

# CSCI111 Final Exam Prep

## Topics

Everything through the second exam. Cumulative. A little more focus on topics since the second exam, but everything is fair game.

### Object-oriented programming

- Benefits, use
- Developing classes – what is our process?
  - instance variables
  - Representing new data types
  - Special methods
    - `__init__`
    - `__str__`
    - `__lt__`
    - `__eq__`
  - other methods, helper methods
- Terminology (not already mentioned above)
  - Instance of (as opposed to instance variables)
  - Overriding methods
  - Testing defined classes
  - Using others' defined classes

### Search techniques

- Linear search
- Binary search

### Exception handling

### Lists

- 2D lists – accessing, processing

### Recursion

### Programming language characteristics

What is Computer Science? What are fields in CS?

### **What I expect from you on exam:**

- To know the Python/programming terminology
  - E.g., names for types of statements
- To be able to explain clearly the concepts. If I were interviewing you for a job/internship, I don't know what you should know, so you need to make it clear in your answers that you know/understand the concepts.
- To know the appropriate Linux commands and how to use them, given a typical situation from lab
- To be able to read a program and describe what the program is doing at a high level in plain English (comments), trace through the program's execution given input (control flow), and say what the program outputs
- To be able to write a program (given an algorithm or creating your own algorithm, given a problem)
- Syntax must be very close to correct (correct keywords, indentation, special characters, variable naming, operations)
- Greater emphasis on ability to read and write code

### **Suggestions on how to prepare:**

- Practice programming on paper and verify program in Python. (Use problems from class, labs, or textbook.)
  - What types of problems should you focus on?
  - What have you struggled with on previous labs? On exams?
  - See practice problems from the slides for the last day of class.
- Practice reading through programs, tracing through them, and saying what the output should be
- The interactive book is helpful for showing you what happens when you run a program. Try to determine what happens first, before looking at what actually happens.
- Read through slides for vocabulary, review questions, and non-problem-solving exercises
- Do the practice/interactive exercises in the textbook. They are helpful!
- Create your own classes
  - Example classes: Deck, Student, Course, BankAccount
  - What are other good things to make into classes?
  - Then, given that the class is already written, use the class (think: instaface, which used the Person and SocialNetwork classes).
- Using classes
  - Create a game using Cards and Deck (war is an example)
- Review terminology – use slides and textbook
- Review Linux commands

### **Exam will be on Canvas**

- Some questions will be “in” Canvas. Others will be in a Word document that you download. You'll edit that document and then upload it to submit your exam.

- Please submit it as a Word document. If you prefer to work in Pages, that is fine, but *save the final document as a Word document using the Export To menu.*
- Pay attention to the time limit so that you can upload your document before time runs out.
- Be extra careful about writing code—paying attention to indentation, capitalization, etc. Beware of Word autocorrecting something you didn't mean to type.