

# COMP90038 Algorithms and Complexity

## Exam Review

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Lecture 24

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# Looking Back

**Data structures:** Arrays, Stacks, Queues, Graphs (directed, undirected, weighted), Binary trees, Binary search trees, AVL trees, Heaps (priority queues).

**Sorting algorithms:** Selection sort, insertion sort, (shellsort), mergesort, quicksort, heapsort, distribution counting.

**Search algorithms:** Sequential search, Binary search, Binary search trees AVL trees, 2–3 trees, Hashing,  $k$ th-largest element.

**Graph algorithms:** DFS, BFS, topological sort, Warshall, Floyd, Prim, Dijkstra.

# Looking Back

**Algorithm analysis:** Asymptotics, the Master Theorem for divide-and-conquer.

**Algorithmic techniques:** Brute force, decrease-and-conquer, divide-and-conquer, transform-and-conquer (presorting, representation change), dynamic programming, greedy methods, time/space tradeoffs.

**String searching algorithms:** Brute-force string search, Horspool, Rabin-Karp.

**Huffman encoding:** Trie

# Preparing for the Exam

A list of examinable material is on the LMS.

Consultation session(s) will be held before the exam; check the LMS for details.

Go over the tute questions again.

Go over the assignment questions again.

Do the practice exam – and sample exam from 2017\*.

A very limited selection of old exam papers (from related subjects) are kept in the library and are available online.

# The Exam

On the night before, get a good night's sleep.

Make sure you know where the exam is held.

Make sure you bring your student card to the exam.

The exam is a 3-hour closed book exam – the cover page is on the LMS (under 'Exam Information').

There is a hurdle requirement on the exam (see handbook).