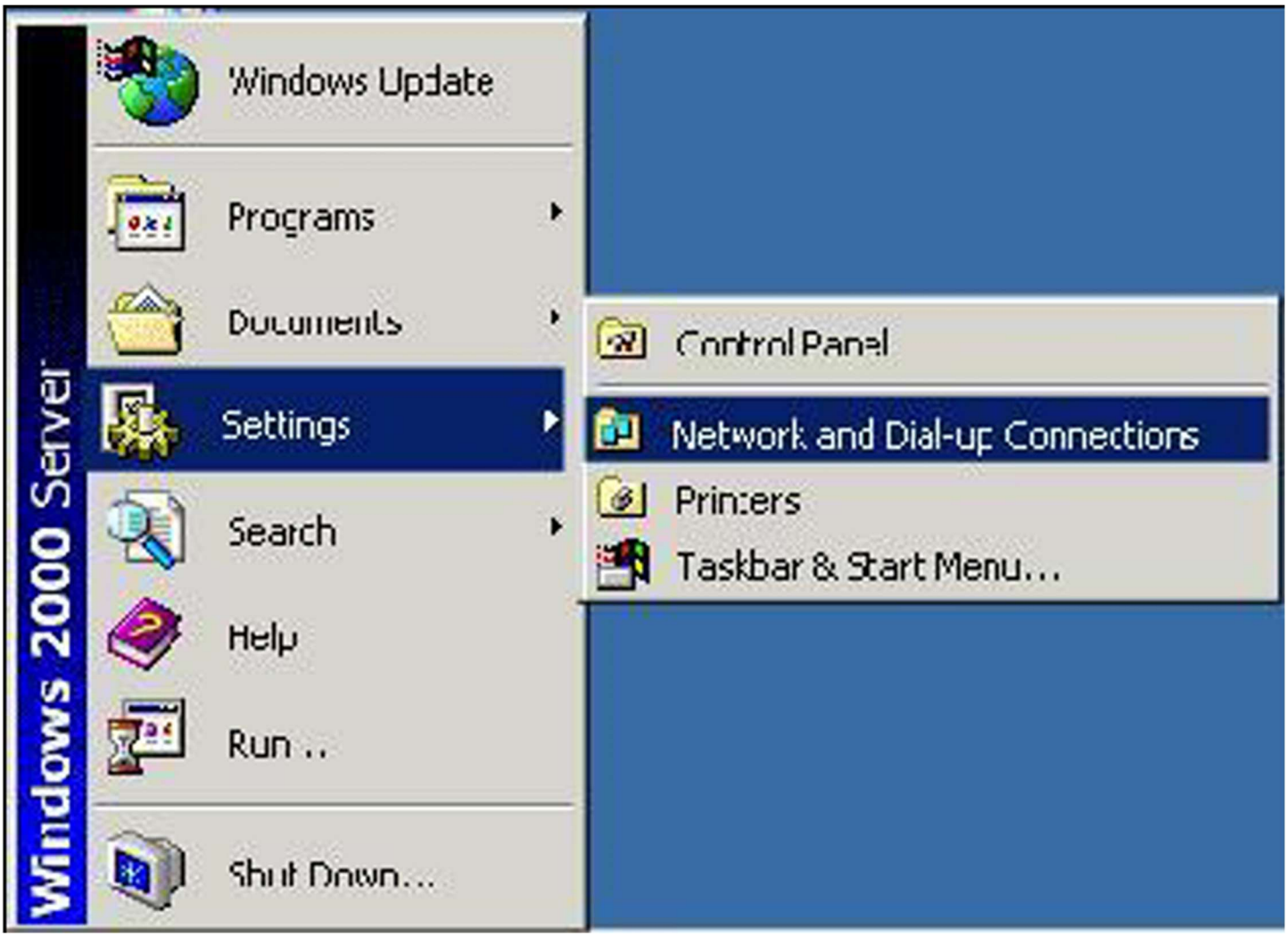

root@Nitin-Agnihotri: ~
root@Nitin-Agnihotri:~# nano list_files.sh
root@Nitin-Agnihotri:~# ./list_files.sh
Enter the directory path:
/mnt/c/Users/Nitin/Documents/NetBeansProjects
Listing files starting with 'a' or 'A' in the directory /mnt/c/Users/Nitin/Documents/NetBeansProjects:
AppletIgnou
AppletProject
root@Nitin-Agnihotri:~#

Q2:(b) Install and configure TCP/IP settings in LINUX/UNIX operating system.Explain with step by step procedure.

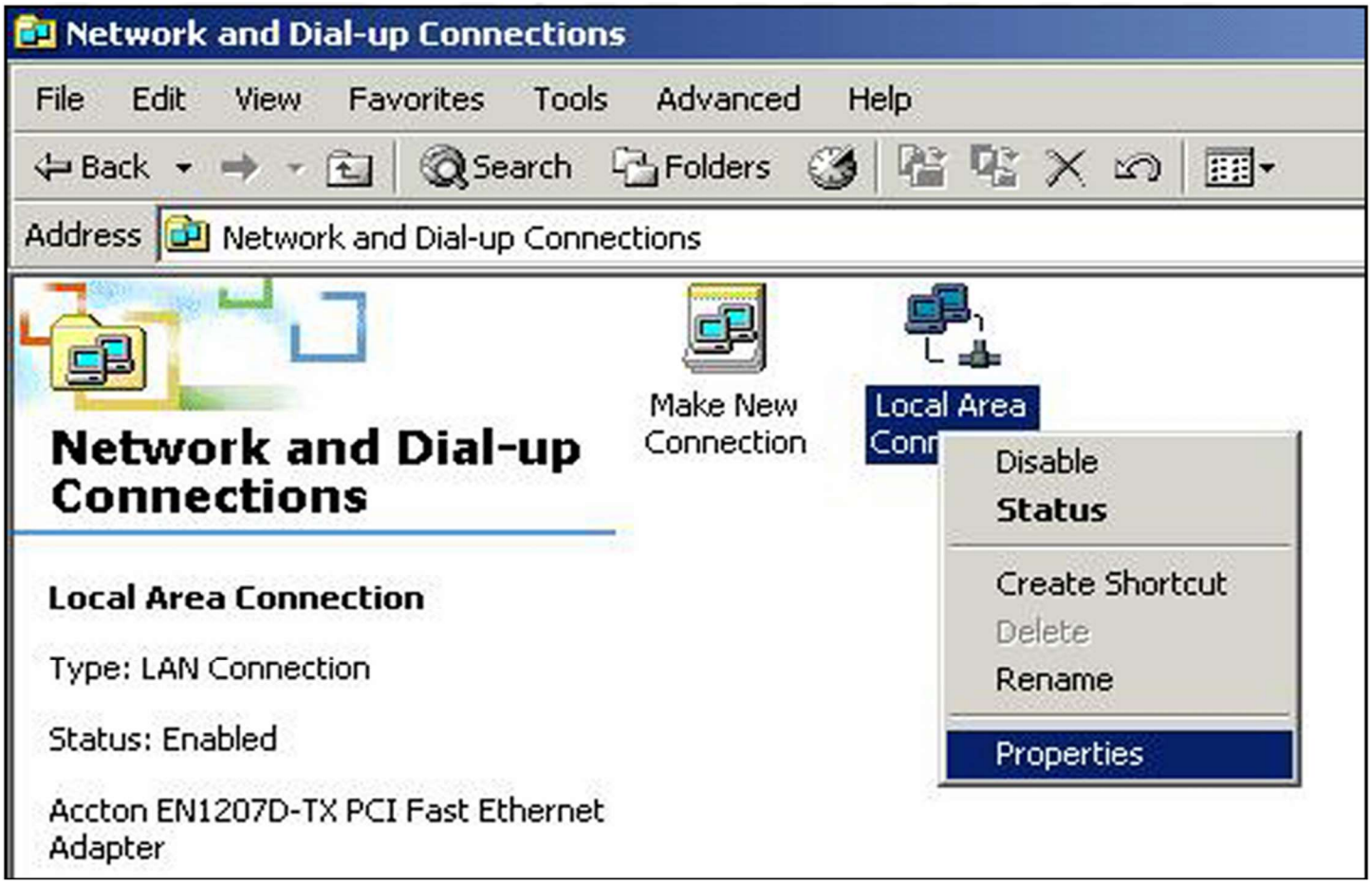
Answer :-

← Installing TCP/IP →

STEP 1 : Open the Network and Dial-Up Connections folder

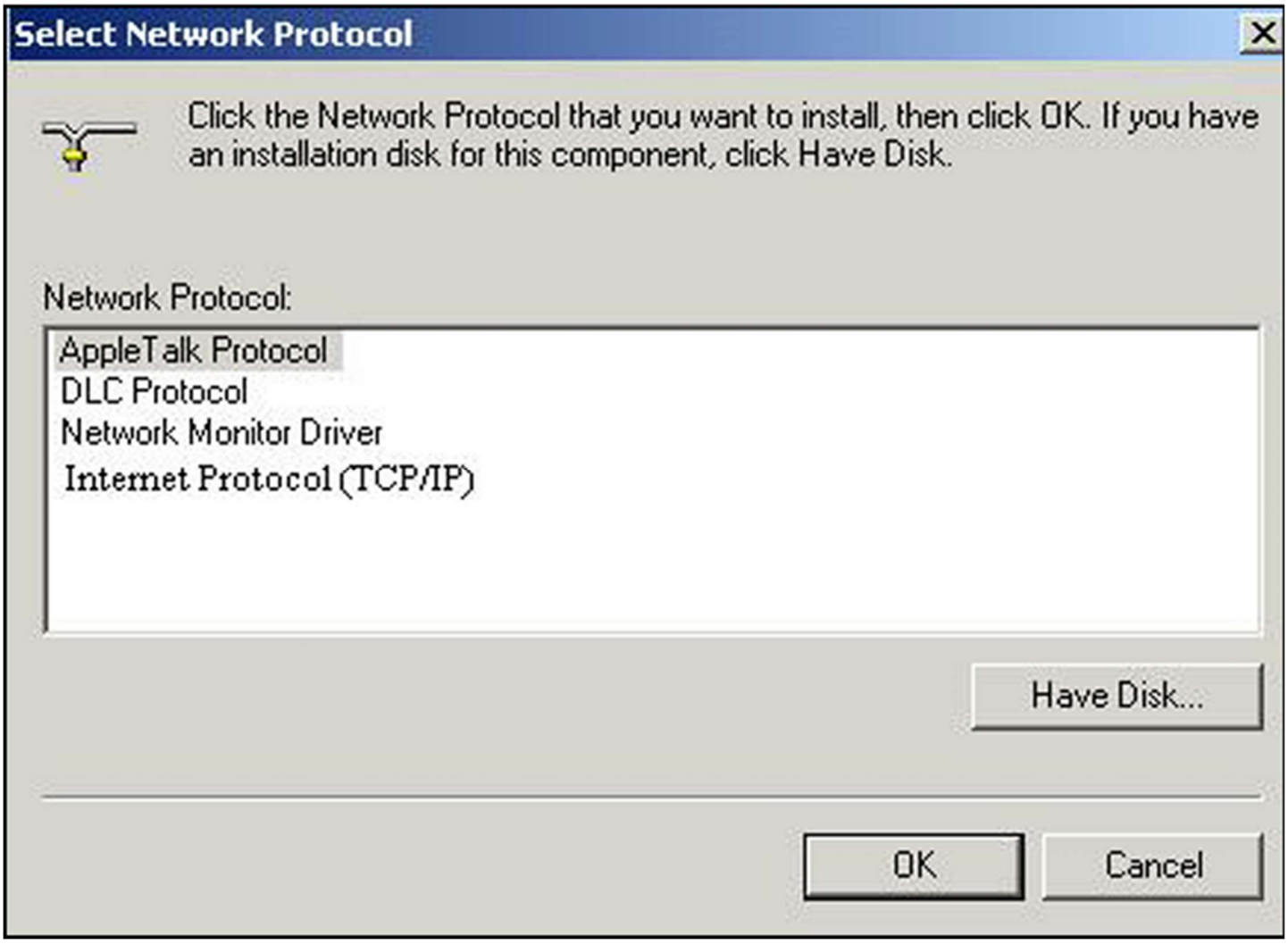


STEP 2 : Right click the Local Area Connection icon and choose the properties.



STEP 3:- Now Click the Install... button, you will see the Select Network Component Type dialog box. Select protocol and click the Add... button

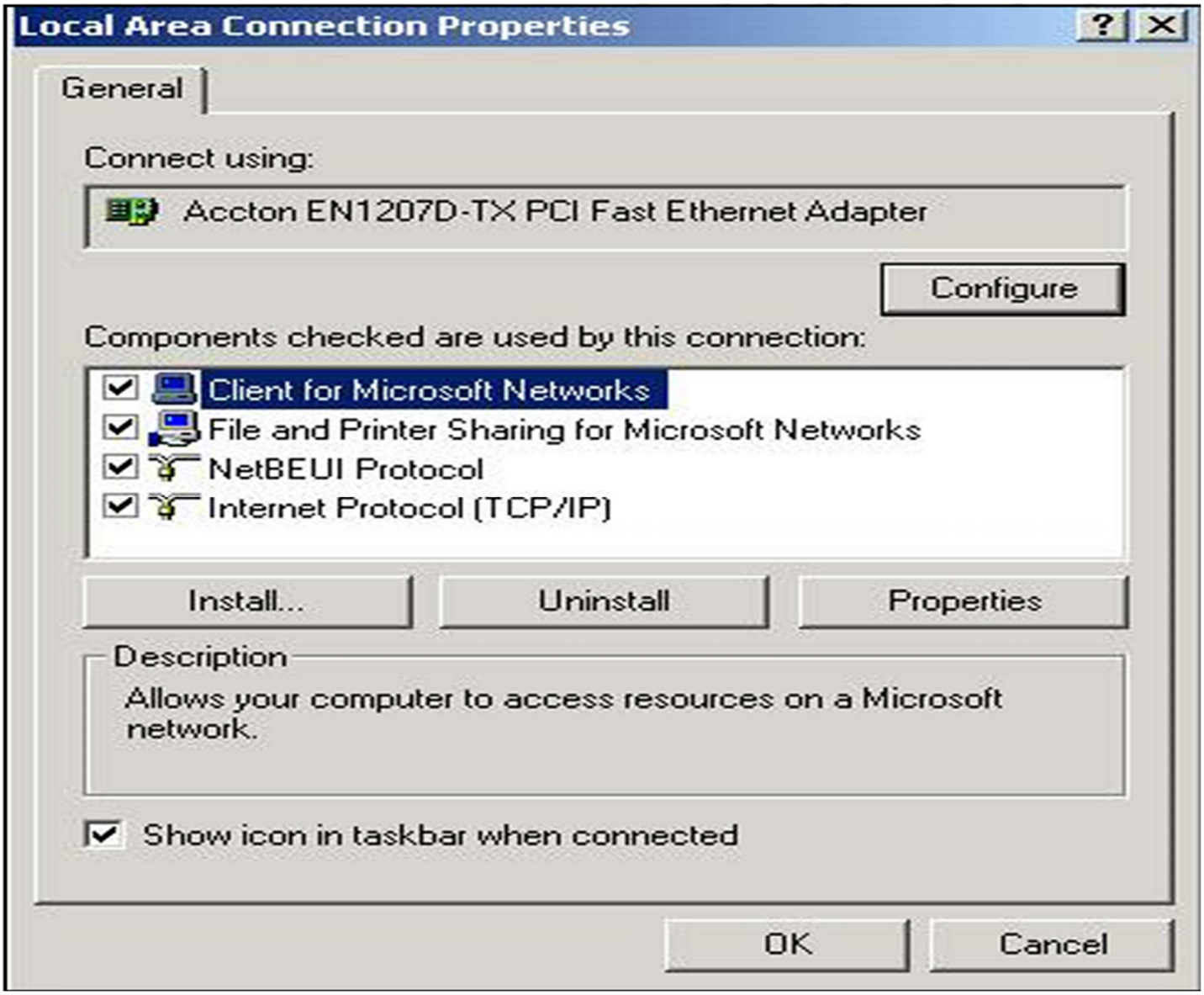
STEP 4 : Choose Internet Protocol (TCP/IP), and then click the OK button.



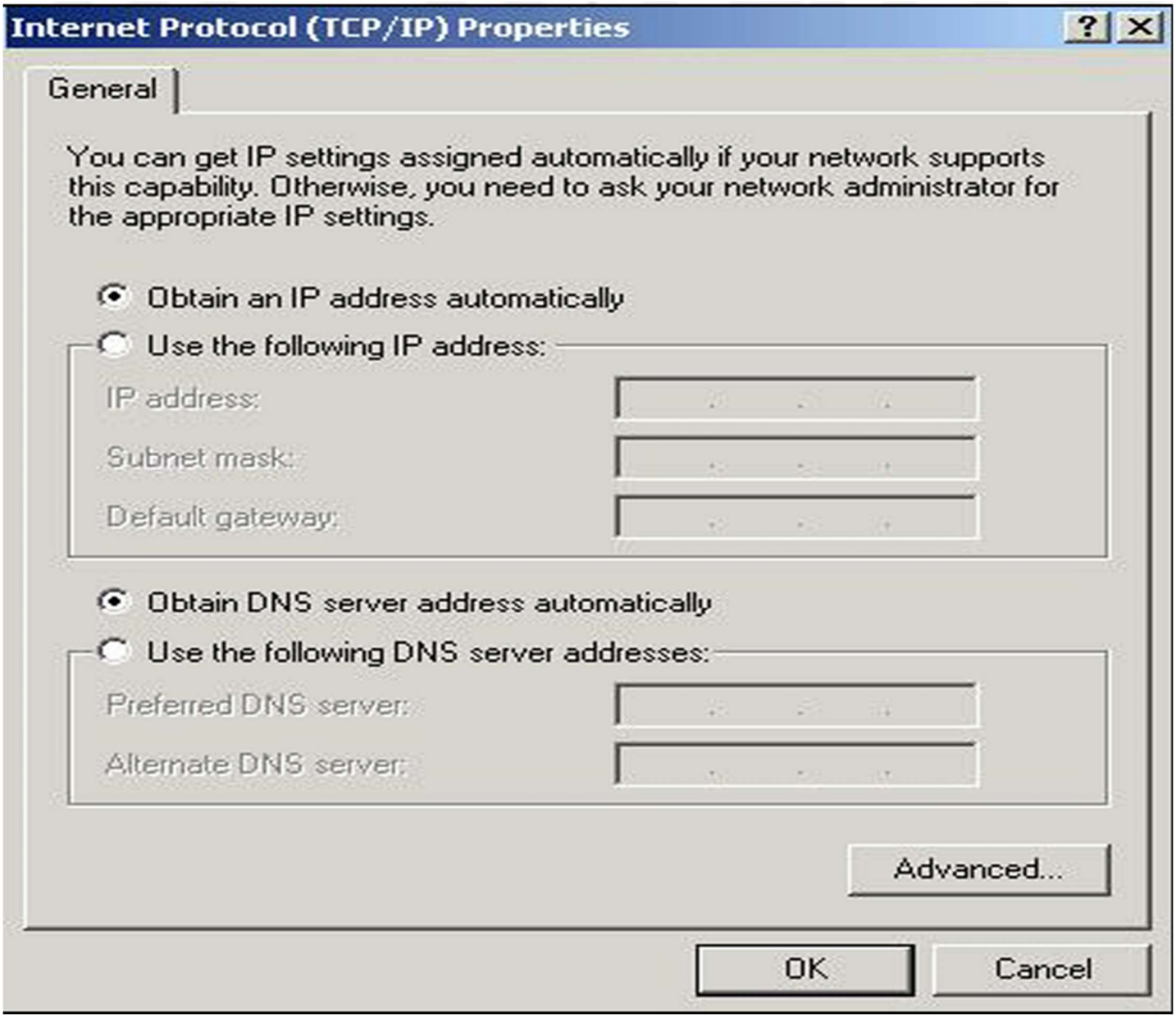
←Configuring TCP/IP Settings→

STEP 1: First you select an IP Address, which is not currently in use by another device (e.g., I am selecting "192.162.6.142" in this example). Also ensure that you know the correct subnet mask to use with that IP address (e.g., 255.255.255.0 in this example).

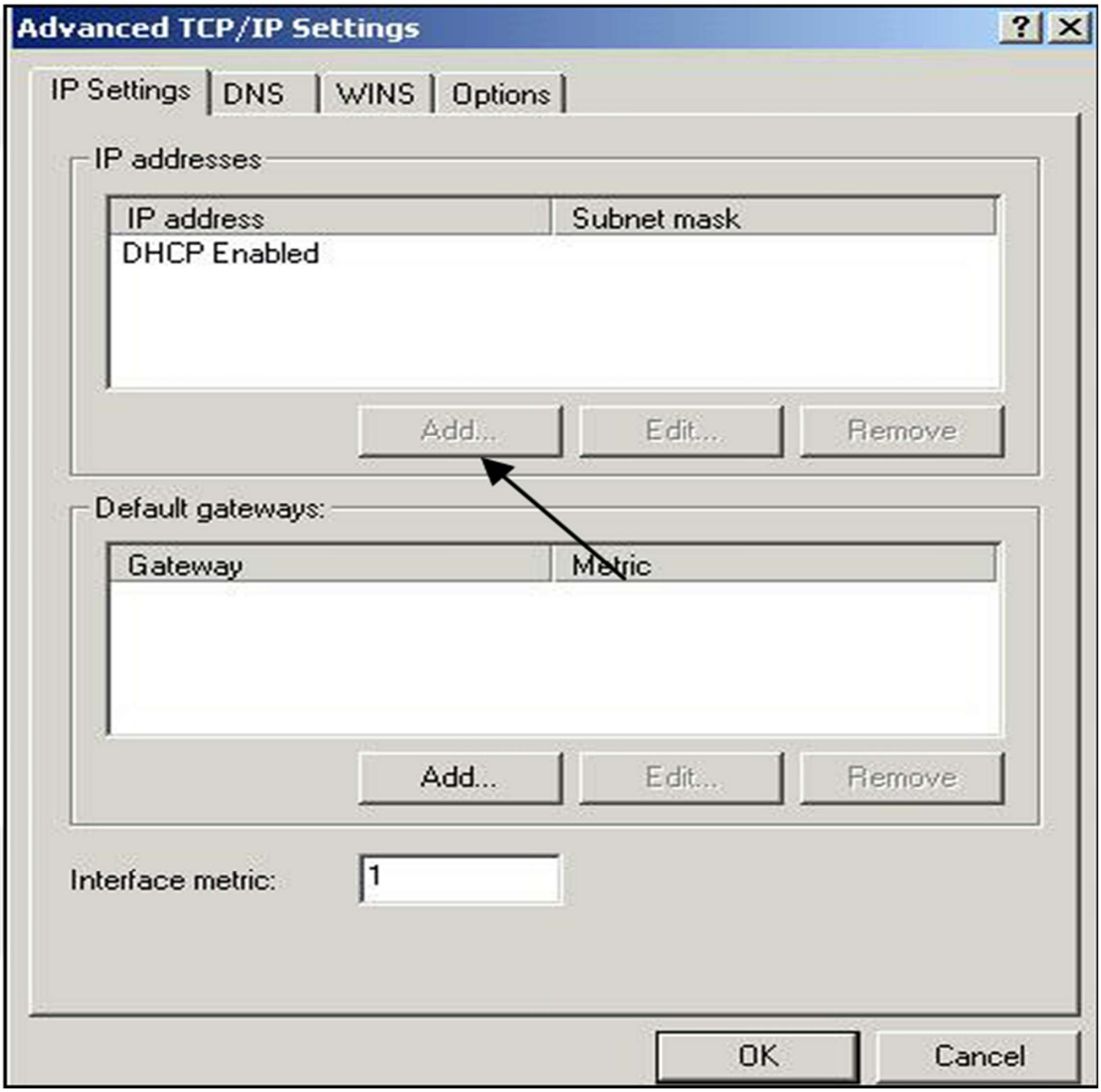
STEP 2 : Open the Network and Dial-Up Connections folder (Start>Settings>Network and Dial-UP Connections) similar to the previous example right click the Local Area Connection icon and choose the properties command and Local Area Connect Properties dialog box appears.



STEP 3: Select Internet Protocol (TCP/IP) in the Components list, and then click the Properties button. The Internet Protocol (TCP/IP) Properties dialog box will appear. We want to manually configure it so we will move to Advanced setting.



STEP 4: The Advanced TCP/IP properties dialog box will appear when you click the Advanced ... button.



STEP 5: Click the Add... button in the IP Addresses control group. The TCP/IP Address dialog box will appear. In that you type the IP address and subnet mask we selected in Step 1.

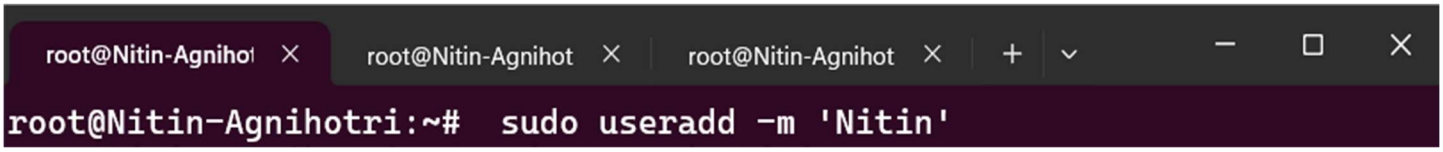
STEP 6 : Click the OK button in the Advanced TCP/IP Settings dialog box. Then similarly click the OK in the Internet Protocol (TCP/IP) Properties dialog box and in the Local Area Connection properties dialog box

Q3: (a) Create a user account in the LINUX/UNIX Server. Set its password and define its permission like'an administrator.

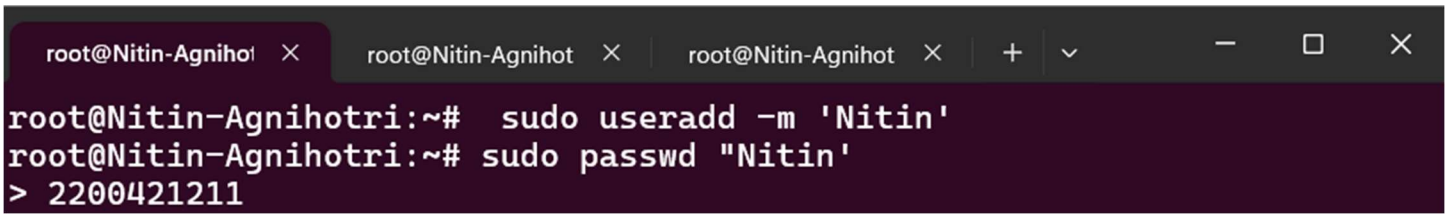
Answer:

Step 1: Create a New User :-

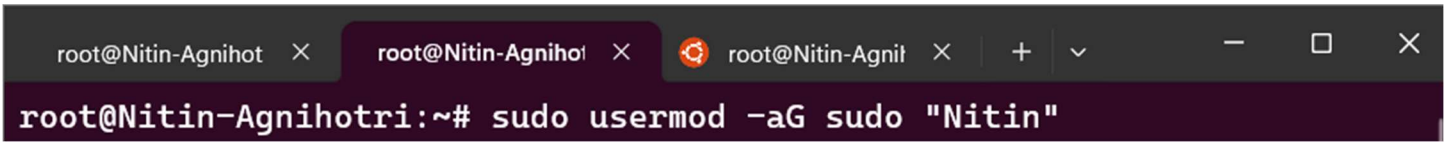
- **Open a terminal.**
- **Use the useradd command to create a new user account.**



Step 2: Set a Password for the New User :-

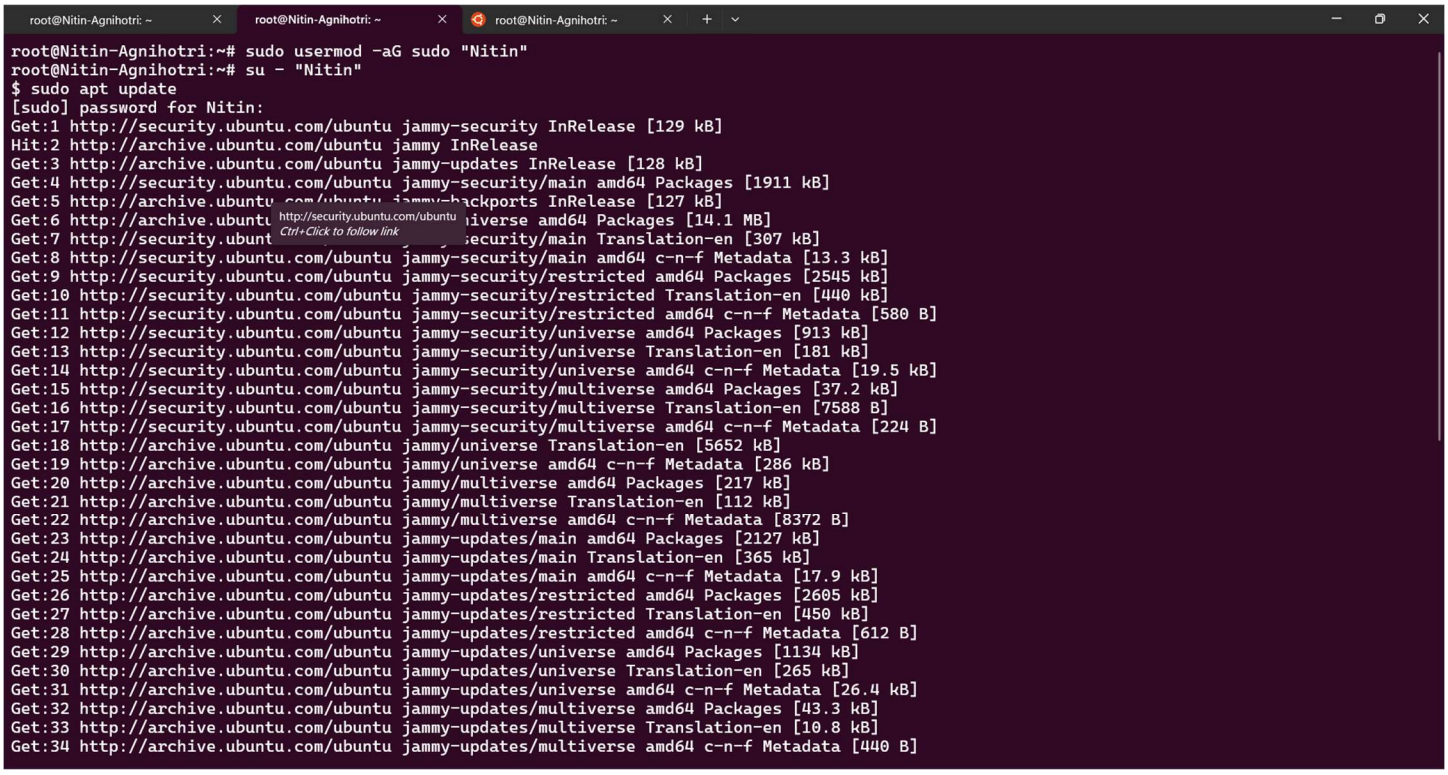


Step 3: Grant Administrator Privileges:-



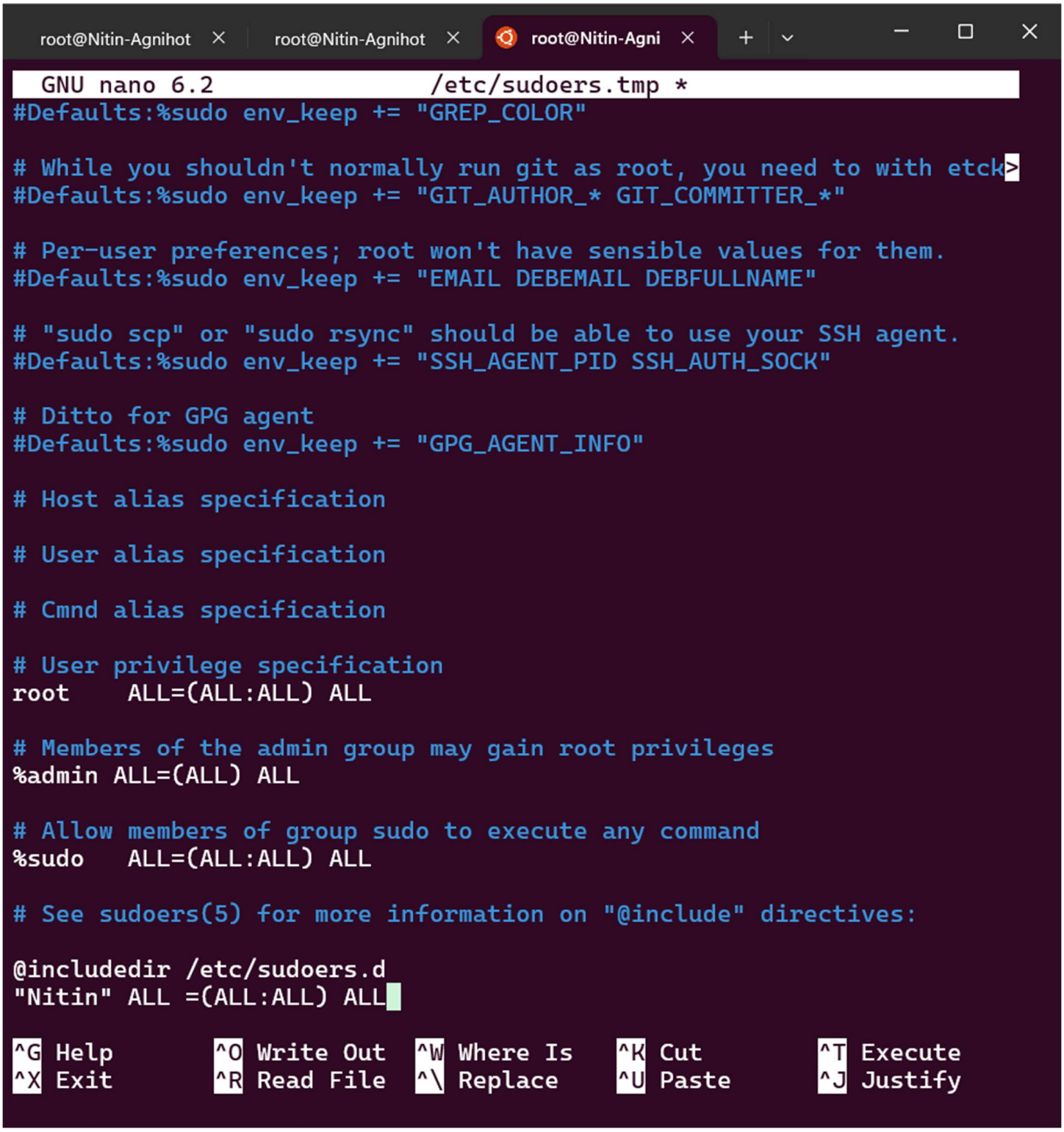
Step 4: Verify the User's Permissions:

- **Switch to the new user account to check if they have sudo privileges:**
- **Test the sudo privileges by running a command that requires administrative access, like:**



STEP 5 : Modify Permissions in the sudoers File (for Fine-Tuning):

- **Open the sudoers file using visudo, a command that safely edits the file:**
- **Add a line for the new user, if needed, to define specific administrative permissions.**



Save and close the file to apply changes.

Q3.(b) Configure a DNS Server as a Root Name Server in Windows 2000 Server. Explain with step by step procedure.

ANSWER :

To configure a DNS Server as a Root Name Server in Windows 2000 Server, I would follow these steps:

1. Open DNS Management Console:

I would open the DNS management console by navigating to Start -> Programs -> Administrative Tools -> DNS.

2. Create Forward Lookup Zones:

In the DNS console, I would right-click on the server name and select "New Zone..." Then, I would select "Primary Zone" and click Next.
I would then enter the name of the zone, for example, ". (Root)" and choose "Allow dynamic updates" (if needed).

3. Create Reverse Lookup Zones:

Similar to forward lookup zones, I would create a reverse lookup zone for the root domain. This is also a primary zone and in the name field, we would use "0.0.127.inaddr.arpa" or 0.in-addr.arpa". I would select "Allow dynamic updates" (if needed).

4. Add Root Hints:

I need to add a few root servers as hints to the DNS server so it can access the root zone.

- **Open the DNS Manager console.**
- **Select the Forward Lookup Zone of the root server.**
- **Right-click and choose "New..." then select "Host (A or AAAA)".**
- **Set the values according to root server details. For example:**
    - **Name : a.root-servers.net**
    - **IP: 198.41.0.4**
    - **Name : b.root-servers.net**

- **IP: 192.228.79.201**
- **Name : c.root-servers.net**
- **IP: 192.33.4.12**
- **etc.**

5. Configure Zone Transfers (Optional):

If it is desired for other DNS servers to receive updates on the root zone, I would configure zone transfers.

6. Restart the DNS Server :

I would restart the DNS server to apply the changes.

Q4(a): In LINUX/UNIX system, access your account available at a remote machine. Download a file from the remote location, modify that file and upload back to the remote machine.

Answer :-

To access a remote machine, download a file, modify it, and then upload it back in Linux/UNIX, you can use tools like SSH, SCP, and nano/vim for editing. Here's a step-by-step guide to accomplish this:

Assume:

- **Username is `nitin`.**
- **Remote IP is `192.168.1.10`.**
- **The file you need to edit is located at `/home/nitin/example.txt`.**

Step 1: Connect to the Remote Machine

Use SSH to access our account on the remote machine.

```
ssh nitin@192.168.1.10
```

Step 2: Download a File from the Remote Machine:

Use `scp` (Secure Copy Protocol) to download the file from the remote location to our local machine.

```
scp nitin@192.168.1.10:/home/nitin/example.txt /home/nitin/local_copy
```

Step 3: Modify the File Locally:

Open the file in a text editor like `nano` or `vim` to make the required modifications.

```
nano /home/nitin/local_copy/example.txt
```

Make your changes and save the file.

Step 4: Upload the Modified File Back to the Remote Machine:

Once you've made the necessary changes, upload the modified file back to the remote machine using "scp".

```
scp /home/nitin/local_copy/example.txt nitin@192.168.1.10:/home/nitin/
```

Q4(b):Configure TCP/IP setting in LINUX/UNIX. Assume IP address is 192.168.1.2 and Port is 446. Explain with step by step procedure.

ANSWER:

To configure TCP/IP settings in Linux/Unix with an IP address of "192.168.1.2" and set up a service to listen on port "446", We have to follow these steps:

Step 1: Access Network Configuration File

On Linux/Unix systems, network configurations are typically stored in "/etc/network/interfaces"(Debian-based systems) or "/etc/sysconfig/network-scripts/ifcfg-<interface>" (Red Hat-based systems). Here, we'll focus on the Debian-based approach.

1. **Open the configuration file:**

```
sudo nano /etc/network/interfaces
```

Step 2: Configure the Static IP Address

2. In the configuration file, identify the network interface (often “eth0” for wired connections or “wlan0” for wireless). For example, if the interface is “eth0”, configure it as follows:

```
auto eth0
iface eth0 inet static
    address 192.168.1.2
    netmask 255.255.255.0
    gateway 192.168.1.1
```

- **address: Set to the IP address you want, “192.168.1.2”.**
- **netmask: Typically “255.255.255.0” for a Class C network.**
- **gateway: The router’s IP address, commonly “192.168.1.1”.**

3. Save and exit the file (Ctrl + X , then Y, and Enter in nano editor).

Step 3: Restart the Network Service:

4. Restart the network service to apply the changes:

```
sudo systemctl restart networking
```

Step 4: Verify IP Configuration:

5. Use the `ip addr` or `ifconfig` command to verify the IP address is set correctly:

```
ip addr show eth0
```

Look for "192.168.1.2" in the output.

Step 5: Set Up a Service to Listen on Port 446

6. Create a simple listener on port `446`. You can use `netcat` (if installed) to listen on this port as a test:

```
sudo nc -lvp 446
```

- **-l: Listen mode.**
- **-v: Verbose mode to display additional information.**
- **-p: Specifies the port number.**

You can replace `netcat` with any service or script you want to run on this port.

Step 6: Verify the Port is Open :

7. Use netstat or ss to check that the port is open and listening:

```
sudo ss -tuln | grep 446
```

You should see LISTEN status for port 446.

You've now configured a static IP address on your Linux system and set up a service to listen on port `446`. This setup is ideal for local network communication and can be adapted further based on network requirements.

Q5. List and execute the following LINUX/UNIX commands:

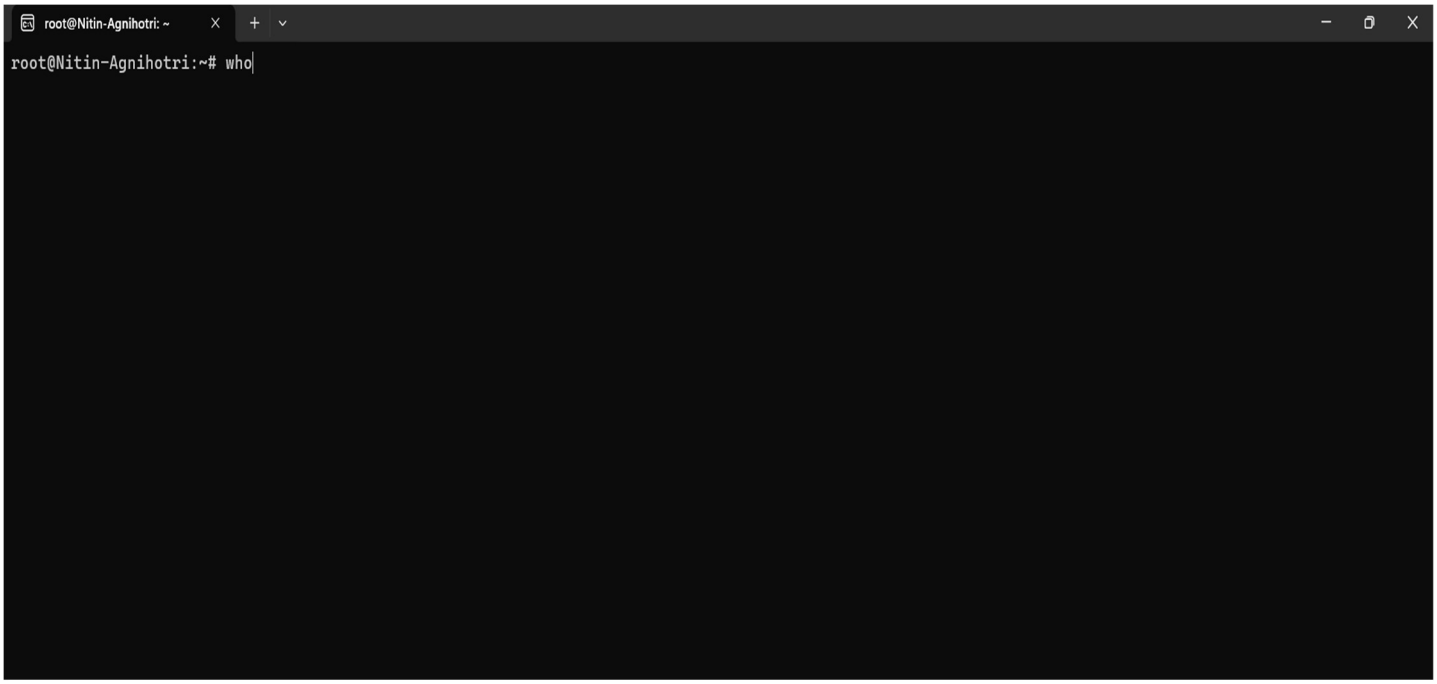
a) **To list all the current users logged in the system.**
b) **To print and set the date.**
c) **To show the reference and name of the terminal.**
d) **To create a new file with name "abc" in the current directory.**
e) **To kill a process with its PID.**

ANSWER :

(a) To List All the Current Users Logged in the System:

Command: ("who")→

← Use the who command to list all users currently logged in. →



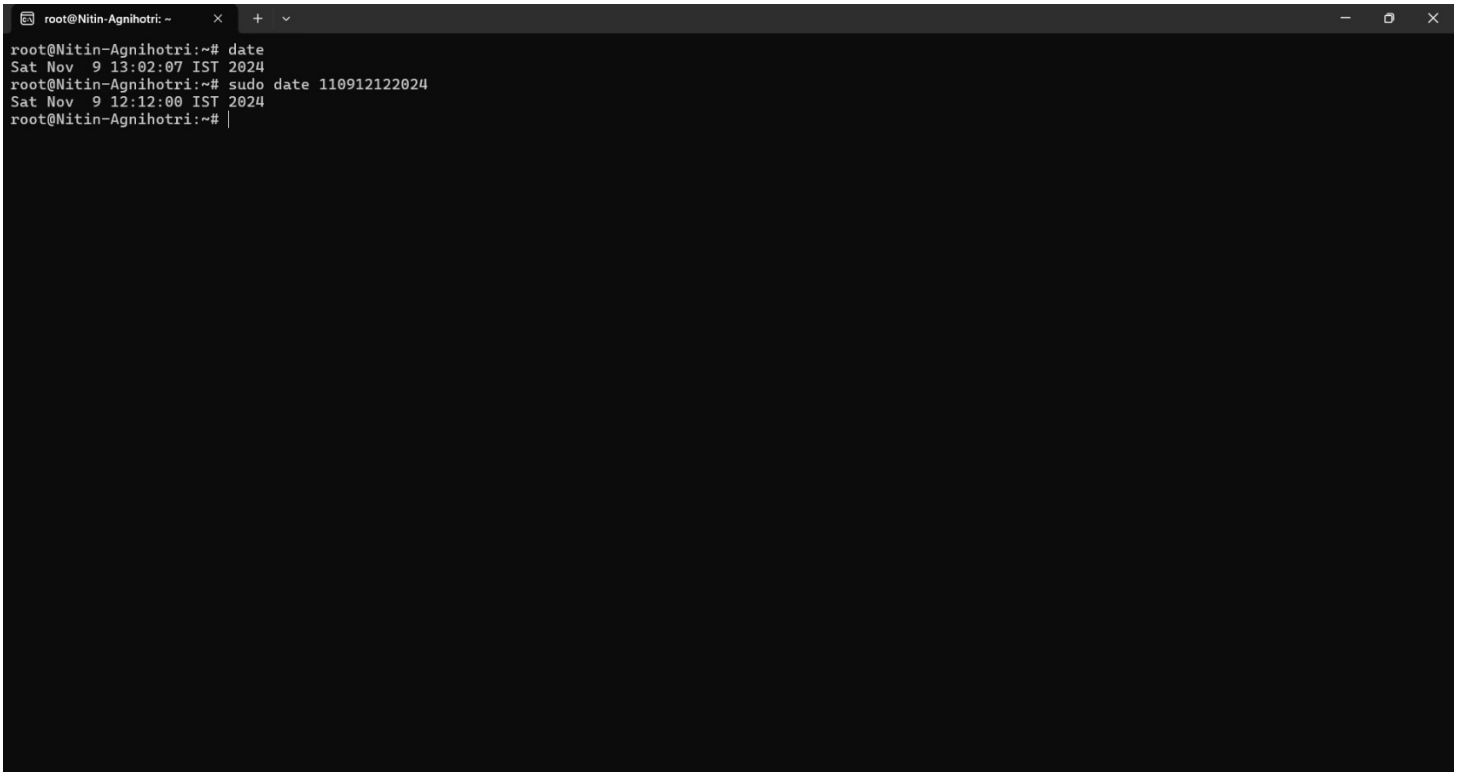
Explanation: This command displays the usernames, terminals, and login times for all active sessions.

(b) To Print and Set the Date:

Use the date command to display and modify the system date.

- **To print the current date**:
  Command: ("date") :

- **To set a new date :**
  Command: "sudo date MMDDhhmmYYYY":
  ➔ **Replace MM with the month, DD with the day, hh with the hour, mm with the minutes, and YYYY with the year.**
  ➔ **Example: To set the date to November 9, 2024, 12:12, use:**



(c) To Show the Reference and Name of the Terminal:

→ **Command: (“tty”):**

Explanation: This command returns the file name of the terminal connected to standard input, showing the active terminal name.

(d) To Create a New File with Name "abc" in the Current Directory:

Command: ("abc")

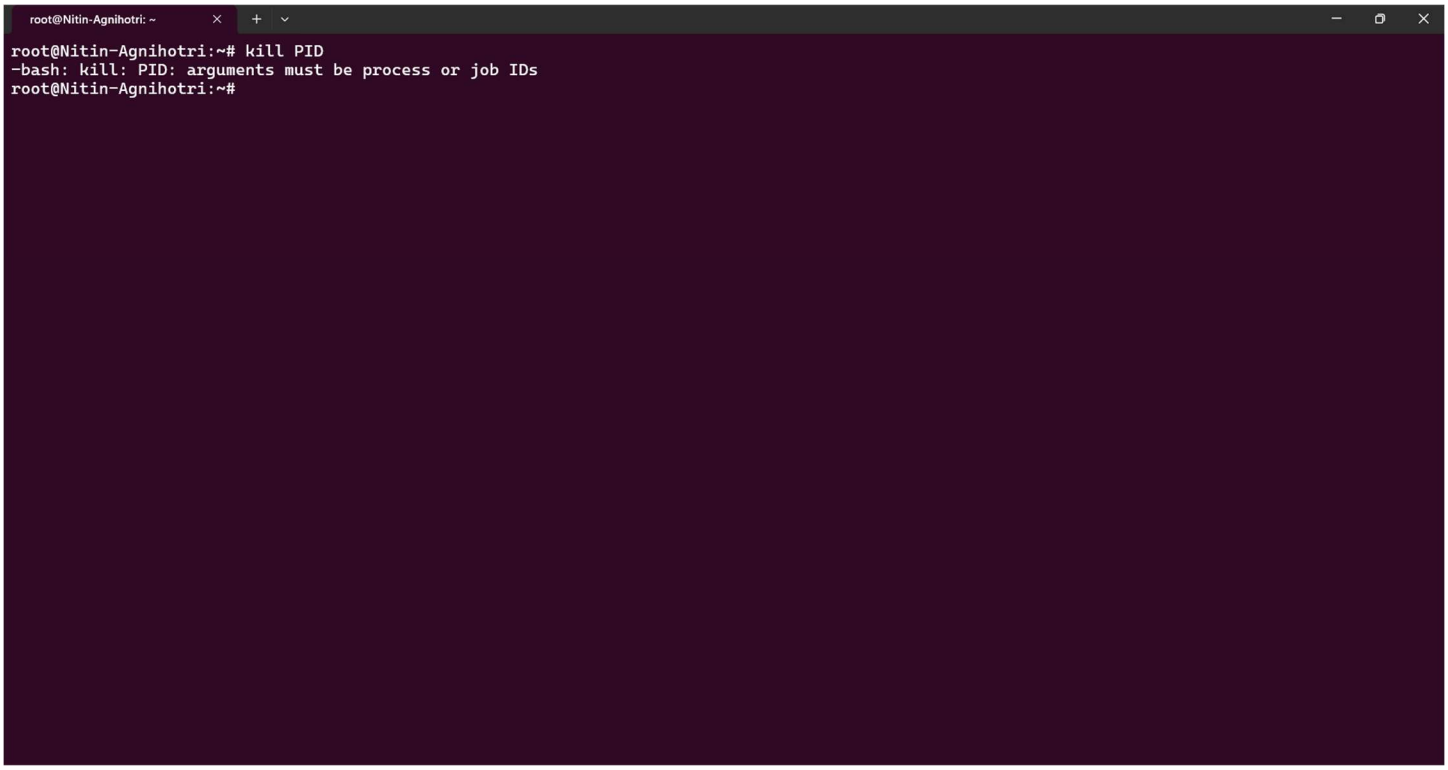
← Use the “touch” command to create an empty file named "abc". →

Explanation: “touch” creates a new, empty file named "abc" in the current directory if it doesn’t already exist.

(e) To Kill a Process with Its PID:

Command : “kill” :

→ **Use the “kill” command followed by the Process ID (PID) to terminate a process.**



Explanation: **Replace PID with the actual process ID of the process you want to terminate.**