

1. Introduction and Python fundamentals

- What is computer science? What are some applications of computer science?
- Difference between a .py file (a module) and the shell
- What is a function? (how to define, idea of arguments/parameters, how to invoke/call)
- Be able to create a program by defining a main method and then calling it

2. For-loops

- Concept of a for-loop and when to use it
- Defining an appropriately named loop variable to go over the elements of a sequence
- How to use `range()` as part of the for-loop structure
- How to loop over strings and lists directly without `range()`
- How to update a list, string, or value using a for-loop
- Nested for-loops or other nested structures (i.e. conditional inside a loop)

3. Conditionals

- Setting up a series of conditional statements (how to use `if/elif/else`)
- Boolean variables and how they are used in conditional statements (+ keywords `and/or`)

4. Variables

- How to define and update variables using assignment (= operator)
- How to swap the values of two variables
- Variable scope (local vs. global) and idea of variables only existing within their functions
- How to query the type of a variable, how to change (cast) a variable from one type to another
- Different variable types (`int`, `float`, `bool`, `str`, `list`)

5. Functions

- Built-in functions like `eval()`, `input()`, `range()`, `round()`, `type()`, `print()`
- Defining helper functions, passing in parameters, “functions calling functions”
- `return`: when and how to use it, when not to use it
- Mutable vs. immutable objects and how this concept interacts with defining functions

6. Strings: sequence of characters

- How to define and work with strings (important: concatenate, length, indexing, slicing)
- Other string methods such as `split()`, `replace()`, `count()`, `upper()`, `lower()`

7. Lists: sequence of elements

- How to define and work with lists (important: concatenate, length, indexing, slicing)
- Other list methods such as `count()`, `index()`, `append()`

8. Files and Misc

- Basics of reading and writing files (+ concept of a file as a sequence of lines)
- Comments (what, why, and how), and style (variable and function names in particular)
- All content from class (through Day 15), labs (through Lab 5), and HWs (through HW 4)

CSC 111: Intro to Computer Science

Midterm: Spring 2017

Instructor: Sara Mathieson

Completed by:

- This exam is to be taken in the Neilson Library during any of their open hours.
- The time limit is **2 hours** unless you received an email saying otherwise. I will be checking all in/out time stamps.
- No communication about the exam with anyone in the class (or outside the class).
- No electronic devices are to be used during the exam, but you may use a 2-sided cheat sheet (8.5" × 11"). Your cheat sheet should be handwritten and created by you (no printed material).
- Discussing the exam, going over the time limit, and using electronic devices are all honor code violations.
- Make sure all your work is contained on these pages (writing on the backs is okay).
- If you are unable to make progress on any part of the exam, tell me what you tried; describe your thought process.
- After completing your exam, reseal the exam using a piece of tape (provided by the library at the circulation desk).

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Part 1	/20
Part 2	/20
Part 3	/20
Part 4	/20
Part 5	/20
Total	/100