

# CSCI 331 Exam 1 Spring 2006

22 February, 2003

Open Book Section

Name: \_\_\_\_\_

This exam is to be turned in by 3:00. There are questions on **both** sides of this sheet.

You may use your books and notes for this section. However, you must turn in the closed book section before consulting your book or notes.

## Problem 1 (8 points)

If you used `scandir` in the the first homework, you needed to write a “filter” routine that returned 0, if a file name met the DCF specification, and returned a non-zero value, if it did not. If you didn't use `scandir`, you still had to do that check before sorting your file names. For this question, you are to write a filter routine that receives a pointer to a `dirent` structure and returns 0, if the file's name starts with the four letters `CSCI`, and returns a non-zero value, if it does not. An **edited** copy of the `dirent` structure, taken from a Unix man page, is given below.

```
struct dirent
{
    .....
    unsigned short d_reclen;    /* length of this d_name */
    char d_name [NAME_MAX+1];  /* file name (null-terminated) */
}
```

Here's is the C header you should use to start your routine:

```
int goodfile (struct direct *p) {
```

## Problem 2 (5 points)

What information must be obtained from the Boot Parameter Block to determine the location of the root directory entries on a FAT16 file system? [Don't do calculations or give byte offset locations. Just list the information.]

**Problem 3 (10 points)**

Suppose you are using a RAID 5 disk system with five disks with a block size of 1024 bytes.

**Problem 3A:**

Describe what must happen to write 128 bytes to the disk?

**Problem 3B:**

Describe what must happen to write 8192 bytes to the disk?

**Problem 4 (5 points)**

A device driver is a collection of kernel routines. What sort of kernel routines would you expect to find in a device driver and how would they be invoked? [There is no one right answer. This is a **short** “discussion” question.]