Homework #4 **M1522.000800 System Programming**

Name: _____

Due Date: Tuesday, March 31, 2015, 23:59 **Student-Number:** _____

Submission: in paper form.
There is a drop off box in class and inside the CSAP Lab in building 301, room 419.

Question 1

Process State

The lecture slides “Process Management” on page 8 show a diagram of a process’ state.

(a) apparently, in Linux there are 'zombie' processes. Explain when a process becomes a zombie and also zombie processes are killed (ended) in Linux.

(b) Write a small program that creates a zombie process.

```
#include <unistd.h>

void main(void)
{
  // your code




}
```

Question 2

Process Creation

Consider the following code. How many times is “Hello world” printed?
Solve this problem without actually executing the code!

```
int main()
{
    pid_t pid;

    pid = fork();
    if (pid == 0) {
        pid = fork();
        if (pid == 0) {
            printf(“Hello world\n”);
        }
    } else {
        printf(“Hello world\n”);
    }

    pid = fork();
    if (pid > 0) {
        printf(“Hello world\n”);
    }

    return 0;
}
```

“Hello world” is printed _____ times.

Question 3

Interprocess Communication

There are two well-known IPC methods for client-server communication: sockets and pipes. Compare the two, what are the advantages/disadvantages of each method?