Computer Science CSC 238H — Wednesday July 22 1998
St. George Campus — University of Toronto

Reviewing

To thoroughly learn the material in this course, and to prepare for the exam, you should do as many of the following things as possible. Start preparing **today**, if you have not already started, because there are lots of things to do on this list. The material in this course is not the sort of thing you can "cram" at the last minute since it takes time and practice to become comfortable applying the techniques you have learned to new problems.

- Reread your lecture notes, working through the proofs and examples.
- Reread the text, working through the proofs and examples. So far, we have covered almost everything up to page 212. We omitted page 12, the proof system on page 31, and page 129.
- Make sure you understand the solutions to the assignment questions and the midterm test questions. (Also the quiz questions, although the quiz questions are typically easier than the kinds of questions you will get on the exam.) You should understand why you lost marks so that you don't make the same mistakes on the exam.
- Work out solutions to assignments and tests from previous terms. They can be obtained from course web pages for previous terms: check the links from the present course web page. Often there will also be solutions to the assignments posted on the web pages for previous terms.
- Important: solve the problems on old exams. If possible, do them within the time limit for the exam. There are several old exams at the back of the textbook. These give a good indication of the level of difficulty of your upcoming exam. If you don't feel confident after doing these exams, do **more**: the university libraries have copies of other old exams that were not included in the textbook. I know the library at Trinity College has exams from many past years, and the library at St Michael's College has some too (as do some other libraries).
- Work out the solutions to **lots** of problems. You can learn this material best by practicing, not just by reading. A list of some good problems from your text are given below. If you still don't feel comfortable with some portions of the material, do more problems related to that section. If necessary, find problems to do in other textbooks. The library has lots of books on discrete mathematics with lots of exercises.
- Eat lots of celery. Green vegetables are said to be good for your brain cells.

I have listed, below, some exercises from your text that will be useful when preparing for your exam. You should at least do these, and probably others. Many have answers in the textbook. For the others, you might want to trade your solutions with a classmate and find errors in each other's solutions.

Logic. Pages 15-17: #8,18,23,25. Pages 26-29: #2,4,5,7-9,12-14. Page 40: Do some of #3-12, except using the proof system on page 53, or redo the proofs on pages 53-55 without looking at the printed proofs.

Asymptotic Notation. Pages 65-66: As many of #1-28 as you need to do to feel comfortable; you should definitely do any questions that look hard to you. The exercises on pages 71-73 are definitely important. (You should be able to solve big-O questions like the one given on the midterm test very quickly.)

Proof Techniques. Pages 86-88: #1-4,8, and as many of #10-43 as you need to do to feel comfortable with the material. Pages 103-105: Do a sampling, especially the starred ones which have answers in the text, and #31,41,42.

Recurrences. Page 153: #21,22,37. Page 164: As many of #11-24,31 as you feel you need to do. (Concentrate on the ones that look hard to you, and don't just guess the solution; prove your solution is correct by mathematical induction!) Page 176: #19,20,28,32,39,40.

Correctness. Pages 191-192: As many as you can! Many students find this part of the course challenging, but it is a very important part of this course. (These problems are probably easier than what you can expect on the exam; better exercises can be found in old exams and assignments from this term and previous terms.) Pages 193-206: All of the exercises scattered through this section.

Finite Automata and Regular Languages. To be announced.