**Week 4 Homework Submission File: Linux Systems Administration**

**Step 1: Ensure/Double Check 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): sudo chmod 600 /etc/shadow
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 600 /etc/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): sudo chmod 644 /etc/group
4. Permissions on /etc/passwd a 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): sudo chmod 644 /etc/passwd

**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):
     1. sudo useradd sam
     2. sudo useradd joe
     3. sudo useradd amy
     4. sudo useradd sara
     5. sudo useradd admin
2. Ensure that only the admin has general sudo access.
   * Command to add admin to the sudo group:
     1. sudo usermod -G sudo admin

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

1. Add an engineers group to the system.
   * Command to add group:
     1. 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):
     1. sudo usermod -G engineers sam
     2. sudo usermod -G engineers joe
     3. sudo usermod -G engineers amy
     4. sudo usermod -G engineers sara
3. Create a shared folder for this group at /home/engineers.
   * Command to create the shared folder: sudo mkdir /home/engineers
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 chown :engineers /home/engineers

**Step 4: Lynis Auditing**

1. Command to install Lynis: sudo apt 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:

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**Bonus**

1. Command to install chkrootkit: sudo apt install chkrootkit
2. Command to see documentation and instructions: man chkrootkit
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:

It appears that nothing needs to be done to harden the system based on the data generated by running sudo chkrootkit -x.

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