Name: _____

Working with Remote UNIX Machines

1. What is a "host name"?

2. Find the "host name" of a Linux machine

3. Find the IP address(s) of the Linux machine you are on

4. Use the ping command to check if a remote system is alive

5. Use the traceroute command to find the routing path between your computer and Google

6. Use secure shell to log into a lab machine "mct263s01.cs.ship.edu"

7. The UNIX ssh command supports "escape sequences," describe how you would use the escape sequence to terminate an SSH command

8. Use secure shell to run the "/bin/ls" command on a remote Linux machine

9. When you sign in to a department machine, where are your files stored?

10. What is your "home directory" on our machines?

11. How much space are you using in your home directory? (see #22 on previous assignment)

12. How do you access your files stored on our server from your personal machine?

13. How do you change your UNIX password if you are on Sloop or any of our other machines?

14. If you use the same password on Sloop and our other UNIX machines, where do you think your password is stored?

15. How can you list the network connections on a machine?

16. SSH allows a technique called port-forwarding. Show the command line that would enable a program, such as a webserver running on port 80 on YOUR machine be served by sloop as port 9999.

17. I am sitting in a classroom with a high-performance UNIX workstation, probably 16-core, 4GHz computer, with 32GB of RAM, and a fast NVMe drive. Our systems administrator works hard to keep all of our Linux systems configured the same. I have this workstation all to myself. My professor says I'm supposed to do everything on Sloop, why is this silly? (see #9 and #10)

18. Describe what the "rsync" command does

19. How would use it to copy all of the files in your home directory to your personal machine?

20. The secure-shell environment also includes the "sftp" command, which allows you to select files, one by one. Show an example of how you would transfer a file "readme.md" from your computer to a remote computer:

21. The sftp command also transfers files using wildcards. Show how you would download a whole directory using sftp.

22. Use the 'nslookup' command to find the IP address of a hostname, such as www.google.com

23. Use the 'nslookup' command to find the host name for an IP address, such as: 8.8.8.8

24. Use the 'whois' command to find out who the administrative point of contact for "ship.edu" is:

25. Use the finger utility on sloop or clipper to "finger" someone in this class:

26. Suppose you want to run eclipse on a Linux station. It requires graphics (known as X11 in UNIX). How would you enable SSH to "forward" your X11 session?

27. Sometimes engineers need to use a web browser from "outside" to test how their application will work. Show how you can run "firefox" from a Linux computer and have its graphical display appear on your computer:

28. Lookup the "wget" command, and show how you would download a web page to a text file.

29. Lookup the "wget" command, show how you download all of the files on a web page, recursively, to "mirror" or "spider" an entire site (and profit!)

So, you want to be an engineer?

Show the commands to do the following: compile a C program on your local machine. If you are using our machines, you can just ssh into the remote machine, or else you'll need to rsync the files over. Then, on the remote machine, use "gdb server" to start running the program remotely, and back on your local machine, use gdb to connect to the remote server, and run and debug the program. *Note: this is a common interview question in today's internet enabled world -for all CS, SE, CE, and EE. CE & EE students typically have to do this with different architectures (e.g. debug a program on MIPS from an Intel machine), while CS & SE will probably have to do this on an AWS or Azure or Docker image.*