

Due at the start of class Wednesday, June 8, 2011.

Consider *Slowsort*:

```
i ← 1
while i < n do
  if a[i] > a[i+1] then
    a[i] ↔ a[i+1]
    i ← 1
  else
    i ← i+1
  end if
end while
```

All of the following problems refer to Slowsort. We want to count the number of COMPARISONS. Try to make your analyses as exact as possible. For each problem write out a summation and then solve the summation.

Problem 1. Assume you start with a sorted list. Remove the largest element and put it back into a random position (which could be back where it came from so there are n positions where it could end up).

- (a) What is the best case?
- (b) What is the worst case?
- (c) What is the average case?

Problem 2. Assume you start with a sorted list. Pick two distinct elements at random element and interchange them.

- (a) What is the best case?
- (b) What is the worst case?
- (c) What is the average case?

Problem 3. Assume you start with a random list.

- (a) What is the best case?
- (b) What is the worst case?
- (c) **Challenge problem.** What is the average case?