Command-Line SPARQL with Jena

The **Apache Jena** Semantic Web toolkit comes with a **SPARQL query processor** called ARQ that can be used as a **command line tool**.

It can run queries against **remote SPARQL endpoints** such as DBpedia, or against **RDF files** that are loaded form the **local machine** or from the **Web**.

http://jena.apache.org/documentation/query/

Query a remote endpoint

```
rsparql --service endpointURL --query sparqlFile
```

```
rsparql --service http://dbpedia.org/sparql
                          --query test.sparql
```

Query an RDF file

```
sparql --data rdfFile --query sparqlFile
```

```
sparql --data http://dbpedia.org/data/The_Beatles.rdf
                          --query test.sparql
```

```
sparql --data localfile.ttl --query test.sparql
```

Data can be loaded from local files or from files on the Web. Load and merge multiple input files by repeating --data.

Query multiple RDF files with named graphs

```
sparql --graph loadFileAsDefaultGraph
       --namedGraph loadFileAsNamedGraph --query …
```

Create multiple named graphs by repeating --namedGraph.

Specify target data in the query

FROM   loads a file into the default graph.
FROM NAMED loads a file into a named graph.
SERVICE   calls out to a remote SPARQL endpoint.

```
SELECT …
FROM <http://dbpedia.org/data/The_Beatles.rdf>
FROM NAMED <file:localfile.ttl>
WHERE { …
    SERVICE <http://dbpedia.org/sparql> { … }
… }
```

A simple test query

To execute a SPARQL query, it must be saved as a text file first. Create a file test.sparql with this example query:

```
SELECT * WHERE {
    ?s ?p ?o
} LIMIT 5
```

Full command-line help

SPARQLing remote endpoints:

```
rsparql --help
```

SPARQLing RDF files (or remote endpoints with SERVICE):

```
sparql --help
```

Output formats

For SELECT and ASK:

```
--results text
--results xml
--results json
--results csv
--results tsv
```

For CONSTRUCT and DESCRIBE:

```
--results turtle
--results rdf
--results n-triples
```

Show query algebra

```
qparse --explain
              --query test.sparql
```

Installation

1. If **Java** is not yet installed, get it from www.java.com. You can verify that it works by *opening a new shell window* and typing `java`. If Java is certainly installed and this still doesn't work, then you may have to *add Java's bin directory to the PATH environment variable*.

2. **Download**: The SPARQL command-line tools are part of Apache Jena. Download the latest Jena release from http://jena.apache.org/

3. **Extract** the downloaded archive into a suitable folder, such as:

Windows: C:\Program Files\Jena
OS X: /Applications/Jena
Linux: /usr/local/Jena

4. **JENAROOT**: *Add an environment variable* called JENAROOT with the folder name as its value.

5. **PATH**: *Add a directory to the PATH environment variable*:

Windows: C:\Program Files\Jena**bat**
OS X: /Applications/Jena/**bin**
Linux: /usr/local/Jena/**bin**

6. **New shell window**: The settings take effect once you **open a shell window**. Verify that ARQ is correctly installed by typing `sparql --help`.