

Assignment: Network Setup and Health Monitoring Task Scheduling

Objective:

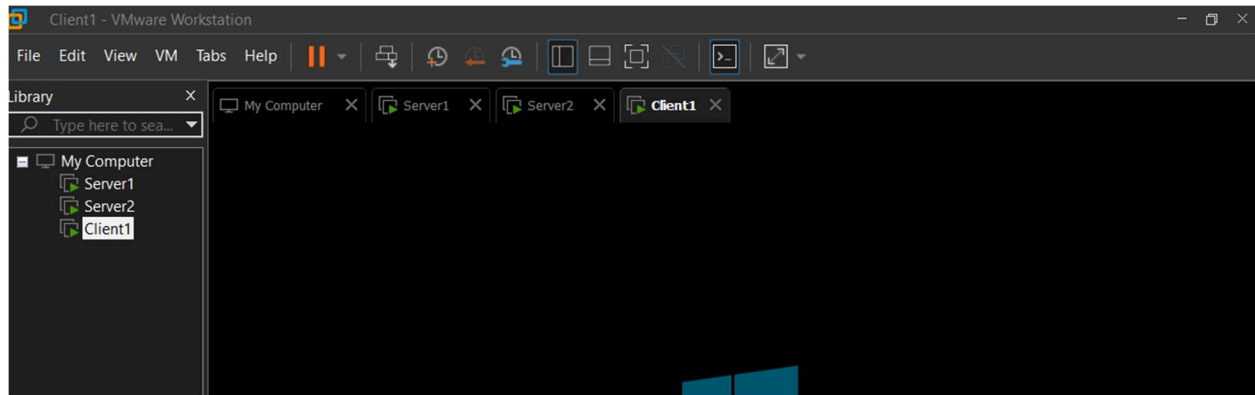
Your task is to design and implement a complete network for health monitoring using **PowerShell**. This will involve configuring two servers and one client. You must demonstrate this assignment and be prepared to explain your script in class.

Requirements:

1. Infrastructure Setup: (20 points)

- **Servers:** You will need two servers (**Server1** and **Server2**) running **Windows Server 2022 Core**.
- **Client:** The client (**Client1**) can be either **Windows 10** or **Windows 11**.

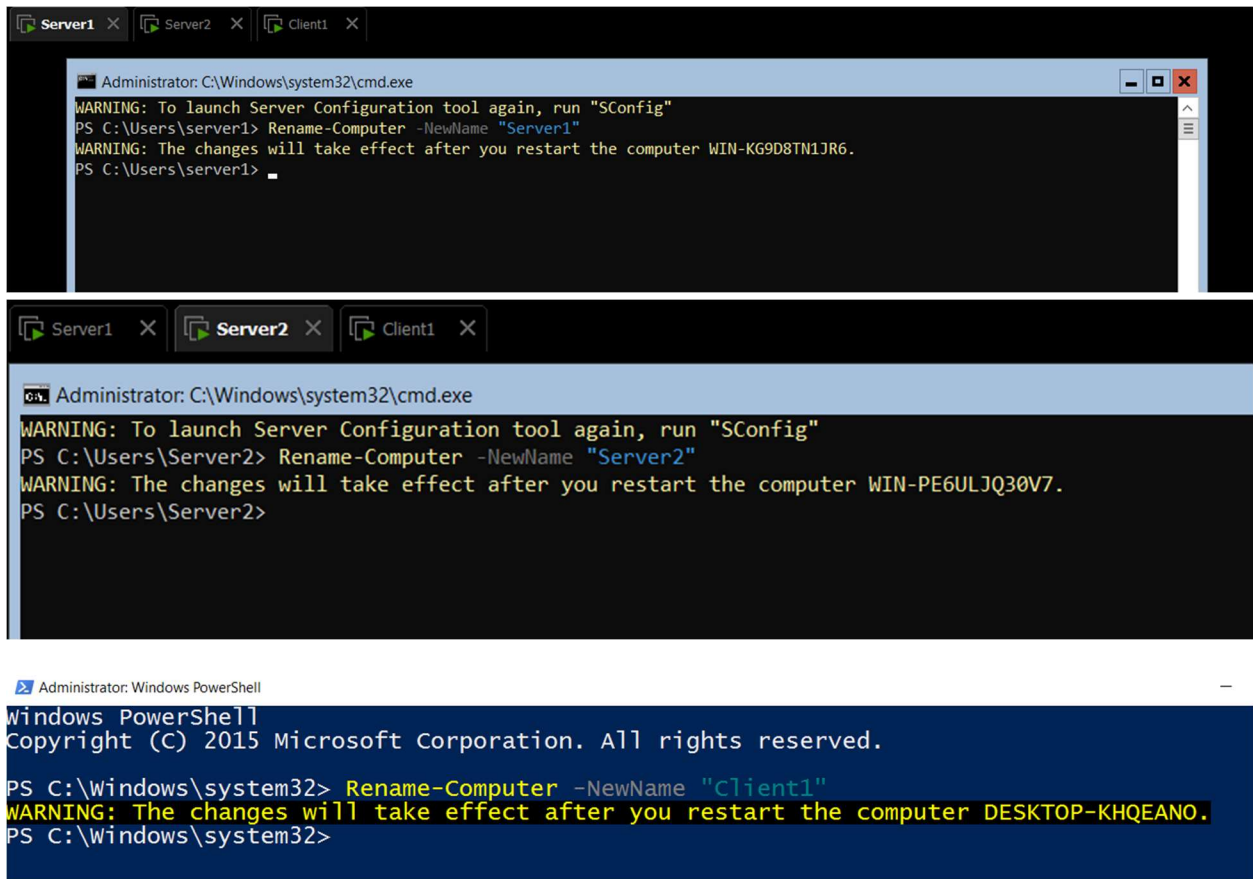
Paste screenshot of VMware displaying the running virtual machines below.



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2. Assign the following hostnames using PowerShell: (15 points)

- **Server1**
- **Server2**
- **Client1**
- Paste screenshot showing the hostnames changed on each VM using PowerShell below.



The image contains three screenshots of PowerShell command prompts, each showing the process of renaming a virtual machine. The first screenshot shows the command `Rename-Computer -NewName "Server1"` being executed in a prompt with the path `C:\Users\server1>`. The second screenshot shows the command `Rename-Computer -NewName "Server2"` being executed in a prompt with the path `C:\Users\Server2>`. The third screenshot shows the command `Rename-Computer -NewName "Client1"` being executed in a prompt with the path `C:\Windows\system32>`. Each screenshot includes a warning message about restarting the computer for the changes to take effect.

```
Administrator: C:\Windows\system32\cmd.exe
WARNING: To launch Server Configuration tool again, run "SConfig"
PS C:\Users\server1> Rename-Computer -NewName "Server1"
WARNING: The changes will take effect after you restart the computer WIN-KG9D8TN1JR6.
PS C:\Users\server1>

Administrator: C:\Windows\system32\cmd.exe
WARNING: To launch Server Configuration tool again, run "SConfig"
PS C:\Users\Server2> Rename-Computer -NewName "Server2"
WARNING: The changes will take effect after you restart the computer WIN-PE6ULJQ30V7.
PS C:\Users\Server2>

Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2015 Microsoft Corporation. All rights reserved.

PS C:\Windows\system32> Rename-Computer -NewName "Client1"
WARNING: The changes will take effect after you restart the computer DESKTOP-KHQEANO.
PS C:\Windows\system32>
```

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3. Domain Configuration using PowerShell: (25 points)

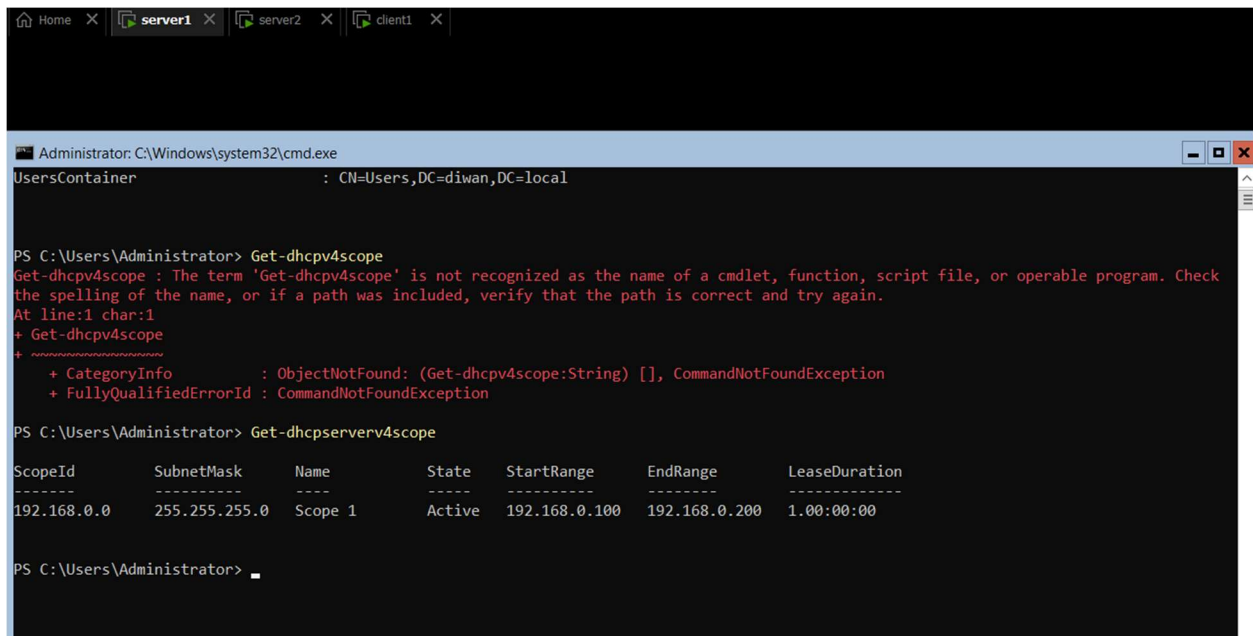
- Set up **Server1** as a **Domain Controller (DC)** with the domain name “**lastname.local**”.
- Setup **DNS** and **DHCP** on **Server1** using PowerShell.
- Make sure the **Server2** and **Client1** get IP Assignment via DHCP.
- Join **Server2** and **Client1** to the domain using PowerShell.

Provide screenshot demonstrating the setup of the domain, DNS, and DHCP, as well as joining a domain using PowerShell. Show that **Server2** and **Client1** successfully receive IP addresses assigned via DHCP configured on **Server1**.

```
PS C:\Users\Administrator> Get-ADDomain

AllowedDNSSuffixes      : {}
ChildDomains            : {}
ComputersContainer      : CN=Computers,DC=diwan,DC=local
DeletedObjectsContainer : CN=Deleted Objects,DC=diwan,DC=local
DistinguishedName       : DC=diwan,DC=local
DNSRoot                 : diwan.local
DomainControllersContainer : OU=Domain Controllers,DC=diwan,DC=local
DomainMode              : Windows2016Domain
DomainSID               : S-1-5-21-2764522379-3804765367-4094371693
ForeignSecurityPrincipalsContainer : CN=ForeignSecurityPrincipals,DC=diwan,DC=local
Forest                 : diwan.local
InfrastructureMaster     : Server1.diwan.local
LastLogonReplicationInterval :
LinkedGroupPolicyObjects : {CN={31B2F340-016D-11D2-945F-00C04FB984F9},CN=Policies,CN=System,DC=diwan,DC=local}
LostAndFoundContainer    : CN=LostAndFound,DC=diwan,DC=local
ManagedBy              :
Name                   : diwan
NetBIOSName            : DIWAN
ObjectClass             : domainDNS
ObjectGUID              : b9db22f3-688c-45ef-b64a-4de4154529ba
ParentDomain            :
PDCEmulator            : Server1.diwan.local
PublicKeyRequiredPasswordRolling : True
QuotasContainer         : CN=NTDS Quotas,DC=diwan,DC=local
ReadOnlyReplicaDirectoryServers : {}
ReplicaDirectoryServers : {Server1.diwan.local}
```

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The screenshot shows a PowerShell console window titled 'Administrator: C:\Windows\system32\cmd.exe'. The window has tabs for 'Home', 'server1', 'server2', and 'client1'. The current session is on 'server1'. The command prompt shows the following commands and output:

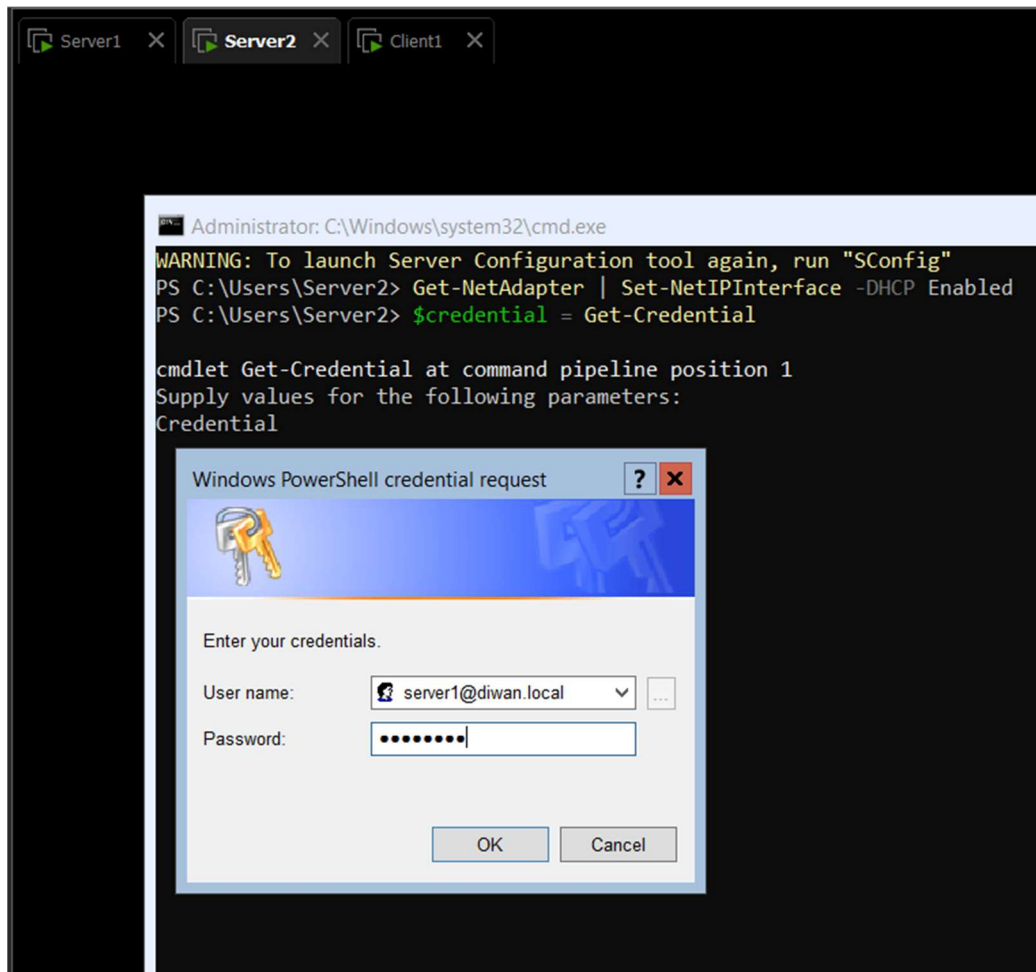
```
UsersContainer : CN=Users,DC=diwan,DC=local

PS C:\Users\Administrator> Get-dhcpv4scope
Get-dhcpv4scope : The term 'Get-dhcpv4scope' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ Get-dhcpv4scope
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (Get-dhcpv4scope:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

PS C:\Users\Administrator> Get-dhcpserverv4scope

ScopeId      SubnetMask    Name          State    StartRange    EndRange      LeaseDuration
-----
192.168.0.0   255.255.255.0 Scope 1        Active   192.168.0.100 192.168.0.200 1.00:00:00

PS C:\Users\Administrator>
```



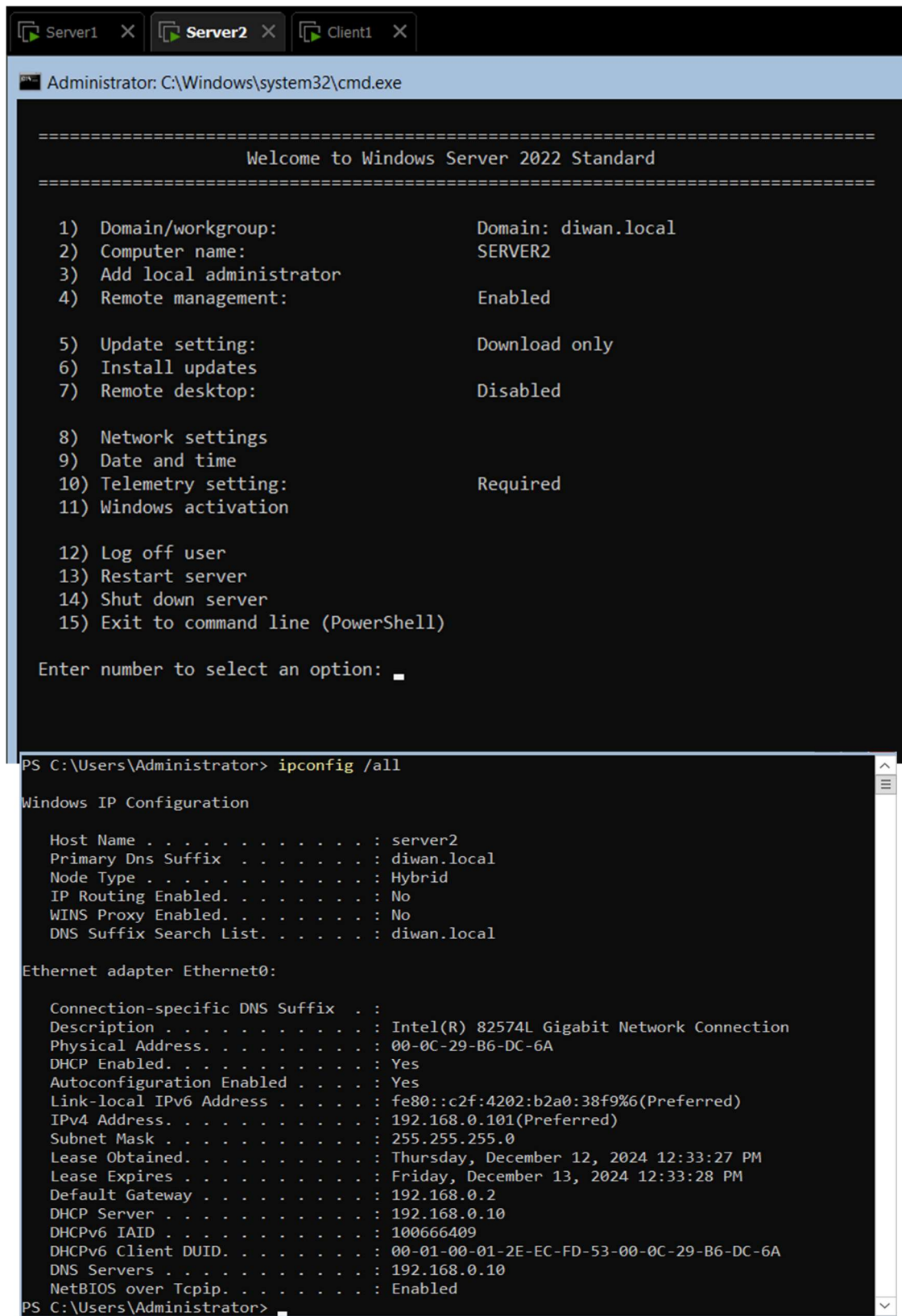
The screenshot shows a PowerShell console window titled 'Administrator: C:\Windows\system32\cmd.exe'. The window has tabs for 'Server1', 'Server2', and 'Client1'. The current session is on 'Server2'. The command prompt shows the following commands and output:

```
WARNING: To launch Server Configuration tool again, run "SConfig"
PS C:\Users\Server2> Get-NetAdapter | Set-NetIPInterface -DHCP Enabled
PS C:\Users\Server2> $credential = Get-Credential

cmdlet Get-Credential at command pipeline position 1
Supply values for the following parameters:
Credential
```

A 'Windows PowerShell credential request' dialog box is open, prompting for credentials. The dialog box has a title bar with a question mark and a close button. It contains a key icon and the text 'Enter your credentials.' Below this, there are two input fields: 'User name:' and 'Password:'. The 'User name:' field has a dropdown menu showing 'server1@diwan.local' and a small '...' button to its right. The 'Password:' field is a text box with dots representing the password. At the bottom of the dialog box are 'OK' and 'Cancel' buttons.

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```
Server1 x Server2 x Client1 x
Administrator: C:\Windows\system32\cmd.exe

=====
Welcome to Windows Server 2022 Standard
=====

1) Domain/workgroup: Domain: diwan.local
2) Computer name: SERVER2
3) Add local administrator
4) Remote management: Enabled
5) Update setting: Download only
6) Install updates
7) Remote desktop: Disabled
8) Network settings
9) Date and time
10) Telemetry setting: Required
11) Windows activation

12) Log off user
13) Restart server
14) Shut down server
15) Exit to command line (PowerShell)

Enter number to select an option:

PS C:\Users\Administrator> ipconfig /all

Windows IP Configuration

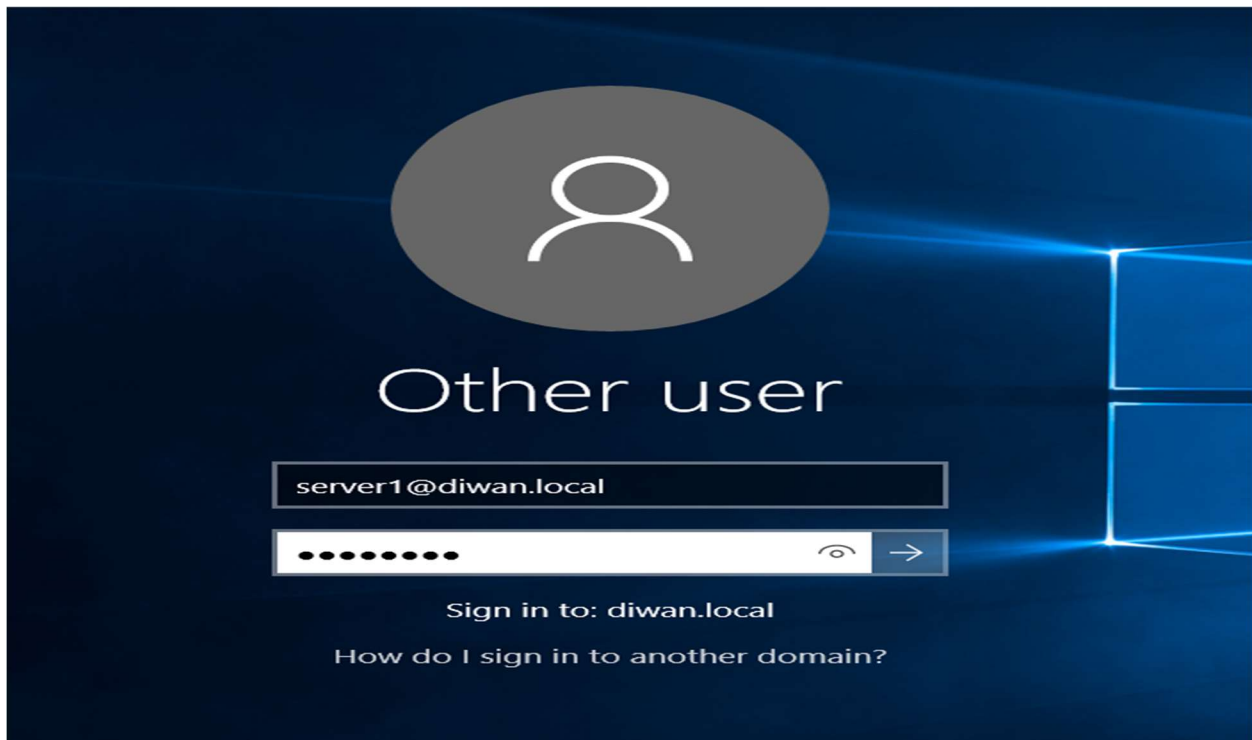
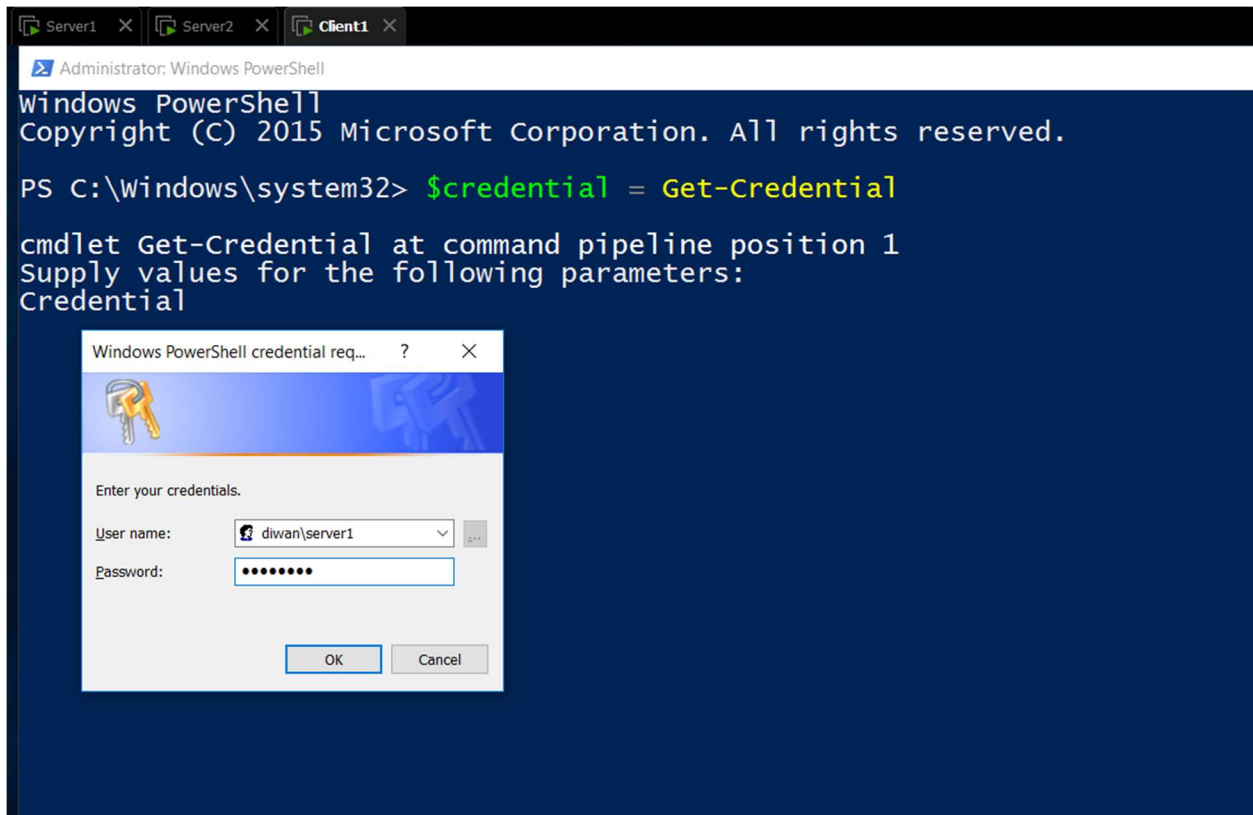
Host Name . . . . . : server2
Primary Dns Suffix . . . . . : diwan.local
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : diwan.local

Ethernet adapter Ethernet0:

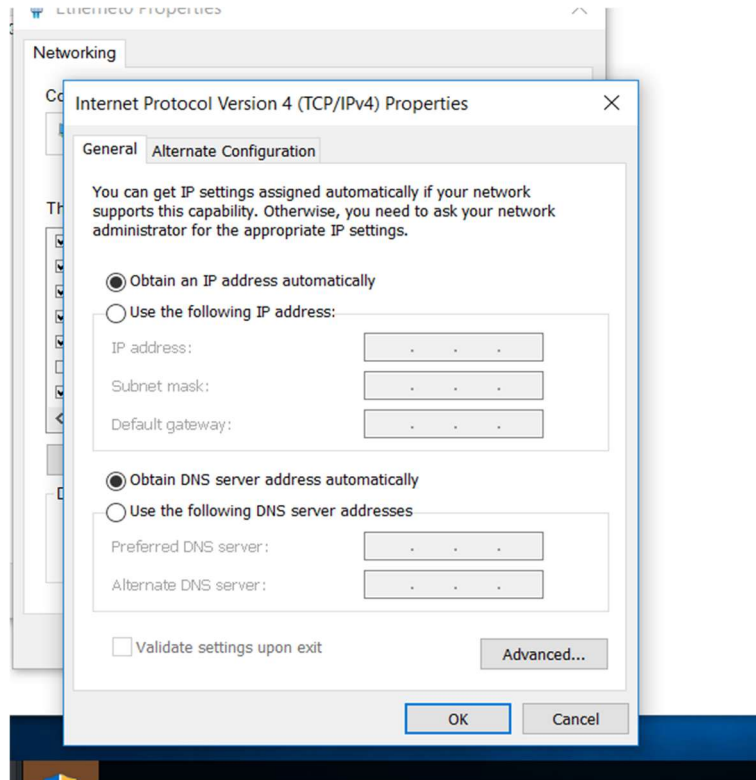
Connection-specific DNS Suffix . . :
Description . . . . . : Intel(R) 82574L Gigabit Network Connection
Physical Address. . . . . : 00-0C-29-B6-DC-6A
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::c2f:4202:b2a0:38f9%6(Preferred)
IPv4 Address. . . . . : 192.168.0.101(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Thursday, December 12, 2024 12:33:27 PM
Lease Expires . . . . . : Friday, December 13, 2024 12:33:28 PM
Default Gateway . . . . . : 192.168.0.2
DHCP Server . . . . . : 192.168.0.10
DHCPv6 IAID . . . . . : 100666409
DHCPv6 Client DUID. . . . . : 00-01-00-01-2E-EC-FD-53-00-0C-29-B6-DC-6A
DNS Servers . . . . . : 192.168.0.10
NetBIOS over Tcpip. . . . . : Enabled

PS C:\Users\Administrator>
```

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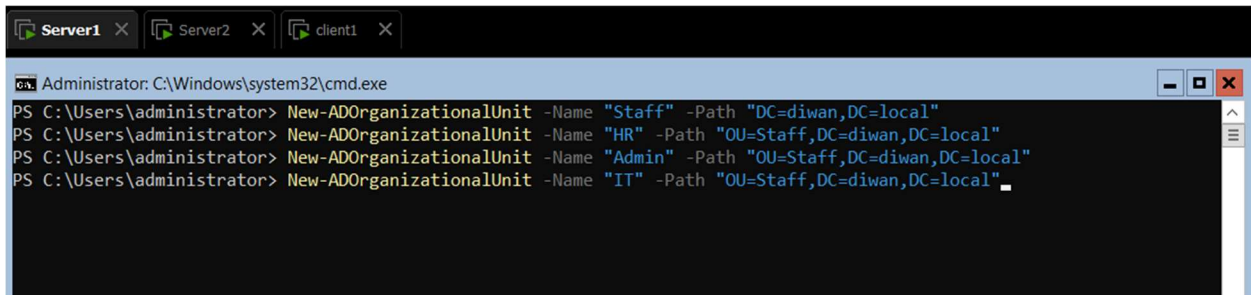
4. Organizational Units: (20 points)

- Create a **Staff OU**.
- Inside the Staff OU, create the following nested OUs:
 - **HR**
 - **Admin**
 - **IT**
- Create **six domain users** using csv and distribute them into the respective nested OUs.
- Install **RSAT** Tools on Windows 10/11 and access the OU Structure.

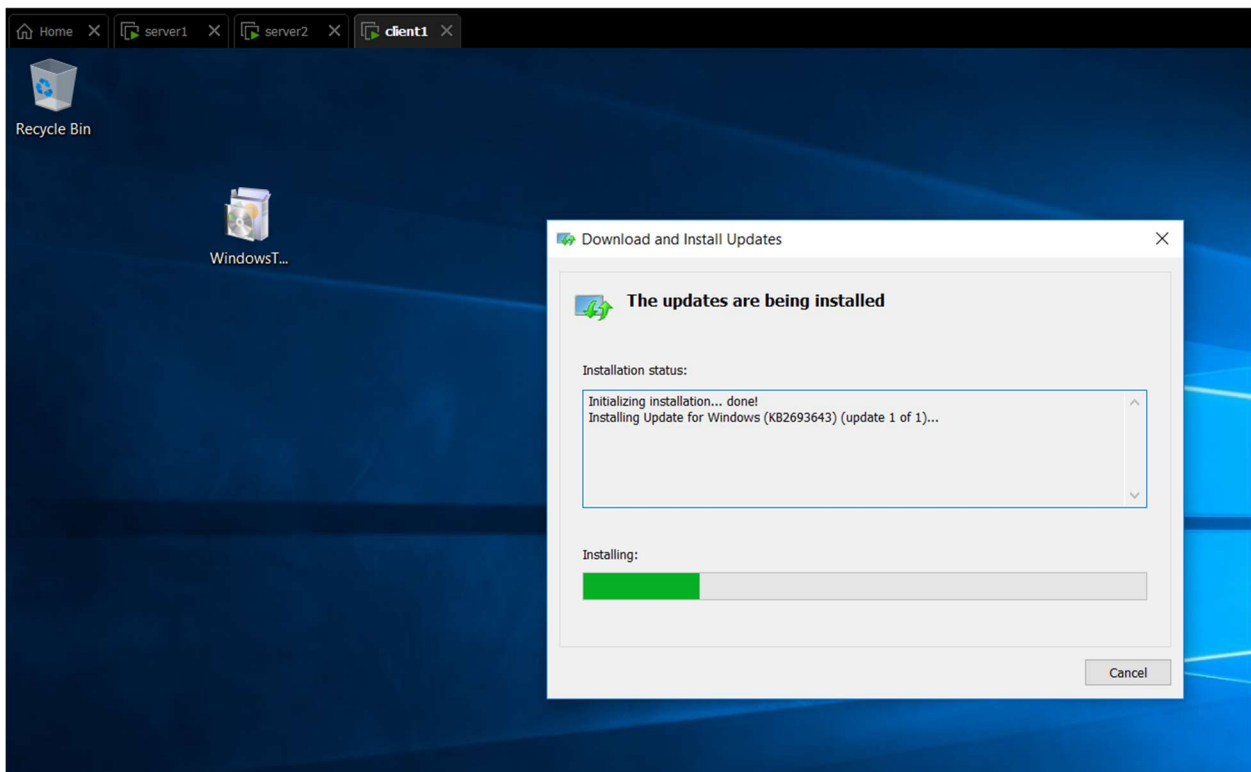
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Paste screenshot of creating a parent Organizational Unit (OU) and a nested OU.

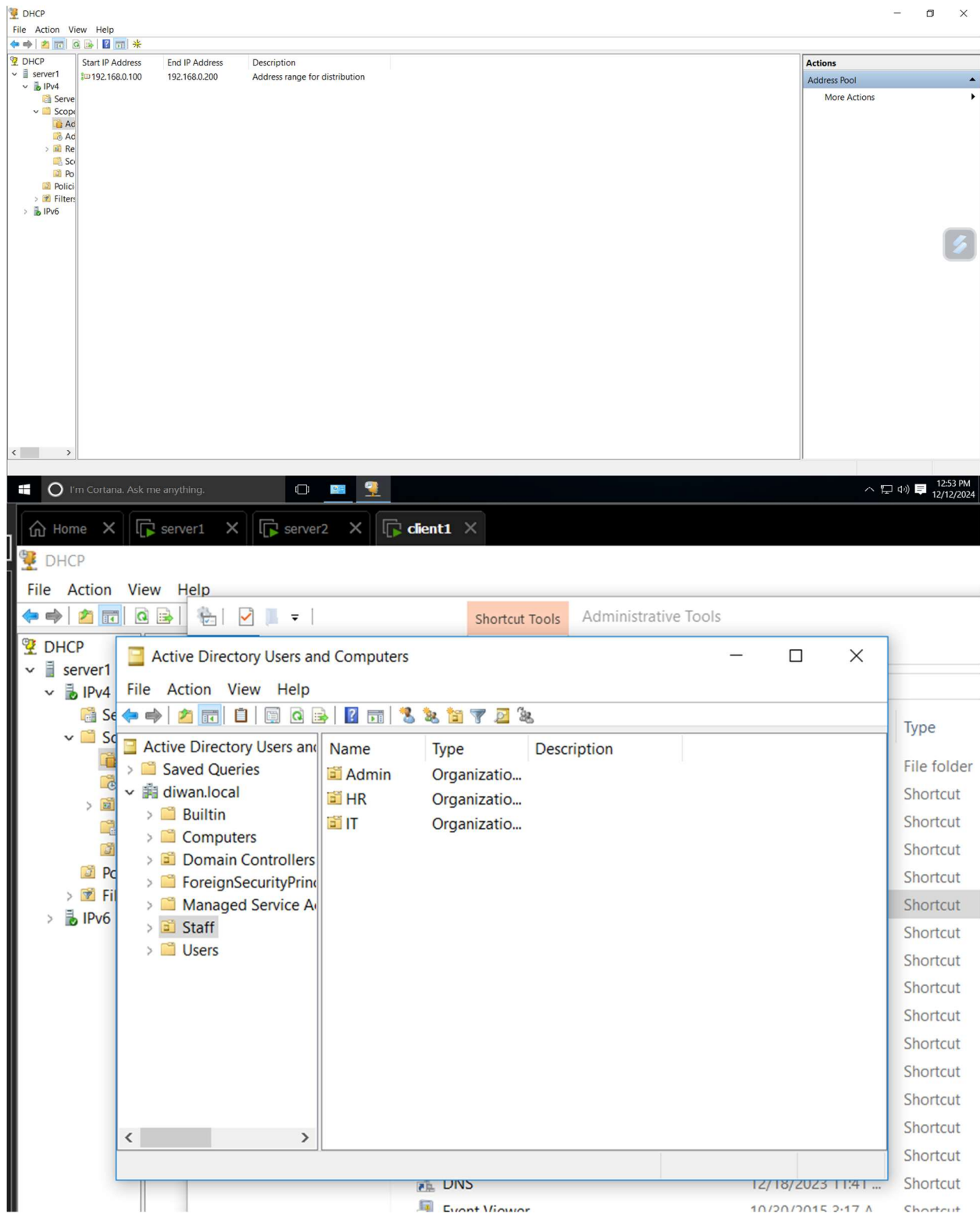
Provide screenshot showing the script running and successfully creating six users along with the screenshot of the script and the csv file. Provide screenshot of installing RSAT tools on Windows 10 using PowerShell



```
Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\administrator> New-ADOrganizationalUnit -Name "Staff" -Path "DC=diwan,DC=local"
PS C:\Users\administrator> New-ADOrganizationalUnit -Name "HR" -Path "OU=Staff,DC=diwan,DC=local"
PS C:\Users\administrator> New-ADOrganizationalUnit -Name "Admin" -Path "OU=Staff,DC=diwan,DC=local"
PS C:\Users\administrator> New-ADOrganizationalUnit -Name "IT" -Path "OU=Staff,DC=diwan,DC=local"
```



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User.csv - Notepad

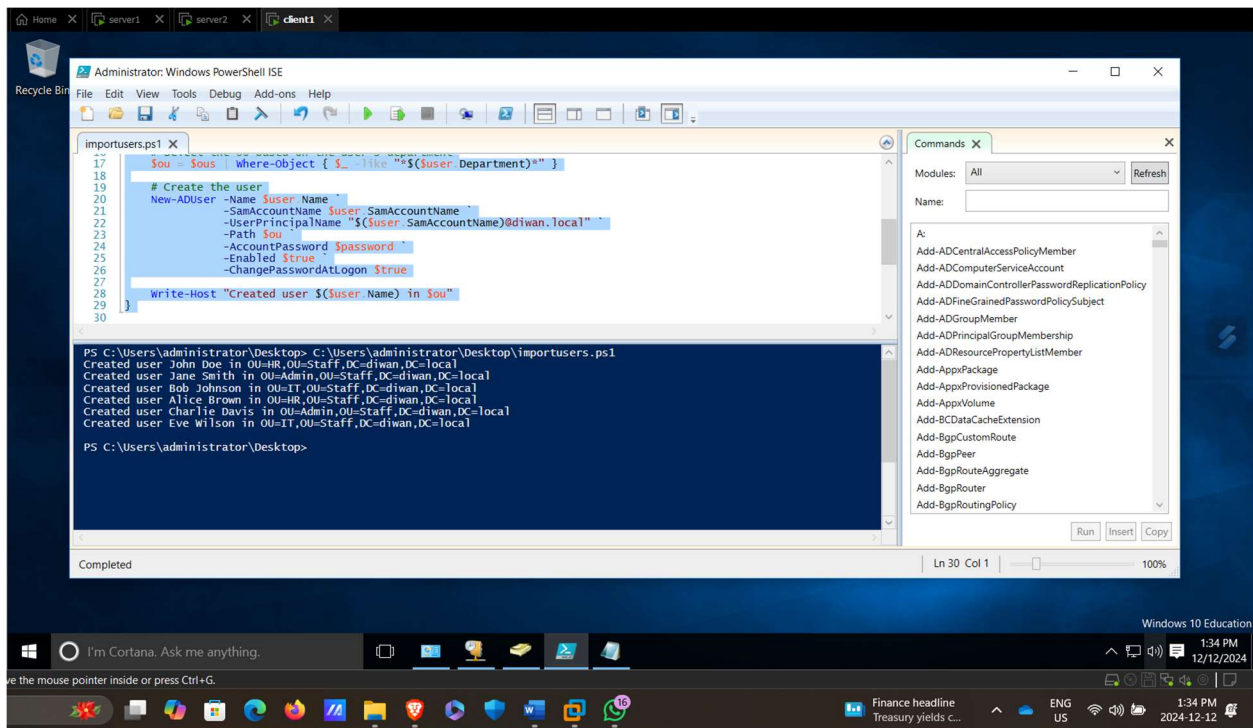
File Edit Format View Help

```
Name,SamAccountName,Department,Password
John Doe,jdoe,HR,P@ssw0rd1
Jane Smith,jsmith,Admin,P@ssw0rd2
Bob Johnson,bjohnson,IT,P@ssw0rd3
Alice Brown,abrown,HR,P@ssw0rd4
Charlie Davis,cdavis,Admin,P@ssw0rd5
Eve Wilson,ewilson,IT,P@ssw0rd6
```

importusers.ps1* X

```
1 # Import the CSV file
2 $users = Import-Csv "C:\Users\administrator\Desktop\User.csv"
3
4 # Define the OUs
5 $ous = @(
6     "OU=HR,OU=Staff,DC=diwan,DC=local",
7     "OU=Admin,OU=Staff,DC=diwan,DC=local",
8     "OU=IT,OU=Staff,DC=diwan,DC=local"
9 )
10
11 # Loop through each user in the CSV
12 foreach ($user in $users) {
13     # Convert the password to a secure string
14     $password = ConvertTo-SecureString $user.Password -AsPlainText -Force
15
16     # Select the OU based on the user's department
17     $ou = $ous | Where-Object { $_ -like "*${$user.Department}*" }
18
19     # Create the user
20     New-ADUser -Name $user.Name `
21         -SamAccountName $user.SamAccountName `
22         -UserPrincipalName "${$user.SamAccountName}@diwan.local" `
23         -Path $ou `
24         -AccountPassword $password `
25         -Enabled $true `
26         -ChangePasswordAtLogon $true
27
28     Write-Host "Created user ${$user.Name} in $ou"
29 }
30
```

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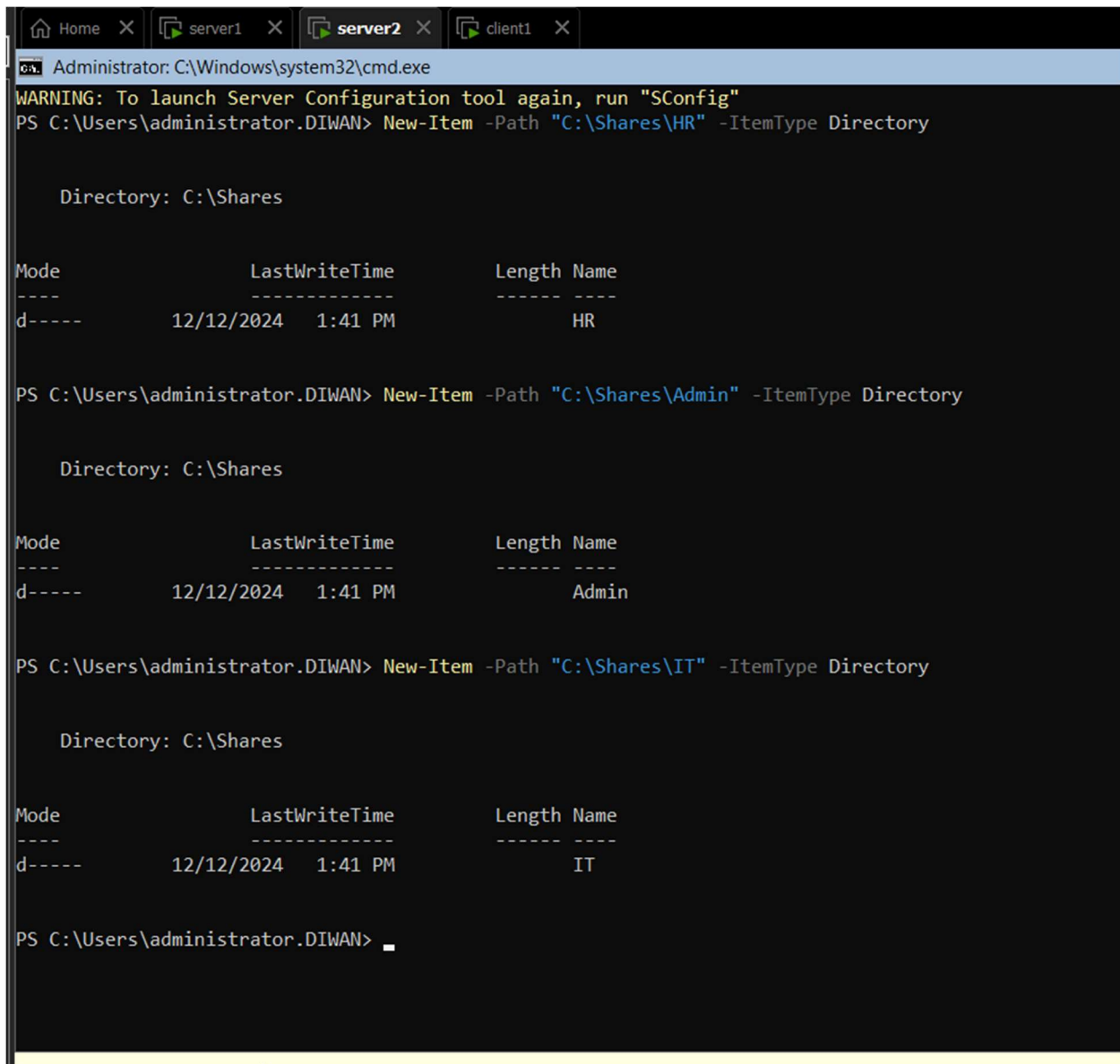


5. File Sharing Setup: (20 Points)

- Set up file sharing on **Server2**.
- Create folders for **HR**, **Admin**, and **IT** to mirror the OU structure.
- **Create User Groups:**
 - Establish groups: **HR_group**, **Admin_group**, and **IT_group**.
 - Randomly assign users to these groups.
- Set Access Permissions:
- Ensure each group has access only to their respective folder:
 - **HR_group** → HR share
 - **Admin_group** → Admin share
 - **IT_group** → IT share

Provide screenshots of creating folders and groups, assigning users to groups, creating shared resources, and assigning permissions using PowerShell below.

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Administrator: C:\Windows\system32\cmd.exe

WARNING: To launch Server Configuration tool again, run "SConfig"

PS C:\Users\administrator.DIWAN> New-Item -Path "C:\Shares\HR" -ItemType Directory

Directory: C:\Shares

Mode	LastWriteTime	Length	Name
d----	12/12/2024 1:41 PM		HR

PS C:\Users\administrator.DIWAN> New-Item -Path "C:\Shares\Admin" -ItemType Directory

Directory: C:\Shares

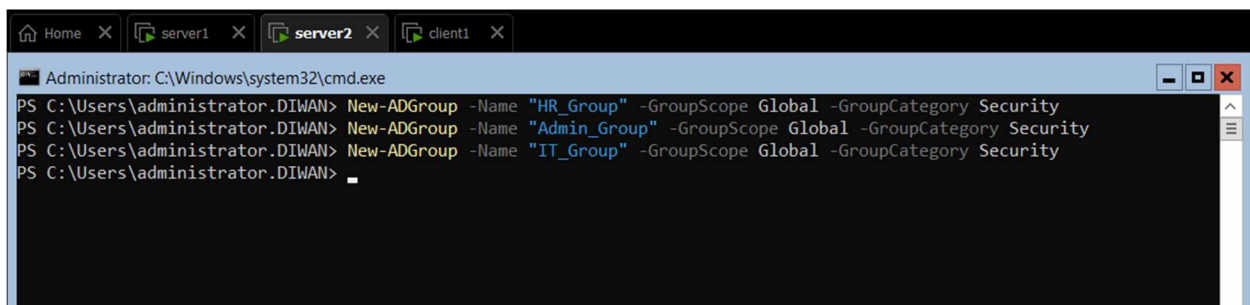
Mode	LastWriteTime	Length	Name
d----	12/12/2024 1:41 PM		Admin

PS C:\Users\administrator.DIWAN> New-Item -Path "C:\Shares\IT" -ItemType Directory

Directory: C:\Shares

Mode	LastWriteTime	Length	Name
d----	12/12/2024 1:41 PM		IT

PS C:\Users\administrator.DIWAN> █



Administrator: C:\Windows\system32\cmd.exe

PS C:\Users\administrator.DIWAN> New-ADGroup -Name "HR_Group" -GroupScope Global -GroupCategory Security

PS C:\Users\administrator.DIWAN> New-ADGroup -Name "Admin_Group" -GroupScope Global -GroupCategory Security

PS C:\Users\administrator.DIWAN> New-ADGroup -Name "IT_Group" -GroupScope Global -GroupCategory Security

PS C:\Users\administrator.DIWAN> █

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```
Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\administrator.DIWAN> # Add HR users to HR_Group
PS C:\Users\administrator.DIWAN> Get-ADUser -Filter * -SearchBase "OU=HR,OU=Staff,DC=diwan,DC=local" | ForEach-Object {
>>     Add-ADGroupMember -Identity "HR_Group" -Members $_
>> }
PS C:\Users\administrator.DIWAN>
```

```
Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\administrator.DIWAN> # Add HR users to HR_Group
PS C:\Users\administrator.DIWAN> Get-ADUser -Filter * -SearchBase "OU=HR,OU=Staff,DC=diwan,DC=local" | ForEach-Object {
>>     Add-ADGroupMember -Identity "HR_Group" -Members $_
>> }
PS C:\Users\administrator.DIWAN> # Add IT users to IT_Group
PS C:\Users\administrator.DIWAN> Get-ADUser -Filter * -SearchBase "OU=IT,OU=Staff,DC=diwan,DC=local" | ForEach-Object {
>>     Add-ADGroupMember -Identity "IT_Group" -Members $_
>> }
PS C:\Users\administrator.DIWAN>
```

```
Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\administrator.DIWAN> # Add Admin users to Admin_Group
PS C:\Users\administrator.DIWAN> Get-ADUser -Filter * -SearchBase "OU=Admin,OU=Staff,DC=diwan,DC=local" | ForEach-Object {
{
>>     Add-ADGroupMember -Identity "Admin_Group" -Members $_
>> }
PS C:\Users\administrator.DIWAN>
```

```
Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\administrator.DIWAN> # Create and share the HR folder
PS C:\Users\administrator.DIWAN> New-SmbShare -Name "HR" -Path "C:\Shares\HR" -FullAccess "HR_Group"

Name ScopeName Path Description
-----
HR * C:\Shares\HR

PS C:\Users\administrator.DIWAN> Grant-SmbShareAccess -Name "HR" -AccountName "HR_Group" -AccessRight Full -Force

Name ScopeName AccountName AccessControlType AccessRight
-----
HR * DIWAN\HR_Group Allow Full

PS C:\Users\administrator.DIWAN>
```

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```
Administrator: C:\Windows\system32\cmd.exe
HR * DIWAN\HR_Group Allow Full

PS C:\Users\administrator.DIWAN> New-SmbShare -Name "Admin" -Path "C:\Shares\Admin" -FullAccess "Admin_Group"

Name ScopeName Path Description
-----
Admin * C:\Shares\Admin

PS C:\Users\administrator.DIWAN> Grant-SmbShareAccess -Name "Admin" -AccountName "Admin_Group" -AccessRight Full -Force

Name ScopeName AccountName AccessControlType AccessRight
-----
Admin * DIWAN\Admin_Group Allow Full

PS C:\Users\administrator.DIWAN>
```

```
Administrator: C:\Windows\system32\cmd.exe
PS C:\Users\administrator.DIWAN> New-SmbShare -Name "IT" -Path "C:\Shares\IT" -FullAccess "IT_Group"

Name ScopeName Path Description
-----
IT * C:\Shares\IT

PS C:\Users\administrator.DIWAN> Grant-SmbShareAccess -Name "IT" -AccountName "IT_Group" -AccessRight Full -Force

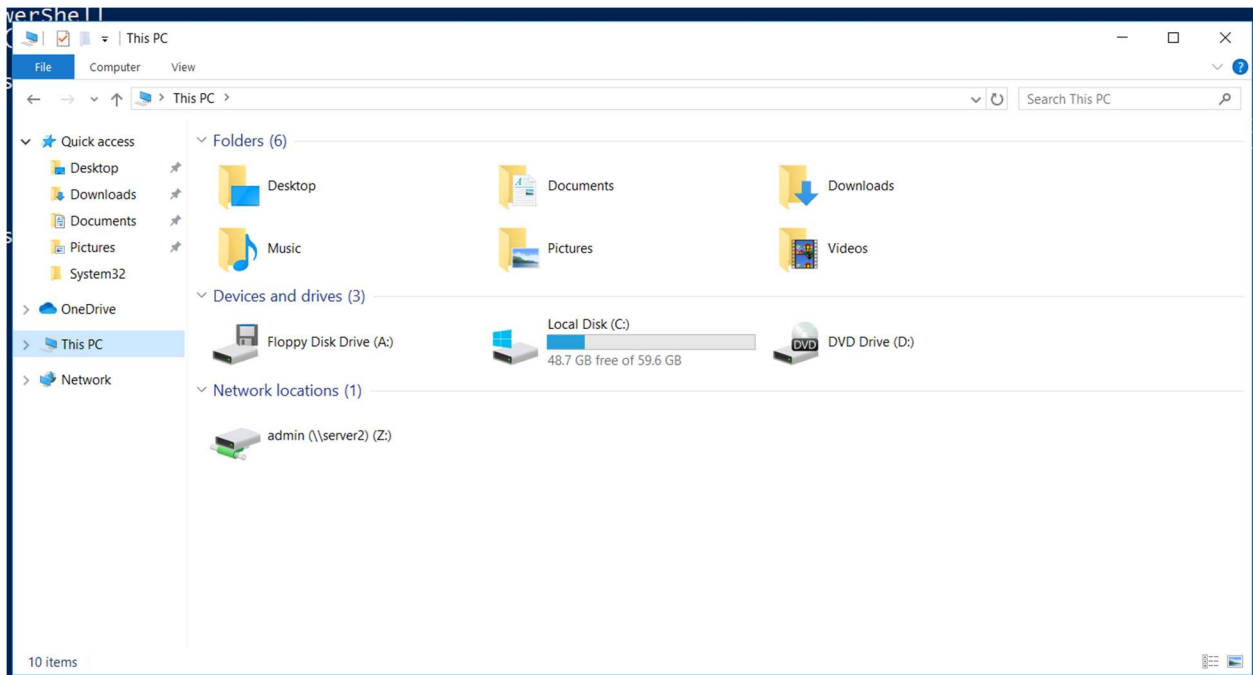
Name ScopeName AccountName AccessControlType AccessRight
-----
IT * DIWAN\IT_Group Allow Full

PS C:\Users\administrator.DIWAN>
```

```
Administrator: C:\Windows\system32\cmd.exe

Name ScopeName AccountName AccessControlType AccessRight
-----
Admin * DIWAN\Admin_Group Allow Full
HR * DIWAN\HR_Group Allow Full
IT * DIWAN\IT_Group Allow Full
C$ * BUILTIN\Administrators Allow Full
C$ * BUILTIN\Backup Operators Allow Full
C$ * NT AUTHORITY\INTERACTIVE Allow Full
ADMIN$ * BUILTIN\Administrators Allow Full
ADMIN$ * BUILTIN\Backup Operators Allow Full
ADMIN$ * NT AUTHORITY\INTERACTIVE Allow Full
IPC$ * BUILTIN\Administrators Allow Full
IPC$ * BUILTIN\Backup Operators Allow Full
IPC$ * NT AUTHORITY\INTERACTIVE Allow Full
```


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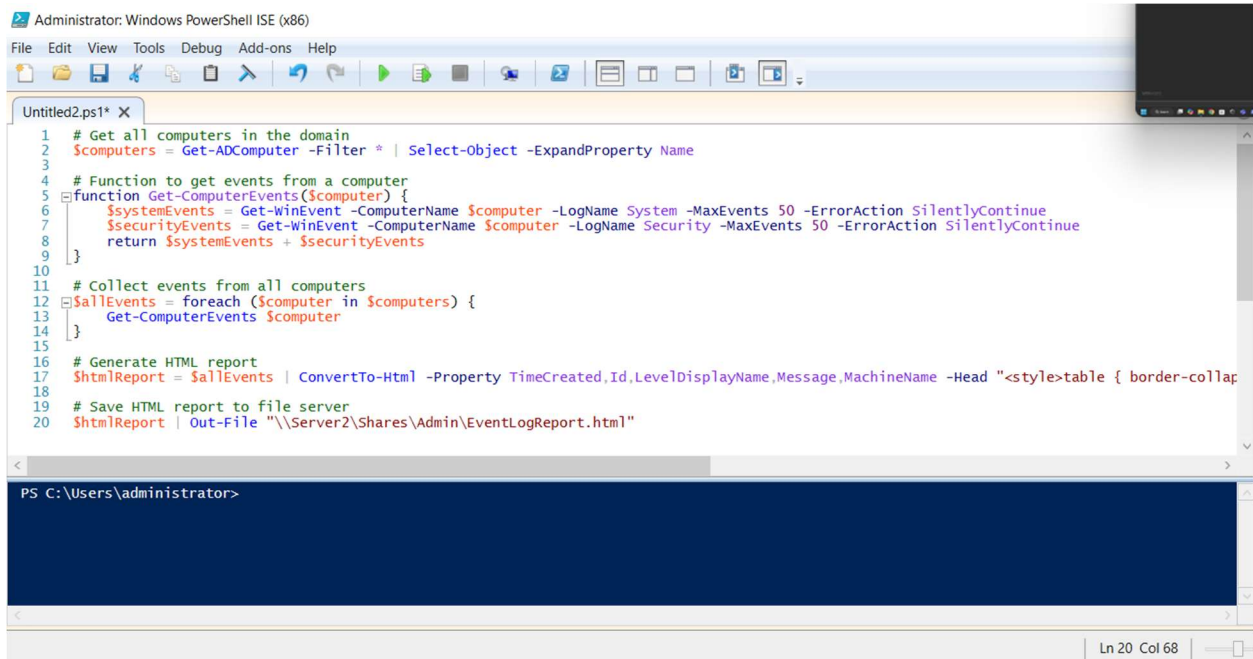


6. Event Log Monitoring Script: (20 points)

- Develop a PowerShell script on your Windows 10/11 client that:
 - Connects to all servers and clients in the domain.
 - Retrieves the latest **50 system and security events** from the event logs.
 - Publishes these events to an **HTML file** on the file server.
 - Schedule this script to run **once a day** using **Task Scheduler**.

Provide a screenshot of the script that retrieves the event logs, generates an HTML file, and copies the HTML file to the shared location. Additionally, include a screenshot of the process to create a Task Scheduler entry using PowerShell, and demonstrate the task's execution.

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Administrator: Windows PowerShell ISE (x86)

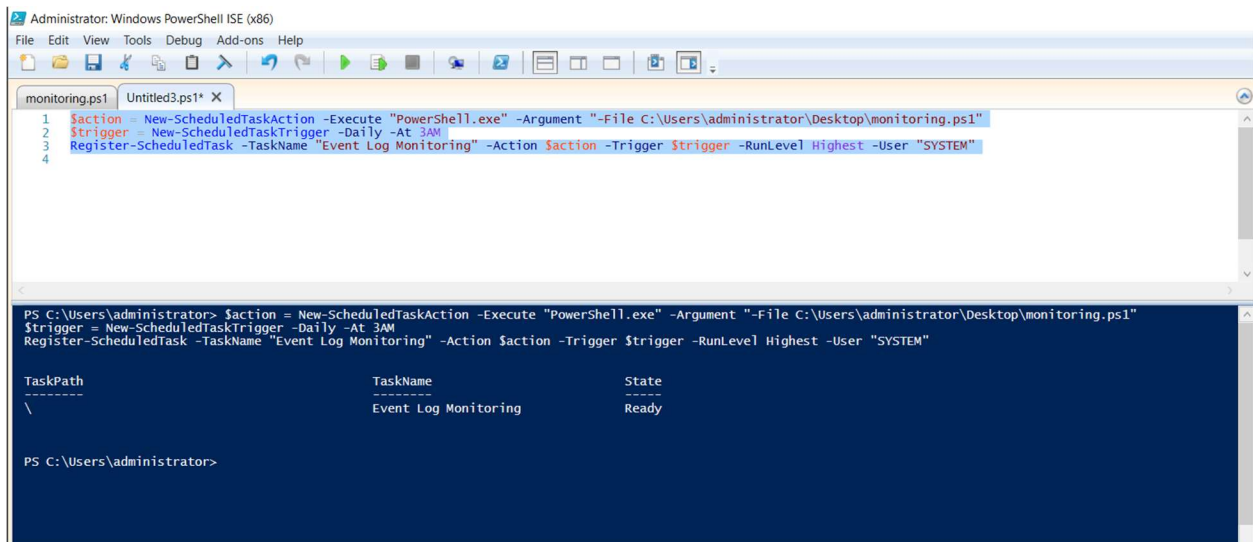
```
File Edit View Tools Debug Add-ons Help
```

Untitled2.ps1* X

```
1 # Get all computers in the domain
2 $computers = Get-ADComputer -Filter * | Select-Object -ExpandProperty Name
3
4 # Function to get events from a computer
5 function Get-ComputerEvents($computer) {
6     $systemEvents = Get-WinEvent -ComputerName $computer -LogName System -MaxEvents 50 -ErrorAction SilentlyContinue
7     $securityEvents = Get-WinEvent -ComputerName $computer -LogName Security -MaxEvents 50 -ErrorAction SilentlyContinue
8     return $systemEvents + $securityEvents
9 }
10
11 # Collect events from all computers
12 $allEvents = foreach ($computer in $computers) {
13     Get-ComputerEvents $computer
14 }
15
16 # Generate HTML report
17 $htmlReport = $allEvents | ConvertTo-Html -Property TimeCreated,Id,LevelDisplayName,Message,MachineName -Head "<style>table { border-collapse: collapse; width: 100%; font-family: sans-serif; font-size: 10pt; color: black; }</style>"
18
19 # Save HTML report to file server
20 $htmlReport | Out-File "\\Server2\Shares\Admin\EventLogReport.html"
```

PS C:\Users\administrator>

Ln 20 Col 68



Administrator: Windows PowerShell ISE (x86)

```
File Edit View Tools Debug Add-ons Help
```

monitoring.ps1 Untitled3.ps1* X

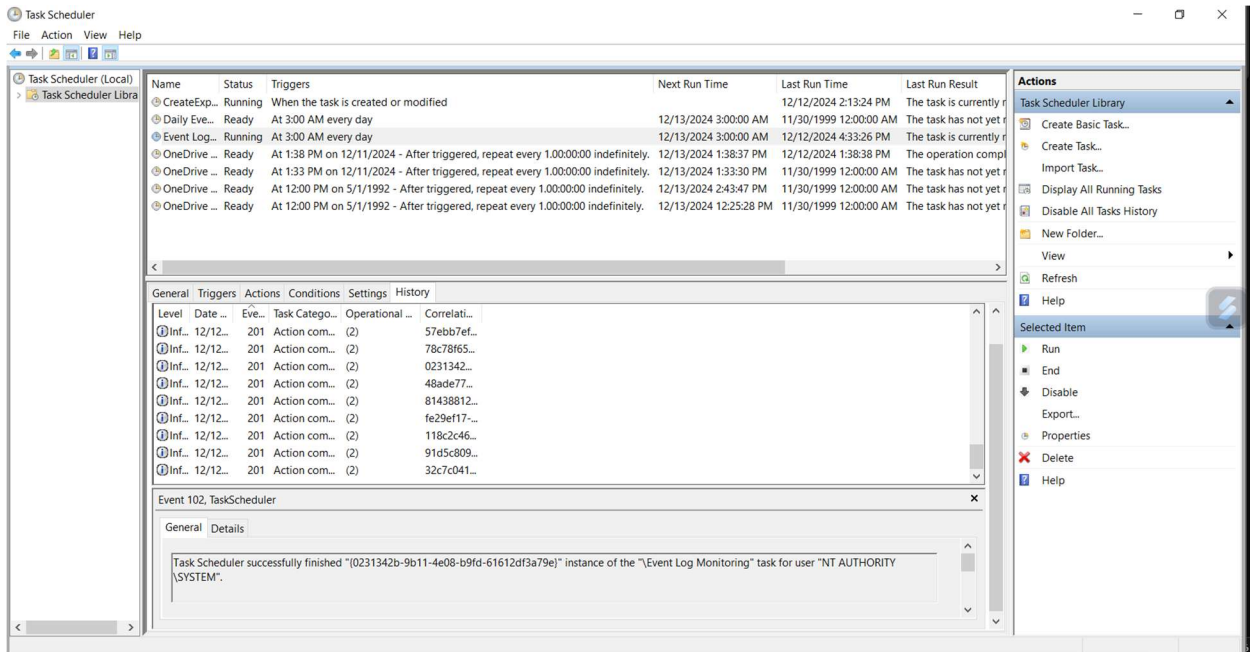
```
1 $action = New-ScheduledTaskAction -Execute "PowerShell.exe" -Argument "-File C:\Users\administrator\Desktop\monitoring.ps1"
2 $trigger = New-ScheduledTaskTrigger -Daily -At 3AM
3 Register-ScheduledTask -TaskName "Event Log Monitoring" -Action $action -Trigger $trigger -RunLevel Highest -User "SYSTEM"
4
```

PS C:\Users\administrator> \$action = New-ScheduledTaskAction -Execute "PowerShell.exe" -Argument "-File C:\Users\administrator\Desktop\monitoring.ps1"
\$trigger = New-ScheduledTaskTrigger -Daily -At 3AM
Register-ScheduledTask -TaskName "Event Log Monitoring" -Action \$action -Trigger \$trigger -RunLevel Highest -User "SYSTEM"

TaskPath	TaskName	State
\	Event Log Monitoring	Ready

PS C:\Users\administrator>

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7. Active Directory Management: (15 points)

- Create a PowerShell script that prompts the user to select from the following **Active Directory** tasks:
 - Reset a user password
 - Disable a user account
 - Enable a user account
 - Unlock a user account
 - Delete a user account
- The script should then prompt for the username and perform the selected task accordingly. The script should be run from Client1.

Paste screenshot showing the script running, prompting for inputs, and performing tasks as expected. Ensure the changes made are demonstrated clearly in the process.

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```
1 function Reset-UserPassword($username) {
2     $newPassword = Read-Host "Enter new password" -AsSecureString
3     Set-ADAccountPassword -Identity $username -NewPassword $newPassword -Reset
4     Write-Host "Password reset for $username"
5 }
6
7 function Disable-UserAccount($username) {
8     Disable-ADAccount -Identity $username
9     Write-Host "Account disabled for $username"
10 }
11
12 function Enable-UserAccount($username) {
13     Enable-ADAccount -Identity $username
14     Write-Host "Account enabled for $username"
15 }
16
17 function Unlock-UserAccount($username) {
18     Unlock-ADAccount -Identity $username
19     Write-Host "Account unlocked for $username"
20 }
21
22 function Delete-UserAccount($username) {
23     Remove-ADUser -Identity $username -Confirm:$false
24     Write-Host "Account deleted for $username"
25 }
26
27 # Main script
28 Write-Host "Select an action:"
29 Write-Host "1. Reset user password"
30 Write-Host "2. Disable user account"
31 Write-Host "3. Enable user account"
32 Write-Host "4. Unlock user account"
33 Write-Host "5. Delete user account"
34
35 $choice = Read-Host "Enter your choice (1-5)"
36 $username = Read-Host "Enter the username"
37
38 switch ($choice) {
39     1 { Reset-UserPassword $username }
40     2 { Disable-UserAccount $username }
41     3 { Enable-UserAccount $username }
42     4 { Unlock-UserAccount $username }
43     5 { Delete-UserAccount $username }
44     default { Write-Host "Invalid choice" }
45 }
46
```



```
114 Select an action:
115 1. Reset user password
116 2. Disable user account
117 3. Enable user account
118 4. Unlock user account
119 5. Delete user account
120 Enter your choice (1-5): 1
121 Enter the username: jdoe
122 Password reset for jdoe
123 PS C:\Users\administrator> |
```

