Course Summary

COMP 520: Compiler Design (4 credits)

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Why did we learn about Compilers?
How does learning about compilers change your view of Programming Language Design?
If you were to select a compiler/language toolkit for another compiler project, what would you choose?


Structure of Final Exam

- 7 questions - each with multiple parts
- total of 85 points
- many questions/compiler phases based on a smallish language that is defined in Q1
- about 25% of the points are about your projects, with emphasis on 2nd half of project
- topics covered in last half of course are included
Tips

- Review Vincent’s midterm review.

- Review the midterm, if you got something wrong, go back to the notes and figure out the right answer.

- Organize your answers - make is easy for the grader to find your answers.

- Write neatly.

- Start each question on a new page.

- Don’t squish in your answers to make a lot fit on one page.

- Be precise.
All the midterm Material

- All the topics from the midterm will also be possible on the final.
- Review, scanners, parsers, weeders, type checking and symbol tables.
Garbage Collection/Memory Allocation

- Problems with `malloc/free`.

- Kinds of Allocators?
  - mark and sweep
  - stop and copy
  - reference counting

- Basics of how each one works.

- Advantages/Disadvantages of each.
Code Generation

- Generating bytecode .... if you couldn’t do the question on the midterm perfectly, practice.

- Understand the structure of Java bytecode and the way in which verification of bytecode works.

- Understand peephole optimization.

- Understand VirtualRISC code.

- Same handouts as for midterm will be attached at the back of your exam paper.
Register Allocation

- Fixed register allocation scheme (for generating VirtualRISC from bytecode).

- Advantages/Disadvantages?

- Basic Block Register Allocation (invariant?)

- Advantages/Disadvantages?
Static Analysis

- simple example, definite assignment problem, understand in some detail.

- live variable analysis, understand the overall problem and approach, don’t need to know the details (until COMP 621).
Thanks ...

- To Vincent and Faiz, they worked hard as TAs.
- To the class - you worked hard all term.
- Also, I hope to see some of you in COMP 621 next fall. Or, if you are interested in either compiler or radiation oncology app COMP 396/401/400 projects, let me know.