Software Design for Log Monitoring System

# 1. Introduction

This project is designed to implement an automated log monitoring system using a PowerShell script. The system is intended to scan system logs, filter critical errors, and send email alerts for necessary actions. The main objective is to automate the monitoring process and ensure that critical system issues are promptly addressed.

# 2. Software Design Principles Applied

## Abstraction

Abstraction was applied by defining high-level functionalities that allow the user to interact with the system without needing to understand the underlying details. The script abstracts the complex log monitoring process.

## Encapsulation

The script groups related tasks into functions, such as log filtering and email notification. Each function handles a specific task, making it easier to maintain and extend.

## Modularity

The system was divided into independent, reusable modules. Each function, such as `FilterErrors()` or `SendAlert()`, performs a specific task, which increases maintainability and reusability of the code.

## Cohesion

Each module or function is highly cohesive, focusing on one specific task. For example, the `MonitorLogs()` function is dedicated only to monitoring the logs, and the `SendAlert()` function handles sending email notifications.

## Coupling

The modules are loosely coupled, interacting with each other through parameters and return values, reducing dependency between them and increasing flexibility.

# 3. Screenshots of Script Execution and Test Results

Below are screenshots showing the execution of the log monitoring script and the test results. Please add your screenshots here.

[Insert Screenshot of Script Execution Here]

[Insert Screenshot of Test Results Here]

# 4. Git Repository Link

The code for the log monitoring system is available at the following GitHub repository:  
[Insert your GitHub Repository Link here]

# 5. Conclusion

In this project, the automated log monitoring system was successfully implemented using PowerShell, following key software design principles. The system efficiently filters and monitors logs, sending alerts when critical errors are detected.

# 6. References

1. PowerShell documentation  
2. GitHub guide for beginners  
3. Software engineering principles (Author, Year)