COMP9020 21T1
Week 10
Course Review

Course Review

Goal: for you to become a competent computer **scientist**.

Requires an understanding of fundamental concepts:

- number-, set-, relation- and graph theory
- logic and proofs, recursion and induction
- order of growth of functions
- combinatorics and probability

In CS/CE these are used to:

- formalise problem specifications and requirements
- develop abstract solutions (algorithms)
- analyse and prove properties of your programs

Examples:

- The University Course Timetabling Problem ($\rightarrow$ PDF)
- COMP9801 (Extended Design and Analysis of Algorithms)

Course Review

- COMP9024 – Data Structures and Algorithms (21T3)

Concept	Used for
logic and proofs	correctness of algorithms
properties of relations	reachability in graphs
graphs	shortest path problems
trees	search trees
$\mathcal{O}$ (big-Oh)	efficiency of algorithms & data structures
alphabets and words	string algorithms
probability, expectation	randomised algorithms

NB

"universitas" (Lat.) = sum of all things, a whole

By acquiring knowledge and enhancing your problem-solving skills, you're preparing yourself for the future

Course Review

- COMP9024 – Data Structures and Algorithms (21T3)

Concept	Used for
logic and proofs	correctness of algorithms
properties of relations	reachability in graphs
graphs	shortest path problems
trees	search trees
$\mathcal{O}$ (big-Oh)	efficiency of algorithms & data structures
alphabets and words	string algorithms
probability, expectation	randomised algorithms

NB

"universitas" (Lat.) = sum of all things, a whole

By acquiring knowledge and enhancing your problem-solving skills, you're preparing yourself for the future

Assessment Summary

1. quizzes — max. mark 14
2. mid-term assignment — max. mark 26
3. final exam — max. mark 60

NB

- QuizMark = max { quizzes, ExamMark * $\frac{14}{60}$ }
- MidtermMark = max { mid-term, ExamMark * $\frac{26}{60}$ }

NB

To pass the course, the sum of your marks

$$\text{Sum} = \text{QuizMark} + \text{MidtermMark} + \text{ExamMark}$$

must be 50 or higher **and** your ExamMark must be 25 or higher.

Check your marks on WebCMS; Example:

```
Exam: 45/60
Midterm_Asst: 19.5/26
Quiz: 11.3/14
Sum: 75.8

midterm: 17/26
quizzes: 11.3/14
```

Note: $\max\{17, 45 * \frac{26}{60}\} = 19.5$

Final Exam

Goal: to check whether you are a competent computer scientist.

Requires you to demonstrate:

- understanding of mathematical concepts
- ability to apply these concepts and explain how they work

Lectures, study of problem sets and quizzes have built you up to this point.

Prac Exams on course webpage ($\rightarrow$ Practice Exams)

Final Exam

2 hour (+10 mins reading time) online test
Monday, 10 May between 2:00pm and 4:15pm Sydney time

NB

You must start the exam between 2:00pm and 2:05pm in order to get the full 130 minutes (= 2 hours 10 mins)

Format:

- Covers **all** of the contents of this course
- 8 numerical/short answer/multiple-choice (with ≥ 1 correct), each worth 4 marks
- 4 open questions, each worth 7 marks
- Maximum marks: 4*8 + 28 = 60

If you

. . . are uncertain about how to interpret a question

. . . are unsure about how to answer a question

. . . find a question too difficult

$\Rightarrow$ do answer to the best of your understanding

$\Rightarrow$ do focus on the questions that you find easier

$\Rightarrow$ do not agonise about a question or your answer after you've submitted

Revision Strategy

- Re-read lecture slides
- Read the corresponding chapters in the book (R & W)
- **Review/solve problem sets**
- Solve more problems from the book
- Attempt prac exams (paper-based) on course webpage

(Applying mathematical concepts to solve problems is a skill that improves with practice)

NB

1. Online consultations **Fri, 23 & 30 Apr, 7 May 1–2pm**
2. **Course Forum** — questions will be answered quickly

Fit To Sit

If you attend an exam

- you declare that you are "fit to do so"
- it is your only chance to pass (i.e. no second chances)

If during an exam you are unwell and can't continue

- stop working, take note of the time
- immediately apply for Special Consideration

NB

If you experience a technical issue:

- Take screenshots of as many of the following as possible: error messages, screen not loading, timestamped speed tests, power outage maps
- If issue was severe, apply for Special Consideration after conclusion of exam. Attach screenshots.

Assessment

Assessment is about determining how well you understand the syllabus of this course.

If you can't demonstrate your understanding, you don't pass.

In particular, I can't pass people just because ...

- please, please, ... my family/friends will be ashamed of me
- please, please, ... I tried really hard in this course
- please, please, ... I'll be excluded if I fail COMP9020
- please, please, ... this is my final course to graduate
- etc. etc.

(Failure is a fact of life. For example, my scientific papers or project proposals get rejected sometimes too)

Assessment (cont'd)

Of course, assessment isn't a "one-way street" ...

- I get to assess you in the final exam
- you get to assess me in UNSW's MyExperience Evaluation
  - go to `https://myexperience.unsw.edu.au/`
  - login using zID@ad.unsw.edu.au and your zPass

Response rate (as of Friday): 20.7% 

Please fill it out ...

- give me some feedback on how you might like the course to run in the future
- even if that is "Exactly the same. It was perfect this time."

So What Was The Real Point?

The aim was for you to become a better computer scientist

- more confident in your own ability to use formal methods
- with a set of mathematical tools to draw on
- able to choose the right tool and analyse/justify your choices
- ultimately, enjoying solving problems in computer science

Finally

That's All Folks

Good Luck with the exam
and with your future computing studies