Assignment n. 1 – part a

XML application Documentation

The root element of the application is named *rns* and contains the element places (of type PlacesType, contains a list of places) and vehicles (of type VehiclesType, contains a list of vehicles).

There are 3 type of places, RoadSegmentType, ParkingAreaType and GateType, and each one is an extension of the base type PlaceType, since some type of information are shared (such as id, capacity and connections).

A place in the system can be referenced by its identifier, this is obtained using a key element (of name placesKey), which also enforce the uniqueness of those keys. However, in the system an identified entity is unique globally, so to enforce uniqueness of ids of both places and vehicles

I’ve exploited a unique element (with name identifiedEntityUnique).

ConnectionsType contains a list of ids of place, to avoid duplicate connections a unique element is exploited inside the definition of the base type PlaceType.

A connection must reference a valid place id, to enforce this I’ve used a key ref of name placesKeyref that refers to the key placesKey defined before.

VehicleType contains information about the vehicle position, origin and destination and each one of them must refer to a valid place id, to do so I’ve used a keyref element that refers to the already defined key placesKey (keyref: positionPlaceKeyref, originPlaceKeyref, destinationPlaceKeyref).

RoadSegmentType extends the base type PlaceType and add to it information about road name (attribute roadName) and road segment name (attribute name). A road must be unique across the system and this is enforced by the unique element uniqueRoad. Also, a road segment must be unique within the road (there could be 2 segment with the same name but not on the same road), so the couple road name and road segment name must be unique across the system and this is enforced by the unique element uniqueSegmentInRoad.

ParkingAreaType extends the base type PlaceType by adding a ServicesType, which is a list of strings identifying services, a unique element (uniqueService) is exploited to enforce uniqueness of services inside each parking area.

GateType extends the base type PlaceType by adding the type of the gate.

Some enums are defined for well-defined values such as vehicle state and type (VehicleStateEnum and VehicleTypeEnum) and gate type (GateTypeEnum)