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# Description

This report documents and summarizes the actual work of weeks 10 and 11. Includes detailed instructions on how to install Powershell latest version, how to use Powershell, and scripting with Powershell. The results of the run are documented in the Results and Tests section. Follow the methodology and objective procedures to complete your findings in the Results and Testing section.

# Aims

The following are the main goals of this study, which summarize installing Powershell 7 and learning its basic and advanced commands:

1. Installation of Powershell latest version.
2. Powershell scripts (variables, Loops, etc)
3. Domain setup in Powershell
4. DSC in Windows 2019.

# Methodology

This section includes instructions for installing PowerShell 7, learning fundamental and advanced concepts and commands, and listing out the procedures needed to accomplish objectives:

1. On Windows, powershell is installed by default, but has been deprecated since version 5. The latest version available is 7, use the following command to indicate which version to view: $PSVersiontable to install powershell 7 A script is created and attached to this report. This script can install Nuget and then Powershell 7 from the gallery. More information in the instructor's notes [1].
2. I've looked into variables, and they can store any kind of object (integers, arrays, and strings) as a value. Its value is null by default. In powershell you can also include operating system services as variables. You can use loops such as For Loops, While Loops, ForEach, and Do While. Switch statements are available in Powershell. More information in the instructor's notes [2].
3. In the remote server configuration, I set up DC1.ps1 with a Windows 2019 desktop as a domain controller, set up Server1.ps1 with a Windows 2019 Core as a server, and similarly created a second domain controller. follow the instructor's instructions [3].
4. You have learned the desired state configuration and implemented a script based on DSC. After finally running the script, the command I used was Start-DscConfiguration -Path C:\PowerShell\DscConfiguration -Verbose -Wait -Force . follow the instructor's instructions [4].

# Results and Testing

In this section the results and testing done after Methodology steps are explained, there are exercises which are programmed and explained in this section of the report:

1. Step 1 of the process was followed to install Powershell 7, as well as Nuget installation and Powershell installation scripts. Refer a lecturer's notes [1].
2. The use of variables, loops like For, ForEach, while, Do/Until, switch statements, and If Else conditional statements was accomplished by applying step 2 of the technique. Consult the lecturer's notes at [2].
3. Following step 3 of the methodology, Windows 2019 desktop setup ran the DC1.ps1 script and considered a domain controller, and Windows 2019 core setup ran the Server1.ps1 script and considered a server. , a second DC was created using the setup DC2.ps1 script. The CreateUsers.ps1 script was run on the DC-1 computer to create a user script.
4. By following step 4 of methodology, it was managed to configure DSC(Desired State Configuration), it can be used to manage and persist server configurations. Refer Lecturer’s notes [4].

# Conclusions

It was determined in this report to install Powershell 7 on Windows by following Methodology step 1; Powershell 7 installation was referred from lecturer's notes [1]. Powershell basic and advanced commands were learned, and scripting concepts such as loops, variables, and conditional statements were taught. Remote configuration utilizing Powershell for DC1 and DC2 construction with server 1 was also demonstrated (Desired State Configuration).

Windows Users and script writers can utilize Powershell as a type of command-line shell and scripting environment to access the.NET Framework. By developing scripts and mixing various instructions, it was intended to define and automate arduous tasks. Powershell over CMD has the primary benefit of enabling administrators to remotely control networks. Powershell Remote is the main network connection management channel. Today, more GUI management consoles rely on remote, therefore Microsoft must make PowerHell more robust from a distance. Its base in a complete NET programming framework has made its scripts easier to develop and significantly boosted stability. By using script codes and command lines, users can construct functionality using Powershell's workflow. Once a specific task has been done by the written scripts, they can be archived for future use or coupled with other scripts to carry out more tasks.

There are some drawbacks to utilizing Powershell as well; for example, there may be some potential security issues when using Windows Powershell. As previously noted, IT managers frequently use it to connect remotely to other PCs and servers, which can lead to security problems. Another difficulty is that using remote capabilities in Windows Powershell needs the host having a Web server. This operation takes up extra space on a server. We would find this tool beneficial if we worked in IT or as an Active Directory network administrator. This is because cmdlets can call hundreds of custom instructions, enhancing your efficiency [6].

The original shell for the Microsoft DOS operating system was the Windows Command Prompt (also known as CMD). There are multiple prompts for each operating system. The command line application for Windows operating systems is cmd.exe, a 32-bit application. For example, you can use the diskpart.exe command to start managing your hard drives. Users can run various programs to manage their machines. A new Microsoft shell called Windows Powershell combines new scripts and cmdlets with the functionality of the older shell CMD. Windows management options are exposed through cmdlets, which are stand-alone programming objects. To save time, you can define complex jobs using reusable scripts. Users can also control their computers with some handy Powershell commands [7].

In addition to Linux shell, PowerShell also has other competitors. PowerShell and Linux shell commands share many similarities. The command-line interface provided by both shells allows users to interact with the operating system. Both shells offer users the possibility to automate operations using scripting. However, there are some major differences between the two shells in these key areas. The Microsoft PowerShell shell is proprietary, but the Linux shell is free source. While PowerShell is only available on Windows, the Linux shell is available on a wide range of devices. Additionally, compared to PowerShell, the Linux shell provides a much greater range of capabilities and commands.l [8].

As a result, we can say that the objectives of this study have been fully implemented and demonstrated for powershell commands, remote script generation, employing fundamental scripting functionalities in Powershell, and so on.

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# Appendices