Mod 7 Lab: Which sorting algorithm is which?

Given a "black box" that takes as input a series of numbers and outputs the time it took to sort those numbers with 5 sorting algorithms, determine which algorithm is which.

When you submit `numbers.txt` to Gradescope, it will sort the numbers inside and tell you how long it took to do so with 5 algorithms that have been aliased as `alg_a`, `alg_b`, `alg_c`, `alg_d`, and `alg_e`:

```
================
n = 1000
----------------
alg    t (ms)
----------------
alg_a  24.6
alg_b  1.35
alg_c  57
alg_d  2.12
alg_e  40.1
----------------
```

You need to

1) Find best/worst/average cases for each algorithm
2) Generate series of numbers that correspond to those cases
3) Determine which alias corresponds to which sorting algorithm

Answers

Write your answers in `answers.py`. It contains a dictionary where the keys are the aliased algorithms; you just need to enter the correct values ('bubble', 'selection', 'insertion', 'merge', or 'quick'):

```
answers = {'alg_a': '', 'alg_b': '', 'alg_c': '', 'alg_d': '', 'alg_e': ''}
```

Lab Notes

- `generate_numbers.py` contains code to automate the generation of `numbers.txt`.
- Each algorithm is used exactly once.
- The `bubble` and `insertion` sorts are adaptive - they can sort in O(n) in the best case.
- The quicksort algorithm always uses the last element in a sublist as the pivot.

Submitting

Students must submit **individually** by the due date (typically, Sunday at 11:59 pm EST) to receive credit.

Grading

This assignment is entirely auto-graded: 20 points per correct algorithm.

Feedback

If you have any feedback on this assignment, please leave it here.