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What did we cover this semester?

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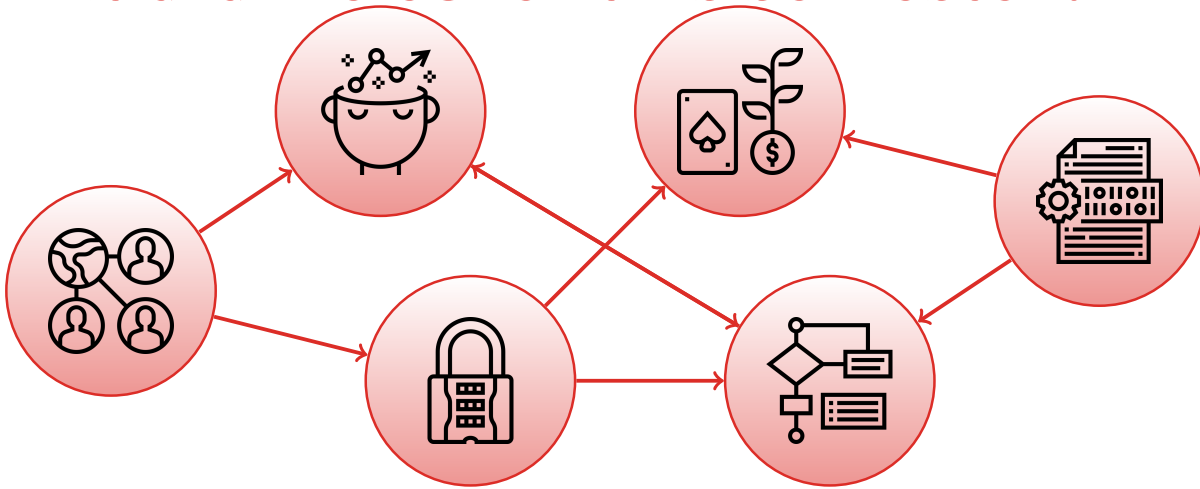
Algorithms

- ▶ Read pseudocode and flowcharts
- ▶ Understand the different complexity classes
- ▶ Analyse short programs (<20 lines) of pseudocode for likely complexity
- ▶ Induction not examinable, recursion **is** examinable

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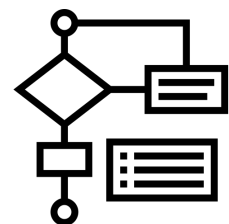
Data representation

▶ Conversion between particular bases
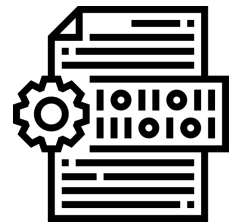
▶ Alternatives for negative number representations

▶ Representation of floating point and Unicode characters

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Sets

▶ Be able to work with algebra

▶ Understand and draw (countable) Venn diagrams

▶ Know how relations and functions work and associated definitions (domain, range, injection etc.)
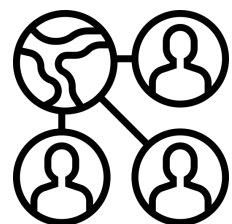
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Quick interlude

In this game, cards have letters on one side and numbers on the other side. If a card has a vowel on one side, it must have an even number on the other side.

Which card(s) must be turned over to find out if the rule has been followed?

| A | K | 2 | 7 |
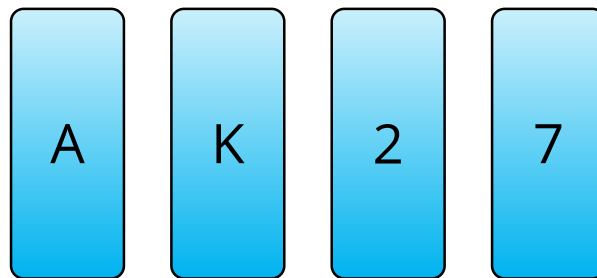
Logic and circuits

▶ Apply laws of logic to propositional statements
▶ Complete truth tables
▶ Convert from English to symbolic logic and vice versa
▶ Draw circuits, write expressions for circuits, simplify expressions, provide output of gates/circuit given inputs
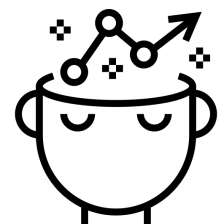
Counting

▶ How to convert a problem into combinatorial notation (C, P, ! etc.)

▶ Different approaches to solving problems

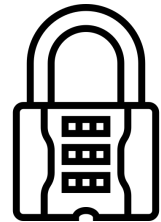Icons made by Eucalyp from www.flaticon.com
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Graphs and trees

▶ How graphs are constructed (draw or describe)

▶ Calculate/understand properties of graphs (degree, complete, directed, weighted etc.)

▶ Define trees and perform traversals

▶ Algorithms are examinable in 2021 for the first time

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Probability

- ► Calculate simple probabilities
- ► Calculate conditional probability and expected value
- ► Solve problems using appropriate distributions
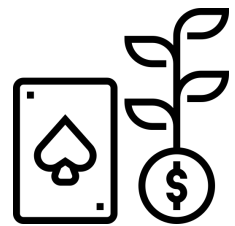
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Exam overview

- ► 60 marks' worth of questions = expect about 60-90 minutes
- ► Mix of autograded (text and set choices) and writing. You may upload images however all questions should be answerable with text.
- ► Generally we don't allow calculators – all bets are off this year.
- ► If in doubt, make a note; reasonable assumptions can be taken into account

Exam structure

In the past the exam has had four sections. As it is now a single quiz, it just has one section.

How should I study?

▶ Read through your notes

▶ Test your recall of the concepts

▶ Practise tutorial questions

▶ Create your own questions

▶ Form study groups

▶ Ask questions in consultation

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What should I do before the day?

► Read through the advice at https://www.swinburne.edu.au/current-students/manage-course/exams-results-assessment/exams/ – probably not that useful

► Get yourself set up at home

► Prepare snacks and water

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What if I failed the assignments?

► Do not panic!

► Don't not sit the exam!

► Recall that you need 50/100 overall to pass.

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What if I fail the exam?

There is no hurdle on the exam this semester, so you can pass with less than 40% on the exam, as long as your overall mark (assignment + continuous quizzes + final quiz) is more than 50%.
If your exam mark (out of 30), your quizzes mark (out of 20) and your assignment mark (out of 50) sum to less than 50, then you will be given a fail mark for the unit.
The latter means repeating the unit, being unable to do any units for which this is a prereq, or having to repeat assessment.

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I can't sit the exam?

► Do not panic! You do however need a good reason.

► Gather as much evidence as you can, and apply for special consideration within three working days.

► Note there is a second chance on 18 June and a second exam period in July.

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Next units

- ► Computer Design: Boolean algebra, circuits, moving towards low-level programming
- ► Artificial Intelligence: logic, probability
- ► Databases: sets, logic
- ► Data Structures: complexity, algorithms
- ► Data Science: probability, data
- ► Highly recommend STA10003 as elective, online and on campus

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The teaching staff

- ► Fatemeh Ansarizadeh
- ► Deepa Prabhu
- ► Harindu Korala
- ► Syeda Zehra

- ► Mahbuba Afrin
- ► Kaberi Naznin
- ► Gamunu Dassanayake
- ► Josh Wright

Dr Clinton Woodward and Dr Markus Lumpe and Dr Ant Edwards and Dr Felip Marti

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Student Feedback Survey

- ▶ This is accessible via Canvas, and usually closes around the end of exams.
- ▶ Please take 10 minutes to complete it; note that you will have questions to answer for the unit as well as teaching staff.
- ▶ See week 10 in Canvas for some more information.

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Extracurricular activities

- ▶ CySCA (Cyber Security Challenge Australia): https://cyberchallenge.com.au, October, contact James Hamlyn-Harris for details
- ▶ FLL (FIRST Lego League): https://firstaustralia.org/, November, contact Therese Keane for details

Read more about Eamonn, one of our past CLE students, who now mentors a FIRST team: https://knowing.swinburne.edu.au/post/183257718464/meet-the-mentors-behind-the-robocats

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Lecture 12
Review

COS10003 Computer Logic and Essentials (Hawthorn)

Semester 1 2021

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Questions I still have

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Topics I need to review