**COMP 1800 – Fall 2016**

Study Guide for Final Exam

* All material from the midterm exam, plus:
* Conditionals
  + Writing boolean expressions using the relational operators: <, >, <=, >=, ==, !=
    - Remember that = and == mean very different things. Use = when you want to assign something to a variable. Use == when you want to determine if a variable has a certain value.
  + Combining boolean expressions together using **and**, **or**, **not**
  + **if**: execute a segment of code if a condition is true
  + **if-else**: execute one of two possible branches depending on whether a condition is true
  + **if-elif**: execute one of multiple possible branches depending on a set of conditions. At most one branch can execute. An optional **else** may be added to the end to provide code to execute if none of the provided conditions are true. If no **else** is provided and none of the conditions are true, then nothing is executed.
* Loops
  + Using the **while** loop to repeatedly execute actions
  + You should be able to write loops that perform the following:
    - Repeat a set of actions for a specific number of times (whether it’s twice, thrice, or 6000)
    - Perform error checking on user input by repeatedly asking for the input until it’s valid
    - Allow the user to repeat an entire program as many times as desired
  + Be able to read a loop and explain exactly what actions it’s taking. The key here is to go line by line, writing down variable values if you have to – don’t try to analyze it all at once!
* Functions
  + Basic idea of a function: a section of code that takes some input (parameters/arguments), performs some actions on that input, and gives back some output (return value)
  + Be familiar with how to use these built-in functions: **input(…)**, **int(…)**, **float(…)**, **str(…)**, **type(…)**, **math.sqrt(…)**, **math.sin(…)**, **math.cos(…)**, **math.tan(…)** (remember that the last three take arguments in radians, not degrees)
  + Know how to write your own custom functions. Remember that a custom function may or may not take parameters, and it may or may not return a value.
* As with the midterm, there will be questions involving reading as well as writing Python code. Be sure you’re able to look at a piece of code and trace the actions that the code is performing. The key here is to go line by line (write things like variable values down if you have to) – don’t just try to glance at the code and figure it out all at once!