

# USING CSDA's UNIX CLUSTER<sup>1</sup>

To be able to access disks and software available on CSDA's system, you must be added to the "csda" group. Access to the csda group is available to all Associates and people working for them. Access to the csda group is also available to all Affiliates, and, under some circumstances, students working with them. Associates and Affiliates wanting to gain access to our UNIX cluster for themselves or someone working with them should e-mail Tim Gage at [apchelp@csc.albany.edu](mailto:apchelp@csc.albany.edu). If the request is for a student, and the project the student will be working on is not currently funded with an CSDA-affiliated grant, a brief description of the project must be included with the request. If Associates and Affiliates have students working with them, a "group" will be created for the Associate or Affiliate and the students so that they can share files if they choose to do so.

There is a directory `/malthus2/csda/help` which has a variety of programs and other information that you may find useful as you begin working on the UNIX. Also, on CSDA's Web Page <http://www.albany.edu/csda/> there are a variety of help documents, and there is a link to UA-ALBANY's site that has UNIX help. You may also find it useful to refer to The UNIX Handbook which is published by Computing and Network Services and available at the bookstore. It is also available with a link from <http://www.albany.edu/csda/>. It will provide detailed information about a broad range of subjects.

Unlike most other systems, the operating system for the **UNIX is case sensitive**. Most commands should be issued in lower case letters. Even your password and userid are case sensitive. If your password is upper case, and you type it in lower case letters, you will not be able to successfully login.

After you login, the UNIX will ask you what terminal type you want to use. If you are using a SUN Work Station, type "sun" (no quotes). If you are using EWAN, NETTERM, another TELNET program, or logging in via modem from home, make sure that your software is set for VT100, and type "vt100".

## Setting the Environment - the ".cshrc" file.

When you login, UNIX looks at a file called **".cshrc"** for instructions. This file is comparable to the `autoexec.bat` file on a PC. It defines paths and the environment for the UNIX session. As in the PC, any modifications you make in your `.cshrc` will not be in effect until you logout and login again, or, you may type the command `"source .cshrc"`.

It will probably be necessary to modify your `.cshrc` file. The default `.cshrc` file provided by USG (Unix Support Group) does not include paths to the `malthus1` disk that stores some of the software you may want to use. CSDA staff will be happy to assist you with this, but, in case you want to tackle it yourself, we will describe the process we think is best.

Modifying your environment will be a two-step process. But, even before beginning the modification process, it would be cautious to copy your existing `.cshrc` file so that you can recreate it incase you make a mistake. So, from your home directory, issue the command:

```
cp .cshrc cshrc-old
```

Next, you will edit your `.cshrc` file, and add a single line to the end of your existing `.cshrc` file. The `.cshrc` can be modified by using any editor (read "pico" below for information about one editor). However, you must use caution when editing the file. Modifying a line so that there are extra line wraps could cause severe errors in your `.cshrc` file. At the very end of your `.cshrc` file, add the line:

```
source ~/.cshrc-csda
```

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<sup>1</sup>Created by Patty Glynn, Center for Social and Demographic Analysis (CSDA), 1/20/98, updated 10/16/98, 2/25/99

This will tell the UNIX to read a file called `.cshrc-csda` for additional information about how you want things run in your UNIX sessions. There is a file `"/malthus2/csda/help/cshrc-csda"`, which is an example of the types of commands you may want to put in your supplement to your `.cshrc` file. You may copy this to your home directory as `.cshrc-csda` by issuing the following command from your home directory.

```
cp /malthus2/csda/help/cshrc-csda .cshrc-csda
```

This command will copy the following file into your home directory. You do not need to type these lines, but you will need to edit the file the `"cp"` command created.

```
# At end of .cshrc file put the following line (omit #)
# source ~/.cshrc-csda
# the following line puts home directory in your path
setenv PATH ~:$PATH
setenv PATH /malthus1/local/bin:$PATH
setenv PATH /malthus1/local:$PATH
setenv PATH /malthus1/local/sas609/utilities/bin:$PATH
alias rm 'rm -i'
alias cdhelp 'cd /malthus2/csda/help'
```

You may edit the `.cshrc-csda` with any editor, but, be sure not so cause extra line wraps by typing too much on any one line. I will explain the meaning of these lines. Any line preceded with a `"#"` is a comment, and is not executed. You can use this character in the first column to document lines you enter.

The `"setenv PATH"` statements tell the UNIX: "If I tell you to do something, and you don't find information about how to do it in the directory that I am in, please search all of the directories I define in my `PATH` statement." For example, the instructions for SAS are stored in `/malthus1/local/sas609/utilities/bin`. If you did not refer to this directory in your `PATH` statement, you would not be able to run SAS. The `":$PATH"` at the end of the statements are **crucial**. Without it, UNIX will forget the paths that were defined previously - and this can cause serious problems.

Within the `.cshrc-csda` file you may create aliases. What you are telling UNIX, is that, "When I tell you X, I really mean Y." If you look at the `.cshrc` provided to you by USG, you will find several aliases that they provided for you. You can use aliases to shorten long commands that you frequently type, or to modify the way commands usually work. The command `"rm"` in UNIXese means "remove file". It is fairly easy to make a mistake, and accidentally delete all of your files. The `"-i"` modification tells UNIX to give you a chance to confirm the removal before it does it. By entering the line `"alias rm 'rm -i'"` into your `.cshrc-csda` file, you will always have the chance to change your mind after asking that a file, or series of files be deleted. We **strongly** recommend this addition.

Aliases can also make changing directories and other commands less cumbersome. For example, with the statement: `"alias cdhelp 'cd /malthus2/csda/help'"` in your `.cshrc-csda`, you can type `"cdhelp"` to get to that directory rather than `"cd /malthus2/csda/help"`. We advise caution when you create aliases. First, you want to make sure that you do not use a name for an alias that is already a valid command. Second, you would not want to create an alias that would make it easy for you to do dangerous things - like "delete my files".

## Useful Commands

Following is a list of commonly used commands, their meaning, and an example of syntax. Remember that the UNIX is case sensitive. For some commands, an asterisk can be used as a wild card on the UNIX.

Command	Meaning	Examples of Syntax
man	show help information for the program I name (if available)	man chmod

&	run in background This symbol, following most commands, will cause the command to run in background so that you can execute other commands while it is running.	sas progname &  spss progname &
cd	change <b>d</b> irectory	cd /malthus2/csda/help
pwd	tell me <b>p</b> resent <b>w</b> orking <b>d</b> irectory	pwd
mkdir	<b>m</b> ake a new <b>d</b> irectory	mkdir newdir
rmdir	<b>r</b> emove a <b>d</b> irectory	rmdir newdir
cp	<b>c</b> opy a file copy to different directory	cp old new cp old /malthus2/csda/help/new
rm	<b>d</b> angerous! <b>r</b> emove file	rm oldfile
ps -aux	give information currently running jobs	ps -aux
kill -9 jobnum	kill a job that is running You can only kill jobs that you own. <b>If you kill SAS or SPSS jobs, you will probably leave files that should be deleted. Ask CSDA staff about this.</b>	kill -9 3718
dir	give information about files in the directory tell about files ending in .lst	dir dir *.lst
ls	give concise directory list	ls
groups	find out what groups a user belongs to	groups userid
Ctrl c	Suspend/stop a process	Hold down the Ctrl key, and press the c key.
!!	repeat my last command	!!
h	tell me history of commands	h
!# (a number)	repeat a command shown in history (h from above)	!3
gzip	compress a file with the gzip utility. the extension will be .gz	gzip filename
gunzip	uncompress a file	gunzip filename.gz

	compressed with gzip	
compress	compress a file with the compress utility. the extension will be .Z	compress filename
uncompress	uncompress a file compressed with compress	uncompress filename.Z
more	show me a file (q will stop it when you have seen enough)	more filename
script	create a file of my conversation with the computer. Close the file with the command exit	script filename exit

## Permissions — Sharing Files and Keeping Them Private

This section will give a brief overview of how to share files with other members of your group. If you want more detailed information, see the [The UNIX Handbook](#).

On the UNIX, users have the option of keeping files private, or giving read or write access (or both) to any group of users to any or all files in a directory. Most users of the CSDA UNIX cluster will be a member of more than one “group”. For example, faculty are a member of the “faculty” group. Anyone with permission to use our system will be added to the “csda” group. Students are part of the “student” group.

The default for files is for the user only to have access to the files and directories. Making files readable by others is pretty easy (once you know the magic words), but, making a directory accessible to others is a multi-step process. The following information is also in the file “/malthus2/csda/help/diracc” which is readable by members of the csda group.

### 1. Making a directory accessible to others in your group

First, using the command “dir” check to see what group the directory is associated with. If it is not the one you want, you may change it with the “chgrp” command.

**chgrp csda dirname** (This command would change the group for the directory to the “csda” group.)

The “chmod” command is used to change the read/write mode of files and directories. To make a directory accessible by the group, you must do the following. (You would substitute the name of the directory for “dirname”.) The “chmod” command will only work on files you own.

**chmod u-l dirname** (This command unlocks the directory called dirname. REQUIRED)

**chmod g+x dirname** (g+x gives execute access to the directory to the group. This command is REQUIRED for others in the group to be able to access the files.)

**chmod g+t dirname** (If write permission is granted, this is an important command. Without it, anyone with write access to the directory can delete files in the directory, even if they do not have write access to the file. If g+t is added, only the owner of the directory can delete files that do not belong to her/him without write access)

**chmod g+r dirname** (This command gives READ ACCESS to the directory to the group)

**chmod g+w dirname** (This command gives WRITE ACCESS to the directory to the group)

Commands to remove read or write access for the group follow:

**chmod g-r dirname** (This command REMOVES READ ACCESS to the directory to the group)  
**chmod g-w dirname** (This command REMOVES WRITE ACCESS to the directory to the group)

## 2. Making a files within a directory accessible to others in your group

You may also give read (or read and write access) to specific files in the directory.

**chmod g+r filename** (This command gives READ ACCESS to the filename to the group)

**chmod g+r \*** (This command gives READ ACCESS to all of the files you own in the directory)

If the files are not associated with the group you want, you may change the group for the files with the “chgrp” command:

**chgrp csda filename** (This command would change the group for the file to the “csda” group)

The “chmod u+x filename” command may be used if you want to make a file “executable”. It is only under special circumstances that you want this, so this command should rarely be used.

For more help about the “chmod” or “chgrp” commands, execute the command “man chmod” or “man chgrp” from your command line, or, ask CSDA staff for assistance.

## PINE: A Pretty Good Mail System

The program “pine” is a pretty good menu-driven mailing system on the UNIX. If you set your terminal type properly when you logon, you shouldn’t have any trouble with it. If you do, feel free to contact CSDA staff for assistance. To access the program, enter the word “pine” in lower case at the command line.

## PICO: A Pretty Good Editor

The editors native to the UNIX (vi and emacs) have a fairly steep learning curve. The program “pico”, however, is a pretty good menu-driven editor that has a similar menu to the mailing system “pine”. To edit a file, enter the command: “**pico filename**” (substituting the name of the file you want to edit for “filename”). If you set your terminal type properly when you logged on, you shouldn’t have any trouble with it. If you do, feel free to contact CSDA staff for instruction.

If you have extensive editing to do, it might be worth using FTP to move the file to your PC, use the editor you like the best, save the file as an ASCII text file, and then FTP the file back to the UNIX. If you want help with any of this, please contact CSDA staff for instruction.