**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 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): 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):
   * sudo useradd sam
   * sudo useradd joe
   * sudo useradd amy
   * sudo useradd sara
   * sudo useradd admin
2. Ensure that only the admin has general sudo access.
   * Command to add admin to the sudo group:
   * sudo nano /etc/security/pwquality.conf
   * minlen = 16, dcredit = 2, ocredit = 1
   * sudo chage -M 90 sam  
     sudo chage -M 90 joe  
     sudo chage -M 90 amy  
     sudo chage -M 90 sara  
     sudo chage -M 90 admin
   * sudo usermod -aG sudo admin
   * sudo visudo
   * admin ALL=(ALL:ALL) ALL

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

1. Add an engineers group to the system.
   * Command to add group: sudo groupadd 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 -aG engineers sam  
     sudo usermod -aG engineers joe  
     sudo usermod -aG engineers amy  
     sudo usermod -aG engineers sara  
     sudo usermod -aG engineers admin
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 chgrp -R engineers /home/engineers
   * sudo chmod -R 770 /home/engineers

**Step 4: Lynis Auditing**

1. Command to install Lynis: sudo apt-get install -y 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: documented as lynis\_report.png

**Bonus**

1. Command to install chkrootkit: sudo apt-get install -y 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: documented as chkrootkit\_report.png

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