CS 5780	**System Administration**	Test 1
Name:	Fall 2003	Max Pts: 42

Important: This is an open book test. You can use any books, notes, or paper, but not exchange anything with other students. You are not allowed to use any electronic/communication devices, including a calculator. *Do not log into the computer during the test.* Any calculations and rough work can be done on the back side of the test pages. You will lose five points for not writing your name.

1. [10 pt] A user is trying to read field 6 from one file, and then use that for a `grep` in another. However, he just gets a blank line.

   ```
   cat db1 | awk '{print $6}' | while read i
   do
       GREP=‘echo $i | grep DB2‘
   done
   echo $GREP
   ```

   What is wrong? Give some suggestion to fix it.

2. [6 pt] Spontaneous processes appear at system startup time but are not considered to be real processes. Yet, they apepar in the process table. Why?

3. [6 pt] Look at the following set of commands:

```
cd ${HOME}
mkdir foobar
cd foobar
touch fubar
mkdir foo
```

What can you say about the number of links in the inode table for `${HOME}`, `foobar`, `fubar`, and `foo` based on the commands given to you.

4. [8 pt] What are the possible states for a process in Unix. Write a one line explanation for each of them. Why are zombie processes not kill-able?

5. [6 pt] Unix filetypes are hard coded and the type of a file cannot be changed without actually deleting the file. Why? How does Unix find out about the file type? How does Unix find out about what type of data is in the file?

6. [6 pt] Unix passwords are encrypted but cannot be easily decrypted. How then does Unix verify the identity of the user? How does it make sure that the encrypted password of two users, who may have selected the same string for password, looks different in the password file?