

EIGHTH QUIZ

You have 15 minutes from the start of class to complete this quiz. Give partial answers if you can't give complete ones. Read the questions with care; work with deliberate speed. Don't give us more than we ask for. The usual instructions apply. Good luck!

Problem 1 (8 points)

(a) (4 points) For each group of three sorting algorithms (insertion sorts, exchange sorts, selection sorts), the film *Sorting Out Sorting* showed three graphs of the algorithms' performance. The third graph showed the overall running time (for sorting different numbers of items). What did the first two graphs show? (Equivalent question: What are the two kinds of operations that we count when we calculate performance of a sorting algorithm?) ["Function calls" is not part of the answer we're looking for.]

(b) (2 points) Why do we make a distinction between the two kinds of operations mentioned in part (a)?

(c) (2 points) Can the difference between these two kinds of operations make a difference in the O -notation of an algorithm? Why or why not?

Problem 2 (14 points)

(a) (10 points) The `CustomerStats` class in the Amusement Park Simulator cries out for refactoring; a copy of the code is attached. Rewrite the two methods `printCustomerWithMostTimeInPark` and `printCustomerWithLeastTimeInPark`, combining them into one `printCustomersParkTime` method by capturing the common code. Use the skeleton code below. (Three pieces of advice: (i) Most of the code can be copied without change (except maybe for identifier names). (ii) Try to choose good identifier names, but most any decent names will get you credit. (iii) There's one tricky boolean expression. Don't get stuck on it; it's only worth a few points, so make sure the rest of your code is right.)

[continued on the next page]

```
/** String parameter is either "most" or "least" */  
private void printCustomersParkTime(String choice)  
{
```

```
}
```

(b) (4 points) Now that you've refactored your code into a `printCustomersParkTime` method, you need to make two more changes in the `CustomerStats` class. Indicate those two changes (by writing on the supplied code; don't forget to add your name and turn that sheet in).