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 u=rw /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 u=rw /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 u=rw,g=r,o=r /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 u=rw,g=r,o=r /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 adduser sam, sudo adduser joe, sudo adduser amy, sudo adduser sara, sudo adduser admin
2. **Ensure that only the admin has general sudo access.**

- ○ **Command to add admin to the sudo group:** sudo usermod -G sudo admin & verify with groups 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 /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

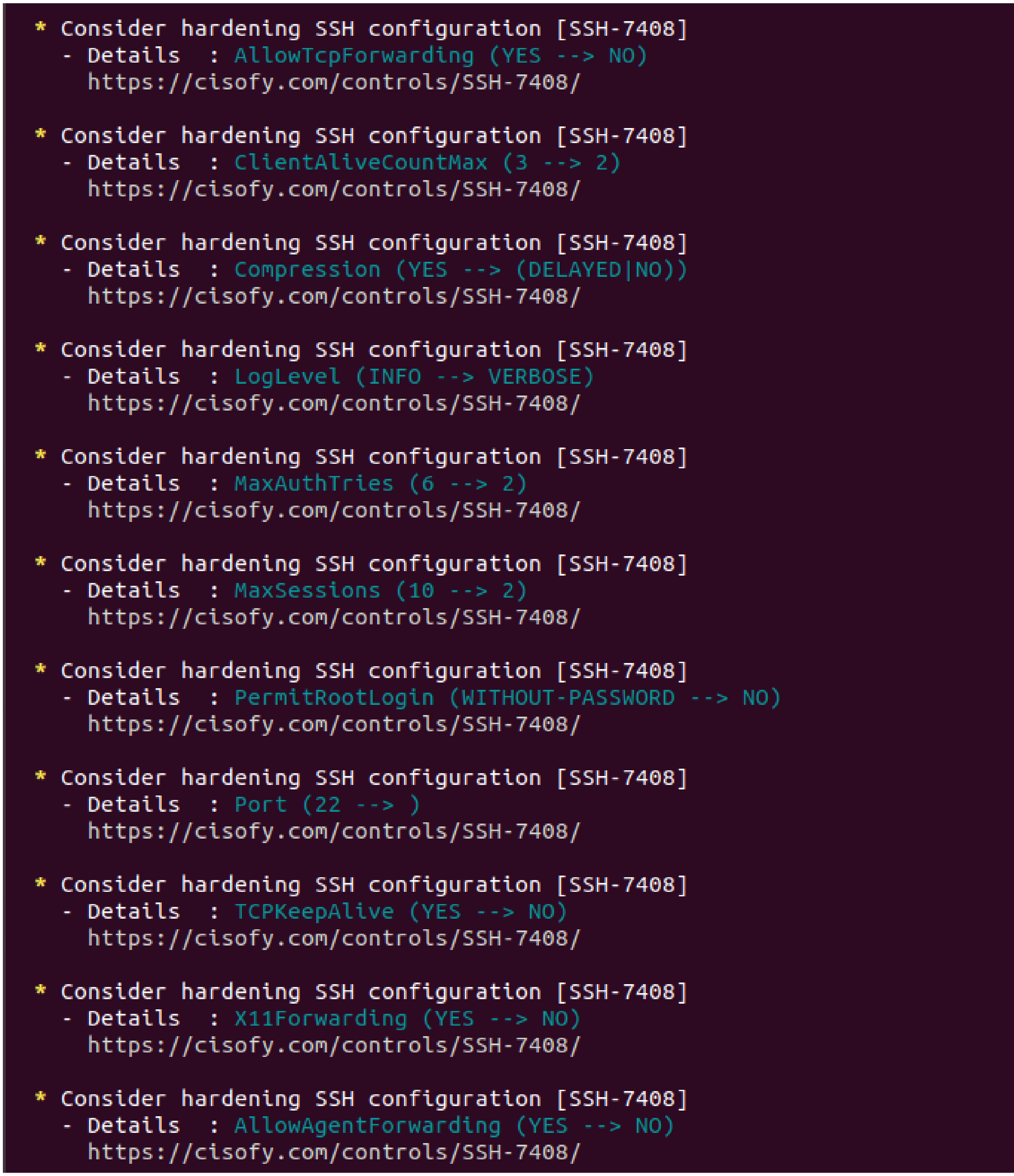
1. **Command to install Lynis:** sudo apt install lynis / sudo apt upgrade lynis (if already installed on VM and seeking upgrade to the latest version)

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

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

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

- Screenshot of report output:



```
* Consider hardening SSH configuration [SSH-7408]
  - Details  : AllowTcpForwarding (YES --> NO)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : ClientAliveCountMax (3 --> 2)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : Compression (YES --> (DELAYED|NO))
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : LogLevel (INFO --> VERBOSE)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : MaxAuthTries (6 --> 2)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : MaxSessions (10 --> 2)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : PermitRootLogin (WITHOUT-PASSWORD --> NO)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : Port (22 --> )
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : TCPKeepAlive (YES --> NO)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : X11Forwarding (YES --> NO)
    https://cisofy.com/controls/SSH-7408/

* Consider hardening SSH configuration [SSH-7408]
  - Details  : AllowAgentForwarding (YES --> NO)
    https://cisofy.com/controls/SSH-7408/
```

Bonus

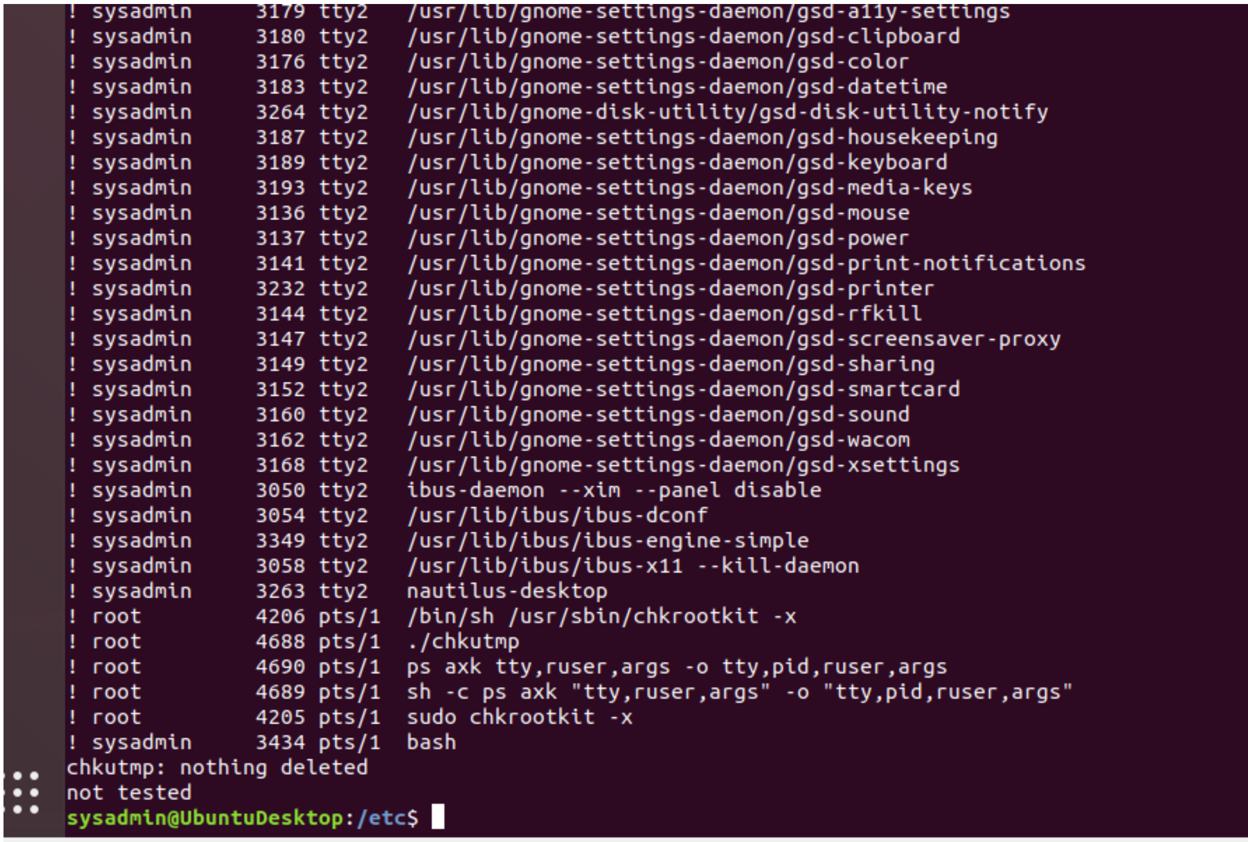
1. **Command to install chkrootkit:** sudo apt install chkrootkit / sudo apt upgrade chkrootkit (if already installed on VM and seeking upgrade to the latest version)

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

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

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

    - Screenshot of end of sample output:



```
! sysadmin     3179 tty2   /usr/lib/gnome-settings-daemon/gsd-a11y-settings
! sysadmin     3180 tty2   /usr/lib/gnome-settings-daemon/gsd-clipboard
! sysadmin     3176 tty2   /usr/lib/gnome-settings-daemon/gsd-color
! sysadmin     3183 tty2   /usr/lib/gnome-settings-daemon/gsd-datetime
! sysadmin     3264 tty2   /usr/lib/gnome-disk-utility/gsd-disk-utility-notify
! sysadmin     3187 tty2   /usr/lib/gnome-settings-daemon/gsd-housekeeping
! sysadmin     3189 tty2   /usr/lib/gnome-settings-daemon/gsd-keyboard
! sysadmin     3193 tty2   /usr/lib/gnome-settings-daemon/gsd-media-keys
! sysadmin     3136 tty2   /usr/lib/gnome-settings-daemon/gsd-mouse
! sysadmin     3137 tty2   /usr/lib/gnome-settings-daemon/gsd-power
! sysadmin     3141 tty2   /usr/lib/gnome-settings-daemon/gsd-print-notifications
! sysadmin     3232 tty2   /usr/lib/gnome-settings-daemon/gsd-printer
! sysadmin     3144 tty2   /usr/lib/gnome-settings-daemon/gsd-rfkill
! sysadmin     3147 tty2   /usr/lib/gnome-settings-daemon/gsd-screensaver-proxy
! sysadmin     3149 tty2   /usr/lib/gnome-settings-daemon/gsd-sharing
! sysadmin     3152 tty2   /usr/lib/gnome-settings-daemon/gsd-smartcard
! sysadmin     3160 tty2   /usr/lib/gnome-settings-daemon/gsd-sound
! sysadmin     3162 tty2   /usr/lib/gnome-settings-daemon/gsd-wacom
! sysadmin     3168 tty2   /usr/lib/gnome-settings-daemon/gsd-xsettings
! sysadmin     3050 tty2   ibus-daemon --xim --panel disable
! sysadmin     3054 tty2   /usr/lib/ibus/ibus-dconf
! sysadmin     3349 tty2   /usr/lib/ibus/ibus-engine-simple
! sysadmin     3058 tty2   /usr/lib/ibus/ibus-x11 --kill-daemon
! sysadmin     3263 tty2   nautilus-desktop
! root         4206 pts/1  /bin/sh /usr/sbin/chkrootkit -x
! root         4688 pts/1  ./chkutmp
! root         4690 pts/1  ps axk tty,ruser,args -o tty,pid,ruser,args
! root         4689 pts/1  sh -c ps axk "tty,ruser,args" -o "tty,pid,ruser,args"
! root         4205 pts/1  sudo chkrootkit -x
! sysadmin     3434 pts/1  bash
chkutmp: nothing deleted
not tested
sysadmin@UbuntuDesktop:/etc$
```