Automated Backup Bash Script

# Overview

This Bash script automates the process of backing up a source directory to a specified destination directory. It performs backups at regular intervals, monitors the source directory for changes, and manages the number of stored backups.

# Usage

Syntax:

./backup.sh <src-dir> <backup-destination> <backup-interval> <max-backup-count>

Parameters:

- src-dir: Directory to back up  
- backup-destination: Directory where backups will be stored  
- backup-interval: Time interval (in seconds) between backups  
- max-backup-count: Maximum number of backups to retain

# Features

- Performs an initial backup and creates a snapshot of the directory state.

- At each interval, checks for changes in the directory structure using `ls -lR`.

- Backs up only when changes are detected, saving disk space.

- Maintains a limited number of backup versions by removing the oldest backups.

# Functions

## gettime()

Returns the current timestamp formatted as YYYY-MM-DD-HH-MM-SS.

## execute\_initial\_backup()

Performs the first backup and creates a snapshot file (`directory\_snapshot.prev`).

## backup\_on\_change()

Detects changes by comparing the current snapshot with the last one. If changes are found, a new backup is created; otherwise, the cycle is skipped.

## remove\_old\_backups()

Counts current backups and deletes the oldest ones if they exceed the maximum allowed.

# Error Handling

- Verifies that the correct number of arguments is provided.

- Checks for the existence of source and backup directories and creates the backup directory if missing.

# Suggestions for Improvement

- Log backup activities to a file for auditing.

- Add email notifications for failed backups.

- Add options for compressing backups.

- Include a configuration file for parameters.