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594 Project Report

Explanation of the Additional Feature

Additional feature triggered by user input of 6 returns a String that contains the zip code with the maximum parking fine and market value average.
From our separate function for step 6, we got the returned value such that the zip-code with maximum parking fine is “19102” with market value average “ 2142855”. This can be easily confirmed from step 2 returned values (by searching max value) and step 3 with that zip-code.

Use of Data Structures

We have used below data structures for the program.

List

List is used to get the properties and parking violations.

Map (TreeMap)

Map is used to get the populations. Population data only consists of zip-code and population, mainly need to be accessed without further modifications. Thus we use Map<Key, Value> data structure for easy access by zip-code <Key>. In addition, since for step 2, output should be in ascending numerical order, we first apply TreeMap instead of HashMap to reduce the steps for reordering later.

Map (HashMap)

HashMap is used for memoization to avoid re-processing. If once the results were processed and presented to users, then the answers are saved and reused.

Array

Array is used to save temporary data when the lists of parking and properties were built by one line per process.

Design

Compact UML class diagram is present below :