Apache Solr

- **Solr** is an open-source search platform that is used to build **search applications**.
- It was built on top of **Lucene** (full-text search engine).
- Solr is enterprise-ready, fast, and highly scalable.
- The applications built using Solr are sophisticated and deliver high performance.

Starting Solr:

- To start Solr we need to open the command line prompt and write the following command:

```
Step 1: cd C:\Apache_Solr\solr-9.2.1\bin
Step 2: solr start
```

▼ Output:

```
Waiting up to 30 seconds to see Solr running on port 8983
Started Solr server on port 8983. Happy searching!
```

Solr Starting In Foreground:

- To start the Solr in the foreground use the following command:

```
solr start -f
```

▼ Output:

```
Java 17 detected. Enabled workaround for SOLR-16463
OpenJDK 64-Bit Server VM warning: JVM cannot use large page memory because it does not have enough privilege to lock pages in memory.
CompileCommand: exclude com/github/benmanes/caffeine/cache/BoundedLocalCache.put bool exclude = true
WARNING: A command line option has enabled the Security Manager
WARNING: The Security Manager is deprecated and will be removed in a future release
2023-07-05 06:01:48.069 INFO  (main) [] o.e.j.s.Server jetty-10.0.13; built: 2022-12-07T20:13:20.134Z; git: 1c2636ea05c0ca8de1ffd6ca7f3
2023-07-05 06:01:48.936 WARN  (main) [] o.e.j.u.DeprecationWarning Using @Deprecated Class org.eclipse.jetty.servlet.listener.ELContext
2023-07-05 06:01:48.979 INFO  (main) [] o.a.s.s.CoreContainerProvider Using logger factory org.apache.logging.slf4j.Log4jLoggerFactory
2023-07-05 06:01:48.982 INFO  (main) [] o.a.s.s.CoreContainerProvider  ___      _       Welcome to Apache SolrÖ version 9.2.1
2023-07-05 06:01:48.982 INFO  (main) [] o.a.s.s.CoreContainerProvider / __| ___| |_ _   Starting in standalone mode on port 8983
2023-07-05 06:01:48.982 INFO  (main) [] o.a.s.s.CoreContainerProvider \__ \/ _ \ | '_|  Install dir: C:\Apache_Solr\solr-9.2.1
2023-07-05 06:01:48.982 INFO  (main) [] o.a.s.s.CoreContainerProvider |___/\___/_|_|    Start time: 2023-07-05T06:01:48.982692Z
2023-07-05 06:01:48.994 INFO  (main) [] o.a.s.s.CoreContainerProvider Solr started with "-XX:+CrashOnOutOfMemoryError" that will crash
2023-07-05 06:01:49.001 INFO  (main) [] o.a.s.s.CoreContainerProvider Solr Home: C:\Apache_Solr\solr-9.2.1\server\solr (source: system
2023-07-05 06:01:49.001 INFO  (main) [] o.a.s.c.SolrXmlConfig Loading solr.xml from C:\Apache_Solr\solr-9.2.1\server\solr\solr.xml
2023-07-05 06:01:49.131 INFO  (main) [] o.a.s.c.SolrResourceLoader Added 1 libs to classloader, from paths: [/C:/Apache_Solr/solr-9.2.1
2023-07-05 06:01:50.760 WARN  (main) [] o.a.s.u.StartupLoggingUtils Jetty request logging enabled. Will retain logs for last 3 days. Se
2023-07-05 06:01:50.765 WARN  (main) [] o.a.s.c.CoreContainer Not all security plugins configured!  authentication=disabled authorizati
2023-07-05 06:01:51.145 INFO  (main) [] o.a.s.c.CorePropertiesLocator Found 0 core definitions underneath C:\Apache_Solr\solr-9.2.1\ser
```

```
2023-07-05 06:01:51.895 INFO  (main) [] o.a.s.j.SolrRequestAuthorizer Creating a new SolrRequestAuthorizer
2023-07-05 06:01:52.419 INFO  (main) [] o.e.j.s.h.ContextHandler Started o.e.j.w.WebAppContext@5be82d43{solr-jetty-context.xml,/solr,fi
2023-07-05 06:01:52.433 INFO  (main) [] o.e.j.s.RequestLogWriter Opened C:\Apache_Solr\solr-9.2.1\server\logs\2023_07_05.request.log
2023-07-05 06:01:52.444 INFO  (main) [] o.e.j.s.AbstractConnector Started ServerConnector@e260766{HTTP/1.1, (http/1.1, h2c)}{127.0.0.1:
2023-07-05 06:01:52.445 INFO  (main) [] o.e.j.s.Server Started Server@f9d87b{STARTING}[10.0.13,sto=0] @6999ms
```

Solr Run On Another Port:

- To run the Solr into another port rather than the default port we use the following command.

```
solr start -p 8585
```

▼ Output:

```
Waiting up to 30 seconds to see Solr running on port 8585
Started Solr server on port 8585. Happy searching!
```

Stopping Solr:

- To stop the Solr we need to use the following command:

```
solr stop -p 8983
```

▼ Output:

```
Stopping Solr process 17692 running on port 8983
Waiting up to 180 seconds for process 17692 to exit
```

Stopping all the Solr:

- To stop all the Solr we need to use the following command:

```
solr stop -all
```

▼ Output:

```
Stopping Solr process 21176 running on port 8983
Waiting up to 180 seconds for process 21176 to exit
```

Solr Restart:

- To restart the solr we need to use the following command.

```
solr restart -p 8983
```

▼ Output:

```
Stopping Solr process 11816 running on port 8983
Waiting up to 180 seconds for process 11816 to exit
Java 17 detected. Enabled workaround for SOLR-16463
The process cannot access the file because it is being used by another process.
Waiting up to 30 seconds to see Solr running on port 8983
```

Solr help:

- To take help use the following command:

```
solr -help
```

▼ Output:

```
Usage: solr COMMAND OPTIONS
       where COMMAND is one of: start, stop, restart, status, healthcheck, create, create_core, create_collection, delete, version, zk,

  Standalone server example (start Solr running in the background on port 8984):

    solr start -p 8984

  SolrCloud example (start Solr running in SolrCloud mode using localhost:2181 to connect to Zookeeper, with 1g max heap size and remot

    solr start -c -m 1g -z localhost:2181 -a "-Xdebug -Xrunjdwp:transport=dt_socket,server=y,suspend=n,address=1044"

  Omit '-z localhost:2181' from the above command if you have defined ZK_HOST in solr.in.cmd.

Pass -help after any COMMAND to see command-specific usage information,
  such as:    solr start -help or solr stop -help
```

Solr Status:

- This **status** command of Solr can be used to search and find out the running Solr instances on your computer.
- Use the following command:

```
solr status
```

▼ Output:

```
Found Solr process 15984 running on port 8983
{
  "solr_home":"C:\\Apache_Solr\\solr-9.2.1\\server\\solr",
```

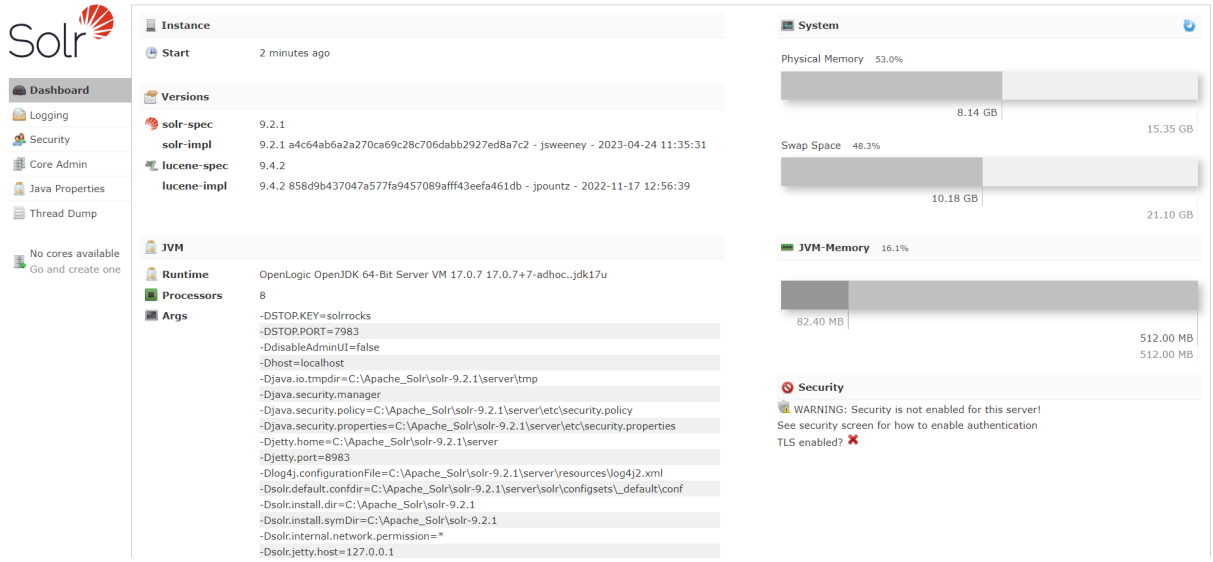
```
  "version":"9.2.1 a4c64ab6a2a270ca69c28c706dabb2927ed8a7c2 - jsweeney - 2023-04-24 11:35:31",
  "startTime":"2023-07-05T06:16:03.424Z",
  "uptime":"0 days, 0 hours, 0 minutes, 11 seconds",
  "memory":"78.9 MB (%15.4) of 512 MB"}
```

Solr Admin:

- After starting Apache Solr, you can visit the homepage of the **Solr web interface** by using the following URL.

```
http://localhost:8983/
```

- You can see the following user interface.



Solr Core:

- A Solr Core is a running instance of a Lucene index that contains all the Solr configuration files required to use it.
- We need to create a Solr Core to perform operations like indexing and analyzing.
- A Solr application may contain one or multiple cores. If necessary, two cores in a Solr application can communicate with each other.
- to create a Solr core with a command line use the following command lines.

```
solr create -c core_demo
```

▼ Output:

```
WARNING: Using _default configset with data driven schema functionality. NOT RECOMMENDED for production use.
         To turn off: bin\solr config -c core_demo -p 8983 -action set-user-property -property update.autoCreateFields -value false

Created new core 'core_demo'
```

- We can also create a core with create_core using the following command.

```
solr create_core -c my_core
```

▼ Output:

```
WARNING: Using _default configset with data driven schema functionality. NOT RECOMMENDED for production use.
         To turn off: bin\solr config -c my_core -p 8983 -action set-user-property -property update.autoCreateFields -value false

Created new core 'my_core'
```

–c core_name	Name of the core you wanted to create
-p port_name	Port at which you want to create the core
-d conf_dir	Configuration directory of the port

Deleting Core:

- To delete the core we can use the following command.

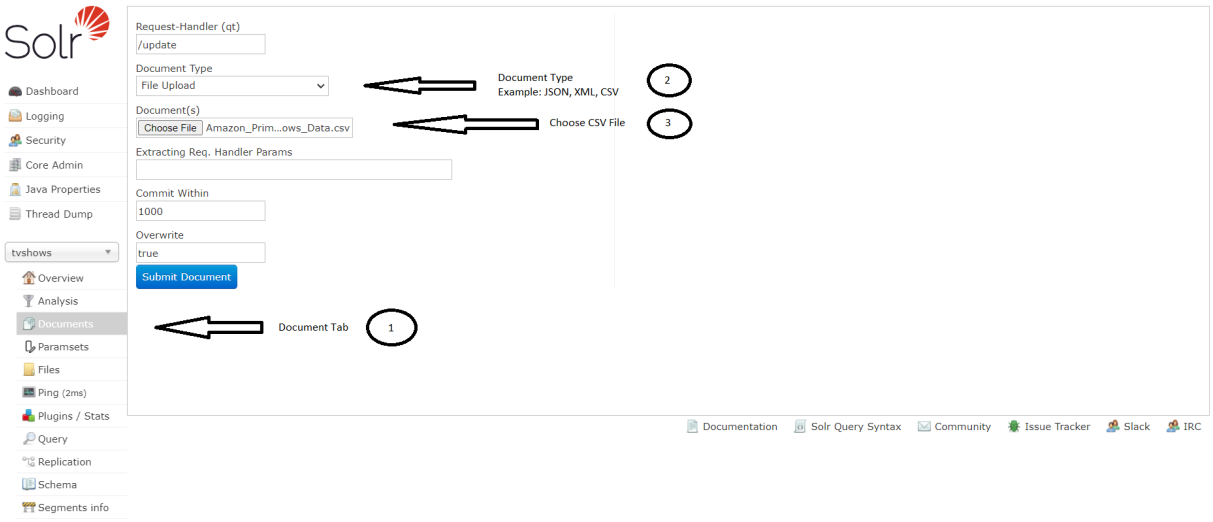
```
solr delete -c my_core
```

▼ Output:

```
Deleting core 'my_core' using command:
http://localhost:8983/solr/admin/cores?action=UNLOAD&core=my_core&deleteIndex=true&deleteDataDir=true&deleteInstanceDir=true
```

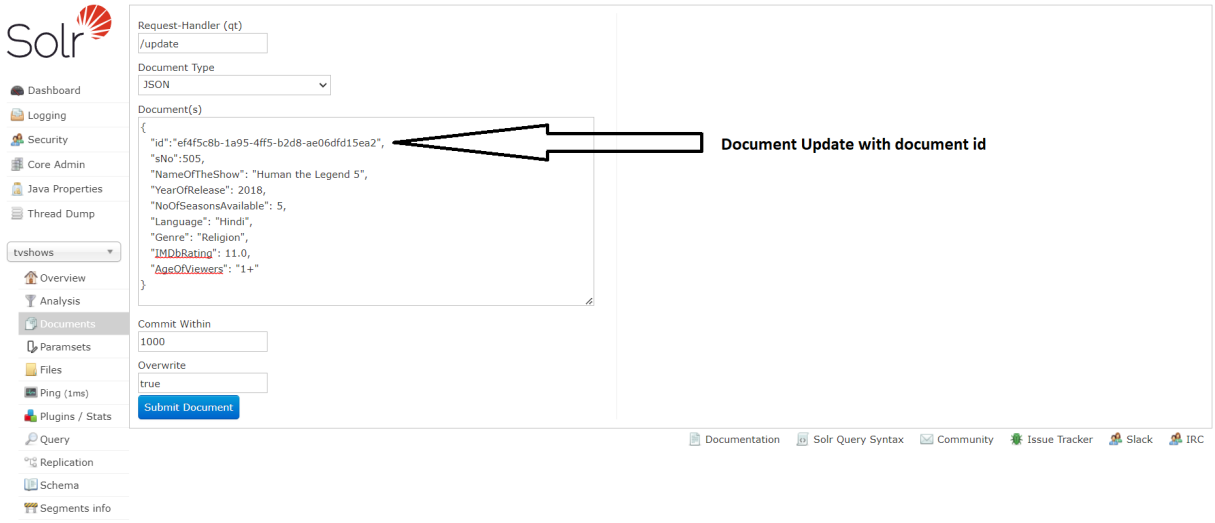
Document Indexing:

Indexing By CSV File in Solr Admin:



Indexing By JSON in Solr Admin:

Updating Document with Solr Admin:



Delete Document on Field Data:

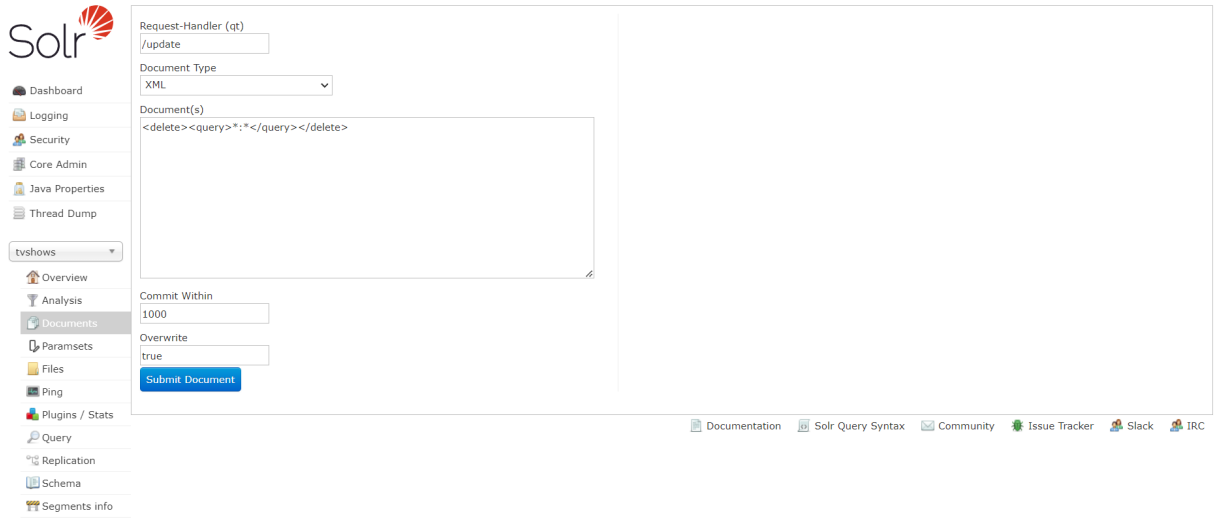
```
# Delete Document Based on Id(Field)

{
'delete':
   {'query':
        'filter(id:(db85bf18-b004-4a5f-8a27-adb2475dd105))'
   }
}
```

Delete All Document with Solr Admin:

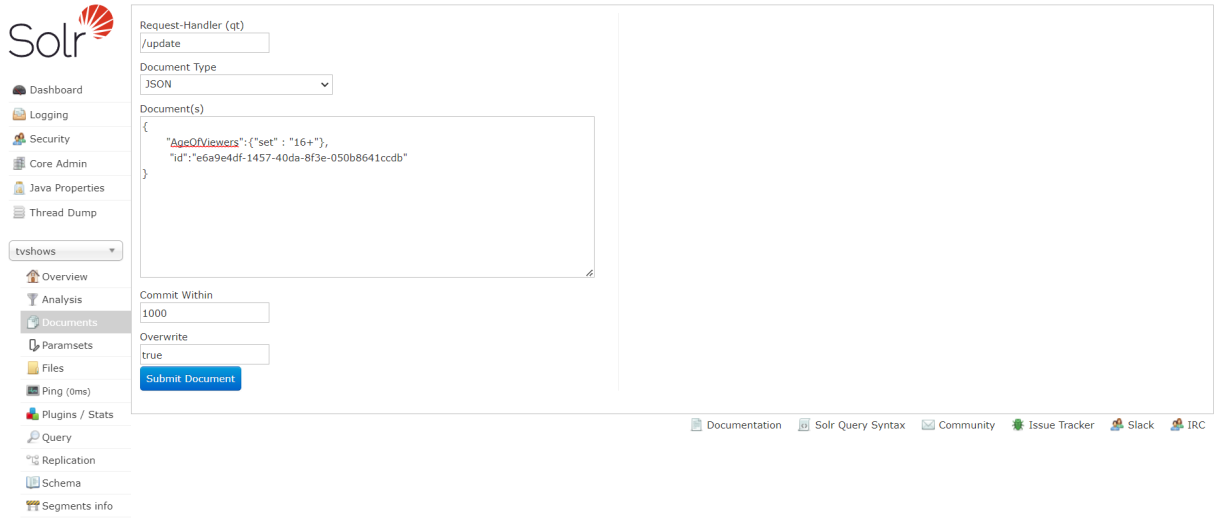
```
{'delete': {'query': '*:*'}}
```

```
<delete><query>*:*</query></delete>
```



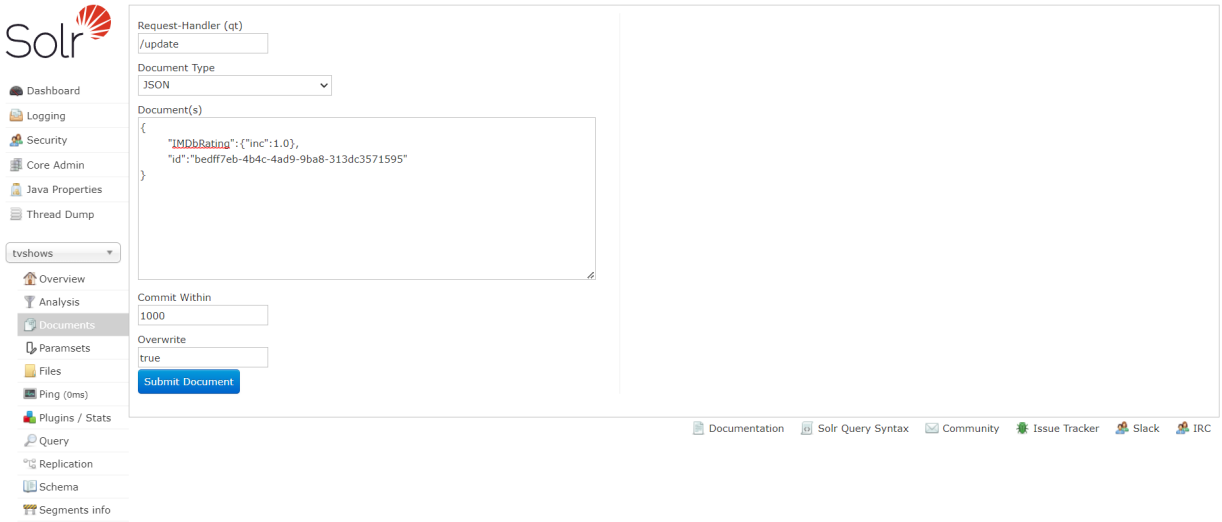
Update Document with Solr Admin(set):

```
{
        "AgeOfViewers":{"set" : "All"},
        "id":"e6a9e4df-1457-40da-8f3e-050b8641ccdb"
}
```

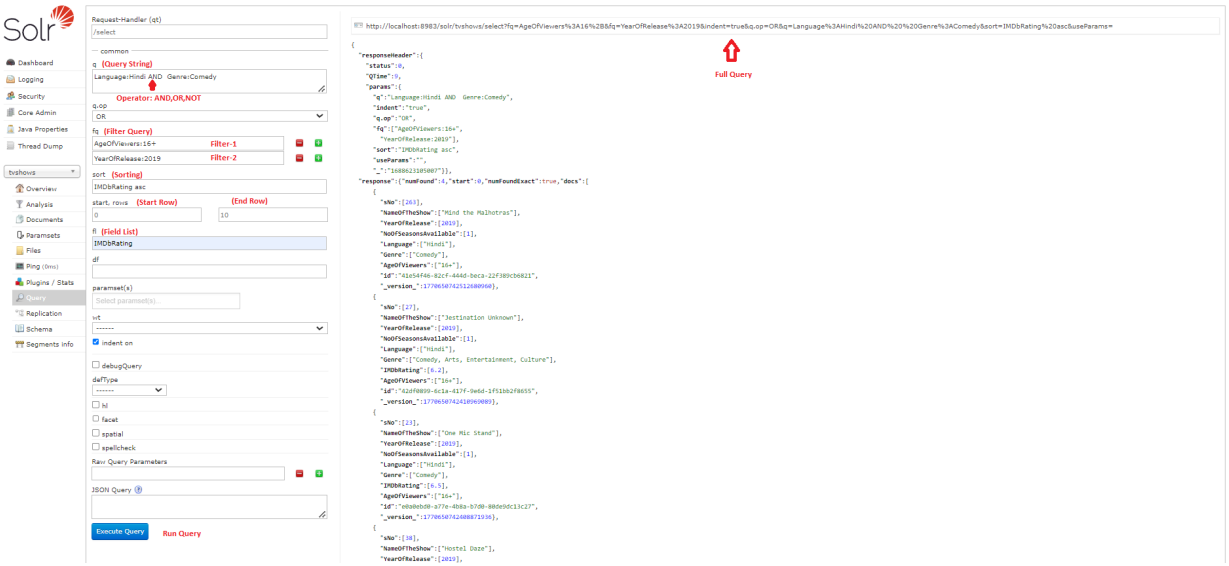


Update Document with Solr Admin(inc):

```
{
        "IMDbRating":{"inc":1.0},
        "id":"bedff7eb-4b4c-4ad9-9ba8-313dc3571595"
}
```



Query With Solr Admin:


Solr
Dashboard
Logging
Security
Core Admin
Java Properties
Thread Dump
tvshows
Overview
Analysis
Documents
Paramsets
Files
Ping (0ms)
Plugins / Stats
Query
Replication
Schema
Segments info
Request-Handler (qt)
/select
common
q (Query String)
Language:Hindi AND Genre:Comedy
Operator: AND,OR,NOT
q.op
OR
fq (Filter Query)
AgeOfViewers:16+
Filter-1
YearOfRelease:2019
Filter-2
sort (Sorting)
IMDbRating asc
start, rows (Start Row)
(End Row)
0
10
fl (Field List)
IMDbRating
df
paramset(s)
Select paramset(s)...
wt
indent on
debugQuery
defType
hl
facet
spatial
spellcheck
Raw Query Parameters
JSON Query
Execute Query
Run Query
http://localhost:8983/solr/tvshows/select?fq=AgeOfViewers%3A16%2B&fq=YearOfRelease%3A2019&indent=true&q.op=OR&q=Language%3AHindi%20AND%20%20Genre%3AComedy&sort=IMDbRating%20asc&useParams=
Full Query