
pystardog Documentation

Pedro Oliveira, John Bresnahan, Stephen Nowell

Jul 26, 2021

CONTENTS:

1	pystardog	1
1.1	What is it?	1
1.2	Installation	1
1.3	Documentation	1
1.4	Tests	1
1.5	Quick Example	2
1.6	Interactive Tutorial	2
2	Modules	3
2.1	stardog.connection	3
2.2	stardog.admin	13
2.3	stardog.content	26
2.4	stardog.exceptions	28
3	Indices and tables	29
	Python Module Index	31
	Index	33

PYSTARDOG

Python wrapper for communicating with the Stardog HTTP server.

1.1 What is it?

This framework wraps all the functionality of a client for the Stardog Knowledge Graph, and provides access to a full set of functions such as executing SPARQL queries, administrative tasks on Stardog, and the use of the Reasoning API.

The implementation uses the HTTP protocol, since most of Stardog functionality is available using this protocol. For more information, go to the Stardog's [HTTP Programming](#) documentation.

1.2 Installation

pystardog is on PyPI so all you need is: `pip install pystardog`

1.3 Documentation

Documentation is readable at [Read the Docs](#) or can be built using Sphinx:

```
pip install -r requirements.txt
cd docs
make html
```

1.4 Tests

To run the tests locally, a valid Stardog license is required and placed in the `dockerfiles/stardog-license-key.bin`. Docker and docker-compose are also required.

```
docker-compose up --exit-code-from tests
```

1.5 Quick Example

```
import stardog

conn_details = {
    'endpoint': 'http://localhost:5820',
    'username': 'admin',
    'password': 'admin'
}

with stardog.Admin(**conn_details) as admin:
    db = admin.new_database('db')

    with stardog.Connection('db', **conn_details) as conn:
        conn.begin()
        conn.add(stardog.content.File('./test/data/example.ttl'))
        conn.commit()
        results = conn.select('select * { ?a ?p ?o }')

    db.drop()
```

1.6 Interactive Tutorial

There is a Jupyter notebook and instructions in the `notebooks` directory of this repository.

MODULES

2.1 stardog.connection

Connect to Stardog databases.

class stardog.connection.**Connection**(*database*, *endpoint=None*, *username=None*, *password=None*, *auth=None*)

Bases: object

Database Connection.

This is the entry point for all user-related operations on a Stardog database

__init__(*database*, *endpoint=None*, *username=None*, *password=None*, *auth=None*)

Initializes a connection to a Stardog database.

Parameters

- **database** (*str*) – Name of the database
- **endpoint** (*str*) – Url of the server endpoint. Defaults to *http://localhost:5820*
- **username** (*str*, *optional*) – Username to use in the connection
- **password** (*str*, *optional*) – Password to use in the connection
- **auth** (*requests.auth.AuthBase*, *optional*) – requests Authentication object. Defaults to *None*

Examples

```
>>> conn = Connection('db', endpoint='http://localhost:9999',  
                      username='admin', password='admin')
```

add(*content*, *graph_uri=None*)

Adds data to the database.

Parameters

- **content** (*Content*) – Data to add
- **graph_uri** (*str*, *optional*) – Named graph into which to add the data

Raises *stardog.exceptions.TransactionException* – If not currently in a transaction

Examples

```
>>> conn.add(File('example.ttl'), graph_uri='urn:graph')
```

ask (*query*, ***kwargs*)

Executes a SPARQL ask query.

Parameters

- **query** (*str*) – SPARQL query
- **base_uri** (*str*, *optional*) – Base URI for the parsing of the query
- **limit** (*int*, *optional*) – Maximum number of results to return
- **offset** (*int*, *optional*) – Offset into the result set
- **timeout** (*int*, *optional*) – Number of ms after which the query should timeout. 0 or less implies no timeout
- **reasoning** (*bool*, *optional*) – Enable reasoning for the query
- **bindings** (*dict*, *optional*) – Map between query variables and their values

Returns Result of ask query

Return type bool

Examples

```
>>> conn.ask('ask { :subj :pred :obj }', reasoning=True)
```

begin (***kwargs*)

Begins a transaction.

Parameters **reasoning** (*bool*, *optional*) – Enable reasoning for all queries inside the transaction. If the transaction does not have reasoning enabled, queries within will not be able to use reasoning.

Returns Transaction ID

Return type str

Raises *stardog.exceptions.TransactionException* – If already in a transaction

clear (*graph_uri=None*)

Removes all data from the database or specific named graph.

Parameters **graph_uri** (*str*, *optional*) – Named graph from which to remove data

Raises *stardog.exceptions.TransactionException* – If currently not in a transaction

Examples

clear a specific named graph

```
>>> conn.clear('urn:graph')
```

clear the whole database


```
>>> conn.clear()
```

close()

Close the underlying HTTP connection.

commit()

Commits the current transaction.

Raises `stardog.exceptions.TransactionException` – If currently not in a transaction

docs()

Makes a document storage object.

Returns A Docs object

Return type `Docs`

explain(query, base_uri=None)

Explains the evaluation of a SPARQL query.

Parameters

- **query** (`str`) – SPARQL query
- **base_uri** (`str`, *optional*) – Base URI for the parsing of the query

Returns Query explanation

Return type `str`

explain_inconsistency(graph_uri=None)

Explains why the database or a named graph is inconsistent.

Parameters **graph_uri** (`str`, *optional*) – Named graph for which to explain inconsistency

Returns Explanation results

Return type `dict`

explain_inference(content)

Explains the given inference results.

Parameters **content** (`Content`) – Data from which to provide explanations

Returns Explanation results

Return type `dict`

Examples

```
>>> conn.explain_inference(File('inferences.ttl'))
```

export(content_type='text/turtle', stream=False, chunk_size=10240, graph_uri=None)

Exports the contents of the database.

Parameters

- **content_type** (`str`) – RDF content type. Defaults to 'text/turtle'
- **stream** (`bool`) – Chunk results? Defaults to False

- **chunk_size** (*int*) – Number of bytes to read per chunk when streaming. Defaults to 10240
- **graph_uri** (*str*, *optional*) – Named graph to export

Returns If stream = False

Return type str

Returns If stream = True

Return type gen

Examples

no streaming

```
>>> contents = conn.export()
```

streaming

```
>>> with conn.export(stream=True) as stream:
    contents = ''.join(stream)
```

graph (*query*, *content_type*='text/turtle', ***kwargs*)

Executes a SPARQL graph query.

Parameters

- **query** (*str*) – SPARQL query
- **base_uri** (*str*, *optional*) – Base URI for the parsing of the query
- **limit** (*int*, *optional*) – Maximum number of results to return
- **offset** (*int*, *optional*) – Offset into the result set
- **timeout** (*int*, *optional*) – Number of ms after which the query should timeout. 0 or less implies no timeout
- **reasoning** (*bool*, *optional*) – Enable reasoning for the query
- **bindings** (*dict*, *optional*) – Map between query variables and their values
- **content_type** (*str*) – Content type for results. Defaults to 'text/turtle'

Returns Results in format given by content_type

Return type str

Examples

```
>>> conn.graph('construct {?s ?p ?o} where {?s ?p ?o}',
               offset=100, limit=100, reasoning=True)
```

bindings

```
>>> conn.graph('construct {?s ?p ?o} where {?s ?p ?o}',
               bindings={'o': '<urn:a>'})
```

graphql ()

Makes a GraphQL object.

Returns A GraphQL object

Return type *GraphQL*

icv()

Makes an integrity constraint validation object.

Returns An ICV object

Return type *ICV*

is_consistent (*graph_uri=None*)

Checks if the database or named graph is consistent wrt its schema.

Parameters **graph_uri** (*str, optional*) – Named graph from which to check consistency

Returns Database consistency state

Return type bool

paths (*query, content_type='application/sparql-results+json', **kwargs*)

Executes a SPARQL paths query.

Parameters

- **query** (*str*) – SPARQL query
- **base_uri** (*str, optional*) – Base URI for the parsing of the query
- **limit** (*int, optional*) – Maximum number of results to return
- **offset** (*int, optional*) – Offset into the result set
- **timeout** (*int, optional*) – Number of ms after which the query should timeout. 0 or less implies no timeout
- **reasoning** (*bool, optional*) – Enable reasoning for the query
- **bindings** (*dict, optional*) – Map between query variables and their values
- **content_type** (*str*) – Content type for results. Defaults to 'application/sparql-results+json'

Returns if content_type='application/sparql-results+json'.

Return type dict

Returns other content types.

Return type str

Examples

```
>>> conn.paths('paths start ?x = :subj end ?y = :obj via ?p',
               reasoning=True)
```

remove (*content, graph_uri=None*)

Removes data from the database.

Parameters

- **content** (*Content*) – Data to add
- **graph_uri** (*str, optional*) – Named graph from which to remove the data

Raises *stardog.exceptions.TransactionException* – If currently not in a transaction

Examples

```
>>> conn.remove(File('example.ttl'), graph_uri='urn:graph')
```

rollback()

Rolls back the current transaction.

Raises *stardog.exceptions.TransactionException* – If currently not in a transaction

select (*query*, *content_type*='application/sparql-results+json', ***kwargs*)

Executes a SPARQL select query.

Parameters

- **query** (*str*) – SPARQL query
- **base_uri** (*str*, *optional*) – Base URI for the parsing of the query
- **limit** (*int*, *optional*) – Maximum number of results to return
- **offset** (*int*, *optional*) – Offset into the result set
- **timeout** (*int*, *optional*) – Number of ms after which the query should timeout. 0 or less implies no timeout
- **reasoning** (*bool*, *optional*) – Enable reasoning for the query
- **bindings** (*dict*, *optional*) – Map between query variables and their values
- **content_type** (*str*, *optional*) – Content type for results. Defaults to 'application/sparql-results+json'

Returns If *content_type*='application/sparql-results+json'

Return type dict

Returns Other content types

Return type str

Examples

```
>>> conn.select('select * {?s ?p ?o}',
                offset=100, limit=100, reasoning=True)
```

bindings

```
>>> conn.select('select * {?s ?p ?o}', bindings={'o': '<urn:a>'})
```

size (*exact*=False)

Database size.

Parameters **exact** (*bool*, *optional*) – Calculate the size exactly. Defaults to False

Returns The number of elements in database

Return type int

update (*query*, ***kwargs*)

Executes a SPARQL update query.

Parameters

- **query** (*str*) – SPARQL query
- **base_uri** (*str*, *optional*) – Base URI for the parsing of the query
- **limit** (*int*, *optional*) – Maximum number of results to return
- **offset** (*int*, *optional*) – Offset into the result set
- **timeout** (*int*, *optional*) – Number of ms after which the query should timeout. 0 or less implies no timeout
- **reasoning** (*bool*, *optional*) – Enable reasoning for the query
- **bindings** (*dict*, *optional*) – Map between query variables and their values

Examples

```
>>> conn.update('delete where {?s ?p ?o}')
```

class stardog.connection.Docs (*client*)

Bases: object

BITES: Document Storage.

See also:

https://www.stardog.com/docs/#_unstructured_data

__init__ (*client*)

Initializes a Docs.

Use `stardog.connection.Connection.docs()` instead of constructing manually.

add (*name*, *content*)

Adds a document to the store.

Parameters

- **name** (*str*) – Name of the document
- **content** (*Content*) – Contents of the document

Examples

```
>>> docs.add('example', File('example.pdf'))
```

clear ()

Removes all documents from the store.

delete (*name*)

Deletes a document from the store.

Parameters **name** (*str*) – Name of the document

get (*name*, *stream=False*, *chunk_size=10240*)

Gets a document from the store.

Parameters

- **name** (*str*) – Name of the document
- **stream** (*bool*) – If document should come in chunks or as a whole. Defaults to False
- **chunk_size** (*int*) – Number of bytes to read per chunk when streaming. Defaults to 10240

Returns If stream=False

Return type str

Returns If stream=True

Return type gen

Examples

no streaming

```
>>> contents = docs.get('example')
```

streaming

```
>>> with docs.get('example', stream=True) as stream:
    contents = ''.join(stream)
```

size()

Calculates document store size.

Returns Number of documents in the store

Return type int

class stardog.connection.GraphQL(*conn*)

Bases: object

See also:

https://www.stardog.com/docs/#_graphql_queries

__init__(*conn*)

Initializes a GraphQL.

Use `stardog.connection.Connection.graphql()` instead of constructing manually.

add_schema(*name*, *content*)

Adds a schema to the database.

Parameters

- **name** (*str*) – Name of the schema
- **content** (*Content*) – Schema data

Examples

```
>>> gql.add_schema('people', content=File('people.graphql'))
```

clear_schemas()

Deletes all schemas.

query (*query*, *variables=None*)

Executes a GraphQL query.

Parameters

- **query** (*str*) – GraphQL query
- **variables** (*dict*, *optional*) – GraphQL variables. Keys: '@reasoning' (bool) to enable reasoning, '@schema' (str) to define schemas

Returns Query results

Return type dict

Examples

with schema and reasoning

```
>>> gql.query('{ Person {name} }',
               variables={'@reasoning': True, '@schema': 'people'})
```

with named variables

```
>>> gql.query(
    'query getPerson($id: Integer) { Person(id: $id) {name} }',
    variables={'id': 1000})
```

remove_schema (*name*)

Removes a schema from the database.

Parameters **name** (*str*) – Name of the schema

schema (*name*)

Gets schema information.

Parameters **name** (*str*) – Name of the schema

Returns GraphQL schema

Return type dict

schemas ()

Retrieves all available schemas.

Returns All schemas

Return type dict

class stardog.connection.ICV (*conn*)

Bases: object

Integrity Constraint Validation.

See also:

https://www.stardog.com/docs/#_validating_constraints

__init__ (*conn*)

Initializes an ICV.

Use `stardog.connection.Connection.icv()` instead of constructing manually.

add (*content*)

Adds integrity constraints to the database.

Parameters `content` (`Content`) – Data to add

Examples

```
>>> icv.add(File('constraints.ttl'))
```

clear ()

Removes all integrity constraints from the database.

convert (`content`, `graph_uri=None`)

Converts given integrity constraints to a SPARQL query.

Parameters

- **content** (`Content`) – Integrity constraints
- **graph_uri** (`str`, *optional*) – Named graph from which to apply constraints

Returns SPARQL query

Return type `str`

Examples

```
>>> icv.convert(File('constraints.ttl'), graph_uri='urn:graph')
```

explain_violations (`content`, `graph_uri=None`)

Explains violations of the given integrity constraints.

Parameters

- **content** (`Content`) – Data to check for violations
- **graph_uri** (`str`, *optional*) – Named graph from which to check for validations

Returns Integrity constraint violations

Return type `dict`

Examples

```
>>> icv.explain_violations(File('constraints.ttl'),  
                           graph_uri='urn:graph')
```

is_valid (`content`, `graph_uri=None`)

Checks if given integrity constraints are valid.

Parameters

- **content** (`Content`) – Data to check for validity
- **graph_uri** (`str`, *optional*) – Named graph to check for validity

Returns Integrity constraint validity

Return type `bool`

Examples

```
>>> icv.is_valid(File('constraints.ttl'), graph_uri='urn:graph')
```

list()

List all integrity constraints from the database.

remove(content)

Removes integrity constraints from the database.

Parameters **content** (*Content*) – Data to remove

Examples

```
>>> icv.remove(File('constraints.ttl'))
```

2.2 stardog.admin

Administer a Stardog server.

class stardog.admin.**Admin** (*endpoint=None, username=None, password=None, auth=None*)

Bases: object

Admin Connection.

This is the entry point for admin-related operations on a Stardog server.

See also:

https://www.stardog.com/docs/#_administering_stardog

__init__ (*endpoint=None, username=None, password=None, auth=None*)

Initializes an admin connection to a Stardog server.

Parameters

- **endpoint** (*str, optional*) – Url of the server endpoint. Defaults to *http://localhost:5820*
- **username** (*str, optional*) – Username to use in the connection. Defaults to *admin*
- **password** (*str, optional*) – Password to use in the connection. Defaults to *admin*

auth (*requests.auth.AuthBase, optional*): **requests Authentication object**. Defaults to *None*

auth and username/password should not be used together. If they are the value of *auth* will take precedent.

.. rubric:: Examples

```
>>> admin = Admin(endpoint='http://localhost:9999',
                  username='admin', password='admin')
```

clear_stored_queries()

Remove all stored queries on the server.

cluster_info()

Prints info about the nodes in the Stardog Pack cluster.

Returns Nodes of the cluster.

Return type dict

cluster_status()

Prints status information for each node in the cluster

Returns Nodes of the cluster and extra information

Return type dict

database(name)

Retrieves an object representing a database.

Parameters **name** (*str*) – The database name

Returns The requested database

Return type *Database*

databases()

Retrieves all databases.

Returns A list of database objects

Return type list[*Database*]

datasource(name)

Retrieves an object representing a DataSource.

Parameters **name** (*str*) – The name of the data source

Returns The DataSource object

Return type *DataSource*

datasources()

Retrieves all data sources.

Returns A list of DataSources

Return type list[DataSources]

datasources_info()

List data sources info

Returns A list of data sources info

Return type list

get_server_properties()

Get the value of any set server-level properties

Returns dict: Server properties

import_virtual_graph(db, mappings, named_graph, remove_all, options)

Import (materialize) a virtual graph directly into the local knowledge graph.

Parameters

- **db** (*str*) – The database into which to import the graph
- **mappings** (*Content*) – New mapping contents. An empty string can be passed for autogenerated mappings.
- **named_graph** (*str*) – Name of the graph into which import the VG.
- **remove_all** (*bool*) – Should the target named graph be cleared before importing?

- **options** (*dict*) – Options for the new virtual graph, <https://docs.stardog.com/virtual-graphs/virtual-graph-configuration#virtual-graph-properties>

Examples

```
>>> admin.import_virtual_graph(
    'db-name', mappings=File('mappings.ttl'),
    named_graph='my-graph', remove_all=True, options={'jdbc.driver': 'com.
mysql.jdbc.Driver'})
```

kill_query(*id*)

Kills a running query.

Parameters *id* (*str*) – ID of the query to kill

new_database(*name*, *options*=None, **contents*)

Creates a new database.

Parameters

- **name** (*str*) – the database name
- **options** (*dict*) – Dictionary with database options (optional)
- ***contents** (*Content* or (*Content*, *str*), *optional*) – Datasets to perform bulk-load with. Named graphs are made with tuples of Content and the name.

Returns The database object

Return type *Database*

Examples

Options

```
>>> admin.new_database('db', {'search.enabled': True})
```

bulk-load

```
>>> admin.new_database('db', {},
    File('example.ttl'), File('test.rdf'))
```

bulk-load to named graph

```
>>> admin.new_database('db', {}, (File('test.rdf'), 'urn:context'))
```

new_datasource(*name*, *options*)

Creates a new DataSource.

Parameters

- **name** (*str*) – The name of the data source
- **options** (*dict*) – Data source options

Returns The new DataSource object

Return type *User*

new_role (*name*)

Creates a new role.

Parameters **name** (*str*) – The name of the new Role

Returns The new Role object

Return type *Role*

new_stored_query (*name, query, options=None*)

Creates a new Stored Query.

Parameters

- **name** (*str*) – The name of the stored query
- **query** (*str*) – The query text
- **options** (*dict, optional*) – Additional options

Returns the new StoredQuery

Return type *StoredQuery*

Examples

```
>>> admin.new_stored_query('all triples',
    'select * where { ?s ?p ?o . }',
    { 'database': 'mydb' }
)
```

new_user (*username, password, superuser=False*)

Creates a new user.

Parameters

- **username** (*str*) – The username
- **password** (*str*) – The password
- **superuser** (*bool*) – Should the user be super? Defaults to false.

Returns The new User object

Return type *User*

new_virtual_graph (*name, mappings, options={}, datasource=None, db=None*)

Creates a new Virtual Graph.

Parameters

- **name** (*str*) – The name of the virtual graph
- **mappings** (*Content*) – New mapping contents
- **options** (*dict*) – Options for the new virtual graph

Returns the new VirtualGraph

Return type *VirtualGraph*

Examples

```
>>> admin.new_virtual_graph(
    'users', File('mappings.ttl'),
    {'jdbc.driver': 'com.mysql.jdbc.Driver'}
)
```

queries()

Gets information about all running queries.

Returns Query information

Return type dict

query(id)

Gets information about a running query.

Parameters **id** (*str*) – Query ID

Returns Query information

Return type dict

restore(from_path, *, name=None, force=False)

Restore a database.

Parameters

- **from_path** (*str*) – the full path on the server to the backup
- **name** (*str*, *optional*) – the name of the database to restore to if different from the backup
- **force** (*boolean*, *optional*) – a backup will not be restored over an existing database of the same name; the force flag should be used to overwrite the database

Examples

```
>>> admin.restore("/data/stardog/.backup/db/2019-12-01")
>>> admin.restore("/data/stardog/.backup/db/2019-11-05",
                  name="db2", force=True)
```

See also:

https://www.stardog.com/docs/#_restore_a_database_from_a_backup

role(name)

Retrieves an object representing a role.

Parameters **name** (*str*) – The name of the Role

Returns The Role object

Return type *Role*

roles()

Retrieves all roles.

Returns A list of Role objects

Return type list[*Role*]

shutdown()

Shuts down the server.

stored_queries()

Retrieves all stored queries.

Returns A list of StoredQuery objects

Return type list[*StoredQuery*]

stored_query(name)

Retrieves a Stored Query.

Parameters **name** (*str*) – The name of the Stored Query to retrieve

Returns The StoredQuery object

Return type *StoredQuery*

user(name)

Retrieves an object representing a user.

Parameters **name** (*str*) – The name of the user

Returns The User object

Return type *User*

users()

Retrieves all users.

Returns A list of User objects

Return type list[*User*]

validate()

Validates an admin connection.

Returns The connection state

Return type bool

virtual_graph(name)

Retrieves a Virtual Graph.

Parameters **name** (*str*) – The name of the Virtual Graph to retrieve

Returns The VirtualGraph object

Return type *VirtualGraph*

virtual_graphs()

Retrieves all virtual graphs.

Returns A list of VirtualGraph objects

Return type list[*VirtualGraph*]

class stardog.admin.**DataSource** (*name, client*)

Bases: object

Initializes a DataSource

See also:

<https://docs.stardog.com/virtual-graphs/virtual-sources>

__init__ (*name, client*)

Initializes a DataSource.

Use `stardog.admin.Admin.data_source()`, `stardog.admin.Admin.data_sources()`, or `stardog.admin.Admin.new_data_source()` instead of constructing manually.

available ()

Checks if the data source is available.

Returns Availability state

Return type bool

delete ()

Deletes a data source

get_options ()

Get data source options

info ()

Get data source info

Returns Info

Return type dict

property name

The name of the data source.

online ()

Online a data source

refresh_count (*meta=None*)

Refresh table row-count estimates

refresh_metadata (*meta=None*)

Refresh metadata

share ()

Share data source

update (*options=None*)

Update data source

class `stardog.admin.Database` (*name, client*)

Bases: object

Database Admin

See also:

https://www.stardog.com/docs/#_database_admin

__init__ (*name, client*)

Initializes a Database.

Use `stardog.admin.Admin.database()`, `stardog.admin.Admin.databases()`, or `stardog.admin.Admin.new_database()` instead of constructing manually.

backup (*, *to=None*)

Backup a database.

Parameters *to* (*string, optional*) – specify a path on the server to store the backup

See also:

https://www.stardog.com/docs/#_backup_a_database

copy (*to*)

Makes a copy of this database under another name.

The database must be offline.

Parameters *to* (*str*) – Name of the new database to be created

Returns The new Database

Return type *Database*

drop ()

Drops the database.

get_options (**options*)

Gets database options.

Parameters **options* (*str*) – Database option names

Returns Database options

Return type dict

Examples

```
>>> db.get_options('search.enabled', 'spatial.enabled')
```

property name

The name of the database.

offline ()

Sets a database to offline state.

online ()

Sets a database to online state.

optimize ()

Optimizes a database.

repair ()

Repairs a database.

The database must be offline.

set_options (*options*)

Sets database options.

The database must be offline.

Parameters *options* (*dict*) – Database options

Examples

```
>>> db.set_options({'spatial.enabled': False})
```

verify ()

verifies a database.

class `stardog.admin.Role` (*name, client*)

Bases: `object`

See also:

https://www.stardog.com/docs/#_security

__init__ (*name, client*)

Initializes a Role.

Use `stardog.admin.Admin.role()`, `stardog.admin.Admin.roles()`, or `stardog.admin.Admin.new_role()` instead of constructing manually.

add_permission (*action, resource_type, resource*)

Adds a permission to the role.

See also:

https://www.stardog.com/docs/#_permissions

Parameters

- **action** (*str*) – Action type (e.g., ‘read’, ‘write’)
- **resource_type** (*str*) – Resource type (e.g., ‘user’, ‘db’)
- **resource** (*str*) – Target resource (e.g., ‘username’, ‘*’)

Examples

```
>>> role.add_permission('read', 'user', 'username')
>>> role.add_permission('write', '*', '*')
```

delete (*force=None*)

Deletes the role.

Parameters **force** (*bool*) – Force deletion of the role

property name

The name of the Role.

permissions ()

Gets the role permissions.

See also:

https://www.stardog.com/docs/#_permissions

Returns Role permissions

Return type dict

remove_permission (*action, resource_type, resource*)

Removes a permission from the role.

See also:

https://www.stardog.com/docs/#_permissions

Parameters

- **action** (*str*) – Action type (e.g., ‘read’, ‘write’)

- **resource_type** (*str*) – Resource type (e.g., ‘user’, ‘db’)
- **resource** (*str*) – Target resource (e.g., ‘username’, ‘*’)

Examples

```
>>> role.remove_permission('read', 'user', 'username')
>>> role.remove_permission('write', '*', '*')
```

users ()

Lists the users for this role.

Returns list[User]

class stardog.admin.**StoredQuery** (*name, client*)

Bases: object

Stored Query

See also:

https://www.stardog.com/docs/#_list_stored_queries

https://www.stardog.com/docs/#_managing_stored_queries

__init__ (*name, client*)

Initializes a stored query.

Use `stardog.admin.Admin.stored_query()`, `stardog.admin.Admin.stored_queries()`, or `stardog.admin.Admin.new_stored_query()` instead of constructing manually.

property creator

The creator of the stored query.

property database

The database the stored query applies to.

delete ()

Deletes the Stored Query.

property description

The description of the stored query.

property name

The name of the stored query.

property query

The text of the stored query.

property reasoning

The value of the reasoning property.

property shared

The value of the shared property.

update (***options*)

Updates the Stored Query.

Parameters ***options* (*str*) – Named arguments to update.

Examples

Update description

```
>>> stored_query.update(description='this query finds all the relevant...')
```

class stardog.admin.**User** (*name, client*)

Bases: object

See also:

https://www.stardog.com/docs/#_security

__init__ (*name, client*)

Initializes a User.

Use `stardog.admin.Admin.user()`, `stardog.admin.Admin.users()`, or `stardog.admin.Admin.new_user()` instead of constructing manually.

add_permission (*action, resource_type, resource*)

Add a permission to the user.

See also:

https://www.stardog.com/docs/#_permissions

Parameters

- **action** (*str*) – Action type (e.g., ‘read’, ‘write’)
- **resource_type** (*str*) – Resource type (e.g., ‘user’, ‘db’)
- **resource** (*str*) – Target resource (e.g., ‘username’, ‘*’)

Examples

```
>>> user.add_permission('read', 'user', 'username')
>>> user.add_permission('write', '*', '*')
```

add_role (*role*)

Adds an existing role to the user.

Parameters **role** (*str or Role*) – The role to add or its name

Examples

```
>>> user.add_role('reader')
>>> user.add_role(admin.role('reader'))
```

delete ()

Deletes the user.

effective_permissions ()

Gets the user’s effective permissions.

Returns User effective permissions

Return type dict

is_enabled ()

Checks if the user is enabled.

Returns User activation state

Return type bool

is_superuser()

Checks if the user is a super user.

Returns Superuser state

Return type bool

property name

The user name.

Type str

permissions()

Gets the user permissions.

See also:

https://www.stardog.com/docs/#_permissions

Returns User permissions

Return type dict

remove_permission(action, resource_type, resource)

Removes a permission from the user.

See also:

https://www.stardog.com/docs/#_permissions

Parameters

- **action** (*str*) – Action type (e.g., ‘read’, ‘write’)
- **resource_type** (*str*) – Resource type (e.g., ‘user’, ‘db’)
- **resource** (*str*) – Target resource (e.g., ‘username’, ‘*’)

Examples

```
>>> user.remove_permission('read', 'user', 'username')
>>> user.remove_permission('write', '*', '*')
```

remove_role(role)

Removes a role from the user.

Parameters **role** (*str* or *Role*) – The role to remove or its name

Examples

```
>>> user.remove_role('reader')
>>> user.remove_role(admin.role('reader'))
```

roles()

Gets all the User’s roles.

Returns list[Role]

set_enabled (*enabled*)

Enables or disables the user.

Parameters **enabled** (*bool*) – Desired User state

set_password (*password*)

Sets a new password.

Parameters **password** (*str*) –

set_roles (**roles*)

Sets the roles of the user.

Parameters ***roles** (*str or Role*) – The roles to add the User to

Examples

```
>>> user.set_roles('reader', admin.role('writer'))
```

class stardog.admin.**VirtualGraph** (*name, client*)

Bases: object

Virtual Graph

See also:

https://www.stardog.com/docs/#_structured_data

__init__ (*name, client*)

Initializes a virtual graph.

Use `stardog.admin.Admin.virtual_graph()`, `stardog.admin.Admin.virtual_graphs()`, or `stardog.admin.Admin.new_virtual_graph()` instead of constructing manually.

available ()

Checks if the Virtual Graph is available.

Returns Availability state

Return type bool

delete ()

Deletes the Virtual Graph.

get_database ()

Gets database associated with the VirtualGraph.

Returns Database name

Return type string

info ()

Gets Virtual Graph info.

Returns Info

Return type dict

mappings (*content_type='text/turtle'*)

Gets the Virtual Graph mappings.

Parameters **content_type** (*str*) – Content type for results. Defaults to 'text/turtle'

Returns Mappings in given content type

Return type str

property name

The name of the virtual graph.

options()

Gets Virtual Graph options.

Returns Options

Return type dict

update (*name*, *mappings*, *options*={}, *datasource*=None, *db*=None)

Updates the Virtual Graph.

Parameters

- **name** (*str*) – The new name
- **mappings** (*Content*) – New mapping contents
- **options** (*dict*) – New options

Examples

```
>>> vg.update('users', File('mappings.ttl'),
              {'jdbc.driver': 'com.mysql.jdbc.Driver'})
```

2.3 stardog.content

Content that can be loaded into Stardog.

class stardog.content.Content

Bases: object

Content base class.

class stardog.content.File (*fname*, *content_type*=None, *content_encoding*=None, *name*=None)

Bases: *stardog.content.Content*

File-based content.

__init__ (*fname*, *content_type*=None, *content_encoding*=None, *name*=None)

Initializes a File object.

Parameters

- **fname** (*str*) – Filename
- **content_type** (*str*, *optional*) – Content type. It will be automatically detected from the filename
- **content_encoding** (*str*, *optional*) – Content encoding. It will be automatically detected from the filename
- **name** (*str*, *optional*) – Object name. It will be automatically detected from the filename

Examples

```
>>> File('data.ttl')
>>> File('data.doc', 'application/msword')
```

data()

class stardog.content.**Raw**(*content*, *content_type*=None, *content_encoding*=None, *name*=None)

Bases: *stardog.content.Content*

User-defined content.

__init__(*content*, *content_type*=None, *content_encoding*=None, *name*=None)

Initializes a Raw object.

Parameters

- **content** (*obj*) – Object representing the content (e.g., str, file)
- **content_type** (*str*, *optional*) – Content type
- **content_encoding** (*str*, *optional*) – Content encoding
- **name** (*str*, *optional*) – Object name

Examples

```
>>> Raw(':luke a :Human', 'text/turtle', name='data.ttl')
>>> Raw(open('data.ttl.zip', 'rb'),
        'text/turtle', 'zip', 'data.ttl')
```

data()

class stardog.content.**URL**(*url*, *content_type*=None, *content_encoding*=None, *name*=None)

Bases: *stardog.content.Content*

Url-based content.

__init__(*url*, *content_type*=None, *content_encoding*=None, *name*=None)

Initializes a URL object.

Parameters

- **url** (*str*) – Url
- **content_type** (*str*, *optional*) – Content type. It will be automatically detected from the url
- **content_encoding** (*str*, *optional*) – Content encoding. It will be automatically detected from the filename
- **name** (*str*, *optional*) – Object name. It will be automatically detected from the url

Examples

```
>>> URL('http://example.com/data.ttl')
>>> URL('http://example.com/data.doc', 'application/msword')
```

data()

2.4 stardog.exceptions

exception `stardog.exceptions.StardogException`

Bases: `Exception`

General Stardog Exceptions

exception `stardog.exceptions.TransactionException`

Bases: `stardog.exceptions.StardogException`

Transaction Exceptions

INDICES AND TABLES

- `genindex`
- `modindex`
- `search`

PYTHON MODULE INDEX

S

`stardog.admin`, [13](#)
`stardog.connection`, [3](#)
`stardog.content`, [26](#)
`stardog.exceptions`, [28](#)

Symbols

`__init__()` (*stardog.admin.Admin* method), 13
`__init__()` (*stardog.admin.DataSource* method), 18
`__init__()` (*stardog.admin.Database* method), 19
`__init__()` (*stardog.admin.Role* method), 21
`__init__()` (*stardog.admin.StoredQuery* method), 22
`__init__()` (*stardog.admin.User* method), 23
`__init__()` (*stardog.admin.VirtualGraph* method), 25
`__init__()` (*stardog.connection.Connection* method), 3
`__init__()` (*stardog.connection.Docs* method), 9
`__init__()` (*stardog.connection.GraphQL* method), 10
`__init__()` (*stardog.connection.ICV* method), 11
`__init__()` (*stardog.content.File* method), 26
`__init__()` (*stardog.content.Raw* method), 27
`__init__()` (*stardog.content.URL* method), 27

A

`add()` (*stardog.connection.Connection* method), 3
`add()` (*stardog.connection.Docs* method), 9
`add()` (*stardog.connection.ICV* method), 11
`add_permission()` (*stardog.admin.Role* method), 21
`add_permission()` (*stardog.admin.User* method), 23
`add_role()` (*stardog.admin.User* method), 23
`add_schema()` (*stardog.connection.GraphQL* method), 10
`Admin` (class in *stardog.admin*), 13
`ask()` (*stardog.connection.Connection* method), 4
`available()` (*stardog.admin.DataSource* method), 19
`available()` (*stardog.admin.VirtualGraph* method), 25

B

`backup()` (*stardog.admin.Database* method), 19
`begin()` (*stardog.connection.Connection* method), 4

C

`clear()` (*stardog.connection.Connection* method), 4
`clear()` (*stardog.connection.Docs* method), 9
`clear()` (*stardog.connection.ICV* method), 12

`clear_schemas()` (*stardog.connection.GraphQL* method), 10
`clear_stored_queries()` (*stardog.admin.Admin* method), 13
`close()` (*stardog.connection.Connection* method), 5
`cluster_info()` (*stardog.admin.Admin* method), 13
`cluster_status()` (*stardog.admin.Admin* method), 14
`commit()` (*stardog.connection.Connection* method), 5
`Connection` (class in *stardog.connection*), 3
`Content` (class in *stardog.content*), 26
`convert()` (*stardog.connection.ICV* method), 12
`copy()` (*stardog.admin.Database* method), 20
`creator()` (*stardog.admin.StoredQuery* property), 22

D

`data()` (*stardog.content.File* method), 27
`data()` (*stardog.content.Raw* method), 27
`data()` (*stardog.content.URL* method), 27
`Database` (class in *stardog.admin*), 19
`database()` (*stardog.admin.Admin* method), 14
`database()` (*stardog.admin.StoredQuery* property), 22
`databases()` (*stardog.admin.Admin* method), 14
`DataSource` (class in *stardog.admin*), 18
`datasource()` (*stardog.admin.Admin* method), 14
`datasources()` (*stardog.admin.Admin* method), 14
`datasources_info()` (*stardog.admin.Admin* method), 14
`delete()` (*stardog.admin.DataSource* method), 19
`delete()` (*stardog.admin.Role* method), 21
`delete()` (*stardog.admin.StoredQuery* method), 22
`delete()` (*stardog.admin.User* method), 23
`delete()` (*stardog.admin.VirtualGraph* method), 25
`delete()` (*stardog.connection.Docs* method), 9
`description()` (*stardog.admin.StoredQuery* property), 22
`Docs` (class in *stardog.connection*), 9
`docs()` (*stardog.connection.Connection* method), 5
`drop()` (*stardog.admin.Database* method), 20

E

`effective_permissions()` (*stardog.admin.User*

method), 23
 explain() (stardog.connection.Connection method), 5
 explain_inconsistency() (stardog.connection.Connection method), 5
 explain_inference() (stardog.connection.Connection method), 5
 explain_violations() (stardog.connection.ICV method), 12
 export() (stardog.connection.Connection method), 5

F

File (class in stardog.content), 26

G

get() (stardog.connection.Docs method), 9
 get_database() (stardog.admin.VirtualGraph method), 25
 get_options() (stardog.admin.Database method), 20
 get_options() (stardog.admin.DataSource method), 19
 get_server_properties() (stardog.admin.Admin method), 14
 graph() (stardog.connection.Connection method), 6
 GraphQL (class in stardog.connection), 10
 graphql() (stardog.connection.Connection method), 6

I

ICV (class in stardog.connection), 11
 icv() (stardog.connection.Connection method), 7
 import_virtual_graph() (stardog.admin.Admin method), 14
 info() (stardog.admin.DataSource method), 19
 info() (stardog.admin.VirtualGraph method), 25
 is_consistent() (stardog.connection.Connection method), 7
 is_enabled() (stardog.admin.User method), 23
 is_superuser() (stardog.admin.User method), 24
 is_valid() (stardog.connection.ICV method), 12

K

kill_query() (stardog.admin.Admin method), 15

L

list() (stardog.connection.ICV method), 13

M

mappings() (stardog.admin.VirtualGraph method), 25

N

name() (stardog.admin.Database property), 20
 name() (stardog.admin.DataSource property), 19
 name() (stardog.admin.Role property), 21

name() (stardog.admin.StoredQuery property), 22
 name() (stardog.admin.User property), 24
 name() (stardog.admin.VirtualGraph property), 26
 new_database() (stardog.admin.Admin method), 15
 new_datasource() (stardog.admin.Admin method), 15
 new_role() (stardog.admin.Admin method), 15
 new_stored_query() (stardog.admin.Admin method), 16
 new_user() (stardog.admin.Admin method), 16
 new_virtual_graph() (stardog.admin.Admin method), 16

O

offline() (stardog.admin.Database method), 20
 online() (stardog.admin.Database method), 20
 online() (stardog.admin.DataSource method), 19
 optimize() (stardog.admin.Database method), 20
 options() (stardog.admin.VirtualGraph method), 26

P

paths() (stardog.connection.Connection method), 7
 permissions() (stardog.admin.Role method), 21
 permissions() (stardog.admin.User method), 24

Q

queries() (stardog.admin.Admin method), 17
 query() (stardog.admin.Admin method), 17
 query() (stardog.admin.StoredQuery property), 22
 query() (stardog.connection.GraphQL method), 10

R

Raw (class in stardog.content), 27
 reasoning() (stardog.admin.StoredQuery property), 22
 refresh_count() (stardog.admin.DataSource method), 19
 refresh_metadata() (stardog.admin.DataSource method), 19
 remove() (stardog.connection.Connection method), 7
 remove() (stardog.connection.ICV method), 13
 remove_permission() (stardog.admin.Role method), 21
 remove_permission() (stardog.admin.User method), 24
 remove_role() (stardog.admin.User method), 24
 remove_schema() (stardog.connection.GraphQL method), 11
 repair() (stardog.admin.Database method), 20
 restore() (stardog.admin.Admin method), 17
 Role (class in stardog.admin), 20
 role() (stardog.admin.Admin method), 17
 roles() (stardog.admin.Admin method), 17

roles() (*stardog.admin.User method*), 24
rollback() (*stardog.connection.Connection method*),
8

S

schema() (*stardog.connection.GraphQL method*), 11
schemas() (*stardog.connection.GraphQL method*), 11
select() (*stardog.connection.Connection method*), 8
set_enabled() (*stardog.admin.User method*), 24
set_options() (*stardog.admin.Database method*),
20
set_password() (*stardog.admin.User method*), 25
set_roles() (*stardog.admin.User method*), 25
share() (*stardog.admin.DataSource method*), 19
shared() (*stardog.admin.StoredQuery property*), 22
shutdown() (*stardog.admin.Admin method*), 17
size() (*stardog.connection.Connection method*), 8
size() (*stardog.connection.Docs method*), 10
stardog.admin (*module*), 13
stardog.connection (*module*), 3
stardog.content (*module*), 26
stardog.exceptions (*module*), 28
StardogException, 28
stored_queries() (*stardog.admin.Admin method*),
18
stored_query() (*stardog.admin.Admin method*), 18
StoredQuery (*class in stardog.admin*), 22

T

TransactionException, 28

U

update() (*stardog.admin.DataSource method*), 19
update() (*stardog.admin.StoredQuery method*), 22
update() (*stardog.admin.VirtualGraph method*), 26
update() (*stardog.connection.Connection method*), 8
URL (*class in stardog.content*), 27
User (*class in stardog.admin*), 23
user() (*stardog.admin.Admin method*), 18
users() (*stardog.admin.Admin method*), 18
users() (*stardog.admin.Role method*), 22

V

validate() (*stardog.admin.Admin method*), 18
verify() (*stardog.admin.Database method*), 20
virtual_graph() (*stardog.admin.Admin method*),
18
virtual_graphs() (*stardog.admin.Admin method*),
18
VirtualGraph (*class in stardog.admin*), 25