Garbage Collection Exercises
CS 4610 — Spring 2017

This Review Set asks you to prepare written answers to questions on garbage collection. Each of the questions has a short answer. You may discuss this Review Set with other students and work on the problems together. However, your write-up should be your own individual work.

1. Consider *Stop & Copy* vs. *Mark & Sweep* garbage collection.

   (a) Assume that the garbage collector is run only when the user program runs out of memory, i.e. when a call to `new` cannot be satisfied. Is one of these two GC algorithms 'faster' than the other? Which algorithm needs to be run more frequently?

   (b) Does either algorithm use strictly more memory than the other?

   (c) Python uses reference counting for its garbage collector. It uses a special 'cycle detector' to clean up cyclical data structures periodically. Are reference cycles common in everday data structures?

   (d) Briefly describe how one might implement a cycle detector. When can a cycle be cleaned?