

System Scripts

1. Purpose and Functionality

a. Backup Script

- i. The backup script is created to provide an interface for users to perform backups, check backup status, and check backup size for specific directories. The following functions are created:
 - 1. **run_backup()**: Starts the process of the backup, by creating a compressed tar of the directories selected.
 - 2. **check_backup_size()**: This shows the size of the last backed-up file.
 - 3. **check_backup_status()**: Displays the status log, showing the start and the completion time of each backup that occurred.

b. Health Check Script

- i. The health script gives the functionality of performing checks on the system in various aspects. The following functions are created:
 - 1. **check_disk_space()**: Displays the current disk space and saves the information to a health report file.
 - 2. **check_memory_usage()**: Shows the current memory usage and provides recommendations if there are any problems.
 - 3. **check_running_services()**: Lists all current services that are running and offers recommendations if there are a lot of services running at the same time.

- 4. **check_system_updates():** Checks all updates and provides recommendations if there is an update that has not been installed.
- 5. **print_recommendations():** If there are any recommendations available, it will print them on the Terminal for the user to view.

2. Performance Analysis

a. Backup Script

- i. **Logging:** The script logs each backup operation, providing a timeline of all backup activities.
- ii. **Error Handling:** The script handles errors during the backup process and prints the error for the user to view.
- iii. **User Interaction:** The interactive menu ensures user-friendly operation.

b. Health Check Script

- i. **User Interface:** The script provides an interactive menu, allowing users to select which function they would like to run.
- ii. **Recommendations:** The script offers any available recommendations based on system checks.

3. Optimizations and Impact

a. Backup Script

- i. **Log Redundancy:** The script has been optimized to remove redundant logging by merging messages from the log file and terminal.
- ii. **User Feedback:** Enhanced user experience by printing backup completion messages to both the terminal for the user to view and the log file.

b. Health Check Script

- i. **Interactive User Interface:** Created an interactive menu to guide users through health checks, and improve usability.
- ii. **Output Enhancement:** enhanced script output by giving each health check's recommendations clearly and simply.
- iii. **Compatibility Handling:** The script was improved to handle package managers that are not supported when it comes to system update checks.