Exercise on RDFS: a perfectible solution

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Semantic Web Technologies

RDFS schema

- Define an RDF schema (classes, properties, subclasses, subproperties, domains, ranges) for a graph that represents information about a railway network.
- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.

RDFS schema: classes

- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.
- **Classes:**
  RailwayNetwork
  Line
  HighSpeedLine (subclass of Line)
  Segment
  Station
  Town
  Village

RDFS schema: properties

- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.
- **Properties:**
  comprises
  isMadeOf
  startsAt
  endsAt
  hasName
  hasLocation

RDFS schema: domain and range

- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.
- **Restrictions:**
  comprises
  domain RailwayNetwork
  range Line
  isMadeOf
  domain Line
  range Segment

RDFS schema: domain and range

- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.
- **Restrictions:**
  startsAt
  domain Segment
  range Station
  endsAt
  domain Segment
  range Station

RDFS schema: domain and range

- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.
- **Domain and range:**
  hasName
  domain Station
  range rdfs:Literal
  hasLocation
  domain Station
  ! range Town or Village

RDFS schema: domain and range

- The network comprises lines; each line is made of segments; a segment has a start station and an end station; a station has a name and a location (a town or a village). Some lines are high-speed lines.
- **Domain and range:**
  hasLocation
  range Town or Village
  Not possible in RDFS. A solution:
  Define a class **Location**
  Town and Village as subclasses of Location
  hasLocation
  range Location