

Linear Data Structures

September 10, 2020

Project 0

Suggested Approach

- Implement the MailAddressInterface
 - Name, streetLine1, streetLine2, city, state, zip
 - Constructor (default and complete)
 - Get Methods
 - Hardest method is probably the one to get the digit of the zip code. Can use integer arithmetic to do it or could just brute force it.
 - toString method

Test it with some simple test cases.

Second Step...

Develop some test code and make sure you can read the necessary information from a file.

- Open the file using a Scanner.
- Read in a line and output it to make sure it worked.
- Set up a short piece of code to read in 5 lines and an integer, then use these to create whatever you named your class. Print it out to make sure it is correct.
- Now you should be able to create a loop that reads in values until you hit the end of the file. Again, print them out as you read them.
- Finally, create an array or an array list to hold 10,000 of these elements and modify the loop code to put 1 "ConcreteMailAddress" in each slot as you read.

Third Step -- Output The Array/ArrayList

Set up the code to output the Array or ArrayList to a file.

1. Read in a filename from the user.
2. Open a PrintWriter for the file.
3. Set up a loop to step through the array or arraylist
 - a. Print out the current item (toString or use the getMethods)

```
pw.println(item.getName());
pw.println(item.getAddress1());
pw.println(item.getAddress2());
```
4. Close the PrintWriter

Fourth Step

Set up the sort.

Set up a two dimensional array with 10 rows/columns and a lot of columns/rows

```
MailAddressInterface bins[ ][ ] = new MailAddressInterface[10][100];
int inUse[] = new int[10];
```

Set up a loop to go through the list of the addresses and put them in bins by their first digit. Check if they are in the correct place.

Take things out of the bins and put them in the original list in the correct order.

Repeat for the other 4 digits.

Fifth Step

Add the Project0Helper code and test -- start with small data sets.

Main Advice

Work with small steps. Add a little bit of code and test. This helps to keep from getting deluged by error messages.

Don't get too "fancy" with it.

You should always (almost always) have a program that runs...

Project0Helper

Do we need to use your main program.

- Absolutely not. It is there only for your reference as an example.

What if the output file already exists?

- You may assume we will put in one that does not already exist for this project.
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