

# Using the Zoo Workstations

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If you know what you're doing, you can probably skip most of these instructions, but skim just in case.

## 1 Logging on to the Redhat Linux machines for the FIRST time

1. The Zoo is a collection of computers at the front of the third floor of AKW. There is a card-access area in room 300, and an open area at the south side of the building. When you have an account, you may use the machines in person or remotely. In person is strongly recommended at first.
2. You must get a Zoo account for each Computer Science class that requires it. From the Computer Science Department web page, follow the "Course Web Pages" link; at the top of that page is a link "Apply for a Zoo Account." Follow that link and go through the sign up procedure.

It is important for computer science students to learn to use the Zoo machines. The best way to do that is to spend time in the Zoo when others are there, and to ask lots of questions. At first this will feel awkward, but soon you'll be one of those answering questions, and you may find you have some new friends. The Zoo web page, accessible from the Computer Science Department web page, has a variety of useful information about the Zoo.

3. You should get your ID card validated for weekend and after 5pm access to AKW. If you haven't signed up for this in class, go to floor G of Watson and follow the posted directions, or ask, if none are posted.
4. Find a machine that is not being used. It should display a message box inviting login. Type your Zoo account name and password. Shortly you should see the KDE interface (or another, if you selected it), with a tool bar at the bottom.
5. Click on the "shell terminal" icon at the bottom of the page to get a window running the shell (or command interpreter). The command prompt will be something like `[angluin@viper ~]$`. You type your commands at this prompt, for example, `emacs` to start emacs, `sml` to call SML/NJ, `tzw` to show the list of people logged on in the Zoo, etc.
6. To log out after a session, make sure to save all your work, and then click on the small logout button (below the lock) on the right side of the tool bar. Click on the "Logout" button in the pop-up window.

## 2 Running Emacs

Emacs is a text editor. It will allow you to write and edit text files, including the SML programs you will be writing for this course. To start emacs, type `emacs` at the shell prompt; if you are sitting in the Zoo, you will get a new emacs window; what happens with ssh will depend on how it is configured. Alternatively, you can use xemacs by typing `xemacs`. You can learn about emacs by going through the tutorial (Select "Emacs Tutorial" under the "Help" menu in the Emacs window); the whole tutorial may take about an hour.

Emacs uses the Ctrl and Alt keys a lot. Locate them before you get going. It also offers a lot of functionality in point and click style, if you prefer that. The concept of a "buffer" is that it holds a copy of your file while you edit it – the changes are not made permanent until you explicitly save. You can be viewing several files simultaneously in several buffers; copy text between them, etc. Emacs can recognize SML syntax and can help you balance parentheses and indent code in a reasonable style (use tab.)

Here are some useful commands.

- `CTRL-x CTRL-c` will let you exit Emacs, asking if you want to save any files that haven't been saved.
- `CTRL-x CTRL-s` will save the file in the currently active buffer (do this often when you start programming, so that you don't lose anything).

- **CTRL-x CTRL-f** (type them in succession) will prompt you at the bottom of the Emacs screen to name a file. You can either type the name of a file that exists, in which case Emacs will load it into the current buffer, or you can type the name of a new file, in which case Emacs will create a new file by that name. You can keep loading more files into a single window—they will be hidden, but they are still there. To find other buffers, try:
  - You can use the pull down menu “Buffers” at the top left, *or*
  - **CTRL-x b** to switch buffers. This will prompt you to enter the name of a file that has already been loaded into Emacs.
- Use the arrow keys on the keyboard to move up, down, left, and right. You can also use **CTRL-p** to move up, **CTRL-n** to move down, **CTRL-b** to move left, and **CTRL-f** to move forward.
- The “Page Down” button or **CTRL-v** moves you a page forward.
- The “Page Up” button or **ALT-v** moves you a page back. (**ALT-x** is also written **M-x** in Emacs documentation).
- **CTRL-l** centers the page so that whatever line the cursor is on will be in the center of the window.
- The “End” button or **ALT->** moves you to the end of a file.
- The “Home” button or **ALT-<** moves you to the front of a file.
- **CTRL-d** deletes the character under the cursor.
- “Delete” deletes the character before the cursor.
- “Insert” switches Emacs between “overwrite mode” and “insert mode.”
- **CTRL-k** kills everything after the cursor on that line (and sticks it in the clipboard).
- **CTRL-space** sets a “mark.” Once you set a mark, you can define a “region” by moving the cursor to the other end of the region.
- **CTRL-w** cuts a region (and puts it into the clipboard).
- **ALT-w** copies a region into the clipboard.
- **CTRL-y** yanks whatever is in the clipboard to wherever the cursor is (like pasting).
- You can also copy and paste regions by selecting them with the mouse. Press and drag with the left mouse button to select a region. Click on the middle button to paste it.
- **CTRL-\_** (**CTRL-SHIFT-hyphen**) lets you undo the last operation. Pressing it twice in succession causes Emacs to undo the last two operations, and so on.
- **CTRL-x 2** (type “**CTRL-x**”, then “2” by itself) will split the Emacs window into two. You can have two different files displayed at once using this feature. To go back to one window, same command with 1 instead of 2.
- **CTRL-x o** will move the cursor into the other window, in the case that you have two windows.
- **CTRL-x 1** will hide the other window, in the case that you have two windows.
- **ALT-x** will prompt you to enter some command (such as “sml”) which is not necessary bound to a keystroke, but which is still a command in Emacs.
- **CTRL-g** will stop any operation—if you get stuck in Emacs, it often helps to hit **CTRL-g** a few times.

If Emacs beeps at you, see what it says at the bottom of the window. Often, it will be prompting you for a “yes” or “no”.

### 3 Manipulating files in the C-shell

A few useful shell commands are described below. Many of the commands deal with directories. Directories, like folders in the “desk top” interface, organize your files in a hierarchical way. Directories can contain files and other directories. When referring to a directory within a directory within a directory. . . , you separate the names of the directories with a “/”. Thus, your “home” directory (the one you get placed in when you log on) is `/homes/classes/cs201/class/your_name`. (This is called the “pathname” to your directory. Since it’s long, all of that is conveniently abbreviated by `~` e.g., files in your home directory would be called `~/file1`, `~/file2`, and so on).

Here are some useful commands.

<code>pwd</code>	See what directory you are in. (Upon login, you should be in the directory <code>/homes/classes/cs201/class/your_name</code> .)
<code>ls</code>	List what’s in this directory.
<code>cd blah</code>	Change current directory to the one named “blah”. Note that “blah” must be a directory in the current directory for you to be able to <code>cd</code> to it.
<code>cd ..</code>	Change current directory to the one that contains this directory.
<code>mkdir foo</code>	Make a directory named “foo” in the current directory.
<code>rmdir bar</code>	Remove a directory named “bar” in the current directory (the directory must be empty before you can remove it).
<code>rm file1</code>	Remove the file called “file1”.
<code>cp file1 file2</code>	Make a copy of “file1” and call it “file2”. If “file2” is the name of a directory, a copy of file1 called “file1” will be created under the “file2” directory.
<code>mv file1 file2</code>	Rename “file1” to “file2”. If “file2” is the name of a directory, “file1” will get moved to the “file2” directory.
<code>more file1</code>	Show the contents of “file1” one screen at a time.
<code>man some_command</code>	Display the online manual pages for “some_command”.

Finally, you can print out a text file with the “`enscript`” or “`lpr`” command. Use this to print out your programs when you hand them in.

```
enscript file1
```

```
---OR ---
```

```
enscript -2r -Pzoo-alw2 file1
```

The “`-2r`” will conserve paper (it fits two pages side by side on a single sheet), and “`-Pzoo-alw2`” will print out on the second printer in the Zoo.

Since “`enscript`” sometimes has problems, if it doesn’t work, you can also print out your programs with the more primitive “`lpr`”:

```
lpr file1
```

or

```
pr file1 | lpr -Pzoo-alw2
```

“`pr`” adds simple headers to `file1` and “`-Pzoo-alw2`” will print out on the second printer in the Zoo.

### 4 Ready to depart the Zoo?

Make sure to save all work you’ve done in emacs. Click the logout button on the tool bar. Click on “Logout” when asked if you really want to quit. You should return to the login screen.

## 5 Administrative problems

If you have problems with one of the computers, or if you have problems with your account that are not cs201 specific problems, first ask a friend for help. Then try sending e-mail to “**dsac**”. (Dsac is a committee of undergraduates who are partly in charge of the Zoo.) If none of that works, send mail to “**requests**”. E-mail sent to that address is handled by the CS Facility which is in charge of systems administration for the Zoo.

## 6 Final comments

This handout should tell you much of what you need to know to get you started in this course. Please go to the Zoo and ask lots of questions to fill in any gaps. There is a lot more to UNIX and to Emacs, however, so you may want to play around with them a bit, go through the tutorials, and ask knowledgeable friends for help before you get your first real assignment.

The TA(s) will be happy to answer any questions you may have about anything related to the course (if the instructions here don't make sense or don't work, if lecture material is unclear, if you get stuck on a problem, etc.), but they are far less willing to deal with questions like “How do I change the color of my Emacs window?” and “Where is the Tetris game in emacs?” so ask those questions at your own risk.