Time-Dependent Multiple-Vehicle Prize-Collecting Arc Routing Problem Data Files

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1 Introduction

These data instances for the Time-Dependent Multiple-Vehicle Prize-Collecting Arc Routing Problem (TD-MPARP) are based upon the instances for Time-Dependent Prize-Collecting Arc Routing Problem (TD-PARP). A full description of the single vehicle instances are available at www.optimization.dk/TD-PARP.

2 Format of Data Files for TD-MPARP

Each instance requires two files: A Road Time Table and a data file.

The files with the Road Time Tables are named for instance "NW25_RTT_time.dat", where "NW" refers to the North-West area and "25" in the number of locations in addition to the depot in the file. Hence this specific instance contains in total 26 locations. These files contains 96 shortest time matrices separated by an empty line. Each matrix is valid for 15 minutes and the first matrix start at time 00:00.

The data files are named for instance "mNW25_xi_k.dat", where "x" is replaced by a capital letter, "i" is replaced by an index, and "k" is replaced by an integer representing the number of vehicles available in the instance. Again, "NW" refers to the North-West area and "25" in the number of locations in addition to the depot in the file. For instances sharing the same "x" and "i", the instance is the same, and only the available number of vehicles is different.

To use these instances, the corresponding files with the Road Time Tables should be used. Note, that there may be locations in the Road Time Table files which are not used in a given data file. The times within the Road Time Tables correspond to travel times across the real world road network.

The data files contain the following information:

- Number of locations (in addition to the depot) in the corresponding Road time Table. Note that this number corresponds to the number in the name of both files.
- Number of prize Arcs.
- Number of vehicles. Note that this corresponds to the value of k in the file name.
- Start time (the time at which the vehicle starts in the depot). In minutes after time 00:00.
- Duration (the time duration for which the vehicle can work). In minutes after time 00:00.
- Time Limit (the time at which the vehicle must be back in depot). This is the sum of the start time and the duration. In minutes after time 00:00.
- Next, for each Prize Arc on a separate row, the following information is given:
  - Unique index of the prize arc.

– Start location of the prize arc.
– End location of the prize arc.
– prize of the arc. Integer value.