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## Week 4 Homework Submission File: Linux Systems Administration

### Step 1: Ensure Permissions on Sensitive Files

1. Permissions on `/etc/shadow` should allow only `root` read and write access.

- Command to inspect permissions: ***ls -l /etc/shadow***

- Command to set permissions (if needed):

2. Permissions on `/etc/gshadow` should allow only `root` read and write access.

- Command to inspect permissions: ***ls -l /etc/gshadow***

- Command to set permissions (if needed):

***sudo chmod g-r gshadow***

3. Permissions on `/etc/group` should allow `root` read and write access, and allow everyone else read access only.

- Command to inspect permissions: ***ls -l /etc/group***

- Command to set permissions (if needed):

4. Permissions on `/etc/passwd` should allow `root` read and write access, and allow everyone else read access only.

- Command to inspect permissions: ***ls -l /etc/passwd***

- Command to set permissions (if needed):

### Step 2: Create User Accounts

1. Add user accounts for `sam`, `joe`, `amy`, `sara`, and `admin`.

- Command to add each user account (include all five users):

***sudo adduser sam,***

***sudo adduser joe***

***sudo adduser amy***

***sudo adduser sara***

***sudo adduser admin***

2. Force users to create 16-character passwords incorporating numbers and symbols.

- Command to edit `pwquality.conf` file:

***sudo nano /etc/security/pwquality.conf***

- Updates to configuration file:

***minlen = 16***

***minclass = 4***

3. Force passwords to expire every 90 days.

- Command to to set each new user's password to expire in 90 days (include all five users):

***sudo chage  -m 90 billy***

***sudo chage  -m 90 joe***

***sudo chage  -m 90 amy***

***sudo chage  -m 90 sara***

***sudo chage  -m 90 admin***

4. Ensure that only the `admin` has general sudo access.

- Command to add `admin` to the `sudo` group:

***sudo usermod -aG sudo admin***

### Step 3: Create User Group and Collaborative Folder

1. Add an `engineers` group to the system.

- Command to add group: ***sudo addgroup engineers***

2. Add users `sam`, `joe`, `amy`, and `sara` to the managed group.

- Command to add users to `engineers` group (include all four users):

***sudo usermod -G engineers sam***

***sudo usermod -G engineers joe***

***sudo usermod -G engineers amy***

***sudo usermod -G engineers sara***

3. Create a shared folder for this group at `/home/engineers`.

- Command to create the shared folder: ***mkdir engineer***

4. Change ownership on the new engineers' shared folder to the `engineers` group.

- Command to change ownership of engineer's shared folder to engineer group: ***sudo chgrp engineer engineers***/

5. Add the SGID bit and the sticky bit to allow collaboration between engineers in this directory.

- Command to set SGID and sticky bit to shared folder:

***Sudo chmod g+s engineers***

### Step 4: Lynis Auditing

1. Command to install Lynis: ***sudo apt -y install Lynis***

2. Command to see documentation and instructions: ***man Lynis***

3. Command to run an audit: ***sudo Lynis audit system***

4. Provide a report from the Lynis output on what can be done to harden the system.

- Screenshot of report output:

A screenshot of a newspaper

Description automatically generated

### Bonus

1. Command to install chkrootkit: ***sudo apt -y install chkrootkit***

2. Command to see documentation and instructions: ***man chrootkit***

3. Command to run expert mode: ***sudo chkrootkit -x***

4. Provide a report from the chrootkit output on what can be done to harden the system.

- Screenshot of end of sample output: ***The report doesn’t show hardening is required.***

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