



Advanced Operating Systems Final Exam Scope
Computer Science Honours
25 October 2013

October 18, 2013

1 Section 1 - Multiple Choice Questions - 15 Marks

- Section consists of only **one** question, **Question 1**.
- General questions will be covered,

2 Section 2 - Finite State Process (FSP) Modeling - 25 Marks

- Section consists of only **one** question, **Question 2**.
- Be able to produce finite state machine (FSM) from given FSP specification.
- Be able to produce a FSP specification, given the corresponding FSM.
- Understand FSP terminology and concepts.
- Be familiar with the idea of parallel composition and composite processes
- Know how to draw a state space composition diagram, given a FSP definition of a composite process.
- Know how to create a FSM, given a corresponding state space composition diagram.
- **Book Chapters (Easy Revision - not much to remember):**
 - Read **Chapter 2** to **Chapter 5** of the Magee & Kramer, *Concurrency* textbook.
 - These chapters contain most of the information you need in order to be able to answer questions in this section.

3 Section 3 - Concurrent Programming - 50 Marks

- Section consists of **two** questions:
 - **Question 3** - (25 Marks).
 - **Question 4** - (25 Marks).
- Know about different semaphore operations - [`wait()` & `signal()`], [`P()` & `V()`], [`down()` & `up()`].
- Be familiar with the idea of *condition synchronization*
- Understand multithreaded programs and know how to interpret them
- Understand the concept of thread interleaving.
- Understand the idea of mutual exclusion.
- Understand the monitor construct and how monitors are used in concurrent programming.
- Read **AGAIN Chapter 4 to Chapter 5** of the Magee & Kramer, *Concurrency* textbook.
- Read **everything** I gave you in class focussing on **Concurrency** and **Concurrent Programming**. The questions will, on the whole, be similar to what you have already seen in the class tests you wrote.

4 Section 4 - Distributed Systems - 50 Marks

- There are **three** questions in this section: **Question 5, Question 6 and Question 7**.
 - **You are required to answer only TWO of these questions.**
 - Read **Chapter 1 to Chapter 4** of the Tanenbaum & Van Steen, *Distributed Systems* textbook.
 - To answer **each** question in this section, read **chapters 1-4** of Tanenbaum & Van Steen carefully.
 - **Remember:** Pictures, diagrams are very important. **DO NOT OVERLOOK THEM.**
 - **Do not forget:** This section **will** contain questions on **Deadlock**.
 - * So, revise the stuff we did in class, and read all the handouts/notes you got in class

5 Section 5 Finally ...()

- There is a **total of 140 Marks** in this exam
- **Remember:**

This is just another class test. Read your work carefully, with **focus** and **understanding**. You should be able to acquit yourself very well.
- Good luck to you all!