HW2

1. In Unix, the first process is called **init**. All the others are descendants of “init”. The **init** process spawns a **sshd** process that detects a new secure ssh requested connection (WKPort 22). Upon a new connection, **sshd** spawns a login process that then loads a **shell** on it when a user successfully logs into the system. Now, assume that the user types **who | grep <uwnetid> | wc –l**. Draw a process tree from **init** to those three commands. Add **fork**, **exec**, **wait**, and **pipe** system calls between any two processes affecting each other.
2. **Consider four different types of inter-process communication (IPC).**
   1. Pipe: implemented with pipe, read, and write
   2. Socket: implemented with socket, read, and write
   3. Shared memory: implemented shmget, shmat, and memory read/write
   4. Shared message queue: implemented with msgget, msgsnd, and msgrcv
   5. Which types are based on direct communication?
   6. Which types of communication do not require parent/child process relationship?
   7. If we code a produce/consumer program, which types of communication require us to implement process synchronization?
   8. Which types of communication can be used to communicate with a process running on a remote computers?
   9. Which types of communication must use file descriptors?
   10. Which types of communication need a specific data structure when transferring data?