This folder contains the instances proposed in T. Vidal, "Arc routing, vehicle routing, and turn penalties: Multiple problems – One combined neighborhood," Working Paper, PUC-Rio, 2015, available at http://w1.cirrelt.ca/~vidalt/en/publications-thibaut-vidal.html. These benchmark instances were derived from original test problems from

[1] Corberán, R. Martí, E. Martínez, and D. Soler, "The rural postman problem on mixed graphs with turn penalties," *J. Oper. Res. Soc.*, vol. 29, no. 7, pp. 887–903, 2002.
[2] L. Bach, G. Hasle, and S. Wøhlk, "A lower bound for the node, edge, and arc routing problem," *Comput. Oper. Res.*, vol. 40, no. 4, pp. 943–952, 2013.

The fleet is assumed to be limited to a number of vehicles specified in the instance definition. Each vehicle has a capacity of Q. Nodes are indexed from 1 to the number of nodes.

The instance file specifies, in turn, general information about the instance, the list of NODES, EDGES, ARCS, and TURNS. For each node, edge, and arc, a boolean value "IS_REQUIRED" states whether a service is required at this location. Turns are identified as triplets of node indices I,J and K.

The specific format of the instance is described below.

```
Name:           <Instance name>
#Vehicles:      <Max. number of vehicles, -1 if unconstrained>
Capacity:       <Vehicle capacity Q>
Depot:          <Index of depot node>
#Nodes:         <number of nodes>
#Edges:         <number of edges>
#Arcs:          <number of arcs>
#Required N:    <number of required nodes>
#Required E:    <number of required edges>
#Required A:    <number of required arcs>
#Nb-Turns:      <number of turns>

----------NODES----------
INDEX     QTY  IS-REQUIRED    X    Y
<list of nodes>

----------EDGES----------
INDEX-I   INDEX-J   QTY  IS-REQUIRED    TR-COST
<list of edges>

----------ARCS----------
INDEX-I   INDEX-J   QTY  IS-REQUIRED    TR-COST
<list of arcs>

----------TURNS----------
INDEX-I   INDEX-J INDEX-K     COST TYPE
<list of turns>
```