Route File Format V1.0

A route file is an XML file that defines the route plan of an arbitrary number of vehicles. We use the following example to explain the data format of route file.

```
Line 1  <?xml version="1.0" encoding="UTF-8"?>
Line 2  <data>
Line 3  <vehicle id="OSTV1" type="CAR" start_time="0.4" driverProfile="NORMAL">
Line 4  <node id="2174950793"/>
Line 5  <node id="2174950794"/>
Line 6  <node id="2090519281"/>
Line 7  </vehicle>
Line 8  <vehicle id="OSTV2" type="CAR" start_time="20.5" driverProfile="HIGHLY_AGGRESSIVE" repeatPerSecond="0.1">
Line 9  <node id="247025152"/>
Line 10 <node id="2180614753"/>
Line 11 <node id="2247259682"/>
Line 12 <node id="2247259686"/>
Line 13 <node id="2247259681" stopover="10.0" />
Line 14 <node id="2247259687"/>
Line 15 <node id="2180785594"/>
Line 16 <node id="2180785601"/>
Line 17 <node id="2180785611"/>
Line 18 </vehicle>
Line 19 <vehicle id="OSTV3" type="BIKE" start_time="30.0" driverProfile="POLITE">
Line 20 <node id="131130352"/>
Line 21 <node id="2279007260"/>
Line 22 <node id="2279007262"/>
Line 23 <node id="2177124599"/>
Line 24 <node id="2020813831"/>
Line 25 <node id="2020813871" stopover="5.2" />
Line 26 <node id="2020813869"/>
Line 27 <node id="2020813895"/>
Line 28 <node id="2020813866"/>
Line 29 <node id="168408675"/>
Line 30 </vehicle>
Line 31 </data>
```

A route file has one data element. The data element can contain any number of vehicle elements. A vehicle element should have the following attributes.

id This can be used to differentiate vehicles

type This can be CAR, BIKE, TRUCK, BUS, TRAM or PRIORITY. The vehicles of different types have different length and top speed. Special road rules for certain vehicle types, such as PRIORITY vehicles, are simulated by SMARTS.

start_time This is the earliest time that a vehicle can start its trip. The time is measured in seconds. For example, the first vehicle starts no earlier than 0.4 second into the simulation. Note that vehicles may not be able to start at exactly the start_time if there is no enough space for inserting the vehicle.

driverProfile This can be HIGHLY_AGGRESSIVE, AGGRESSIVE, NORMAL, POLITE or HIGHLY_POLITE. This attribute defines the aggressiveness of driving.

Optionally, you can add attribute, **repeatPerSecond**, to a vehicle element. The repeatPerSecond attribute specifies the rate that vehicles are generated with the exact same route plan. For example, in Line 8, there is a repeatPerSecond attribute with value 0.1. That means vehicles, which use the exact same route plan, will be generated every 10 seconds. If the attribute value is 2, the simulator will generate two vehicles every second that is simulated.

A vehicle element can have many **node** elements, showing the nodes on the route of the vehicle. A node element has an id, which is read from OpenStreetMap data.

Optionally, you can add an attribute, **stopover**, to a node element. This attribute indicates the number of seconds that a vehicle should stop at the edge, which starts from the node. For example, in Line 25, there is a stopover attribute with value 5.2. This means that the vehicle will stop at the edge that starts from node 2020813871 to node 2020813869 for 5.2 seconds. The simulator will temporarily remove the vehicle from the road when it enters the edge. Once the stopover time elapsed, the simulator will try to insert the vehicle back to the road.