Chair for Algorithms
and Data Structures
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Efficient Route Planning
SS 2012

http://ad-wiki.informatik.uni-freiburg.de/teaching

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Exercise Sheet 11

Submit until Wednesday, July 25 at 4:00pm

Exercise 1 (12 points)

Implement a method *numTransferPatternsFromStation* that for a given station X computes for each station Y the number of optimal transfer patterns between X and Y.

For the sake of simplicity, consider optimality with respect to travel time (so that you can use your existing Dijkstra implementation).

As usual, consider the implementation advice given in the lecture and the code design suggestions linked from the Wiki.

You should write a unit test that for a simple (but, of course, non-trivial) graph checks whether the set of transfer patterns for a few selected station pairs is correct.

Exercise 2 (6 points)

Run the method from Exercise 1 on *at least* 100 random stations on the transit network of Hawaii (GTFS feed linked from the Wiki) for a Wednesday.

Compute a histogram for the number of transfer patterns of all station pairs this considered. Namely, which percentage of these station pairs has a number of transfer patterns: (1) of exactly zero, (2) between 1 and 4, (3) between 5 and 9, (4) between 10 and 19, (5) between 20 and 49, and (6) 50 or more.

As usual, report your results in a row on the table linked from the Wiki. In particular, report the average time for a call to the method *precompute*, as well as the histogram information.

Exercise 3 (2 points)

As usual, commit your solution to our SVN and check that everything works on Jenkins, and also commit a text file *feedback-exercise-sheet-11.txt* where you briefly describe your experiences with this exercise sheet and the corresponding lecture.