School of Computer Science and Software Engineering
Clayton Campus, Monash University
CSE2303 and CSE2304
Semester I, 2002

Practical Session 0
Introduction to Unix

In CSE2303 and CSE2304 you will be required to use the operating system called *Unix*. This operating system is more suitable for program development than systems such as Windows or MacOS which you may have already used. You will be using Unix extensively for the rest of your course, possibly exclusively by the time you reach third year.

> **Unix and Linux**
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> *Unix* is a generic term referring to a range of operating systems that all behave in roughly the same way. Many of them are commercial systems sold by different vendors. *Linux* is a freely-available version of Unix. For most purposes, you can use the names interchangeably.

Registering your Unix account. To get to your Unix account, you will need to register for it. Registration basically entails you getting your username and password, so that you can log in.

Your username is easy: it's the same three-to-five-letters-plus-a-number code, based on letters from your real name, that you use to log in to Windows or when you use AuthCate. Your username is in *lower case* (Windows isn't picky about this, but Unix is).

There are two ways to register. You only need to do one of these:

- Using the web: visit **http://www.its.monash.edu.au/cgi-bin/getpass** and follow the instructions.

- Using *telnet*: connect to **alpha1.cc.monash.edu.au** and log in as REGISTER. You can start telnet from Windows by typing "telnet" in the window that pops up when you choose **Run...** from the **Start** menu. In case you're asked, your terminal type is probably "VT100".

Have a pen handy, then enter the information you're asked for. Your username is the one that was talked about above. Remember that the year is four digits long. Write down the password shown on your screen. Your password should be in lower case (even if it isn't displayed that way) - again, Unix is fussy about case. If you're using the telnet interface, you have less than a minute to write this down, so don't spend all that time rummaging for a pen!

You can only register this way once! If you don't get your password the first time, you'll have to follow the advice below.

If your registration fails

Sometimes, registration fails for no apparent reason. If that happens to you, there are two options open to you:

- Your password is probably the same as your initial AuthCate password. Take a guess. If it works, you can continue.
- Take your ID card and traipse over to join the queue at the ITS Helpdesk. They can change your password for you.

Now that you have your password, you can proceed to log in to your account.

Logging into Unix. Now you need to log in to Unix. This differs depending what campus you're on. The following applies to Clayton and Caulfield campuses. Check with your local ITS if you're elsewhere.

First, you'll need to find a computer that can boot Unix. If you're in a scheduled prac, chances are good that the computer in front of you will work.

Reboot the machine. While it's rebooting, there will come a moment when you are asked which operating system to load. Choose "Linux" from the list.

While the computer boots, it may display a lot of text on the screen. This can be safely ignored. What you are eventually looking for is a line that looks something like this:

clay-b19g14a-10 login:_

with the cursor flashing at the end of the line. This is the *login prompt*; the computer is ready for you to log in.

At the `login:` prompt, type in your username, *in lower case*. You'll then be prompted for your password; type that in too, also in lower case. You'll now see a prompt like this:

clay-b19g14a-10>_

with the cursor flashing to the right. (The format of this prompt varies greatly from Unix to Unix; yours is probably different.)

This prompt is called the *shell prompt*, and it's where you type commands in order to have them performed. The shell prompt is described in more detail in later sections.

Logging out To log out, type `exit` (or `logout`) at the shell prompt, and press ENTER:

clay-b19g14a-10> exit

The Unix Shell. A *shell* is a program whose job is to interpret a user's commands and to act on them. With MS-DOS, the shell is `COMMAND.COM`; with Microsoft Windows, it's `explorer.exe` (which handles your mouse clicks). On Unix, there are several different shells. The original one is called `sh` (the "Bourne shell", named after the person who created it). You'll likely be using an enhanced version of `sh`, called `bash` (which stands, in true computer-geek-humour style, for the "Bourne-again shell"). The following examples assume that you are using `bash`, but even if you're not, the other Unix shells are pretty similar, and most of the command will work just the same.

Shells are pretty simple programs, and can't do much by themselves. Instead, they largely rely on invoking external commands to do most of their work.

The shell prompt After you log into a Unix system, the shell starts automatically, and you are deposited at a prompt called the *shell prompt*. It may look something like this:

clay-b19g13-10>_

or like this:

[user@clay-b19g13-10 user] $_

or even like this:

%_

Whatever your prompt looks like, the following examples will use the latter `%` symbol. In other words, don't type the initial `%` symbol in when you are doing the following examples; it represents the prompt.

Introduction to the X Window System. Unix as an operating system dates back to about 1970, a time when there were no fancy graphical user interfaces, no mice and not even a heck of a lot of display screens. This is part of the reason why computer programmers use the word "print" when they mean "display": in those days, the display device was a noisy line printer.

Of course, technology has improved a lot since then, bringing with it nice Graphical User Interfaces, such as Microsoft Windows and MacOS. Unix developed its own GUI as well, called the "X Window System", or just "X". (The developers of X don't like it to be called "X Windows", but people still do.)

When you log in to a Unix machine, you exist in a text-only mode, often called *console* mode. All Unix computers are able to support console mode, so it is the lowest common denominator. But most Unix machines now have sophisticated graphical modes too, allowing you to use X.

To start up X, use the `startx` command:

% startx

It may take up to a minute for X to fully load. What you see now depends on which *window manager* you are using.

The default window manager is called `xfce`. It is designed to be a lightweight, easy-to-use window manager that doesn't clutter your desktop.

`xfce` has a panel at the bottom which contains a number of icons for your most common applications. Each icon also has a clickable arrow above it, which expands to show more, similar, applications. To start an application, click on its icon.

There are four workspaces (virtual screens) called “One” to “Four”, which effectively quadruples your working space. Click on the names of these workspaces to switch between them.

Exiting X To exit X and return back to the console, you’ll need to find the “exit” option in the main menu for your window manager. With `xfce`, it’s the button in the panel that looks like a power switch.

Web browsing with Unix. Netscape Navigator is probably the most likely web browser to be installed on a Unix machine. You can start it by simply typing `netscape` at the shell prompt, or by finding it in your window manager’s program menu. Naturally, you need to be running X to use Netscape.

If you’re familiar with the Windows or Macintosh version of Netscape, you’ll be right at home with Unix Netscape. You should have little trouble if you’re used to using other browsers such as Opera or Internet Explorer on Windows.

Online Unix Prac System.

> **In order to complete this prac you need to visit the Online Unix Prac System and complete all the topics in the set called “CSE2303/CSE2304 Prac0: Introduction to Unix”.**

Logging in. If you have an AuthCate password and you can remember it, then visit:

> **http://www.csse.monash.edu.au/∼unixprac/user/main.epl**

and enter your AuthCate username and password.

Click on the “Edit Sets” link, and choose the set called “CSE2303/CSE2304 Prac 0: Introduction to Unix”. You can additionally choose the optional topic set if you want some extra exposure to Unix. Click on “Change Sets”, and you will see a list of topics.

Now, just go through each of the topics one by one, and do what they say. The Unix Prac System remembers which topics you have completed, so when you come back to it later it will remind you which topics you’ve already done.

Guest login If you have forgotten or never received your AuthCate password, you can still use the Unix Prac system, but it will not remember which topics you’ve done, nor will it present the topics in a logical order. The URL is

> **http://www.csse.monash.edu.au/∼unixprac/guest/main.epl**