

Problem Set 3.1

CS 311

Due Feb. 17, 2014

Due at the beginning of class in hardcopy.
Sections 3.4–6

1. What is the output of the following program?

```
#include <sys/types.h>
#include <stdio.h>
#include <unistd.h>

int value = 5;

int main()
{
    pid_t pid;

    pid = fork();

    if (pid == 0)
    {
        value = 15;
        printf("Value = %d.\n", value);
    }
    else if (pid > 0)
    {
        wait(NULL);
        printf("Value = %d.\n", value);
    }

    return 0;
}
```

If the `wait()` system call is removed from the previous program, what will the modified program's output be?

2. What are the benefits and the disadvantages of each of the following? Consider both the system level and the programmer level.
 - (a) Synchronous and asynchronous communication

- (b) Automatic and explicit buffering
 - (c) Send by copy and send by reference
 - (d) fixed-size and variable-sized messages
3. The program `rpcinfo` is used to get information about Remote Procedure Call services running on a Linux system. Running the command `rpcinfo -s` on phoenix results in the following output:

program	version(s)	netid(s)	service	owner
100000	2,3,4	local,udp,tcp,udp6,tcp6	portmapper	superuser
100024	1	tcp6,udp6,tcp,udp	status	29
100004	1,2	tcp,udp	ypserv	superuser
100011	2,1	tcp,udp	rquotad	superuser
100005	3,2,1	tcp6,udp6,tcp,udp	mountd	superuser
100003	4,3,2	udp6,tcp6,udp,tcp	nfs	superuser
100227	3,2	udp6,tcp6,udp,tcp	nfs_acl	superuser
100021	4,3,1	tcp6,udp6,tcp,udp	nlockmgr	superuser
100009	1	udp	yppasswdd	superuser

Explain the meaning of the program and service columns.