

Installing MongoDB – on the CS VM

References:

<https://www.youtube.com/watch?v=1uFY60CESIM> thenewboston tutorial on getting set up.

In myACM go to the **Skillsoft Learning Center** and log in. Then in the search box, type in **mongo**.

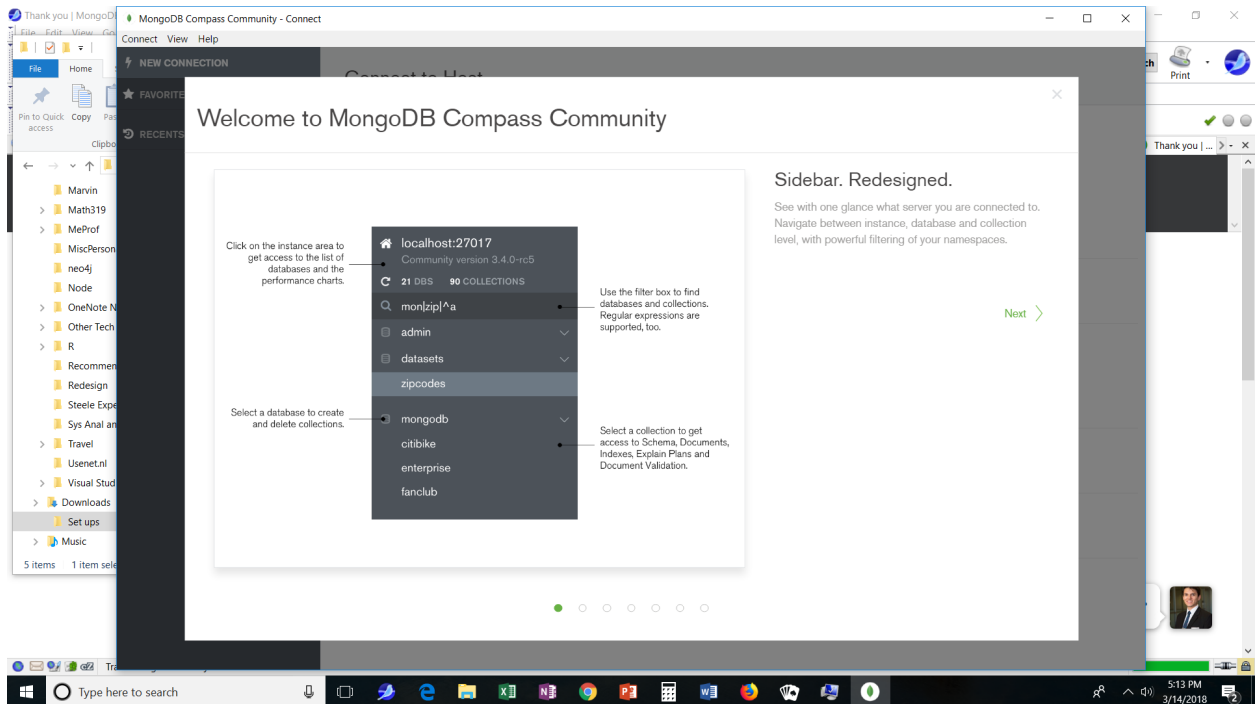
Choose the course **MongoDB: Concepts, Installation, and Querying**. The modules on Installation are in Lesson 2.

<https://www.youtube.com/watch?v=-OX8mr6Q8Ew> is Derek Banas' tutorial – goes very fast

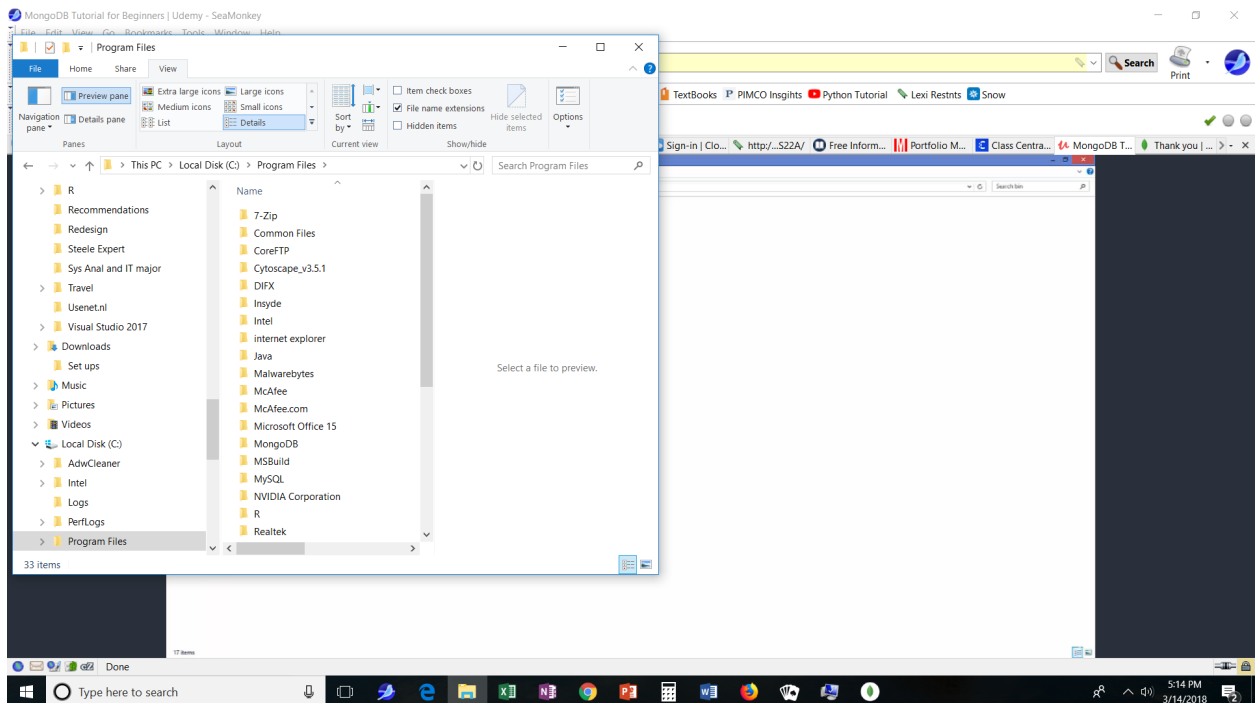
<https://www.coursera.org/learn/introduction-mongodb/lecture/Hadhu/installing-mongodb-on-windows> This may require your signing in to audit the course (so it's free) – if you want to use Atlas for data science.

1. Before I install any new software, I like to **Create a Restore Point**. This option is disabled on the CS VM, but you can do it on your own machine.
In the dialog box next to the Windows icon type: create restore point
Then follow the dialog boxes to create a restore point
2. Go to <https://www.mongodb.com/try/download/community>
3. Choose "**On Premises**"
4. Scroll to **Community Server** - There will be a green Download button.
5. You will get the current version and choose MSI (Microsoft Installer) .
6. Save the downloaded file.
7. Open and run the MSI installer, (probably in your downloads – ctrl+j is a keyboard shortcut)
8. Agree to Terms and Conditions
9. Choose the **Complete** Set Up Type
10. You will get to a Service Configuration Box. Choose to **run as a network service**.
In the box the domain is "." and you can choose your own password.
11. Notice that Mongo has chosen a Data Directory and a Log Directory for you --- use the defaults:
**C:\Program Files\MongoDB\Server\5.0\data\
C:\Program Files\MongoDB\Server\5.0\log**
12. Click the check box to let installer also install MongoDB Compass
13. You may have to close all the browsers and other applications before proceeding.
14. If the machine still says you may need to reboot --- allow for that & the installer will later tell you when to reboot.
15. This will install Mongo & you will find it in the Program Files folder.
16. It will also install Mongo Compass, which is the GUI interface.
17. You may get an additional license to agree to.

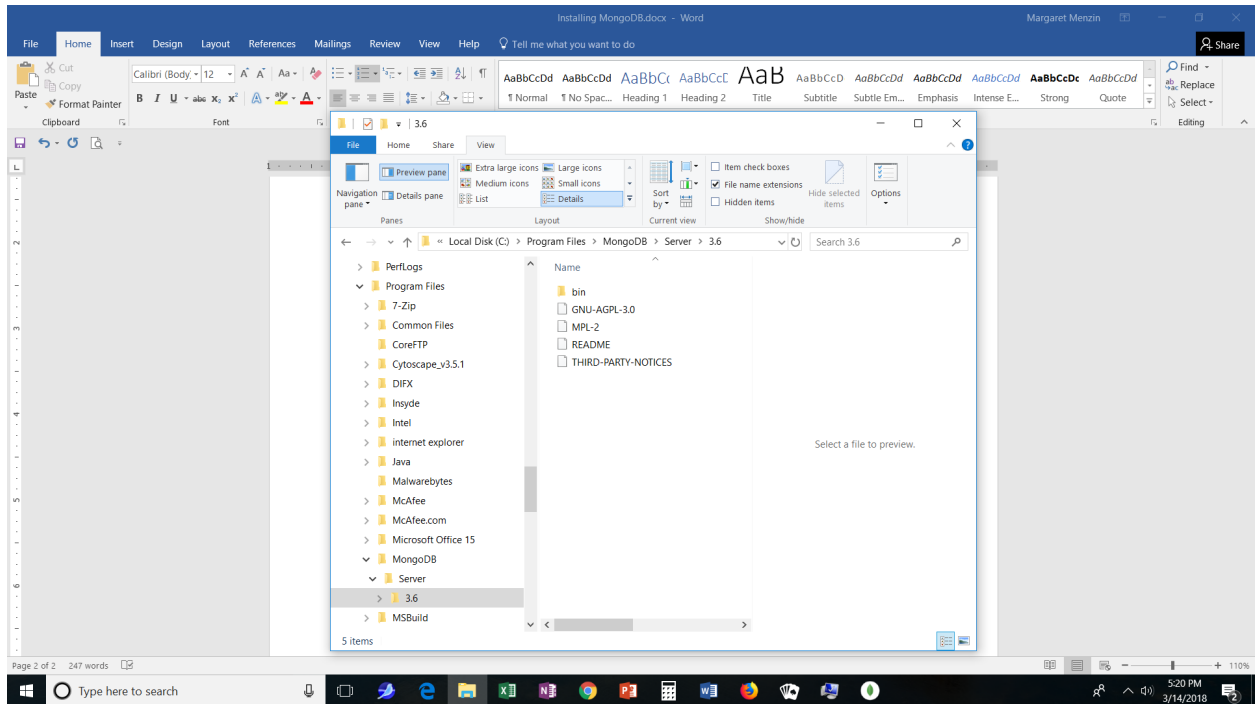
18. You should find yourself looking at something like:



19. Before we start to use Mongo, navigate over to the Program Files folder (on the C drive) and open that folder. You should find Mongo:
My screen looks like:



20. If you open the Mongo folder you get to the Server folder, and if you open that folder you get to one named 3.6 (or whatever the version number is), and finally if you open that you should get to something like:



21. **NOTE:** In version 5.0 the above folder will also hold the data and log directories --- that is the current version on MongoDB automatically makes those directories for us..

22. It's always a good idea to look at the README file – though I have also posted it in Moodle.

The file starts with:

COMPONENTS :

```
mongod - The database server.
mongos - Sharding router.
mongo  - The database shell (uses interactive JavaScript).
```

23. So

mongod is the database server --- it is what we will need to connect to. It will run in the background, waiting for our requests.

mongo is the command line interface --- it is where we will enter our commands to manipulate (CRUD) our data.

mongos is used for sharding the data when we have a very large database.

24. An aside on **shards and sharding**:

Sharding data means splitting it up in a “horizontal partition”. For example, if you have a huge table of customers you might choose to split it into multiple tables based on their location (e.g. by state).

Even 50 years ago there was one giant system for all plane reservations, named Sabre. At that time there were 2 large databases – one for flights originating in the Eastern half of the U.S. and one for flights originating in the Western half. It was quite an achievement – among other reasons because it was used by *all* the airlines (& still is.) Sabre still exists (see <http://www-03.ibm.com/ibm/history/ibm100/us/en/icons/sabre/> for a really interesting set of pages on it) and now holds about 100 million reservations at a time.

Plainly, it would be slow to hold all the reservations on one server, so the data is *sharded* and different servers hold different parts of the data.

Of course, while sharded data means smaller files and so (presumably) faster execution of queries, it also brings the additional complexity – both in the design of how you split up (shard) the data and in making sure your queries of finding the machine with the right data.

We won’t shard our data, but you should know that both Mongo and MySQL (& other major DBMSs) provide the ability to shard data under program control.

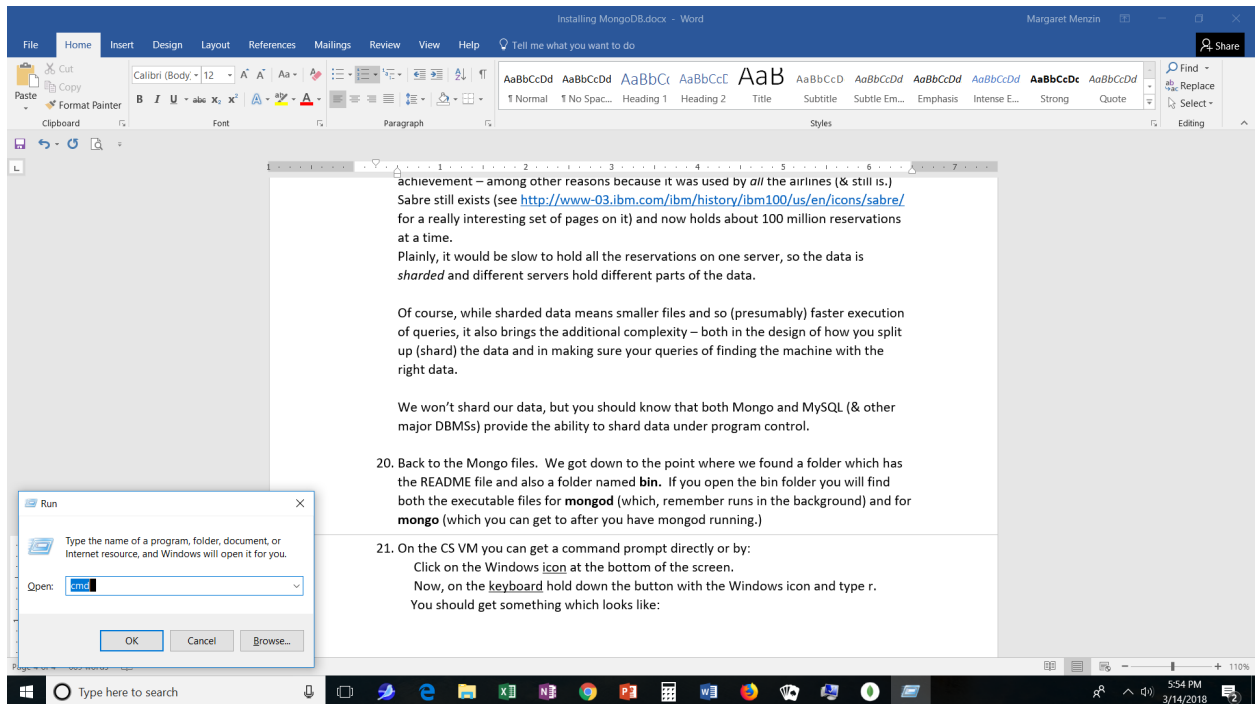
25. Back to the Mongo files. We got down to the point where we found a folder which has the README file and also a folder named **bin**. If you open the bin folder you will find both the executable files for **mongod** (which, remember runs in the background) and for **mongo** (which you can get to after you have mongod running.)

26. On the CS VM the command prompt has been put on the desktop. On your own machine you can get a command prompt directly or by:

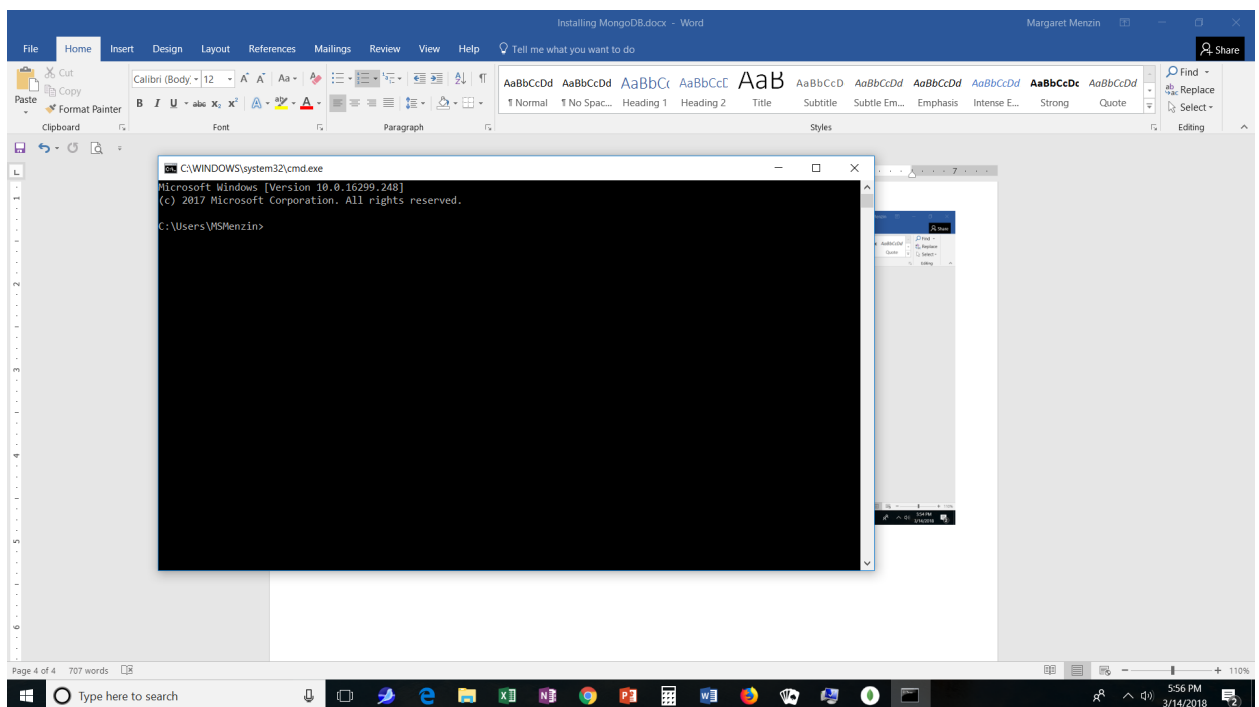
Click on the Windows icon at the bottom of the screen.

Now, on the keyboard hold down the button with the Windows icon and type r.

You should get something which looks like:



and it should say **cmd** in the Open text box. (If not, type it in) and click OK. A box like the one below (except with your user name) should appear.



27. You probably can't read the writing from this document, but it says:

Microsoft Windows [Version 10.0.16299.248]

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C:\Users\MSMenzin>

The > is your command line prompt and you are now in the PowerShell (linux-like environment) for Windows 10.

Now you need to navigate over to the bin folder. In PowerShell the following basic commands are useful:

cd *directory_name* *Changes the directory to what you named.*

cd ../ Goes up one level in the directory hierarchy (i.e. to the parent)

dir Lists the folders and files in your current directory.

md *new_directory* Makes a new directory in the current directory (folder)

We want to get to Mongo – so you execute the following

cd ../../ *This takes you up 2 levels to C:*

dir *To see what folders are there*

cd Program Files To get to that folder

dir

cd MongoDB

cd Server\5.0\bin *or whatever the current version is*

dir

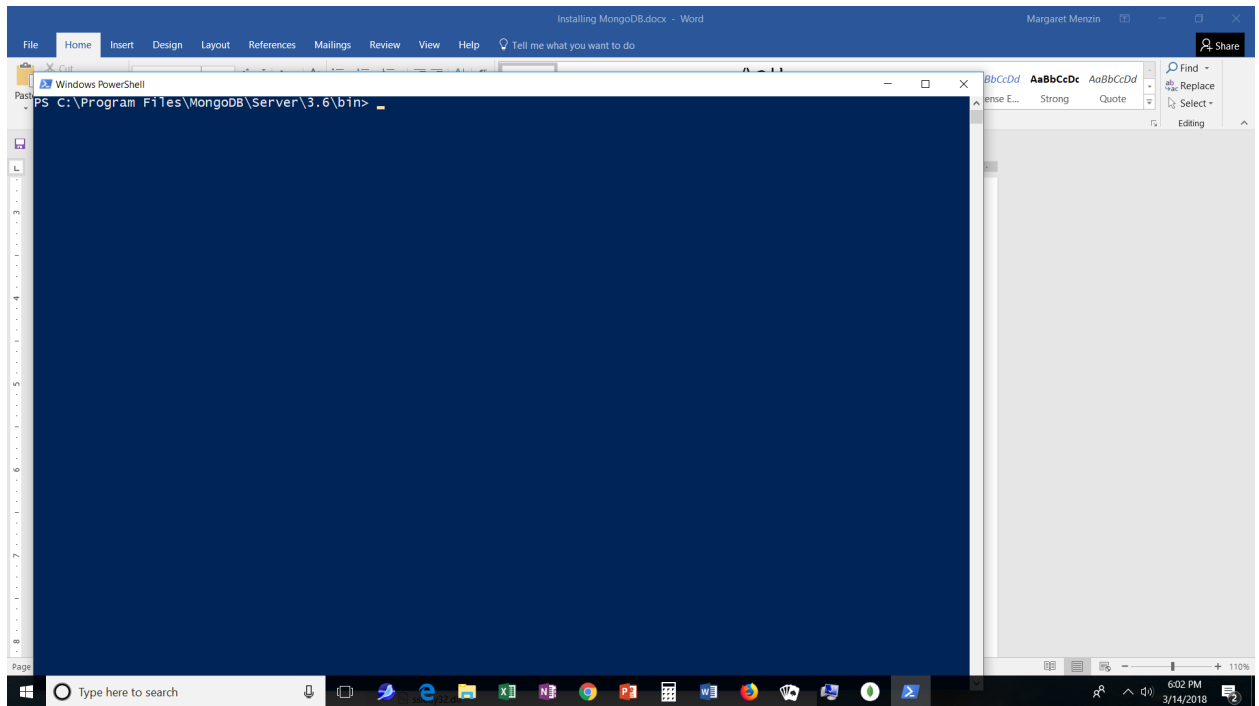
You can also accomplish the same thing (but with less understanding) by doing the following:

Go into the bin folder (by using Windows Explorer)

Hold down the shift key while you right click your mouse

From the dialog box which comes up, choose Open PowerShell.

Now you get something like:



You can see from the top line:

PS C:\Program Files\MongoDB\Server\5.0\bin>
that you have also been migrated over to the bin folder.

Type dir and you will again get the list of files and folders.

HINT: We are going to use both these windows – so if I get one in each method they will have different colored backgrounds and icons and will be easy to tell apart.

28. Either way, when you are in the bin type:

(In older versions of mongo you would get the following error message near the bottom:
exception in initAndListen: NonExistentPath: **Data directory C:\data\db\ not found., terminating**

This is b/c Mongo requires a folder in the C: drive named **data** and inside that a folder named **db**.

So use Windows Explorer to go up to the C: drive and create these folders.

Alternatively, you could migrate to the C: drive and type:

```
md data    In some references you will see mkdir, which is the same as md  
cd data  
md db
```

29. But in version 4.4 that is already done for us and when you type **.\mongod.exe** wonderful things will happen.

And you will see that mongod is waiting for a connection.

30. Now go back to the bin folder in Windows Explorer and again hold down the shift key and right click and open the PowerShell to get a 2nd command line window.

31. In the new Command line window type **.\mongo.exe**

Again wonderful things will happen – and if you go back to the 1st window (the one for mongod) you will see near the bottom that the connection has been accepted!

Back in the 2nd window (the one where we executed mongo) if you type **db** at the prompt you will see that there is a sample database named **test**.

32. **In general you want to start the database server mongod before you start mongo.**

Most of your work will be in the mongo shell – so I like to first start mongod from the command line interface (black window) and then start mongo in the power shell (blue window) by shift + right click in the bin folder.

You may find it useful to put a short-cut to the bin folder on your desktop.

33. **It is not necessary in Windows 10 but in some versions of Windows you need to add to the system path variable as follows:**

Go to the Control Panel or in the search box next to the Windows icon type: edit environment variables. Or if a dialog box pops up, select Environment Variables. Look at the (lower) System box, highlight Path and click on Edit.

To the list of path variables add:

C:\Program Files\Mongo\Server\3.6\bin and then move that to the top if you have an older version of Mongo. Click on OK. A good video on this starts at minute 5 in

<https://www.coursera.org/learn/introduction-mongodb/lecture/Hadhu/installing-mongodb-on-windows> if you chose to audit that course. You will now need to close & reopen your PowerShell windows.

34. **The quit() function allows you to leave the mongo shell** – in case you are doing other things in the PowerShell.