Linux Activity - Practice Questions

1. What is the command that can output the total memory used by LINUX?
    a. **Free** command: This is the most simple command to check memory usage. For Example, '$ free –m', the option 'm' displays all the data in MBs.
    b. **/proc/meminfo**: The next way to determine memory usage is to read /proc/meminfo file. For Example, '$ cat /proc/meminfo'
    c. **Vmstat**: This command basically lays out the memory usage statistics. For Example, '$ vmstat –s'
    d. **Top** command: This command determines the total memory usage as well as also monitors the RAM usage.
    e. **Htop**: This command also displays memory usage along with other details.
2. What is the command to use when you want to change to the directory "/opt/app"?
    a. cd /opt/app (cd = change directory)
3. What is the command that you can find running processes on your VM with the name "cron"?
    a. ps -ef | grep cron
    b. ps -aux | grep cron
4. What is the command that you can run to assume or change your current user to "root" user?
    a. sudo su
    b. sudo su root
5. What is the command that can show all the files in the directory "/tmp"?
    a. ls /tmp (ls = list)
6. What is the command that can show all the files in the directory "/tmp" including hidden files?
    a. ls -a /tmp
7. What is the command that can show all the files in the directory "/tmp" sorted by date and time?
    a. ls -lart /tmp (r = recursive, t = time)
8. What is the command that you can run to create a folder called "/tmp/ntu/module1/5"?
    a. mkdir -p /tmp/ntu/module1/5
9. What is the command that you can run to create a file in folder /tmp/ntu/module1/5 called "assignment.txt"?
    a. touch /tmp/ntu/module1/5/assignment.txt
    b. vi /tmp/ntu/module1/5/assignment.txt (type :wq afterwards to exit)
10. What is the command that you can run to change the owner of the file "/tmp/ntu/module1/5/assignment.txt" to "root"?
    a. chown root /tmp/ntu/module1/5/assignment.txt (you may have to run with "sudo")
11. What is the command that allows you to view the contents of file "/tmp/ntu/module1/5/assignment.txt"?
    a. cat /tmp/ntu/module1/5/assignment.txt

12. What is the command that allows you to edit and update file “/tmp/ntu/module1/5/assignment.txt” with the string “Hello, I am learning linux commands!” ?
    a. vi /tmp/ntu/module1/5/assignment.txt → “click “i” to enter interactive mode” and type “Hello, I am learning linux commands!” → type “:wq” to save and exit.
13. What is the command that allows you to copy the file “/tmp/ntu/module1/5/assignment.txt” to a new folder “/tmp/ntu/module1/6” ? Assume you have already created the folder /tmp/ntu/module1/6
    a. cp /tmp/ntu/module1/5/assignment.txt /tmp/ntu/module1/6 (cp = copy)
14. What is the command that allows you to move the file “/tmp/ntu/module1/5/assignment.txt” to “/tmp/ntu/module1/6”? This means that the folder /tmp/ntu/module1/5 should be empty.
    a. mv /tmp/ntu/module1/5/assignment.txt /tmp/ntu/module1/6 (mv = move)
15. What is the command that allows you to remove or delete the file “/tmp/ntu/module1/6/assignment.txt”?
    a. rm /tmp/ntu/module1/5/assignment.txt
    b. rm -f /tmp/ntu/module1/5/assignment.txt (f = force, optional)
16. What is the command that shows whether the website www.netflix.com is reachable?
    a. ping www.netflix.com
    b. telnet www.netflix.com 80
    c. traceroute www.netflix.com

Additional Questions

1. What is the command that allows you to change the permissions of a folder “/tmp/app” with permissions “Owner - Read, Write, Execute, Group - Read, and Public - Read”? Refer to https://chmod-calculator.com/
    a. chmod 755 /tmp/app
        i. Owner: read, write, execute (7)
        ii. Group: read, execute (5)
        iii. Public: read, execute (5)

2. What is the command that allows you to change the permissions of a folder “/tmp/app” with permissions “Owner - Read, Write, Execute, Group - Read, Write, and Public - Read”? Refer to https://chmod-calculator.com/
    a. chmod 775 /tmp/app
        i. Owner: read, write, execute (7)
        ii. Group: read, write, execute (7)
        iii. Public: read, write (5)

3. You have a log file from your application located at “/var/log/output.log”. Your team lead requires you to search the logs for the occurrences of the word “ERROR”. What is the command that you can run to get the expected result?
    a. grep "ERROR" /var/log/output.log

    b. grep -i "ERROR" /var/log/output.log (-i for ignoring upper and lower casing for the word error)
4. Your team lead now would like you to use the same file “/var/log/output.log”, but this time, you will need to print the number of times the word “ERROR” is found in the file. What is the command that you can run to get the expected result?
    a. grep "ERROR" /var/log/output.log | wc -l (wc = word count)
5. Your team is no longer using the directory “/var/log/output/”, which still contains a list of files. What command would you run to remove all the files as well as the directory?
    a. rm -rf /var/log/output (r = recursive, f = force)
6. Create a file called “coaching.txt” in the directory “/tmp/ntu/module1/6/” with the 2 line contents:
    a. “This file is for coaching lessons”
    b. “This file is in the /tmp/ntu/module1/6 directory”
    c.
    d. vi /tmp/ntu/module1/6/coaching.txt → “click “i” to enter interactive mode” and type “This file is for coaching lessons” → type Enter to go to the next line → type “This file is in the /tmp/ntu/module1/6 directory” → type “:wq” to save and exit.
7. You found out that you have placed the file from the previous question in the wrong folder. You are required to move the file to the folder “/tmp/ntu/module1/coaching” instead. What command would you run?
    a. mv /tmp/ntu/module1/6/coaching.txt /tmp/ntu/module1/coaching.txt
8. On top of that, you found out that you have incorrectly named the file. Instead of “coaching.txt”, you are required to rename it as “coaching-1.txt”. What is the command you would run?
    a. mv /tmp/ntu/module1/coaching.txt /tmp/ntu/module1/coaching-1.txt
9. You are asked to find the top 5 running Linux processes on your VM by CPU utilization. What command would you run?
    a. top -o cpu -n 5 -l 1 -stats pid,command,cpu,mem | head -n 12 && top -o cpu -n 5 -l 1 -stats pid,command,cpu,mem | tail -n 5 | sort -k3nr | head -n 6
10. You have multiple log files in different sub-directories under /tmp that contain the string “.log”. You are requested to find all the files in the different sub-directories. What command would you run?
    a. find /tmp -type f -name '*.log'
    b. grep -r ".log" /tmp/*
11. What is meant by the “root” account and what is it used for? Who has access to this account?
    a. By default, the root account is only accessible to the system administrator or users with sudo privileges. However, on some systems, the root account may be enabled and accessible with a password. It is generally recommended to only use the root account when necessary and to use a regular user account for day-to-day tasks, to reduce the risk of accidental damage or security breaches.
12. You were informed that there is something called Ksh and Csh, on top of Bash. What are the differences between these 3?

a. Ksh (Korn Shell) is a Unix shell developed by David Korn of AT&T Bell Labs in the early 1980s. It is an enhanced version of the original Bourne shell (sh) and is compatible with most sh scripts. Ksh has many advanced features, including command-line editing, filename completion, and the ability to run shell scripts with setuid permissions.

   Csh (C shell) is another Unix shell developed by Bill Joy of the University of California, Berkeley, in the late 1970s. It was designed to be more interactive and user-friendly than the original sh shell. Csh has a syntax that is similar to the C programming language, and it includes features such as command-line editing, history, and job control.

   Bash (Bourne-Again SHell) is a Unix shell developed by Brian Fox for the GNU Project as a free software replacement for the original Bourne shell (sh). Bash is compatible with sh scripts and includes many features from other Unix shells, including Ksh and Csh. It has a syntax that is similar to sh but includes many enhancements, including command-line editing, history, filename completion, and job control.

   One key difference between these shells is their syntax and command-line options. Ksh, Csh, and Bash all have their own unique set of syntax rules and command-line options, which may make scripts written for one shell incompatible with the others.

   Another difference is their default configuration settings. For example, Csh uses a different syntax for setting environment variables than Bash or Ksh, which may cause compatibility issues.

   Overall, the choice of which shell to use depends on personal preference and the specific requirements of the task at hand. However, Bash is the most widely used and supported shell in modern Unix/Linux systems.

13. What is a cron in Linux and what is it used for?
    a. Cron is a time-based job scheduling tool widely used in many system.

       Cron uses a daemon process to run in the background and check the crontab files every minute for any changes. When a scheduled task is due, cron executes the specified command as the user who created the crontab entry.

       Cron is a powerful tool for automating system tasks and reducing manual workload. However, it requires careful configuration and monitoring to ensure that scheduled tasks are running correctly and not causing any unintended consequences.

14. You were informed that there are many applications and software built on UNIX. What is the difference between UNIX and Linux?
    a. UNIX and Linux are similar operating systems that share many design principles and concepts. However, Linux is more flexible, affordable, and customizable, and it has become the dominant operating system in many industries and applications.
15. What are the functions of the Linux Kernel?
    a. Memory management: The Linux kernel manages the memory used by programs and ensures that each program has access to the resources it needs without interfering with other programs.

    b. Process management: The kernel manages the processes running on the system, including starting and stopping processes, allocating resources to processes, and managing inter-process communication.

    c. Device management: The kernel provides a device driver framework that allows other software programs to interact with hardware devices on the system, such as hard drives, network adapters, and sound cards.

    d. Security: The Linux kernel provides a variety of security features to protect the system from unauthorized access, including access control lists, file permissions, and process isolation.

    e. Network management: The kernel manages network connections and provides support for various network protocols and services, such as TCP/IP, DNS, and DHCP.