CMPSC 311 - Introduction to Systems Programming

Module: Studying

Professor Patrick McDaniel
Fall 2014
Oops ….

- Easy C class implementation

**PROJECT BUDGET**
$10-$30 USD

**TOTAL BIDS**
2

**PROJECT DESCRIPTION**
You are to implement the following functions:

```c
int16_t crud_open(char *path);
// This function opens the file and returns a file handle
int16_t crud_close(int16_t fd);
// This function closes the file
int32_t crud_read(int16_t fd, void *buf, int32_t count);
// Reads "count" bytes to the file handle "fd" from the buffer "buf"
int32_t crud_write(int16_t fd, void *buf, int32_t count);
// Writes "count" bytes to the file handle "fd" from the buffer "buf"
int32_t crud_seek(int16_t fd, int32_t loc);
// Seek to specific point in the file
```

And that is it. Very simple work. More details are in the attachment.

Idea is you are to maintain the correct file contents in an
object stored on the CFRU device.
How to study in college.

• This is really four questions:
  ‣ When to study?
  ‣ Where to study?
  ‣ What to study?
  ‣ How to study?
  ‣ Measuring the result?
Goal of studying

• Q: Why do we study?
• A: To understand and be able to apply?
Goal

• Q: Why do we study?
• A: To understand and be able to apply?

Know what you know, what you don’t know, and know the difference.
When to study

• Time management
  ‣ How you allocate your time to study is as important as any other aspect.
  ‣ Techniques:
    • Time bins: fixed allocations of time per topic/area/skill
    • Enforce time boundaries! (snapshot)
    • Work with TODO lists
    • Daily budgets
Where to study

- Location/company breeds mood and outcome
  - Isolation is often good
  - Studying with others works for some, less so for others
  - Library is great, Starbucks less so
  - While watching TV is terrible

- Distraction Management
  - Turn off email
  - Pandora - avoid commercials, audio/visual interrupts
  - Avoid “eyes running over the page” syndrome
What to study

• Different contents require different approaches
  ‣ definitions
  ‣ concepts
  ‣ skills

• Prioritization
  ‣ understand what is important
  ‣ titles of slides, red text, presence on previous tests
  ‣ understand the focus of the class
  ‣ math, programming, engineering, design, ...

• Understand the outcomes
  ‣ what does the professor expect me to be able to do?
How do study

• Right tool for the job
  ‣ Read the slides, circle things you don’t understand
  ‣ 3x5 cards for definitions (use as flash cards)
  ‣ Draw pictures
    • e.g., can you draw a picture of memcpy?
  ‣ Make up example problems/find on Internet
  ‣ Write programs!
    • For this class, this is the most important.
  ‣ Write summary or explain to your Mom/roommate
    • e.g., how does a process get more memory?
    • e.g., what are the two major ejection approaches for caching
Result

• Studying is best served when you can generate something tangible:
  ‣ **Dictionary**: of terms with definitions
  ‣ **API guide**: with meaning and description of arguments
  ‣ **Program**: develop program that has a function for each API and demonstrates its use.
  ‣ **Portfolio**: labeled diagrams describing the major designs
    • e.g., process space, cache behavior
  ‣ **Problem set guide**: example problems
    • e.g., conversion of hex numbers, cache behaviors
Exams

• Q: Why do we give them?
• A: To make you study the material.
• *Implication*: if you understand what the professor wants you to know (outcomes), then you know what will be on the test.
311 Outcomes?

• Terminology: abstractions, application space, …
• Concepts: isolation, caching, …
• Language primitives: addresses, strings, structs, …
• Interfaces: file I/O, memory management, …
• Tools: compiler, debugger, linker, …
• Skills: calculating address, coding with strings, …
What do I ask in exams?

• Terminological/definition questions (8 questions)
  ‣ Asks: what are the terms and ideas (most regurgitate)?
  ‣ Form: short answer (1-2 sentences, sometime a single word)
  ‣ Weight: about 40%

5. (5pts) What is *swap space*?
What do I ask in exams?

• Conceptual synthesis (2 questions)
  ‣ Asks: explain the course concepts and apply them?
  ‣ Form: long answer (1-2 paragraphs)
  ‣ Weight: about 20%

9. *(10pts)* Name one advantage of using variables in makefiles we discussed in class and describe why it is important.
What do I ask in exams?

• Skills demonstration (4 questions)
  ‣ Asks: show mastery of skills taught in class and assignments?
  ‣ Form: word problems
  ‣ Weight: about 40%

14. (10pts) Write a function that receives a 4-byte unsigned integer \( x \) and returns a count of the number of bits equal to 1 (e.g., if the input is 5, then the function would return 2).
How to study?

• Focus energy on the slides and course assignments.
• Book is there for additional information, there may be a short question about content.
• You should be able to perform any skill taught in class.
How to take?

• Read the questions very carefully.
• Answer what you know first.
• Only try to figure out how to perform an unknown skill after you have done everything else.
Midterm #2

- Bit/byte operations
- Strings
- Memory management
- Debugging
- Input/output
- Caching
How about some freebee questions?

NO.