

# CS450 Assignment 1: Introduction to Unix

## Due September 25th, 2002

September 11, 2002

This is a small assignment designed to get everyone up to speed on how to use access and use the Solaris machine for CS450. If you've Unix before, this should be fairly straight forward, if you haven't then this will give you a good chance to catch up.

All answers must be typed and submitted in class no later than September 25<sup>th</sup>, 2002. For remote students you may email your answers as plain ASCII text or PDF (not MS-Word, RTF, HTML etc) to your TA with [cs450-091] Assignment 1: Lastname, Firstname as the subject line (replace 091 with the appropriate section). For homework that is emailed it must all be one file with the extension .pdf or .txt and it must be sent before your class section starts.

### 1. Log in to cs450.cs.iit.edu and change your password.

This can be done only via secure shell (SSH). If you are using a PC check out SecureCRT or TeraTerm. Under Linux or other Unix (including Mac OSX) you can use the command line SSH from a terminal window (`ssh -l username cs450.cs.iit.edu`). Please do this early as the TAs are not the ones who create and manage the accounts so there is some turn around time involved.

The default password for your account is your username. It is CRITICAL that you change your password upon your first logon, this can be done with the `passwd` command. Write your new password down as the TAs do not have access to passwords.

No answer is needed for this problem; however, if you have useful information that you would like to share, feel free to do so.

### 2. Briefly describe what a shell is and how it works. Tell what shell your account has. How is shell execution different when commands have an ampersand (&) appended to them?

### 3. How do you access the online manual in Unix? How can tell if something is a shell command or a C library function? Provide examples of both. If a command has multiple entries in the manual, how do you specify each one (specifically for the wait command)?

Your first stop on this should be reading the manual page for the manual program. Note, the online manual for Solaris operates slightly different than the online manual for Linux and BSD.

### 4. What are the C compilers installed on the system? Write a simple program that starts up, and invokes the fork system call. Have the child process display "Hello CS450" and have the parent process wait for the child process to exit before exiting.

For this command you will need to use the `fork` and possibly the `wait` or `waitpid` system calls. The online manual provides information on how to use it and a Google search will return many results. Here is an example of some possible output:

```
Parent: Starting Program
Child: Hello CS450
Parent: Exiting Program
```

Make sure that you include your commented C source code and the text of the output of your program. Failure to include either of these will result in no credit.

5. **What is a pipe? How does output redirection work? Write a shell command that does the following:**

- (a) Searches a list of books in `~wagspat/books.txt` for all works by Goethe.
- (b) Sorts the list of books alphabetically.
- (c) Outputs the list to a file in your home directory called `goethe.txt`.

This can be done all as one command on the command line by using pipes and redirection. An example would be `cmd1 arg1 arg2 | cmd2 | cmd3 > outfile.txt`. It only takes two commands to achieve the result you need. Some functions that might be helpful to you are `cat`, `sed`, `grep`, `sort`, and `awk`. Look up the commands in the online manual for more information about their usage.