

SPARQL Endpoint 20분 만에 생성하기


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Apache Jena

 Apache Jena

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Apache Jena

A free and open source Java framework for building [Semantic Web](#) and [Linked Data](#) applications.

[Get started now!](#)[Download](#)

RDF

RDF API

Interact with the core API to create and read [Resource Description Framework](#) (RDF) graphs. Serialise your triples using popular formats such as [RDF/XML](#) or [Turtle](#).

ARQ (SPARQL)

Query your RDF data using ARQ, a [SPARQL 1.1](#) compliant engine. ARQ supports remote federated queries and free text search.

Triple store

TDB

Persist your data using TDB, a native high performance triple store. TDB supports the full range of Jena APIs.

Fuseki

Expose your triples as a SPARQL end-point accessible over HTTP. Fuseki provides REST-style interaction with your RDF data.

OWL

Ontology API

Work with models, RDFS and the [Web Ontology Language](#) (OWL) to add extra semantics to your RDF data.

Inference API

Reason over your data to expand and check the content of your triple store. Configure your own inference rules or use the built-in OWL and RDFS [reasoners](#).

<https://jena.apache.org/index.html>

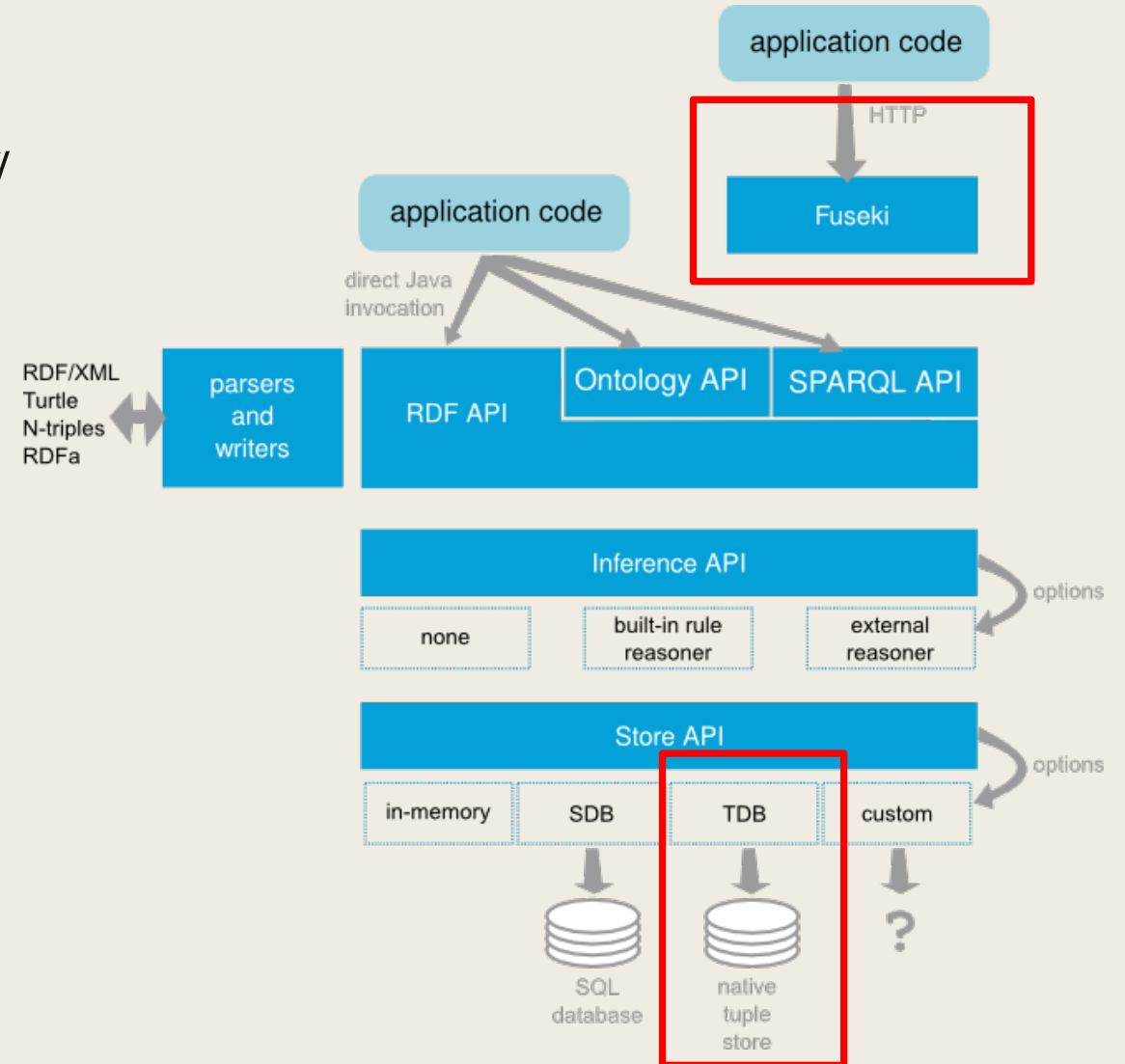
Fuseki & TDB

■ Fuseki

- SPARQL Endpoint을 제공함으로 HTTP를 통해 트리플 접근을 가능케 해줌
- 메모리 또는 TDB 기반으로 영속성 유지

■ TDB

- Jena Framework에서 제공하는 native 트리플 스토어



Fuseki

■ 다운로드

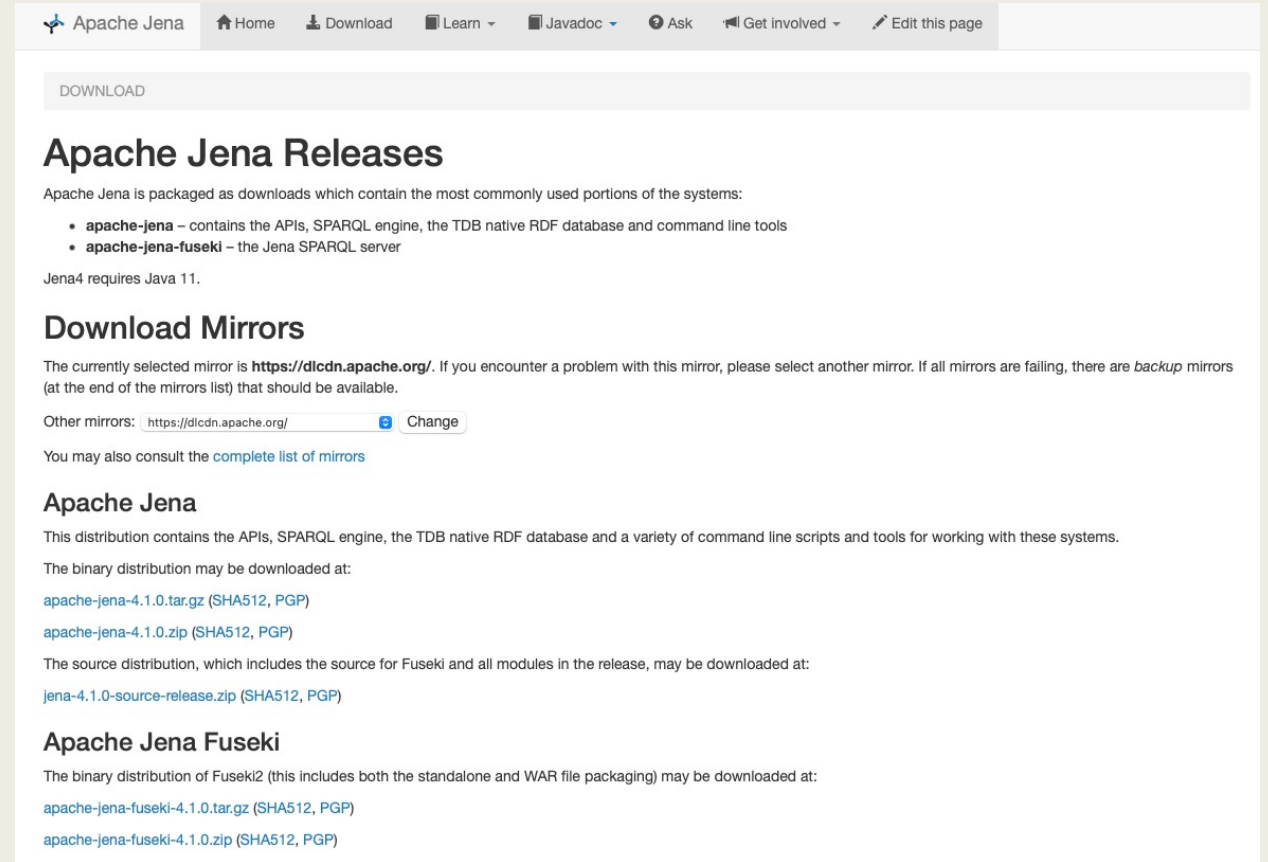
<https://jena.apache.org/download/>

현재 버전은 4.1.0 (2021년 9월 현재)

현재 버전은 자바 11 이상을 지원하고
있음

자바 8을 사용하는 경우에는 3.x 버전을
다운받아야 함

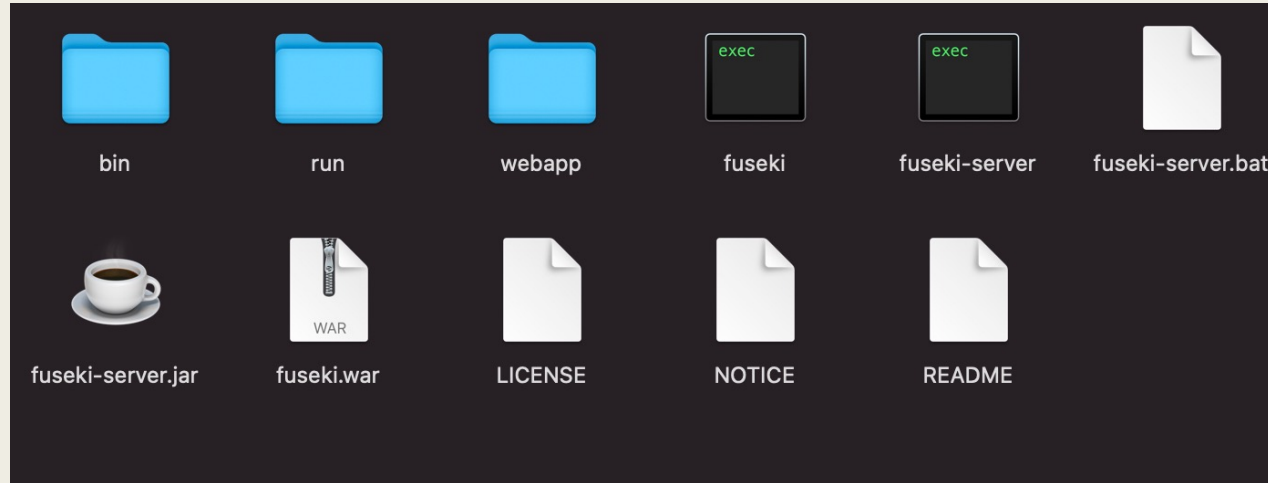
<https://repo1.maven.org/maven2/org/apache/jena/apache-jena-fuseki/3.6.0/>



The screenshot shows the Apache Jena Releases page. The navigation bar includes links for Home, Download, Learn, Javadoc, Ask, Get involved, and Edit this page. The main heading is "Apache Jena Releases". Below it, a note states that Apache Jena is packaged as downloads containing the most commonly used portions of the systems. A bulleted list specifies that **apache-jena** contains the APIs, SPARQL engine, the TDB native RDF database, and command line tools, while **apache-jena-fuseki** is the Jena SPARQL server. A note mentions that Jena4 requires Java 11. The "Download Mirrors" section indicates the currently selected mirror is <https://d1cdn.apache.org/> and provides a "Change" button. It also links to a "complete list of mirrors". The "Apache Jena" section describes the distribution and provides download links for `apache-jena-4.1.0.tar.gz` and `apache-jena-4.1.0.zip`. The "Apache Jena Fuseki" section provides download links for `apache-jena-fuseki-4.1.0.tar.gz` and `apache-jena-fuseki-4.1.0.zip`.

Fuseki 구동

■ 압축 풀기

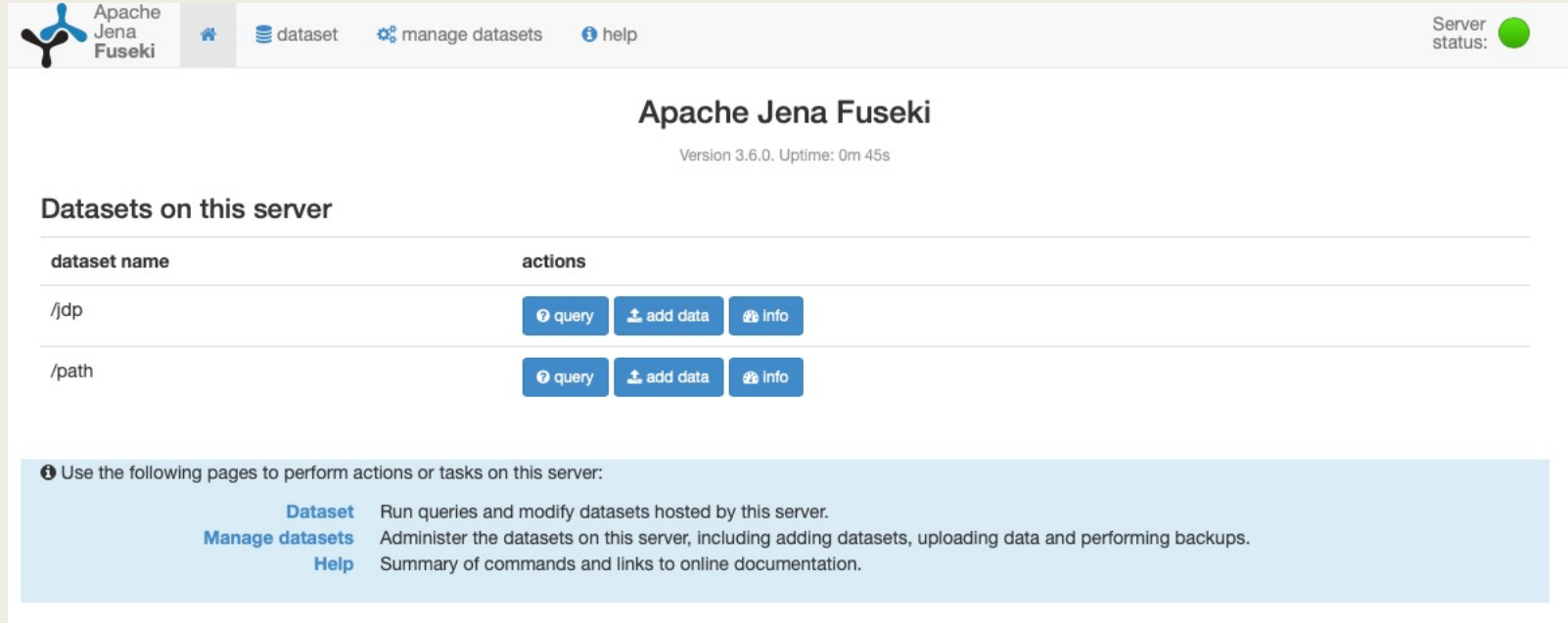


■ 실행

```
→ apache-jena-fuseki-3.6.0 ll
total 99000
-rw-r--r--@ 1 joyhong staff 30K 12 13 2017 LICENSE
-rw-r--r--@ 1 joyhong staff 9.3K 12 13 2017 NOTICE
-rw-r--r--@ 1 joyhong staff 2.3K 12 13 2017 README
drwxr-xr-x 11 joyhong staff 352B 9 5 00:29 bin
-rwxr-xr-x@ 1 joyhong staff 12K 12 13 2017 fuseki
-rwxr-xr-x@ 1 joyhong staff 2.2K 12 13 2017 fuseki-server
-rw-r--r--@ 1 joyhong staff 1.2K 12 13 2017 fuseki-server.bat
-rw-r--r--@ 1 joyhong staff 25M 12 13 2017 fuseki-server.jar
-rw-r--r--@ 1 joyhong staff 23M 12 13 2017 fuseki.war
drwxr-xr-x 12 joyhong staff 384B 9 5 00:56 run
drwxr-xr-x 16 joyhong staff 512B 9 8 19:00 webapp
→ apache-jena-fuseki-3.6.0 ./fuseki-server
```

SPARQL Endpoint

- <http://localhost:3030/index.html>



The screenshot shows the Apache Jena Fuseki web interface. At the top, there is a navigation bar with the Apache Jena Fuseki logo, a home icon, a 'dataset' link, a 'manage datasets' link, and a 'help' link. On the right, the 'Server status' is indicated by a green circle. The main heading is 'Apache Jena Fuseki' with the version '3.6.0' and uptime '0m 45s'. Below this, the section 'Datasets on this server' contains a table with two rows: '/dp' and '/path'. Each row has three buttons: 'query', 'add data', and 'info'. At the bottom, a light blue box contains instructions on how to use the interface, with links to 'Dataset', 'Manage datasets', and 'Help'.

dataset name	actions
/dp	query add data info
/path	query add data info

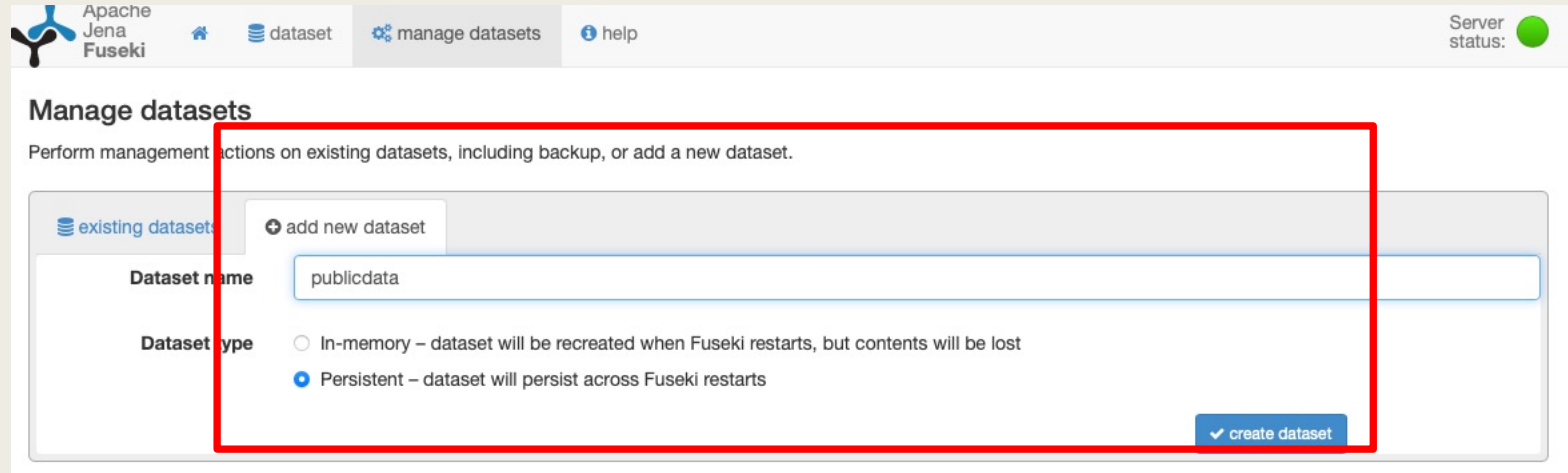
Use the following pages to perform actions or tasks on this server:

- [Dataset](#): Run queries and modify datasets hosted by this server.
- [Manage datasets](#): Administer the datasets on this server, including adding datasets, uploading data and performing backups.
- [Help](#): Summary of commands and links to online documentation.

*처음 구동시 Datasets은 비어있는 상태이기 때문에
manage datasets 메뉴를 통해 데이터셋 생성*

데이터셋 생성

■ manage datasets



Apache Jena Fuseki

dataset manage datasets help

Server status: ●

Manage datasets

Perform management actions on existing datasets, including backup, or add a new dataset.

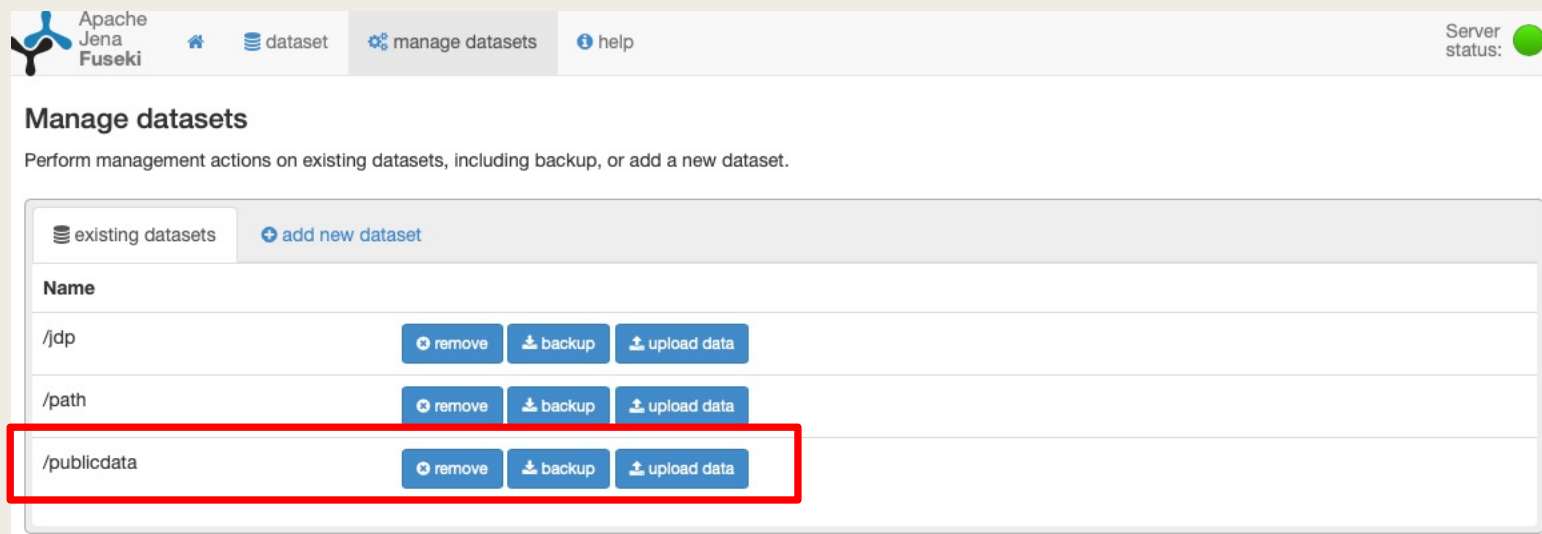
existing datasets **+ add new dataset**

Dataset name

Dataset type

- ☐ In-memory – dataset will be recreated when Fuseki restarts, but contents will be lost
- ☒ Persistent – dataset will persist across Fuseki restarts

create dataset



Apache Jena Fuseki

dataset manage datasets help

Server status: ●

Manage datasets

Perform management actions on existing datasets, including backup, or add a new dataset.

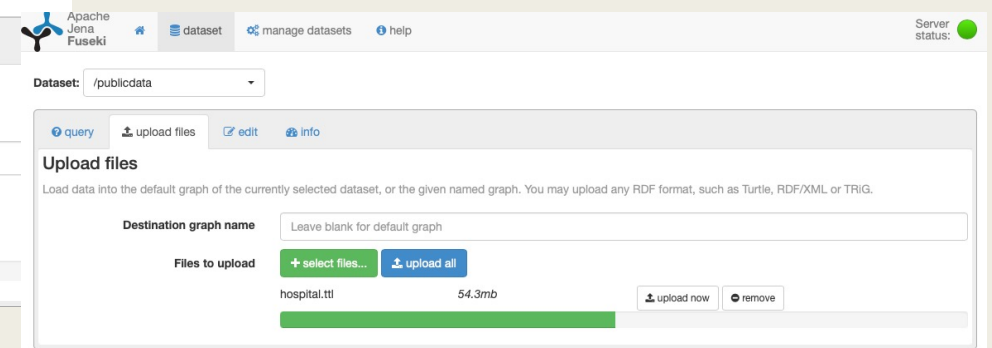
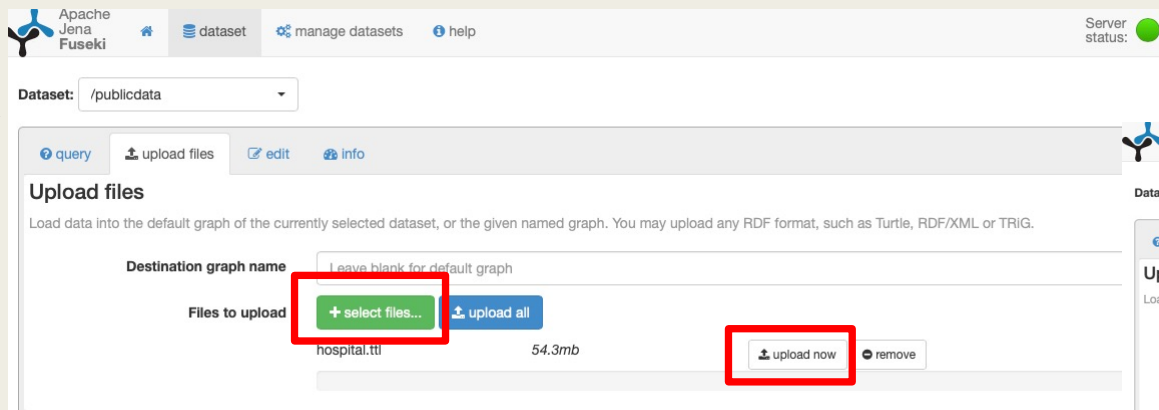
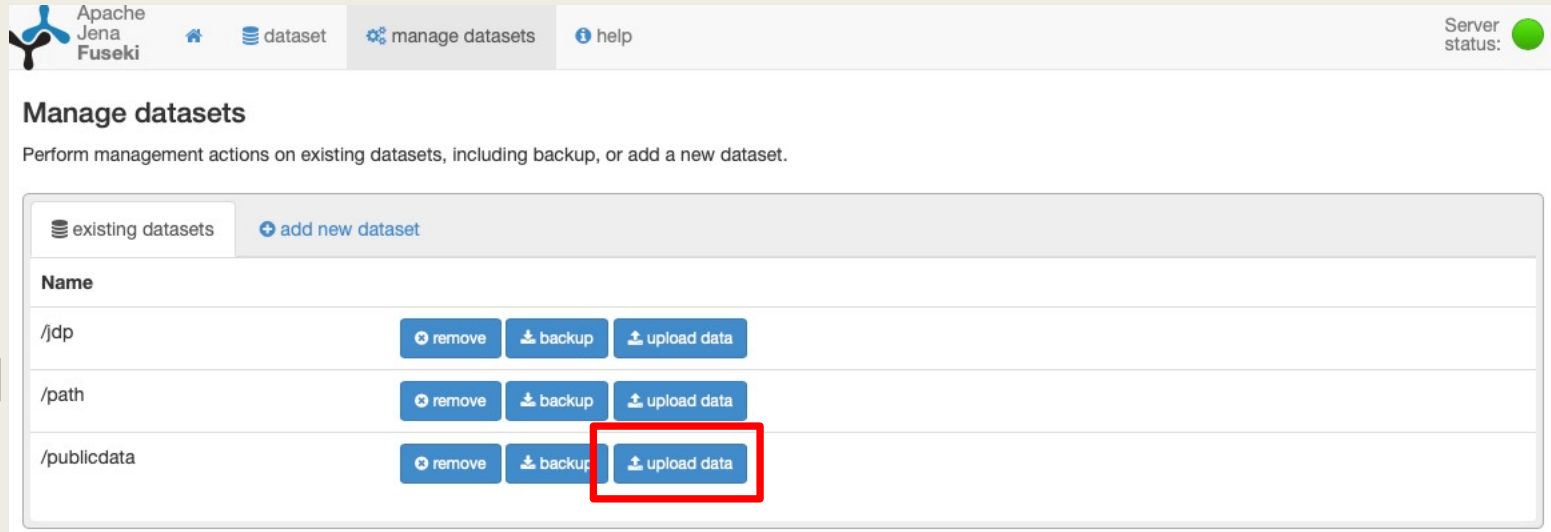
existing datasets **+ add new dataset**

Name	
/jdp	remove backup upload data
/path	remove backup upload data
/publicdata	remove backup upload data



데이터 업로드

■ upload data



업로드 완료

■ 업로드 완료

Apache Jena Fuseki

dataset manage datasets help

Server status: ●

Dataset: /publicdata

query upload files edit info

Upload files

Load data into the default graph of the currently selected dataset, or the given named graph. You may upload any RDF format, such as Turtle, RDF/XML or TriG.

Destination graph name:

Files to upload: + select files... upload all

hospital.ttl 54.3mb

Result: **success**. 1118003 triples

Query

■ SPARQL Query

Apache Jena Fuseki

dataset manage datasets help

Server status: ●

Dataset: /publicdata

query upload files edit info

SPARQL query

To try out some SPARQL queries against the selected dataset, enter your query here.

EXAMPLE QUERIES

Selection of triples Selection of classes

PREFIXES

rdf rdfs owl xsd

SPARQL ENDPOINT

http://localhost:3030/publicdata/query

CONTENT TYPE (SELECT) JSON

CONTENT TYPE (GRAPH) Turtle

QUERY RESULTS

Table Raw Response

SPARQL 생성

Apache Jena Fuseki

dataset manage datasets help

Server status: ●

Dataset: /publicdata

query upload files edit info

SPARQL query

To try out some SPARQL queries against the selected dataset, enter your query here.

EXAMPLE QUERIES

Selection of triples Selection of classes

PREFIXES

rdf rdfs owl xsd

SPARQL ENDPOINT:

CONTENT TYPE (SELECT):

CONTENT TYPE (GRAPH):

```
1 PREFIX bif: <http://www.openlinksw.com/schemas/bif#>
2 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
3 PREFIX foaf: <http://xmlns.com/foaf/0.1/>
4 SELECT *
5 WHERE {
6   ?subject rdfs:label ?label.
7   ?subject foaf:homepage ?homepage.
8   filter(regex(?label, "성남", "i" ))
9 }
10 LIMIT 25
```

PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
SELECT *
WHERE {
 ?subject rdfs:label ?label.
 ?subject foaf:homepage ?homepage.
 filter(regex(?label, "성남", "i"))
}
LIMIT 25

QUERY RESULTS

Table Raw Response

SPARQL 결과

SPARQL ENDPOINT

http://localhost:3030/publicdata/query

CONTENT TYPE (SELECT)

JSON

CONTENT TYPE (GRAPH)

Turtle

```
2 PREFIX foaf: <http://xmlns.com/foaf/0.1/>
3 SELECT *
4 WHERE {
5   ?subject rdfs:label ?label.
6   ?subject foaf:homepage ?homepage.
7   filter(regex(?label, "성남", "i" ))
8 }
9 LIMIT 25
```

QUERY RESULTS

Table

Raw Response

Showing 1 to 8 of 8 entries

Search:

Show 50 entries

	subject	label	homepage
1	<http://joyhong.tistory.com/resource/h_168>	"성남중앙병원"	<http://www.schosp.co.kr>
2	<http://joyhong.tistory.com/resource/h_18295>	"성남속편내과의원"	<http://www.soksn.co.kr/index.asp>
3	<http://joyhong.tistory.com/resource/h_18296>	"성남시노인보건센터의원"	<http://scsh.or.kr>
4	<http://joyhong.tistory.com/resource/h_45820>	"성남리더스치과의원"	<http://blog.naver.com/sungeu2>
5	<http://joyhong.tistory.com/resource/h_55939>	"성남시분당구보건소"	<http://www.bundanghealth.or.kr/>
6	<http://joyhong.tistory.com/resource/h_55940>	"성남시중원구보건소"	<http://jungwonhealth.or.kr>
7	<http://joyhong.tistory.com/resource/h_66805>	"성남의료소비자생활협동조합 우리한의원"	<http://blog.naver.com/sncoop0223>
8	<http://joyhong.tistory.com/resource/h_66806>	"성남청담한의원"	<http://www.yonghan.net/>

Showing 1 to 8 of 8 entries

SPARQL Endpoint 주소

- URL

- 이 예제에서는 디폴트 설정을 그대로 사용하여 *localhost:3030* 에 *publicdata*로 데이터셋을 생성하여 아래와 같이 url에 *sparql* 질의를 요청할 수 있다.

<http://localhost:3030/publicdata/query>

감사합니다

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<http://joyhong.tistory.com>