Exam 1 Review

CS 2308
Spring 2015

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Exam 1

- Friday, February 20
- In class, closed book, closed notes, clean desk
- 15% of your final grade
- 50 minutes to complete it
- I recommend using a pencil (and eraser)
- All writing will be done on the test paper I will hand out.
- No calculators or cell phones.

Exam Format

- 100 points total, 4 (or 5) pages
  - Writing functions/code (about 1 page)
  - Multiple choice/matching
  - Fill-in-the-blank/short answer
  - Demonstrating the search/sort algorithms

Content from Textbook

- Chapter 6: 6.1-5, 7-10, and 13
- Chapter 7: 7.1-4, 6, and 8
- Chapter 11: 11.2-8
- Chapter 8: 8.1 and 8.3
- Linux material from the Linux lecture.

- see lecture pdfs for specific topics:
  Review part 2, Linux, Chapter 8

C++ Programming on Linux

- What is Linux
- Linux file system
- Basic shell commands

pwd	more/less/cat
ls	cp
cd	mv
mkdir	rm
rmdir	man

- Basic file editing (nano, etc.)
- edit, compile, run

```
nano
g++
./a.out
```

- know how to **use** the commands

Chapters 6, 7, 11 Review

- Know how to program with functions, arrays and structures.
- Passing parameters by reference and by value
- Passing arrays to functions, processing arrays
- Partially filled arrays
- Arrays of structures
- Everything from PA1 and PA2

Ch.8: Searching and Sorting Arrays

- Searching
  - Linear Search
  - Binary Search
- Sorting
  - Bubble Sort
  - Selection Sort
- Efficiency
  - Growth rate functions: which are faster/slower
  - Efficiency of each searching/sorting algorithm

You **will not** need to know the code
--but I may ask you to implement linear search

You **will** need to be able to demonstrate the algorithms
--see exercises at end

Example Programming Problem

Write a function that accepts an array of integers and the size of the array and prints out a table listing how many values in the array fall in each of the following ranges:

less than 50
50 to 59
60 to 69
70 to 84
85 to 99
over 100

Binary Search
Example

The target of your search is 101. Given the following list of integers, record the values of first, last, and middle during a binary search. Assume the following numbers are in an array.

1 7 8 14 20 42 55 67 78 101 112 122 170 179 190

Repeat the exercise with a target of 114

```
first   0
last   14
middle  7
```

```
first   0
last   14
middle  7
```


Sorting
Example

Use the following array for both questions:

11	8	14	7	12	18	2	17
0	1	2	3	4	5	6	7

Show the contents of the array after 2 passes of the selection sort

Show the contents of the array after 1 pass of the bubble sort

How to Study

- Review the slides
  - understand all the concepts, quiz yourself
- Use the book to help understand the slides
  - there will be no questions over material (or code) that is in the book but not on the slides
- Review programming assignments (fix yours!)
  - get printouts of solutions in my office
- Try some exercises from the book
- Practice, practice, practice!
- Get some sleep