

Placement Empowerment Program

Cloud Computing and DevOps Centre

Write the Shell Script to Monitor Logs : Create a script that monitors server logs for errors and alert you

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Introduction

Log files play a critical role in IT systems, as they record activities and events generated by applications, servers, and network devices. Monitoring these logs helps identify issues such as errors, warnings, and suspicious activities that may require immediate attention. Automating the monitoring process ensures efficiency and reduces the risk of missing critical information.

This PoC demonstrates the creation of a **PowerShell script** to monitor logs in real-time. The script will detect specific keywords (like "error") in a log file and alert the user when such events occur.

Overview

This project involves writing and running a PowerShell script that continuously scans a log file for specific keywords. The script:

1. Reads the log file in real time.
2. Matches new entries in the log against predefined keywords (e.g., "error").
3. Triggers an alert when a match is found.

This solution is lightweight and practical for system administrators and IT professionals to monitor logs on Windows systems.

Objective

The objective of this project is to:

1. Automate the process of monitoring log files for critical events.
2. Learn how to create and execute PowerShell scripts on a Windows system.
3. Demonstrate real-time detection of keywords like "error" in log files.
4. Enhance troubleshooting efficiency by providing immediate alerts for critical events.

Importance

1. Proactive Issue Detection

By monitoring logs in real time, this project helps detect errors and issues as they occur, reducing downtime and improving system reliability.

2. Learning Automation Tools

This project introduces PowerShell scripting, a powerful automation tool, to beginners. It provides hands-on experience with practical applications.

3. Cost-Effective Solution

Using PowerShell eliminates the need for expensive third-party monitoring tools while still achieving effective log monitoring.

4. Time Efficiency

Automation saves significant manual effort in scanning logs, allowing IT professionals to focus on resolving issues.

5. Scalability

The script can be adapted to monitor multiple log files or handle complex use cases, making it a foundational step toward advanced automation.

Step-by-Step Overview

Step 1:

Create a Folder called logs for Your Logs and Script



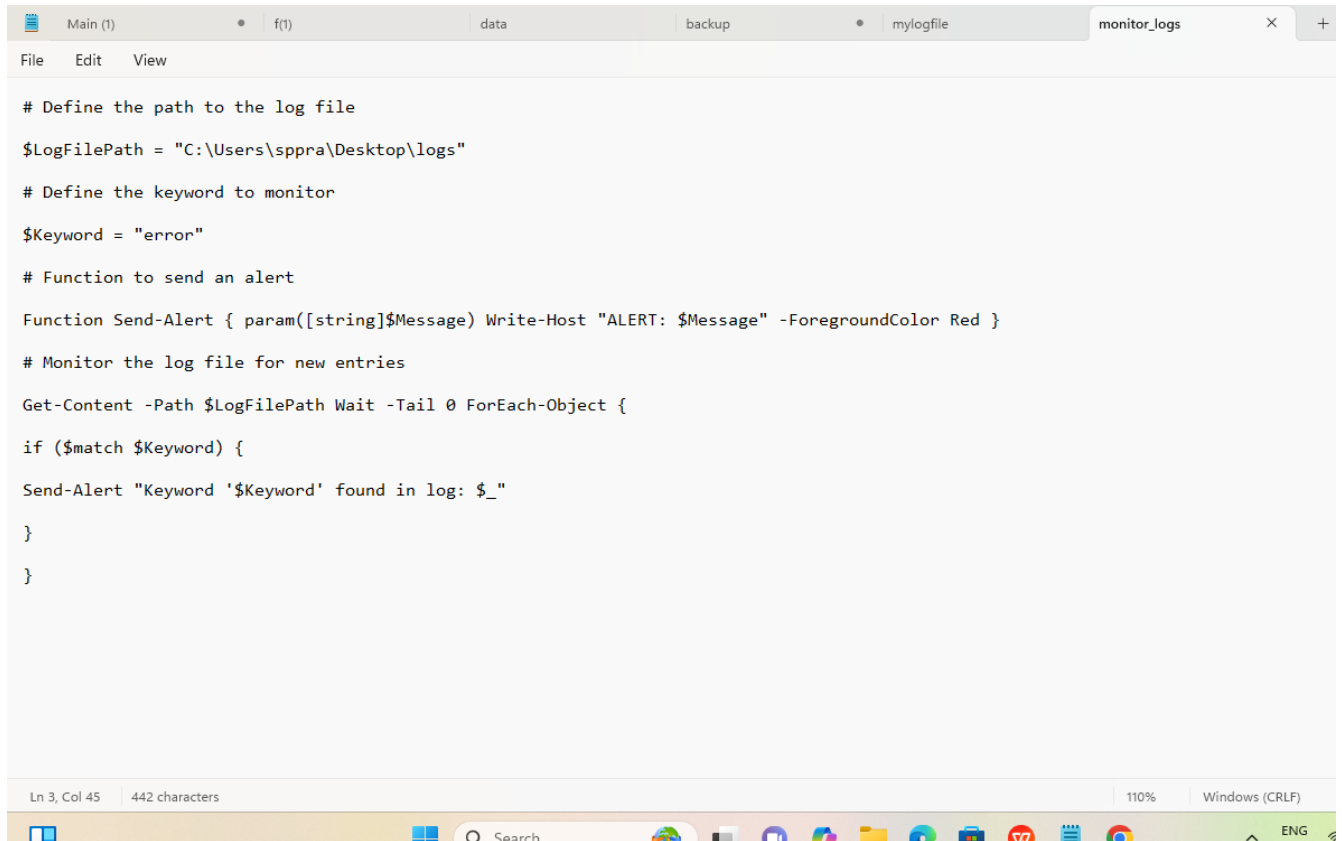
Step 2:

Open Notepad and Add the following sample text to it and Save the file as **mylogfile.log** inside the logs folder



Step 3:

Open Notepad and Type the following PowerShell script into it and Set the \$LogFilePath address to the mylogfile.log which you saved in logs folder. Save the file as monitor_logs.ps1 inside the same logs folder



```
# Define the path to the log file
$LogFilePath = "C:\Users\sppra\Desktop\logs"

# Define the keyword to monitor
$Keyword = "error"

# Function to send an alert
Function Send-Alert { param([string]$Message) Write-Host "ALERT: $Message" -ForegroundColor Red }

# Monitor the log file for new entries
Get-Content -Path $LogFilePath Wait -Tail 0 ForEach-Object {
if ($match $Keyword) {
Send-Alert "Keyword '$Keyword' found in log: $_"
}
}
```

The screenshot shows a Notepad window with the title bar "Main (1)". The menu bar includes "File", "Edit", and "View". The script content is as follows:

```
# Define the path to the log file
$LogFilePath = "C:\Users\sppra\Desktop\logs"

# Define the keyword to monitor
$Keyword = "error"

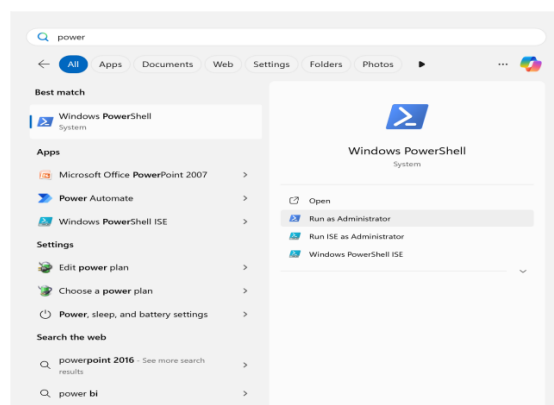
# Function to send an alert
Function Send-Alert { param([string]$Message) Write-Host "ALERT: $Message" -ForegroundColor Red }

# Monitor the log file for new entries
Get-Content -Path $LogFilePath Wait -Tail 0 ForEach-Object {
if ($match $Keyword) {
Send-Alert "Keyword '$Keyword' found in log: $_"
}
}
```

The status bar at the bottom indicates "Ln 3, Col 45", "442 characters", "110%", and "Windows (CRLF)". The Windows taskbar is visible at the bottom of the screen.

Step 4:

Click the Windows Key and Search for Windows PowerShell and click Run as Administrator.

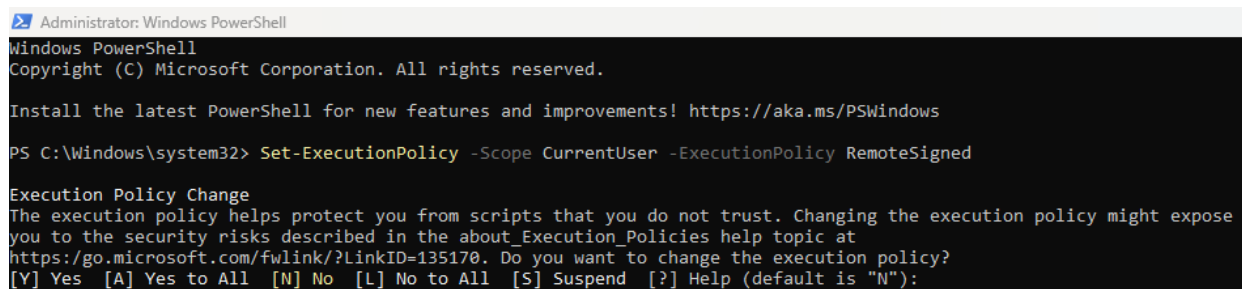


Step 5:

Run the following command to allow script execution:

Set-ExecutionPolicy -Scope CurrentUser -ExecutionPolicy RemoteSigned

When prompted, type Y and press Enter.



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

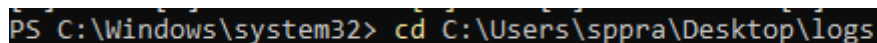
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Windows\system32> Set-ExecutionPolicy -Scope CurrentUser -ExecutionPolicy RemoteSigned

Execution Policy Change
The execution policy helps protect you from scripts that you do not trust. Changing the execution policy might expose
you to the security risks described in the about_Execution_Policies help topic at
https://go.microsoft.com/fwlink/?LinkID=135170. Do you want to change the execution policy?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"):
```

Step 6:

Navigate to the logs folder

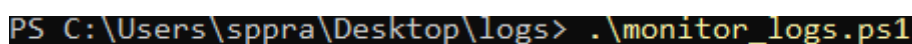


```
PS C:\Windows\system32> cd C:\Users\sppra\Desktop\logs
```

Step 7:

Run the script:

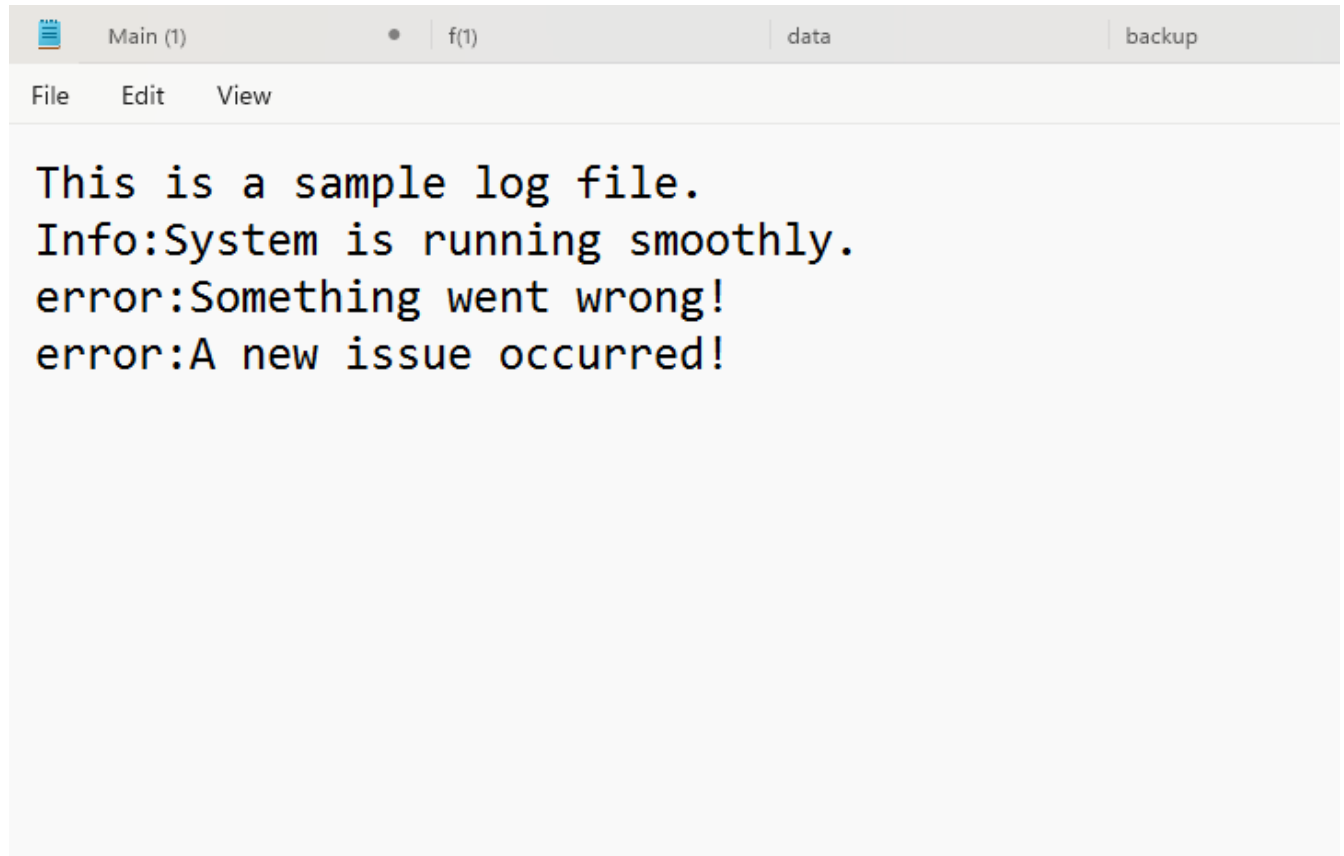
.\monitor_logs.ps1



```
PS C:\Users\sppra\Desktop\logs> .\monitor_logs.ps1
```

Step 8:

Open mylogfile.log in Notepad and Add a new line with the word "error" and Save the file.

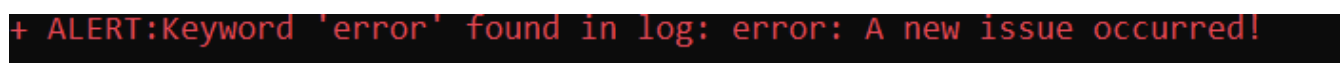
A screenshot of a Notepad application window. The title bar shows 'Main (1)' and 'f(1)'. The menu bar includes 'File', 'Edit', and 'View'. The text area contains the following log entries:

```
This is a sample log file.  
Info:System is running smoothly.  
error:Something went wrong!  
error:A new issue occurred!
```

Step 9:

Check PowerShell — you should see an alert like:

ALERT: Keyword 'error' found in log: error: A new issue occurred!

A screenshot of a PowerShell terminal window. The text is displayed in red on a black background. It shows the alert message:

```
+ ALERT:Keyword 'error' found in log: error: A new issue occurred!
```

Explanation:

1. When the script is running, it continuously monitors the log file.

2. If any line containing the keyword "error" is added to the file, it immediately triggers an alert in PowerShell.

Outcome:

By completing this Proof of Concept (PoC), we will:

1. Successfully create and execute a PowerShell script to monitor log files in real time.
2. Detect and alert on predefined keywords (e.g., "error") to highlight critical events.
3. Gain hands-on experience with PowerShell scripting and automation on a Windows system.
4. Understand the importance of log monitoring in proactive system maintenance and troubleshooting.
5. Learn to customize and scale the script for more advanced monitoring scenarios in future projects.