

This is

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Knowledge Graphs

Exercise 6: KG

6.1. RML and SHACL

An insurance company stores customer and policy information in two CSV files: *customers.csv* and *policies.csv*. Each policy refers to its policyholder by customer ID.

First, **write the RML mappings** that create an IRI and an `rdf:type ex:Customer` triple for each customer, and an IRI and an `rdf:type ex:Policy` triple for each policy. Each policy must also have an `ex:hasPolicyholder` link to the customer IRI formed from its `customer_id`.

Second, **write a SHACL shape** requiring every `ex:Policy` to have exactly one `ex:hasPolicyholder` value and requiring that value to have class `ex:Customer`. Check the triples generated from the CSV files. Which policy violates the shape? How to correct it?

You can run the RML mappings online: <https://rml.io/playground/kgc/burp/v0/#>

You can run the SHACL shapes online: <https://shacl.org/playground/>

Note: This exercise is adapted from <https://github.com/adnanmasood/policygraph-tables-to-triples>.

6.2. Knowledge graph comparison

For Wikidata, DBpedia, and YAGO find out the following:

1. How many Basketball players have the property “height” (instance)
2. How many subclasses of Event exist (schema)

Use the corresponding SPARQL endpoints:

- Wikidata: <https://query.wikidata.org>
- DBpedia: <https://dbpedia.org/sparql>
- YAGO: <https://yago-knowledge.org/sparql>

6.3. Wikidata results visualization

Have a look at the following page with different possibilities to visualize a SPARQL result:

https://www.wikidata.org/wiki/Wikidata:SPARQL_query_service/Wikidata_Query_Help/Result_Views

Visualize the following queries:

1. List all images of type sea with an ImageGrid
2. Show all majors of Mannheim in a timeline
3. A map showing all big cities in Germany.
4. Line chart of the population of Mannheim.