**Task 1: Linked Open Data Cloud**

Have a look at the Linked Open Data Cloud: [lod-cloud.net](http://lod-cloud.net).

1.1 What does the Linked Open Data Cloud show?

1.2 Can you name central nodes and detect important subgroups of nodes in the cloud?

**Task 2: Knowledge Graphs**

Find differences and similarities of the information about Hannover in the following knowledge graphs and resources:

<table>
<thead>
<tr>
<th>Knowledge Graph</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBpedia</td>
<td><a href="http://dbpedia.org/page/Hanover">http://dbpedia.org/page/Hanover</a></td>
</tr>
<tr>
<td>Wikidata</td>
<td><a href="https://www.wikidata.org/wiki/Q1715">https://www.wikidata.org/wiki/Q1715</a></td>
</tr>
<tr>
<td>Google Knowledge Graph</td>
<td><a href="https://www.google.com/search?q=hannover">https://www.google.com/search?q=hannover</a></td>
</tr>
</tbody>
</table>

**Task 3: Understanding SPARQL queries**

For each of the following queries:
- Explain which results you expect from the query.
- Execute the query at [https://dbpedia.org/sparql](https://dbpedia.org/sparql) and check the results.

What do you notice when you execute Query 3.3, compared to the other queries?

**Query 3.1**

```
SELECT ?leader WHERE {
    ?city rdfs:label "Hanover"@en .
}
```

**Query 3.2**

```
SELECT ?a ?b ?c WHERE {
    ?c rdfs:label "Hanover"@en .
}
```

**Query 3.3**

```
SELECT ?subject WHERE {
    FILTER regex(?abstract, "Hanover") .
    FILTER regex(?abstract, "computer", "i") .
}
```
Query 3.4
SELECT ?player WHERE {
  ?team rdfs:label "Hannover 96"@en .
  ?player dbo:team ?team .
  FILTER(?height > 1.95).
}

Task 4: Writing SPARQL queries

For each of the following queries given in natural language:
- Write a SPARQL query to retrieve the needed information.
- Execute your query at https://dbpedia.org/sparql and check the results.

Query 4.1
What is the total population ("dbo:populationTotal") of Hannover?

Query 4.2
Which entities have a label ("rdfs:label") that ends with “Hannover”? Show their URIs and labels.

Query 4.3
Which persons were born and died in Hannover?

Query 4.4
Which districts of Hannover have a total population of less than 20,000?

More Information

SPARQL query language definition:
https://www.w3.org/TR/rdf-sparql-query/

Wikidata SPARQL endpoint:
https://query.wikidata.org

Wikidata SPARQL query examples with explanations:
https://www.wikidata.org/wiki/Wikidata:SPARQL_tutorial

YAGO demos:

Google Knowledge Graph Search API (executable with key only):
https://developers.google.com/knowledge-graph/