CSE 411: Computer System Administration

Homework 3: Automating System Tasks with Bash [Halloween theme]

Total Points: 25
Group Size: Up to 3 students
Due Date: *10/29/2025*

Objective

Welcome, system wizards!
Your task is to conjure a **Bash script** that automates eerie **Ubuntu system administration rituals**. You'll combine logic, loops, and variables to breathe life into your very own *Admin Monster Script (name it: cse411_monster_script.sh)*.

To survive this challenge, you must:

- Brew at least **one `if` conditional** potion
- Enchant your code with **two or more variables**
- Cast at least **one `while` loop** spell **[we have learnt for loop in class, The syntax of while loop is as follows]**

  while [condition]

  do

  # commands to execute repeatedly

  done

Pick Your Spells (Choose 5 Tasks Minimum):

Select at least **five** system-admin incantations to automate:

1. **Haunted Disk Monitor**
   - Check if your disk is overflowing with ghostly files (e.g., >80% usage)
   - If so, raise a warning in your **tomb log file**
2. **Phantom User Detector**
   - Ask for a username
   - Use an `if` charm to reveal whether that user haunts your `/etc/passwd`
3. **Resource Resurrection Ritual**
   - Summon CPU, memory, and disk stats using `top`, `df`, or `free`
   - Present them as if from a crystal ball
4. **Cursed Backup Spell**
   - Back up a directory using `tar` or `rsync`

    - Name the archive with a timestamp — so you know *when the spirits last stirred*
5. **Ghost Ping Loop**
    - Continuously (via a `while` loop) ping a host like `google.com`
    - Stop the haunting once the ghost (host) disappears
6. **Log Exorcism**
    - Find and (optionally) banish `.log` files older than a given number of days
    - Warn before deleting—some spirits linger in old logs…

Script Requirements

Your script **must**:

1. Start with a proper shebang (`#!/bin/bash`)
2. Be executable (`chmod 755 cse411_admin_toolkit.sh`)
3. Contain:
    - At least one `if` statement
    - At least one `while` loop
    - At least two variables
4. Contain meaningful **comments** explaining each major step
5. Produce **clear, user-friendly output**

Screencast Requirement

Each group must record a **5-10 minute screencast** demonstrating:

- How the script works
- Example executions for at least two selected features
- Discussion of your code logic
- Mention of any AI tools (e.g., ChatGPT, Copilot) used to understand concepts
    - Clearly **cite** them at the end of your video

Submission Components

Upload a video file to the course system containing: Screencast video file or link

Hints

- Use commands like `df`, `grep`, `awk`, `ping`, `systemctl`, and `date` effectively.
- Test each part of your script separately before combining. **Everything needs to be in one script**
- Comment your logic to make it readable and maintainable.
- You may use AI tools to **understand concepts**, but not to write the full script. Always cite your sources.