King Saud University

College of Computer and Information Sciences

CSC 227: Operating Systems

Homework 1

Due Date: Sunday 28 October 2018

Part I:

The use of Virtualization nowadays is widespread. A user can run multiple virtual machines with different guest operating systems in one physical machine that's operated by a host operating system.

You are asked to do the following:

1- Install a virtual machine manager (VMM) such as, but not limited to, Virtual Box, VMware or Parallels on top of your host OS.
2- Use this VMM to create a virtual machine (VM).
3- Install a Linux distribution of your choice on top of the VM you created.
4- Create a user and use your first name initial and last name as the username. For example: *Abdullah Alshalan* would use ***aalshalan*** as his username.
5- Log in as the user you created and use Linux command -line to show the logged in user and the time the system was booted. (***Hint***: you can use the command ***who*** to obtain such information. To learn more about how to use a Linux command, you can read the man page of that command by executing the following:

   man *command*

   For example, you can learn how the command ***who*** works by executing:

   man who

   Write a brief description of about your experience in Part I which include:

   - Which VMM did you use, and why.
   - Description of the specifications of your VM including: number of cores, size of RAM, size of hard disk.
   - Screenshots of Step 5.

Part II:

Find the following information about your virtual machine:

- Size of Memory in Kilobytes.
- How much memory is used in Kilobytes.
- How much free space is left in the memory in Kilobytes.
- The size of the swap and how much of the swap space is used in Kilobytes.
- Find 5 processes run by the logged in user, and report their name, PID, how much memory and CPU percentage were they using at the time you found them.
  (***Hint***: you can use the command ***top*** to find this information. Lookup its man page to use the appropriate options.)

Provide screenshots with your answer.

Part III:

Using the installed Linux operating system (Part I), write a simple program that uses at least **THREE** types of system calls. Then, use ***ltrace*** with proper parameters to

- Show the list of system calls used.
- Identify one system call for each type of system call you used.
  (**Hint**: ask ***ltrace*** to display system calls and to not display library calls)

Provide screenshots with your answer.