

SECOND QUIZ

You have 15 minutes from the start of class to complete this quiz. Read the questions with care; work with deliberate speed. Don't give us more than we ask for. The usual instructions apply. A copy of the restaurants program is included for reference. Good luck!

Problem 1 (15 points)

Fill in the body of the method `averagePriceOfDrinkType` in the `OrderList` class below. You may find the `contains` method from the `String` class in the Java API useful:

`boolean contains (String s)` returns true if and only if this string contains the specified string

```
class Order {
    private String customer;
    private String drink;
    private double price;

    public String getCustomer() {return customer;}
    public String getDrink() {return drink;}
    public double getPrice() {return price;}
}

class OrderList {
    private ArrayList<Order> theOrders;

    // Return the average price of all the orders in the list whose drink name contains
    // the argument. For example, an order with the drink name "grande nonfat latte"
    // would have its price included in a call to averagePriceOfDrinkType("latte").
    // If there are no drinks of the specified type, return zero.
    public double averagePriceOfDrinkType (String drinkType) {
```

Problem 2 (10 points)

We can find analogies to the classic data structures in the literary world:

- (a) Some large dictionaries and encyclopedias have thumb tabs for each letter, cut-outs in the edge of the volume so the reader can turn directly to the first page of listings for that letter. Is this access to the beginning of each letter's listings more like a stack, queue, array, tree, or linked list?
- (b) When cookbooks describe complicated recipes, they break them into sub-recipes, much like procedures in a programming language. Thus, the recipe for a cake might say, "Use the chocolate icing recipe on page 23," and that chocolate icing recipe might say in turn, "See page 195 for instructions on melting chocolate." Which data structure would you use to represent the sequence of recipes and sub-recipes being carried out at a given moment, to make it most convenient to return to the "calling" recipe when each sub-recipe is completed: a stack, queue, array, tree, or linked list?
- (c) Is a book's table of contents, with chapters, sections, and sub-sections, more like a stack, queue, array, tree, or linked list?
- (d) Most newspapers run a new crossword puzzle every day. Below the puzzle it generally says, "Solution in tomorrow's newspaper." Is this sequence of puzzles and solutions more like a stack, queue, array, tree, or linked list?
- (e) Some people are very rigid about reading newspapers in chronological order; they won't read one day's newspaper unless they've read all the previous days' papers, in order. Even if days or weeks go by when they don't have time to read the paper, they'll save the papers, in order, and read them in order when time permits. Is this arrangement more like a stack, queue, array, tree, or linked list?