CS 320, B Section, Final Exam study guide

1 Exam Logistics:

Your CS 320 final exam for the CS 320 B section will be available on Gradescope on 15th December, 12 pm EST. The exam on Gradescope will be available for 48 hours until 17th December, 12 pm EST. Please note that you will have exactly 3 hours in one sitting to complete the exam. Hence it is crucial that you set aside that 3-hour block in the 48 hours when you think you can write the exam without any interruptions. As I mentioned in the lecture on 10th December, when you click on the final exam on Gradescope, a timer will initiate, and you will then be required to complete the exam. So please make sure that you click on the final exam only when you are ready. I hope that the 48-hour window and the 3-hour duration to write the final exam alleviates some of the stress.

2 Topics:

Please note that this is not an exhaustive list of topics for your final exam. You are responsible for everything covered in a lecture from week one until the last lecture. Refer to Blackboard and all the recorded lectures for the exhaustive list of topics.

1. Week 2: Introduction to OCaml
2. Week 3: Function Types, Tail recursion, and problem-solving

   Make sure you are comfortable with what tail recursion is and how you convert a normal recursive program in OCaml into a tail-recursive problem.

   What are function types? And how do you interpret them?

   Review some of the in lecture problems that we covered
3. Week 4: Merge Sort, Insertion Sort, Option Types, and Currying
4. Week 5: High Order functions and currying

   Make sure to review some of the problems from your theory assignment on this.
5. Week 6 and Week 7: Inductive Types

   Again, review the problems from the theory assignment, and do not forget to check some of the problems on binary trees and trees provided in the programming assignment.
6. Week 8: Formal Grammar

   Professor Marco has made some great videos on formal grammar that are posted on Blackboard. Please make sure to review them. Also, review your theory assignment on problems related to formal grammar. When is grammar ambiguous? How do you convert ambiguous grammar into an unambiguous? How do you address issues related to associative and precedence in grammar?
7. Week 11 and Week 12: Operational Semantics:
8. Week 13: Static and Dynamic Scoping

   Make sure to review the problems we did in a lecture on static scoping and dynamic scoping involving print statements.

9. Week 14: Functions
    How does the grammar change to incorporate functions
    What operational semantics are required to incorporate functions
    Activation records
    Dynamic links
    Closure
    Deep binding
    Shallow binding
    Adhoc binding
10. Week 15: Memoization

3 How do I study for the final exam?

The best approach to studying for the final exam is to review all your theory assignments again. This is very crucial. I hope to make your final exam on the same pattern you have seen in your theory assignments. Also, I strongly recommend watching my lectures on in class coding sessions for inductive types, fold_right, tail recursion, etc. If there is any unclear topic, you are strongly recommended to rewatch the recorded lectures on Blackboard. Attached to this study guide is also your lab 12 with more questions and answers. Lab 12 is another great resource for reviewing for your final exam.

4 What questions can I expect on the final exam?

You will have some true and false questions, some multiple choice, and some questions that are short answers. You will get some coding questions as well. However, these questions are also clubbed into short answers.