COMP 3004 Midterm review

- Software engineering
  - What it is, why it's needed

- Build models
  - What's a model? A kind of mapping of a system; a virtual representation of something so that it can be discussed, evaluated, understood
  - Why? To get a better idea of how to build the real thing
  - Dynamic model: represents system behaviour from the user's point of view; sequence diagrams, state machine diagrams, activity diagrams
  - Functional model: use cases (based on functional requirements)
  - Object model: class diagrams
  - What do we model? Application domain, solution domain

- Software development life cycle activities/phases/processes
  - Requirements elicitation
  - Analysis
  - High-level system design
  - Detailed object design
  - Implementation
  - Testing
  - Deployment, maintenance

- Requirements elicitation
  - We get to find out exactly what the client wants
  - Figure out the functional and non-functional requirements (categories)
  - Requirements specification
  - Traceability: allows us to figure out what parts of the system the changes will affect
  - Scenarios and use cases
  - Use cases:
    - Actors (external systems, end users), system boundaries
    - Relationships between actors and use cases (initiate, participate)
    - Relationships between use cases (extend, include, inherit)
    - UML use case diagrams
    - Use case table descriptions

- Analysis
  - Object model
    - Based off the real world, the application domain, from functional requirements, use cases
    - Entity, boundary, control objects
    - Attributes, operations
    - Aggregation (composition, shared), inheritance
    - Multiplicity, directionality
    - UML class diagrams, data dictionaries
  - Dynamic model
    - Show the system behaviour from the user's point of view
    - UML sequence diagrams, state machine diagrams

- High-level system design
  - Design goals, design criteria
  - Subsystems and classes, subsystem interface
  - Subsystem decomposition:
    - Coupling, cohesion
    - Architecture styles: MVC, repository, 3-tier, 4-tier, peer-to-peer, client-server, pipe and filter
    - Layers and partitions
    - services

- Midterm
  - Tuesday, October 29
  - Topics: up to and including 3.2
  - 80 minutes
  - Out of 50 marks
  - Concepts: 10 marks (4 MCQ, 2 small exercises)
  - Exercise: 40 marks (3-4 questions)

- Rules
  - Bring your campus card
  - No bathroom breaks