Wrapping up

CSC165, MATHEMATICAL EXPRESSION AND REASONING FOR COMPUTER SCIENCE

DAVID LIU (SHORTER VERSION BY FRANÇOIS PITT)
Check course website for...

Some content details
Final exam aid sheet and cover page
Extra office hour schedule
Final exam study tips

1. **Space out your studying.** It's more effective to engage with material in several shorter sessions rather than one long cramming night.


3. **Work with others** (intelligently). Help each other review material, explain concepts, get "unstuck". Don't work with people who'll distract you—even if you're friends!
Aim for mastery

“Mastery” means that you are the expert.

Go beyond “re-reading and re-doing”:

- create multiple solutions
- identify common mistakes or errors
- explain ideas to others
- make up new questions
Final exam day tips

1. **Take care of yourself.** Sleep and eat well. Have some fun!
2. **Arrive early.** (but not too early)
3. **Bring a watch, drink, and snack.**
4. **Skim every question.** Play to your strengths.
5. **Get key ideas down first, leave space for details.**
Looking back, looking ahead

WHAT WERE THE BIG THEMES FROM CSC165?
WHERE CAN YOU GO FROM HERE?
Expressing ideas precisely

By the end of this course, you should be able to:

- Translate statements between English and predicate logic
- Read and understand new definitions, and expand them in statements
Reading and writing proofs

By the end of this course, you should be able to:

◦ Write a formal proof header based on the structure of the statement being proved.
◦ Write correct *chains of reasoning* using definitions, assumptions, intermediate steps, and external facts.
◦ Apply different proof techniques.
Analysing algorithm running time

By the end of this course, you should be able to:

- Analyse the running time of an algorithm...
  - Using an exact step counts
  - Using over-/underestimates
- Analyse the worst-case/best-case runtime of
- an algorithm
- Analyse the average-case runtime of an algorithm — but only according to the naive definition of “average”
Working with new domains

By the end of this course, you should be able to:

◦ Read definitions about new mathematical domains, such as number theory, number representations, asymptotic bounds, and graphs...

◦ And whatever else comes next!
Some future courses — directly related

CSC236/240 – recursive runtime, algorithm correctness
CSC263/265 – data structures
CSC373 – algorithms
CSC473 – advanced algorithms
CSC438 – computability and logic
CSC448 – automata theory
CSC463 – computational complexity