

# Distributed Data Systems

---

DIANE WOODBRIDGE, PH.D



UNIVERSITY OF SAN FRANCISCO  
CHANGE THE WORLD FROM HERE

# Contents

---

## MongoDB

- Installation and Launching



# MongoDB

Install MongoDB (**4.0**) in your environment

**\$conda install mongodb**

```
Last login: Tue Dec 11 10:24:59 on ttys001  
ML-ITS-603436:/ dwoodbridge$ conda install mongodb  
Solving environment: | done
```

## Package Plan ##

environment location: /Users/dwoodbridge/anaconda3

added / updated specs:

- mongodb

The following packages will be downloaded:

package	build	
certifi-2018.11.29	py36_0	146 KB
curl-7.61.1	ha441bb4_0	135 KB
Total:		281 KB

The following NEW packages will be INSTALLED:

mongodb: 4.0.2-had4e77e\_0

The following packages will be UPDATED:

certifi:	2018.10.15-py36_1000	conda-forge --> 2018.11.29-py36_0
curl:	7.58.0-ha441bb4_0	--> 7.61.1-ha441bb4_0
libcurl:	7.58.0-hf30b1f0_0	--> 7.61.1-hf30b1f0_0

The following packages will be DOWNGRADED:

ca-certificates:	2018.10.15-ha4d7672_0	conda-forge --> 2018.03.07-0
conda:	4.5.11-py36_1000	conda-forge --> 4.5.11-py36_0
openssl:	1.0.2p-h470a237_1	conda-forge --> 1.0.2p-h1de35cc_0

<https://docs.mongodb.com/manual/tutorial/install-mongodb-on-os-x/>

# MongoDB

---

## Installation and Launching

- mongod
  - Primary daemon process for the MongoDB system.
- mongo
  - The mongo shell is an interactive JavaScript interface to mongod.



# MongoDB

---

mongod will use data directory, create a data/db/

- Create data/db - `$mkdir data/db`

1. Start the **server** : Run mongod executable with dbpath.

- `mongod --dbpath=data/db`

2. Stop mongod : `$Ctrl-C`

```
[msds691] ML-ITS-901885:2021_MSDS697 dwoodbridge$ mongod --dbpath=/Users/dwoodbridge/Class/2021_MSDS697/Data/db
2020-12-18T12:49:12.652-0800 I CONTROL [main] Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] MongoDB starting : pid=38890 port=27017 dbpath=/Users/dwoodbridge/Class/2021_MSDS697/Data/db 64-bit host=ML-ITS-901885
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] db version v4.0.3
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] git version: 7ea530946fa7880364d88c8d8b6026bbc9ffa48c
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] OpenSSL version: OpenSSL 1.1.1i 8 Dec 2020
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] allocator: system
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] modules: none
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] build environment:
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten]   distarch: x86_64
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten]   target_arch: x86_64
2020-12-18T12:49:12.659-0800 I CONTROL [initandlisten] options: { storage: { dbPath: "/Users/dwoodbridge/Class/2021_MSDS697/Data/db" } }
2020-12-18T12:49:12.660-0800 I STORAGE [initandlisten] Detected data files in /Users/dwoodbridge/Class/2021_MSDS697/Data/db created by the 'wiredTiger' storage engine, so setting the active storage engine to 'wiredTiger'.
2020-12-18T12:49:12.660-0800 I STORAGE [initandlisten] wiredtiger_open config: create,cache_size=15872M/session_max=20000,eviction=(threads_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snappy),file_manager=(close_idle_time=100000),statistics_log=(wait=0),verbose=(recovery_progress),
2020-12-18T12:49:13.183-0800 I STORAGE [initandlisten] WiredTiger message [1608324553:183311][38890:0x1148bedc0], txn-recover: Main recovery loop: starting at 2/6528
2020-12-18T12:49:13.261-0800 I STORAGE [initandlisten] WiredTiger message [1608324553:261094][38890:0x1148bedc0], txn-recover: Recovering log 2 through 3
2020-12-18T12:49:13.316-0800 I STORAGE [initandlisten] WiredTiger message [1608324553:316331][38890:0x1148bedc0], txn-recover: Recovering log 3 through 3
2020-12-18T12:49:13.355-0800 I STORAGE [initandlisten] WiredTiger message [1608324553:355533][38890:0x1148bedc0], txn-recover: Set global recovery timestamp: 0
2020-12-18T12:49:13.428-0800 I RECOVERY [initandlisten] WiredTiger recoveryTimestamp. Ts: Timestamp(0, 0)
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten]
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the database.
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** Read and write access to data and configuration is unrestricted.
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten]
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** WARNING: This server is bound to localhost.
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** Remote systems will be unable to connect to this server.
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** Start the server with --bind_ip <address> to specify which IP
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** addresses it should serve responses from, or with --bind_ip_all to
2020-12-18T12:49:13.464-0800 I CONTROL [initandlisten] ** bind to all interfaces. If this behavior is desired, start the
```

# MongoDB

## Running MongoDB Shell

- **Terminal 1** : While your **mongod** server is on. (`$mongod --dbpath=db_path`)
- **Terminal 2** : Run **mongo** executable in another terminal (`$mongo`) - Optional

The image shows two terminal windows side-by-side. The left window, titled "Macintosh HD — mongod — 80x24", displays the log output of a MongoDB server starting up. It includes messages about the storage engine being set to 'wiredTiger', startup warnings about soft rlimits, and network listening on port 27017. The right window, titled "dwoodbridge — mongo — 80x24", shows a MongoDB shell session. It starts with the shell version (3.2.10), connects to the 'test' database, and shows startup warnings about file limits. Both terminals have their titles and some of their content highlighted with orange boxes.

**Terminal 1** (Left):

```
2016-10-31T13:32:47.662-0700 I CONTROL [initandlisten] options: {}
2016-10-31T13:32:47.662-0700 I - [initandlisten] Detected data files in /data/db created by the 'wiredTiger' storage engine, so setting the active storage engine to 'wiredTiger'.
2016-10-31T13:32:47.662-0700 I STORAGE [initandlisten] wiredtiger_open config: create,cache_size=9G,session_max=20000,eviction=(threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snappy),file_manager=(close_idle_time=100000),checkpoint=(wait=60,log_size=2GB),statistics_log=(wait=0),
2016-10-31T13:32:48.170-0700 I CONTROL [initandlisten]
2016-10-31T13:32:48.170-0700 I CONTROL [initandlisten] ** WARNING: soft rlimits too low. Number of files is 256, should be at least 1000
2016-10-31T13:32:48.172-0700 I FTDC [initandlisten] Initializing full-time diagnostic data capture with directory '/data/db/diagnostic.data'
2016-10-31T13:32:48.172-0700 I NETWORK [HostnameCanonicalizationWorker] Starting hostname canonicalization worker
2016-10-31T13:32:48.172-0700 I NETWORK [initandlisten] waiting for connections on port 27017
2016-10-31T13:32:48.173-0700 W NETWORK [HostnameCanonicalizationWorker] Failed to obtain address information for hostname ML-ITS-603436: nodename nor servname provided, or not known
2016-10-31T14:13:2 connection accepted from 127.0.0.1:51873 #
```

**Terminal 2** (Right):

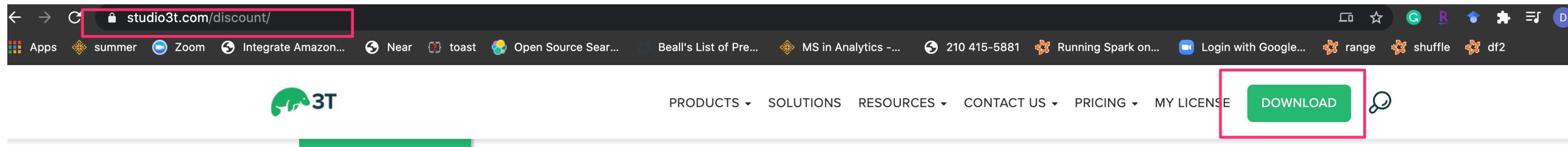
```
Last login: Mon Oct 31 13:27:34 on ttys002
[ML-ITS-603436:~ dwoodbridge$ mongo
MongoDB shell version: 3.2.10
connecting to: test
Server has startup warnings:
2016-10-31T13:32:48.170-0700 I CONTROL [initandlisten]
2016-10-31T13:32:48.170-0700 I CONTROL [initandlisten] ** WARNING: soft rlimits too low. Number of files is 256, should be at least 1000
> ]
```



# MongoDB

## Studio3T

- MongoDB Query Editor
- Useful for connecting to a local and remote server and executing queries.



### Teachers, students & researchers

Are you a teacher or student at a K-12 school or university? Or perhaps a PhD or postdoc student working on a research project? If you're looking for a MongoDB GUI that you agree to use *only* for classroom or research work, then Studio 3T may very well be your free MongoDB GUI.

Studio 3T offers a **free one-year Pro license** to students and teachers who can provide proof of eligibility. How's that for a student discount?

<https://studio3t.com/download/>

Proof of eligibility:

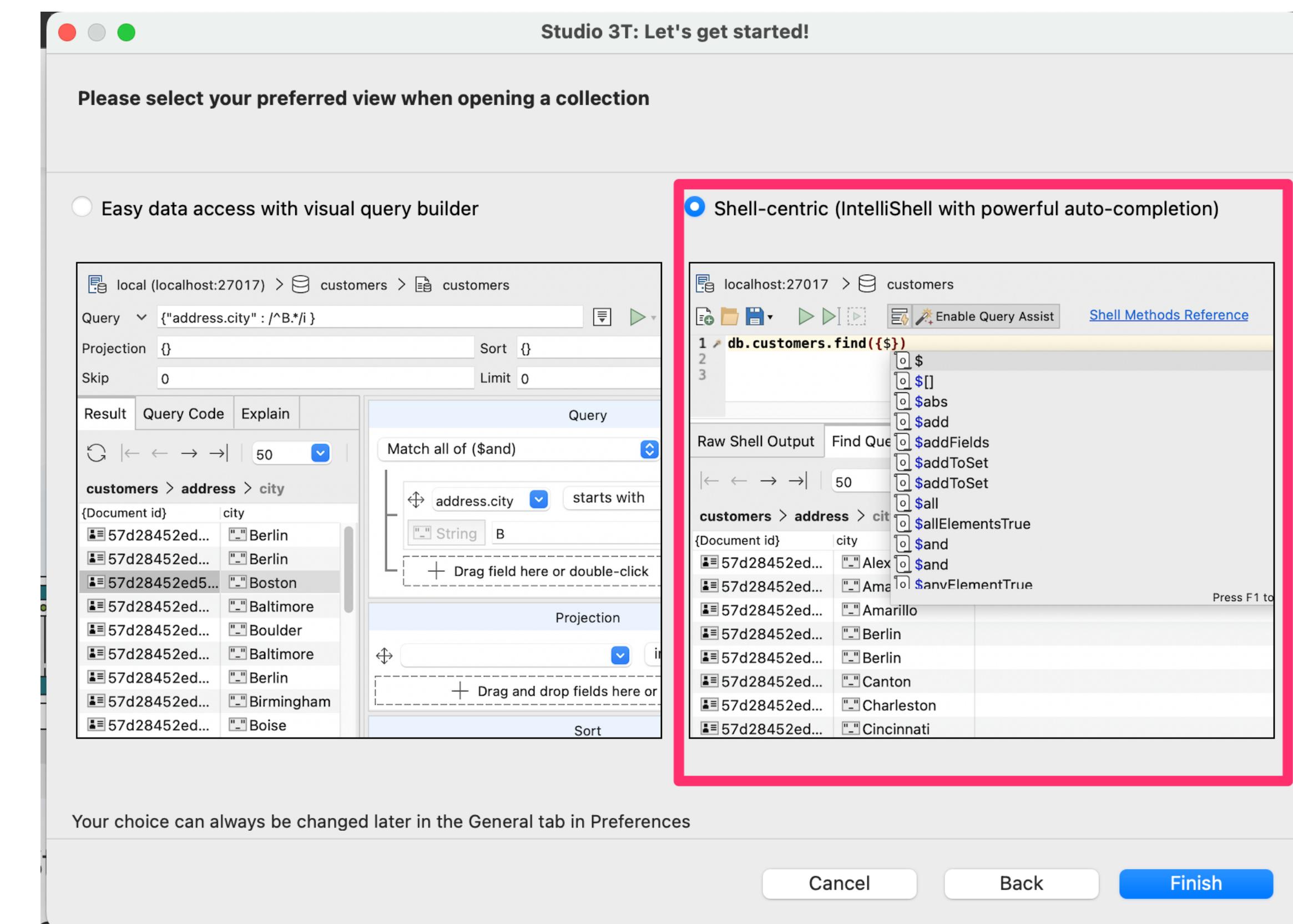
- School-issued email address AND
- Proof of enrollment (e.g. school ID card, transcript, report card)

[APPLY HERE](#)

# MongoDB

## Studio3T

- MongoDB Query Editor
- Choose Shell-Centric



<https://studio3t.com/download/>

<https://studio3t.com/discount/>



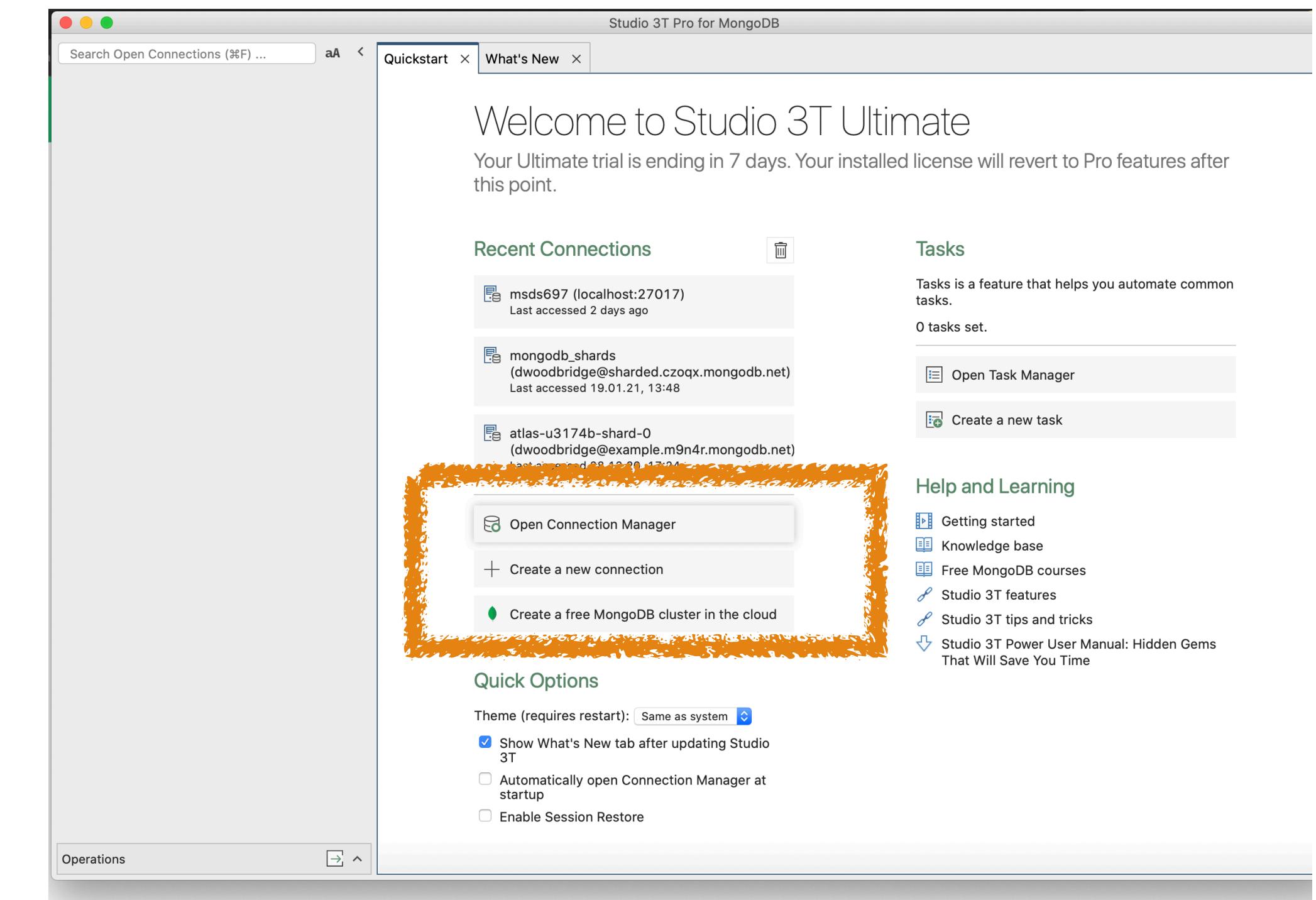
# Use Studio3T instead of mongo

## Terminal

- Start the mongod process
  - mongod --dbpath=data/db/

## Open Studio3T

- Choose Create New Connection and add the name.
- Connect to the server.
- Open IntelliShell.



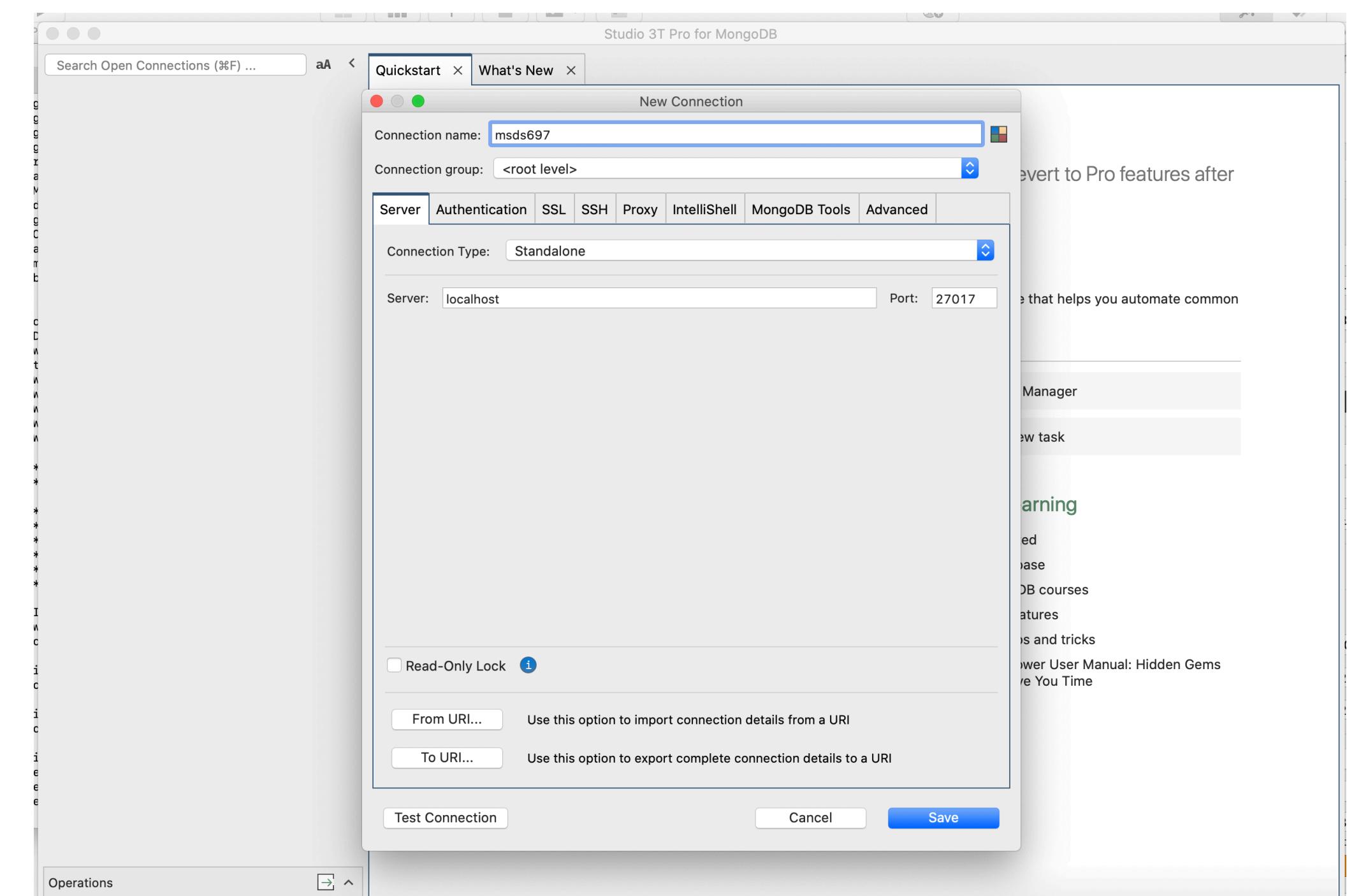
# Use Studio3T

## Terminal

- Start the mongod process
  - mongod --dbpath=data/db/

## Open Studio3T

- Choose Create New Connection and add the name.
- Connect to the server.
- Open IntelliShell.



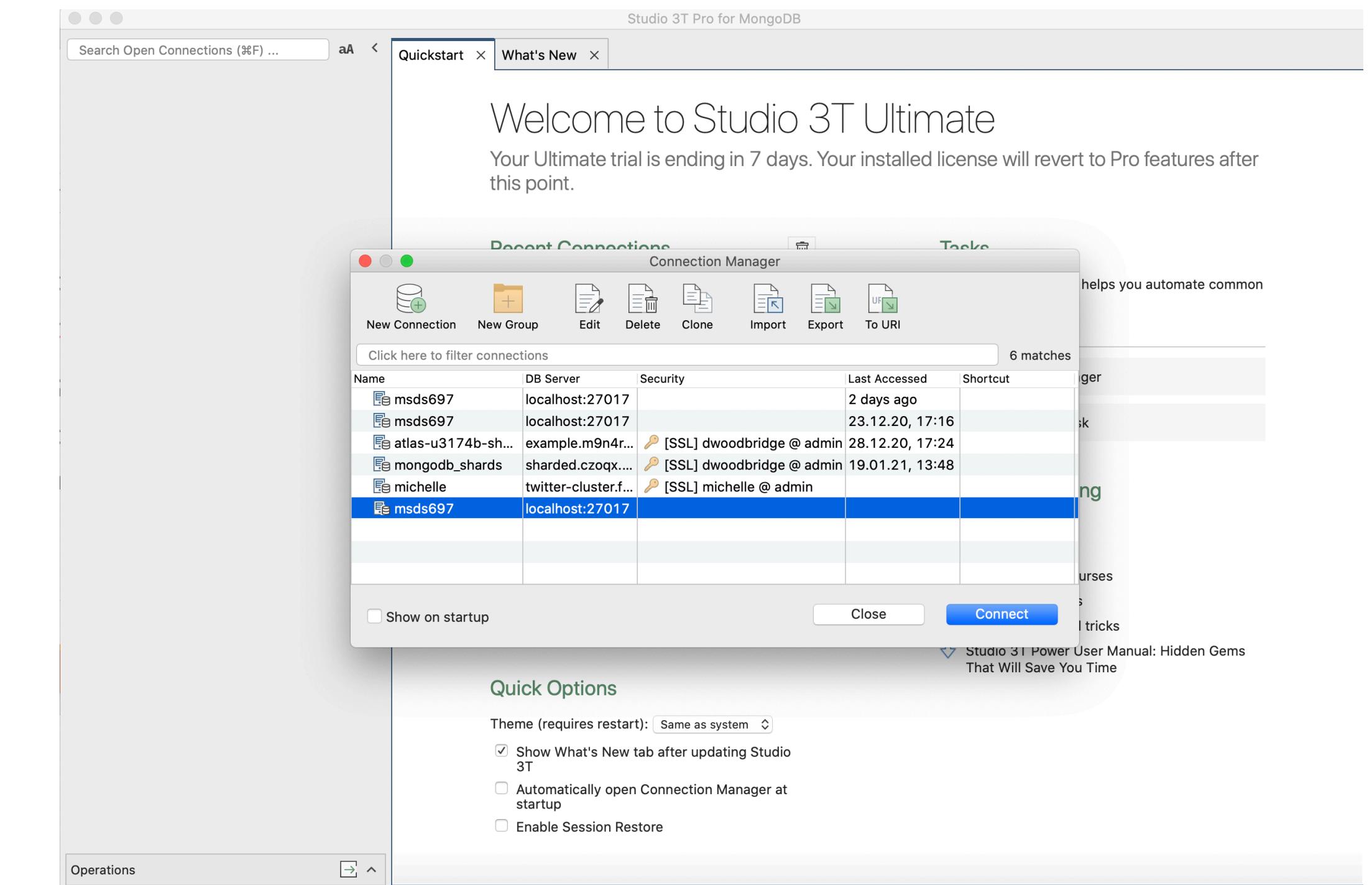
# Use Studio3T

## Terminal

- Start the mongod process
  - mongod --dbpath=data/db/

## Open Studio3T

- Choose Create New Connection and add the name.
- Connect to the server.
- Open IntelliShell.



# Use Studio3T

## Terminal

- Start the mongod process
- mongod --dbpath=data/db/

## Open Studio3T

- Choose Create New Connection and add the name.
- Connect to the server.
- Open IntelliShell.

