System Administration Decal
Intermediate Lab #4
October 7, 2008

Introduction

This lab is oriented around getting acquainted with your new virtual server. There aren't very many questions, but do submit responses anyway. In any case, I will be checking that you've done everything by logging into your server. This lab should be done with your group, so I expect only five submissions total. Remember to note down the members of your group, the user IDs of each member, and your group number.

There are many troublesome parts of this lab that are meant to challenge you as a group, so keep that in mind while working on it. **Do not be afraid to ask me questions.** III is notably hard, so you might want to take a look at that first. The first two parts could conceivably be done by one person.

Again, please send your completed lab to joshk.decal@triplehelix.org.

I. Setting Up Users

Since all the members on your group will probably be working at different times, it is going to be important for everyone to be able to log in and work on their own time. They'll also need administrator access. You'll also be learning a few tricks for how to set up user accounts without actually needing to give them a preassigned password or having them type it in on the keyboard.

For this exercise, just paste relevant terminal transcripts of what you did to accomplish what the question asks.

1. Use the adduser program to create users for each member in your group.
2. Install sudo. You can do this using the "apt-get" package management tool for Debian. Use Google or the man page to look up how to use it.
3. Add all your users to the sudoers file using visudo. You can either add them by creating a line for each user in the sudoers file, or by adding them all to a common group (the traditional "admin" group is 'wheel'), and adding a sudoers line for the group. Again, I don't expect you to know how to use these tools a priori; I want you to read the manpages for sudoers, visudo, and sudo.

II. Shootin' The Breeze, Unix Style

You might not think it, but early UNIX geeks who had nothing better to do came up with lots of ways for users on a multiuser system to talk to and interact with each other. If you're a CSUA member, soda is a great (albeit quite restricted) example of this.

Use the 'apropos' command to search through man page synopses to find the commands you need to answer questions 2 and 3. You can just use keywords like 'user' and 'logged'.

1. Have all of your group members log on to your virtual server. Use the 'write' command to talk to other group members. **Hint:** Remember that ^C is an interrupt. ^D is an End of File character.
2. Find a way to address all the users on a computer.

3. Finally, find a way to prevent other people from using 'write' to spam your terminal.

III. NetHack – Compilation Challenge

NetHack is a game that has existed in some form or another for at least 20 years. It started out as a game called rogue, then evolved to a game called hack, and then NetHack is the latest version that was developed by many people around the world. It's a game – with terminal-only graphics – where you are in a dungeon looking for the famed Amulet of Yendor. During your quest, you move around, pick up treasures, equip weapons, open doors, buy supplies, and learn spells, and of course you defeat a ton of enemies.

In this exercise, you'll compile NetHack from source on your virtual server, and then play it. Be sure to mention all the steps you took to compile the software. Warning: **This is probably the most challenging part of this lab. You may not use apt-get to install any of NetHack's requirements and I will make you do the lab again if I find out.**

1. You will need to install an additional library, ncurses, to get NetHack to build, so compile that first. Build it from source! Remember to have the build-essential package installed first.
2. Next, you will need to build and install GNU bison and GNU flex. This provides the 'yacc' and 'lex' programs. If either has a dependency, build and install it too.
3. Download NetHack's source from www.nethack.org. **Patch it with the patch on the class website**. Build it on your server. It *doesn't* quite fit the three-step procedure I mentioned in class, so you're on your own! The README will point you to a file you can read to install NetHack on UNIX. Ignore any instructions about Qt or X11. You are building the console version of NetHack.

   You'll have to navigate through a few files to figure it out. This will take you a while, but that's why this is a *group* lab, and everyone can work on it.

   You will need to make a change to src/Makefile to prevent NetHack from building against a library you don't have, and instead use the 'ncurses' library you built and installed earlier.

   You will need to make a change to a *different* Makefile to make NetHack use flex instead of trying to use 'lex'. Alternatively, you could create a symlink from lex to flex in the appropriate directory.

   Finally, remember that once you have built the binaries, you have to install them before anything works. They will end up in the /usr/games directory.
4. Play some NetHack and let me know what your high score is. I suggest starting with the Valkyrie or Samurai character class. Use the Guidebook at http://www.nethack.org/v343/Guidebook.html to help you get started with playing. Check out http://alt.org/nethack/plr.php?player=joshk for my high scores. Happy hacking!