

## Assignment Title: Linux Command Mastery and Scripting Project

### Objective:

To exhibit advanced skills in using common Linux commands and shell scripting, with a focus on real-world applications and performance optimization.

### Assignment Overview:

In this project, you are tasked with creating a series of shell scripts that automate common Linux system administration tasks. You will also analyze the performance of these scripts, identify any inefficiencies, and apply optimizations. The assignment requires a detailed report and a video presentation to demonstrate your understanding and thought process.

### Part 1: Script Development

#### Backup Script:

Develop a script to perform a backup of user-specified directories. Implement features like compression, logging of backup status, and error handling. The script should report on the size of backup files and any issues encountered.

#### System Health Check Script:

Write a script to check the health of the system. Include checks for disk space, memory usage, running services, and recent system updates. Output a health report with any recommendations for actions.

### Part 2: Documentation and Video Presentation

#### Documentation:

Provide a comprehensive report that includes:  
The purpose and functionality of each script.  
Insights from the performance analysis.  
Detailed descriptions of optimizations and their impact.  
The report should be technical yet understandable to someone with basic Linux knowledge.

#### Video Presentation:

Record a video (8 minutes) where you:  
Demonstrate the functionality of each script.  
Walk through the performance analysis process.  
The video should clearly display command line operations and include your commentary explaining each step.

#### Submission Guidelines:

Submit all scripts, the report, and a Youtube link for your recorded video.