Revision guide for COMS31900 2018/9

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1 Guide

The May/June exam for COMS31900 will have 3 questions and you should answer all of them. Note that the exam is 2 hours long and so you should pay careful attention to time keeping. In particular, please be careful not to spend too long on question 1!

As a general rule, all the material in lectures **and** problem sheets is examinable unless explicitly stated otherwise in this document.

The following is a list of material that will not be examinable:

- Proofs from the orthogonal range search lecture. You **will** however be expected to know the relevant algorithms and data structures and to be able to apply the techniques to novel problems.
- Proofs from the last four lectures. You **will** however be expected to be able to apply the algorithmic approximation and proof techniques to the problems covered and to problems not covered in lectures.

In order to be explicit, here is a list of topics which are examinable. Where a topic is mentioned, you will be expected to have mastered all the related material in the lecture and problem sheets. For example, where suffix trees are mentioned this is understood to include generalised suffix trees, and the applications such as pattern matching and those listed in problem sheet 3. However, as we did not cover any linear time construction algorithms for suffix trees you will not be examined on them. The topics that are examinable are:

- Randomness, independence, hash functions, static perfect hashing, cuckoo hashing, Bloom filters, van Emde Boas trees, orthogonal range queries, suffix trees and applications, suffix arrays including use and linear time construction, LCA/RMQ including related reductions, approximation algorithms for NP-hard problems including constant factor, PTAS, FPTAS and APTAS approximation methods.