

MongoDB- Storing Reviews

Tutorial – 3, Download, Set up and Implementation

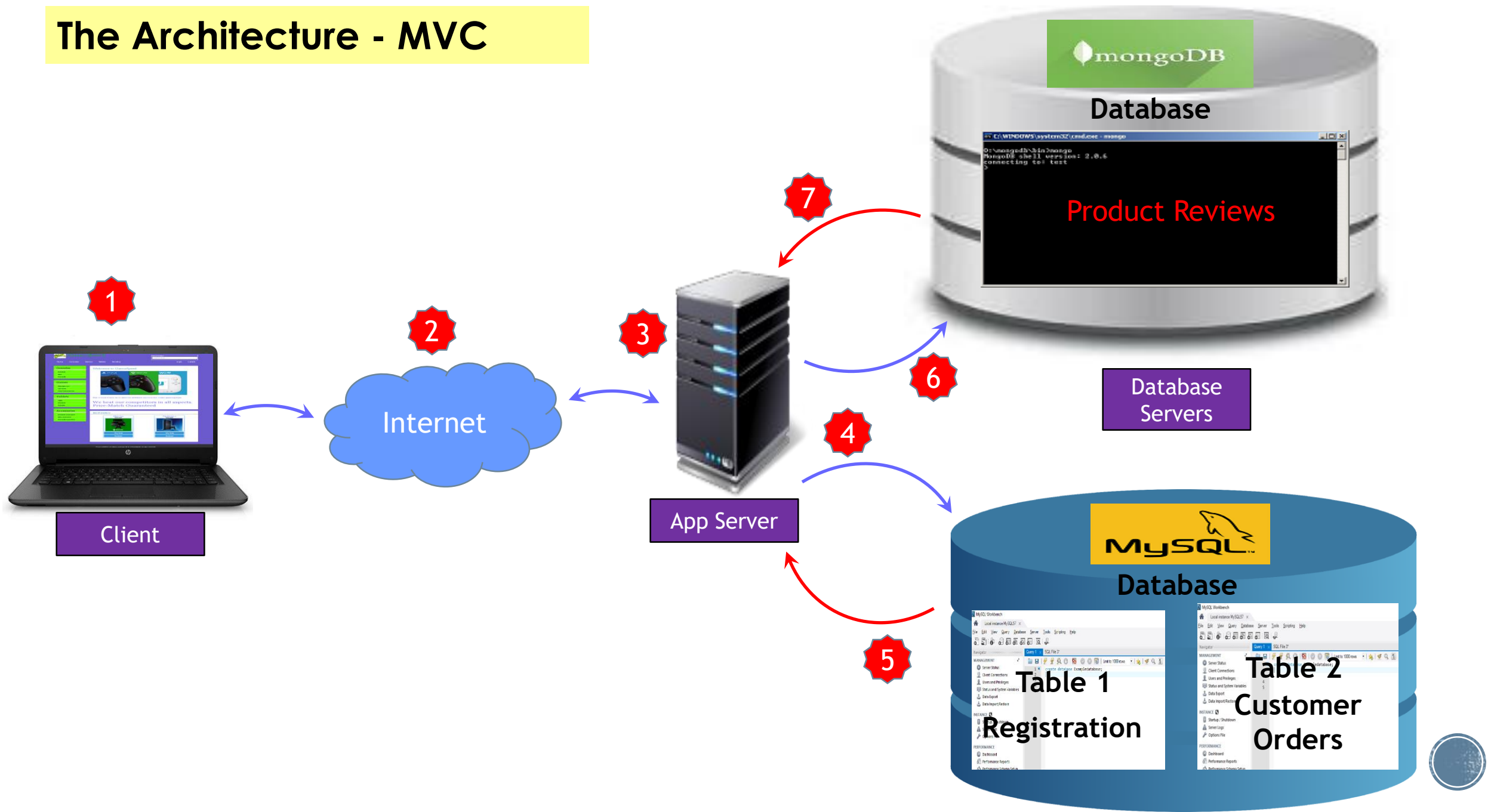
CSP 595 - Enterprise Web Application

Dr. Atef Bader

Illinois Institute of Technology



The Architecture - MVC



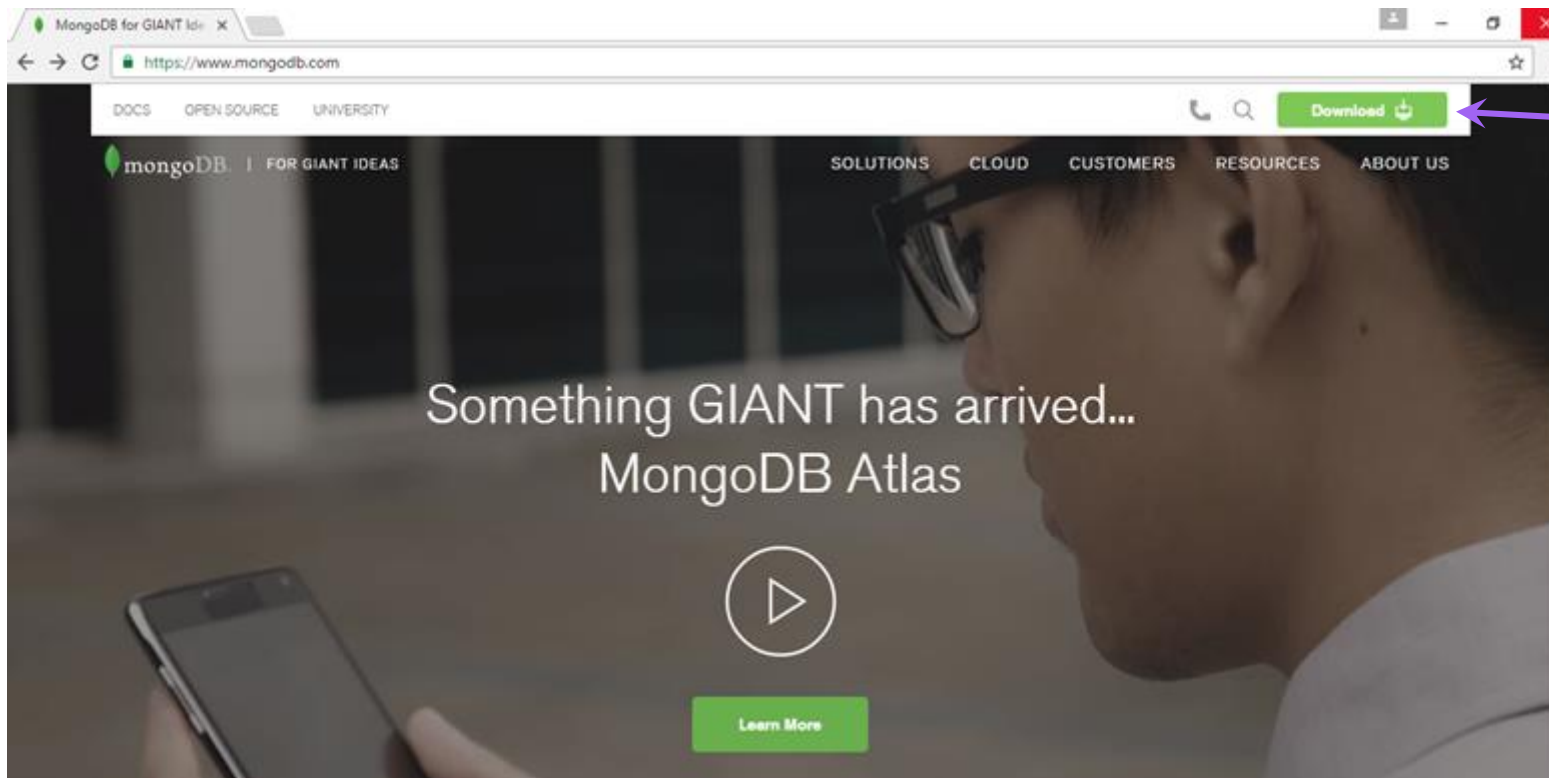
1. Mongo DB - Overview

- Mongo DB is a cross platform, document oriented database
- Mongo DB works on the concept of Collections and documents
- Terminologies:
 - Database: This is the physical container for the collections
 - Collection: Collection is a group of Mongo DB documents
 - Document: Document is a set of key - value pairs
- Advantages:
 - Schema-less: The number of fields, content and size of the document can vary from one another
 - Scalability: Mongo DB is easy to scale



2. Mongo DB - Download

- Go to <https://www.mongodb.org/> and click on the 'Download MongoDB' button to download Mongo DB

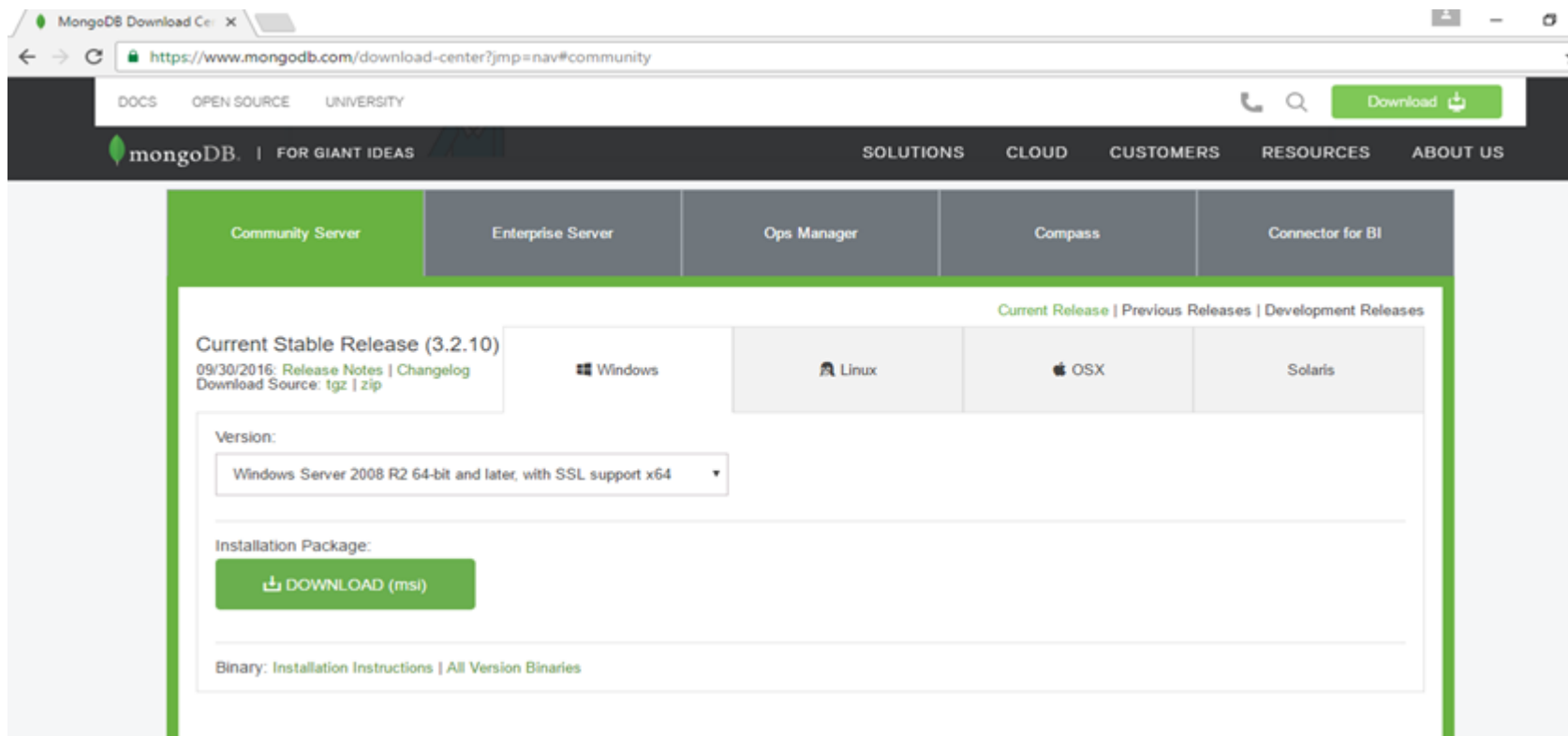


Click on the download button for downloading MongoDB



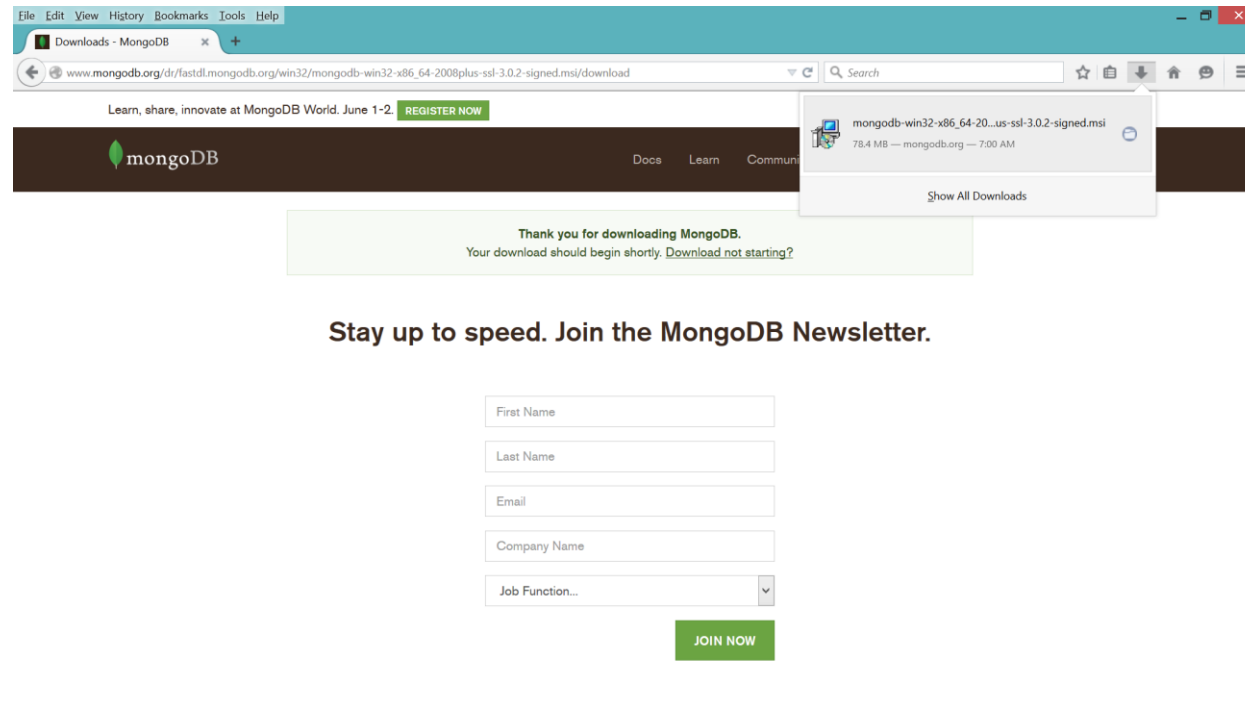
2. Mongo DB - Download

- Select the operating system as Windows and the version as 'Windows Server 64 - bit 2008 R2 64 bit and later with SSL support x64'
- Click on the 'Download (MSI)' to begin the download



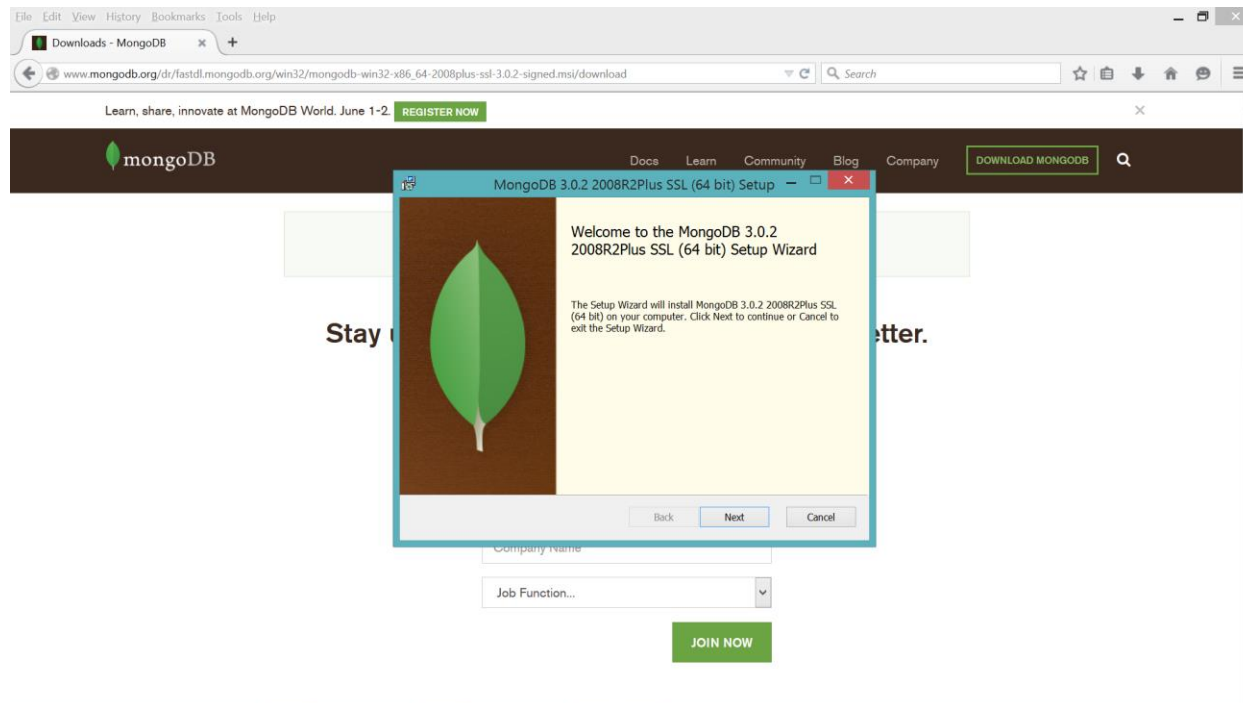
2. Mongo DB - Download

- Please note the location of the folder where MongoDB is being downloaded



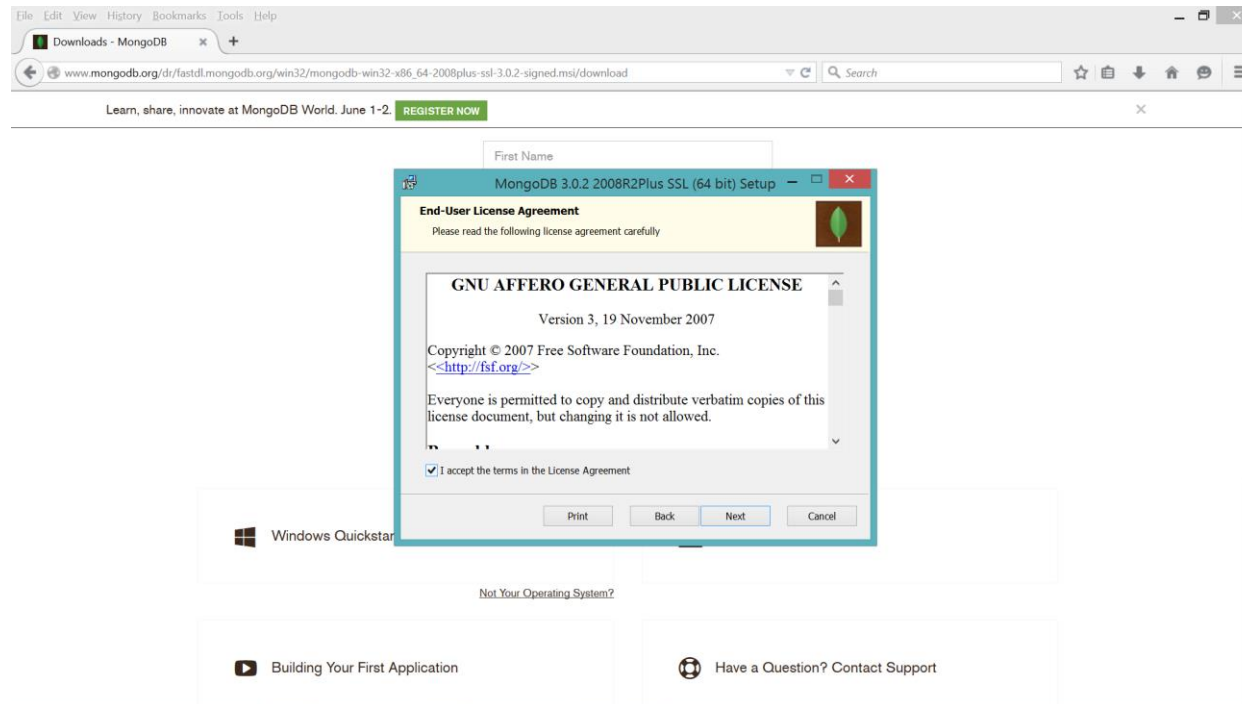
3. Mongo DB - Setup

- To start the installation, go to the folder where MongoDB has been downloaded and double click on the installation file
- This should open the MongoDB setup wizard as shown below
- Click on 'Next' to proceed with the installation



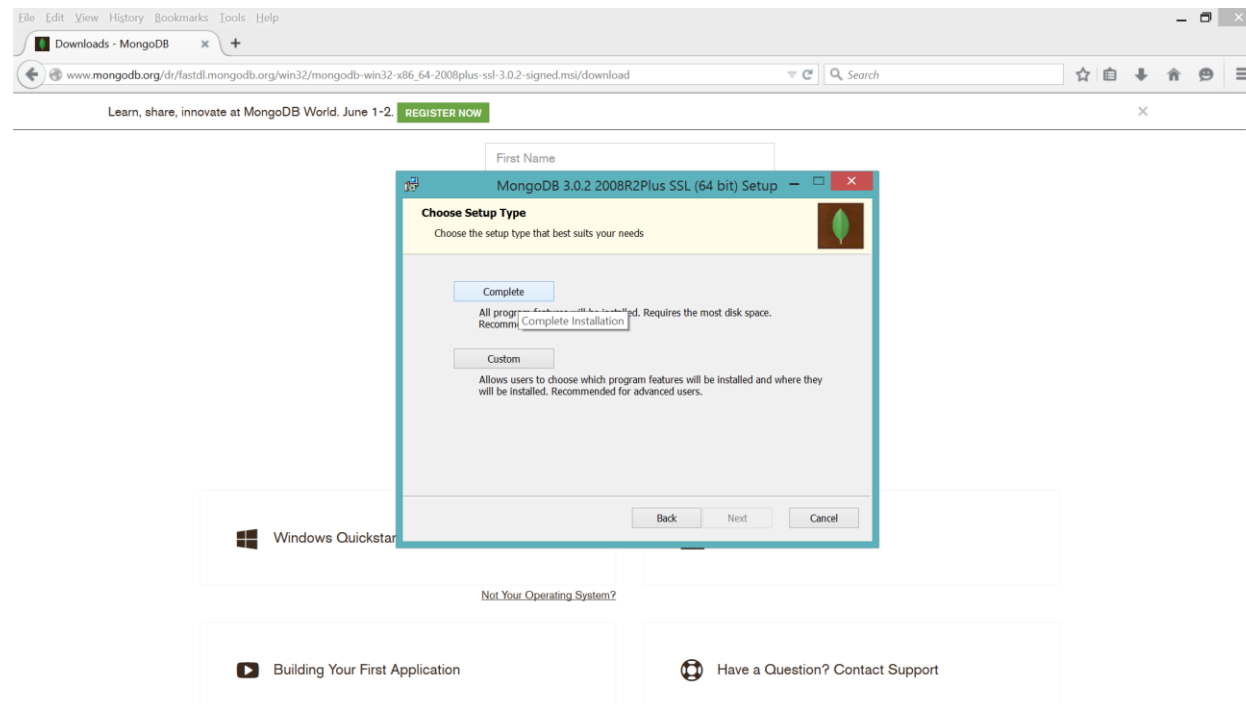
3. Mongo DB - Setup

- Accept the license agreement and proceed by clicking on 'Next'



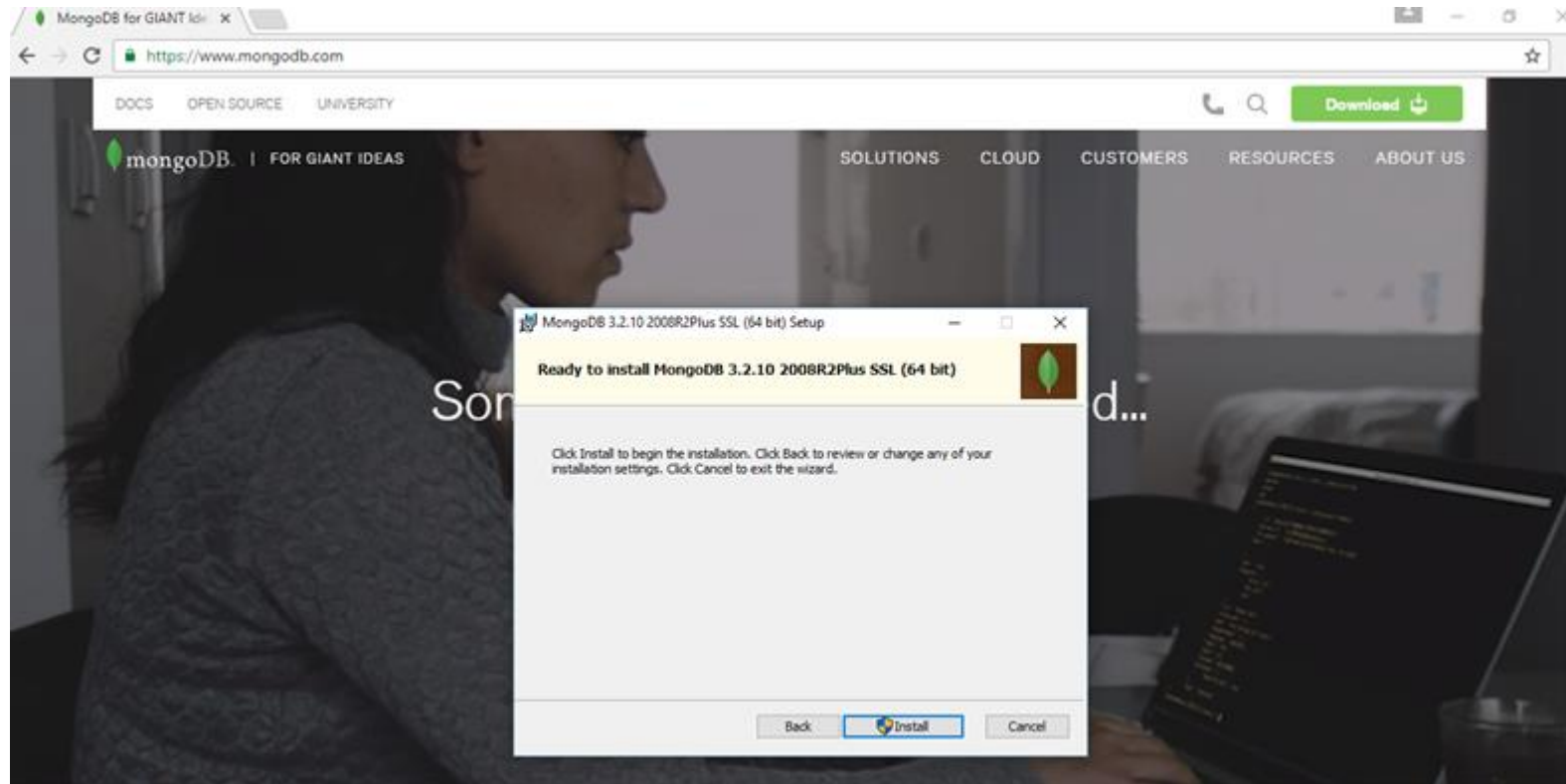
3. Mongo DB - Setup

- Select the setup type as 'Complete' and then click on 'Next'
- Since we are at the beginners level with MongoDB, hence, it is recommended that you select the setup type as 'Complete'



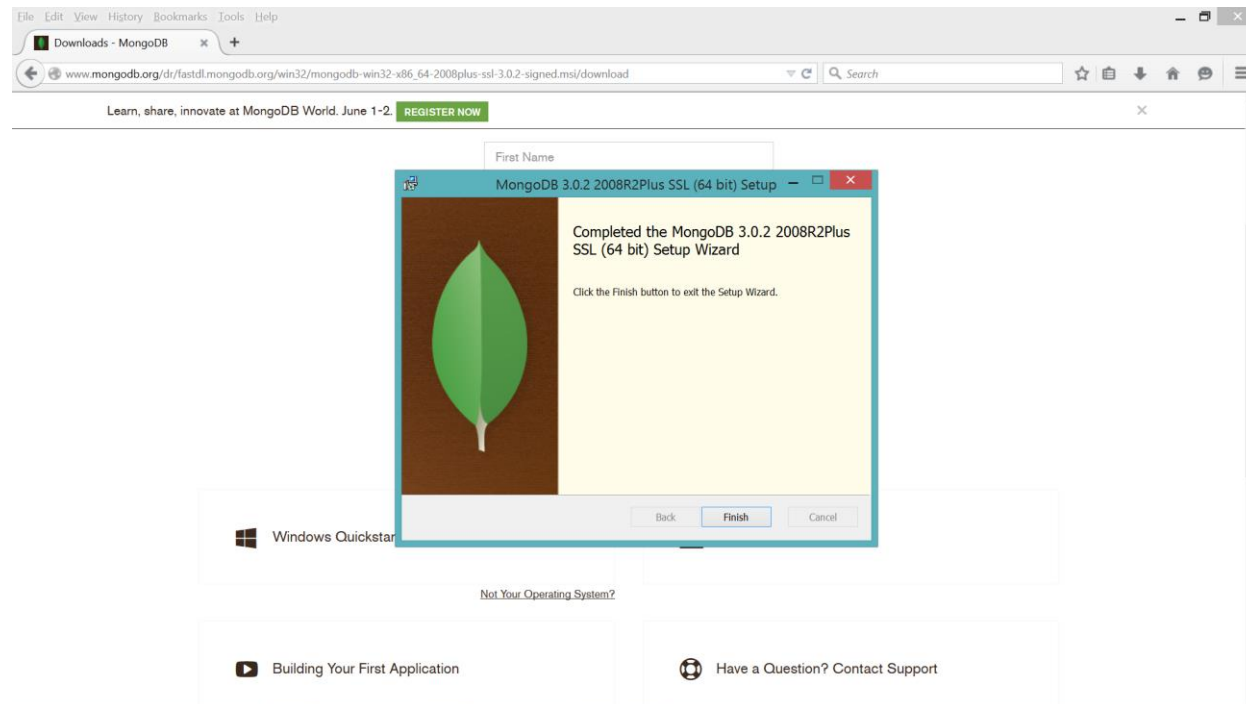
3. Mongo DB - Setup

- Click on install to install Mongo database



3. Mongo DB - Setup

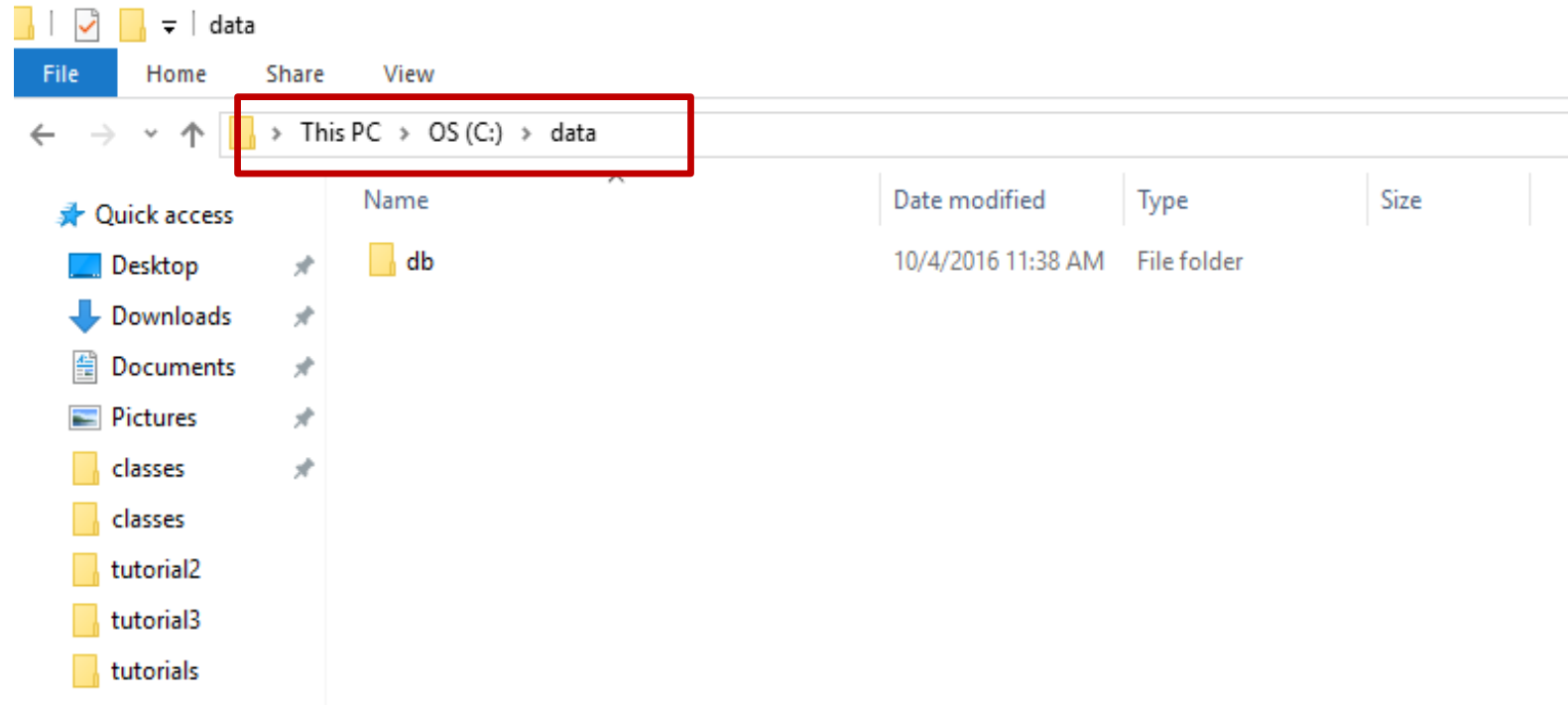
- Once the installation is complete, click on 'Finish' to complete the process



4. Mongo DB – Startup Instructions

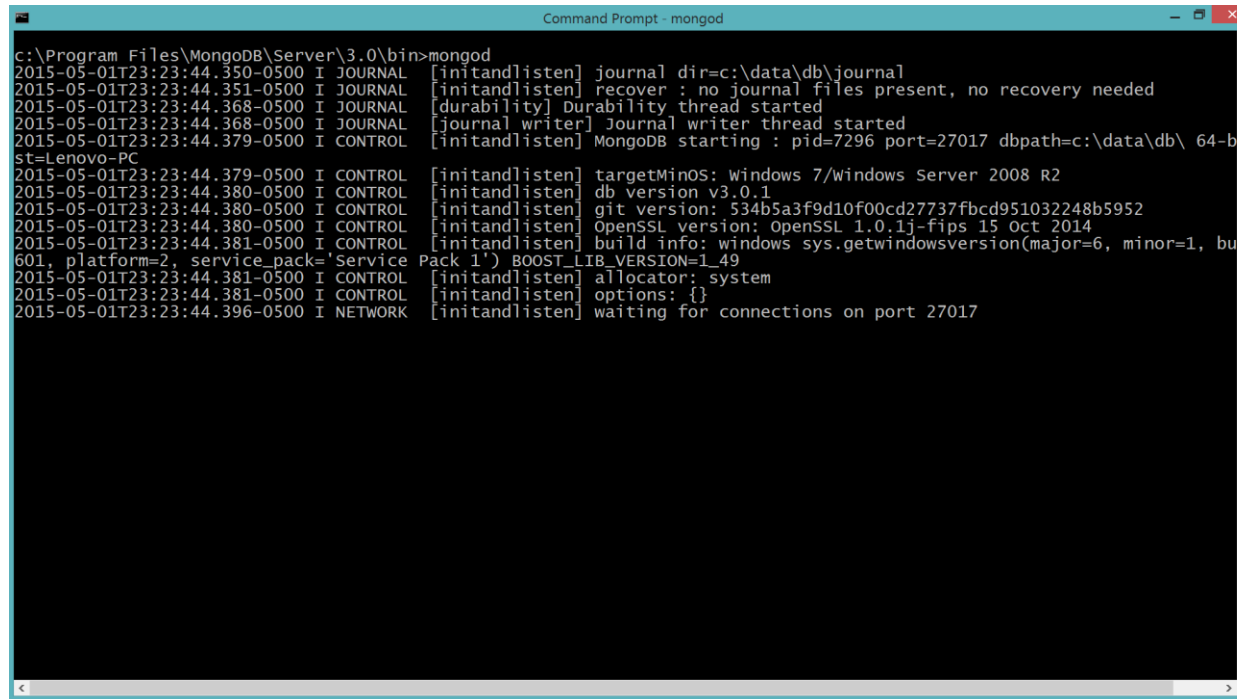
Create a data and db folder inside C drive as c:\data\db

Make sure that you directly create data\db folder inside c drive only



4. Mongo DB – Startup Instructions

- To start Mongo DB, open command prompt and enter the command ‘mongod’ .
- Mongo DB is usually installed under C:/Program Files/MongoDB
- To start Mongo DB server process , locate the “mongod.exe” stored in C:\Program Files\MongoDB\Server\3.2\bin and click it.

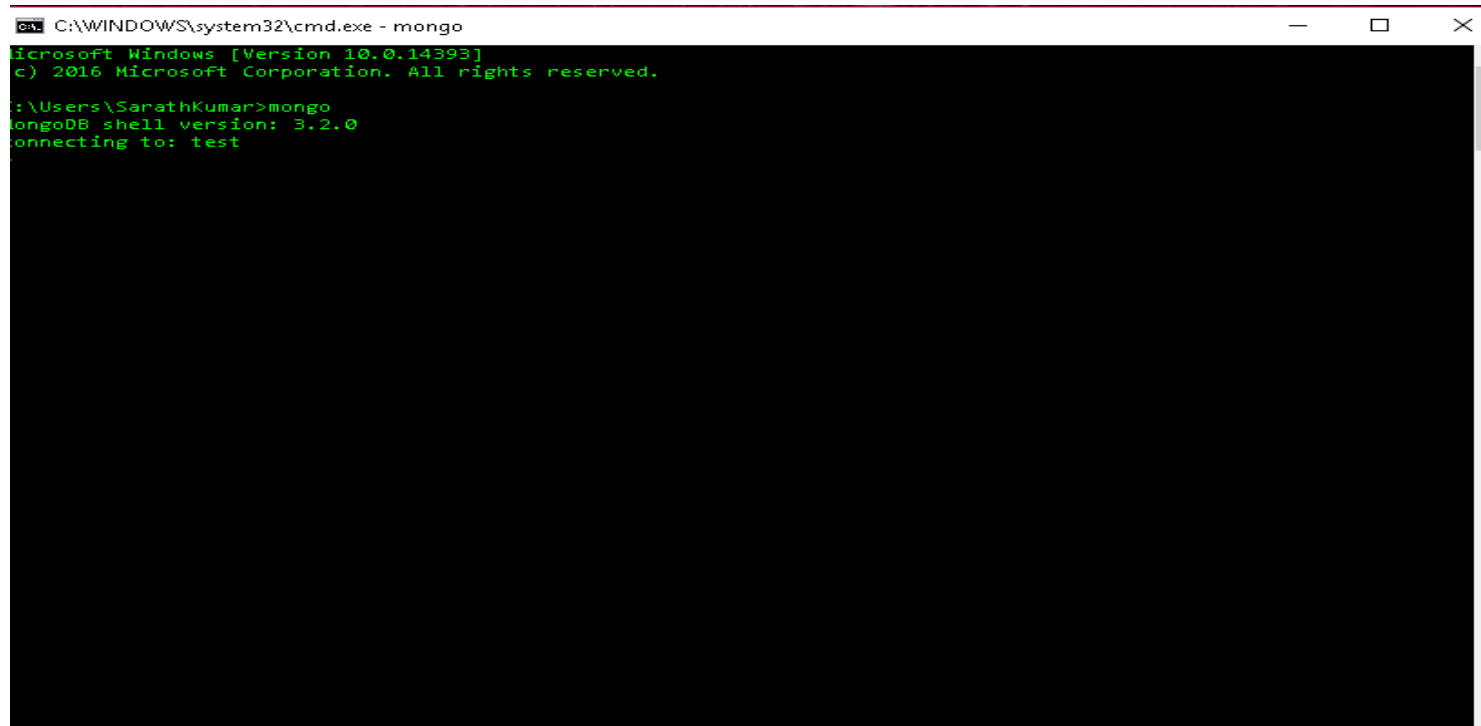


```
c:\Program Files\MongoDB\Server\3.0\bin>mongod
2015-05-01T23:23:44.350-0500 I JOURNAL [initandlisten] journal dir=c:\data\db\journal
2015-05-01T23:23:44.351-0500 I JOURNAL [initandlisten] recover : no journal files present, no recovery needed
2015-05-01T23:23:44.368-0500 I JOURNAL [durability] Durability thread started
2015-05-01T23:23:44.368-0500 I JOURNAL [journal writer] Journal writer thread started
2015-05-01T23:23:44.379-0500 I CONTROL [initandlisten] MongoDB starting : pid=7296 port=27017 dbpath=c:\data\db\ 64-b
st=Lenovo-PC
2015-05-01T23:23:44.379-0500 I CONTROL [initandlisten] targetMinOS: Windows 7/Windows Server 2008 R2
2015-05-01T23:23:44.380-0500 I CONTROL [initandlisten] db version v3.0.1
2015-05-01T23:23:44.380-0500 I CONTROL [initandlisten] git version: 534b5a3f9d10f00cd27737fbc951032248b5952
2015-05-01T23:23:44.380-0500 I CONTROL [initandlisten] OpenSSL version: OpenSSL 1.0.1j-fips 15 Oct 2014
2015-05-01T23:23:44.381-0500 I CONTROL [initandlisten] build info: windows sys.getwindowsversion(major=6, minor=1, bu
601, platform=2, service_pack='Service Pack 1') BOOST_LIB_VERSION=1_49
2015-05-01T23:23:44.381-0500 I CONTROL [initandlisten] allocator: system
2015-05-01T23:23:44.381-0500 I CONTROL [initandlisten] options: {}
2015-05-01T23:23:44.396-0500 I NETWORK [initandlisten] waiting for connections on port 27017
```



4. Mongo DB – Startup Instructions

- To start Mongo shell, open command prompt and enter the command ‘mongo’
- Mongo DB is usually installed under C:/Program Files/MongoDB
- To start Mongo shell, locate the “mongo.exe” stored in C:\Program Files\MongoDB\Server\3.2\bin and click it.



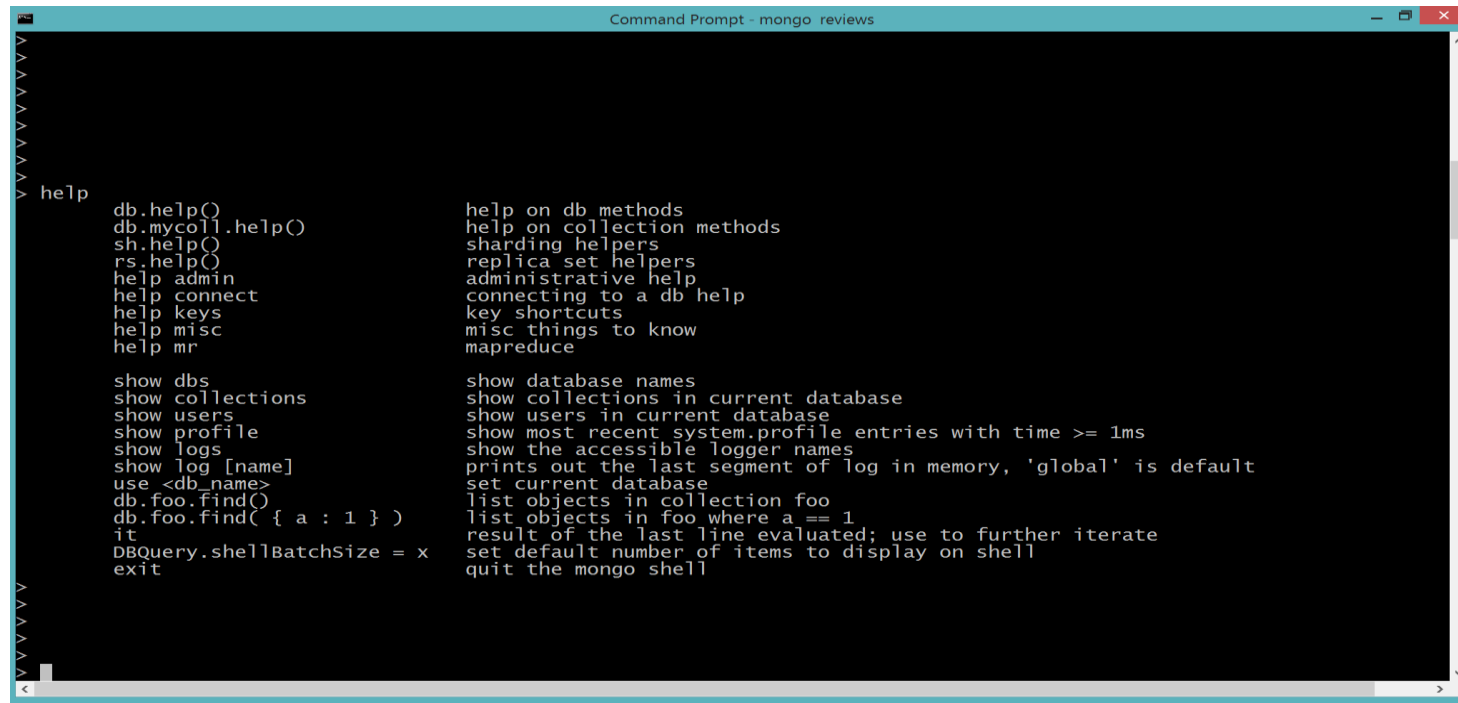
```
C:\WINDOWS\system32\cmd.exe - mongo
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\SarathKumar>mongo
MongoDB shell version: 3.2.0
connecting to: test
```



4. Mongo DB – Help command & Documentation

- The 'Help' command is a very handy command and can be used to check various commands available with Mongo DB
- To learn more on MongoDB Commands , visit: <https://docs.mongodb.com/manual/reference/mongo-shell/>



```
Command Prompt - mongo reviews

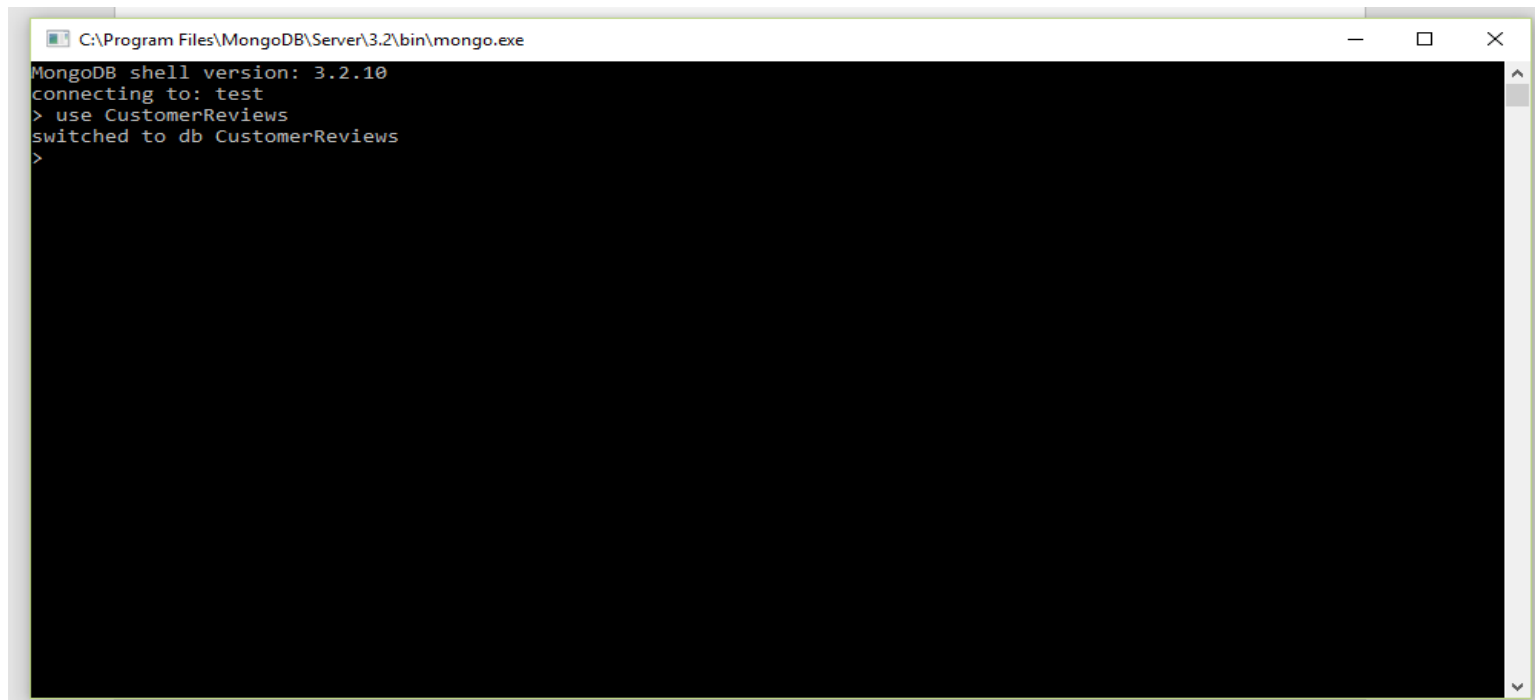
help
db.help()          help on db methods
db.mycoll.help()   help on collection methods
sh.help()          sharding helpers
rs.help()          replica set helpers
help admin         administrative help
help connect       connecting to a db help
help keys          key shortcuts
help misc          misc things to know
help mr            mapreduce

show dbs           show database names
show collections   show collections in current database
show users         show users in current database
show profile       show most recent system.profile entries with time >= 1ms
show logs          show the accessible logger names
show log [name]    prints out the last segment of log in memory, 'global' is default
use <db_name>      set current database
db.foo.find()      list objects in collection foo
db.foo.find( { a : 1 } ) list objects in foo where a == 1
it                result of the last line evaluated; use to further iterate
DBQuery.shellBatchSize = x set default number of items to display on shell
exit              quit the mongo shell
```



4. Mongo DB – Use a database

- In order to use a database, you must select it first
- To select a database along with the startup, use the command 'use databasename'
- Example, to select the 'CustomerReviews' database, the command is 'use CustomerReviews'
- You can then check the db you are in by typing db command


A screenshot of a Windows command prompt window titled "C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe". The window shows the MongoDB shell version 3.2.10. It displays the connection process to a "test" database. The user enters the command "use CustomerReviews", and the shell responds "switched to db CustomerReviews". The prompt then returns to ">".

```
C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe
MongoDB shell version: 3.2.10
connecting to: test
> use CustomerReviews
switched to db CustomerReviews
>
```



4. Mongo DB – Create Collections

- You can manually create collection or automatic by running your java program
- To create a collection manually type `db.createCollection(collectionname)`

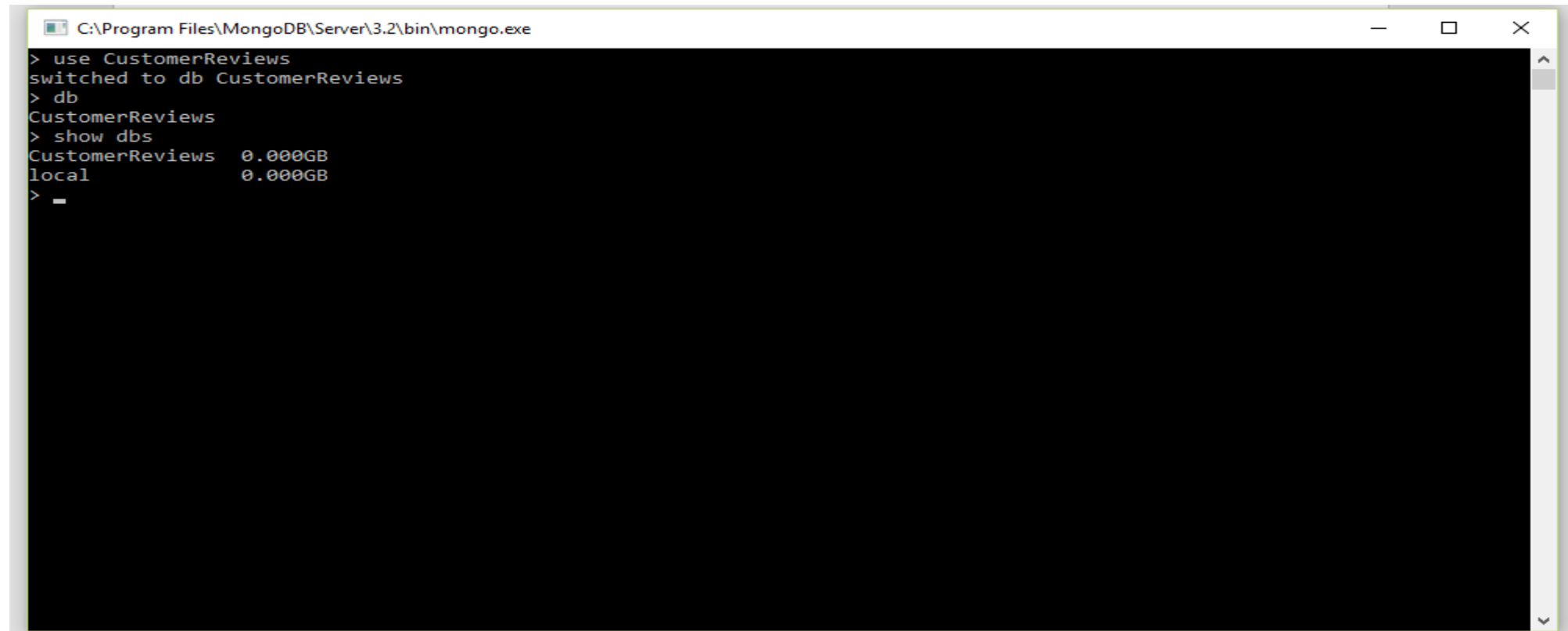
A screenshot of a MongoDB shell window. The title bar shows the path 'C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe'. The shell prompt is '>'. The command 'db.createCollection("myReviews")' has been entered, and the output '{ "ok" : 1 }' is displayed. The prompt '>' is visible again on the next line.

```
C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe
>
> db.createCollection("myReviews")
{ "ok" : 1 }
>
```



4. Mongo DB – Display list of available databases

- To check the databases that exist, use the command 'show dbs'
- This will show the list of available databases



```
C:\Program Files\MongoDB\Server\3.2\bin>mongo.exe
> use CustomerReviews
switched to db CustomerReviews
> db
CustomerReviews
> show dbs
CustomerReviews  0.000GB
local            0.000GB
> _
```

The screenshot shows a command prompt window titled "C:\Program Files\MongoDB\Server\3.2\bin>mongo.exe". The user has entered the command 'use CustomerReviews', which has switched the context to the 'CustomerReviews' database. Then, the user entered 'show dbs', which displays a list of databases: 'CustomerReviews' with a size of 0.000GB and 'local' with a size of 0.000GB. The prompt is currently at the end of the line following the last command.



4. Mongo DB – Show collections

- Use the command 'show collections' to view the list of available collections in the selected database



```
C:\Program Files\MongoDB\Server\3.2\bin>mongo.exe
> use myReviews
> show collections
myReviews
> _
```

The screenshot shows a Windows command prompt window titled "C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe". The prompt is at the MongoDB shell, where the command 'show collections' has been entered. The output shows 'myReviews' as the only collection in the current database. The prompt is currently at the end of the line, ready for the next command.



4. Mongo DB – Query data

- In order to query data, use the command 'db.COLLECTION_NAME.find()'
- The find() queries the data available in the selected collection.
- Example, to query the 'myReviews' collection we use the command 'db.myReviews.find()'



```
C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe
>
>
> db.myReviews.find()
{ "_id" : ObjectId("57f3e06441e5be1e543b3e0d"), "title" : "myReviews", "userName" : "customer1", "productName" : "xbox360", "productType" : "consoles", "productMaker" : "microsoft", "reviewRating" : "5", "reviewDate" : "2016-09-13", "reviewText" : " Amazing Game to Play" }
> _
```



5. Compile and run

- You need to include all the JAR files before you compile your Java program which imports external libraries (Such as Servlets, MongoDB in this tutorial)
- To include these external JAR files, make the changes to the 'CLASSPATH' variable in your 'env-setup-for-tomcat_backup.bat' file
- Locate and copy the location of the JAR files on your computer and edit the 'CLASSPATH' variable accordingly
- **NOTE:** Make sure you have the necessary JAR files on your computer



5. Compile and run

- Here is the snapshot of my 'env-setup-for-tomcat_backup.bat'
- The location of the JAR files highlighted will differ based on where they are present on your computer
- Please make sure you do the changes accordingly

env-setup - Notepad

File Edit Format View Help

```
set JAVA_HOME=C:\Program Files\Java\jdk1.7.0_80
```

```
set PATH="C:\Program Files\Java\jdk1.7.0_80\bin";%PATH%
```

```
set CLASSPATH=c:\apache-tomcat-7.0.34\lib\servlet-api.jar;c:\apache-tomcat-7.0.34\lib\jsp-api.jar;  
c:\apache-tomcat-7.0.34\lib\mongo-java-driver-3.1.0-20150911.172057-81.jar;  
c:\apache-tomcat-7.0.34\lib\mysql-connector-java-5.1.39-bin.jar;
```

```
set ANT_HOME=C:\apache-tomcat-7.0.34
```

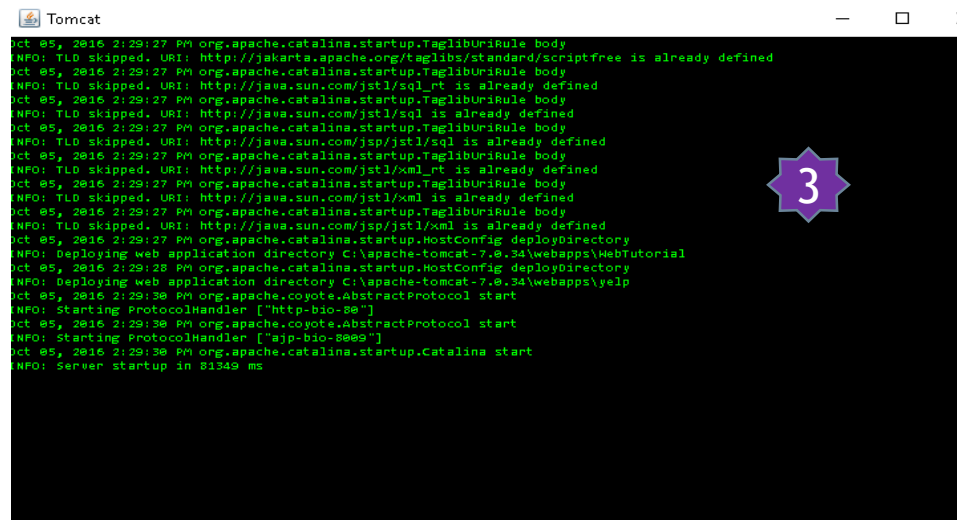
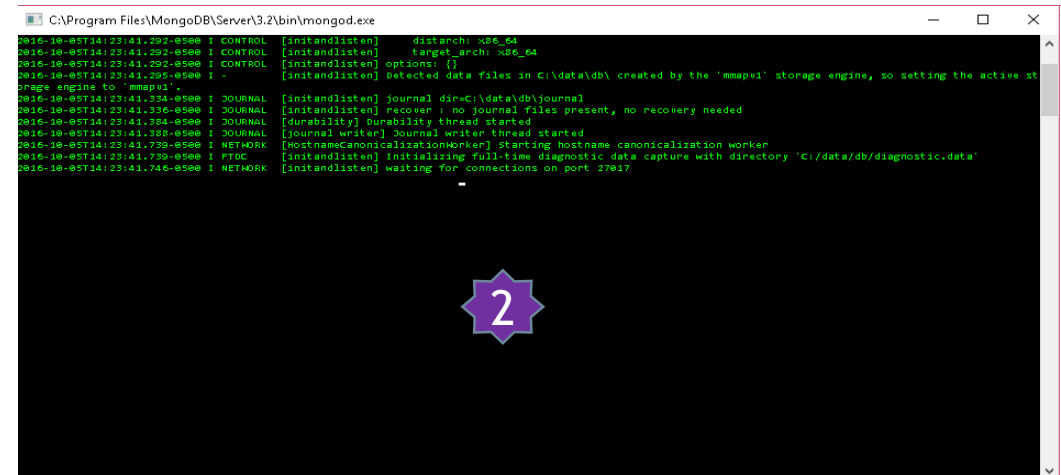
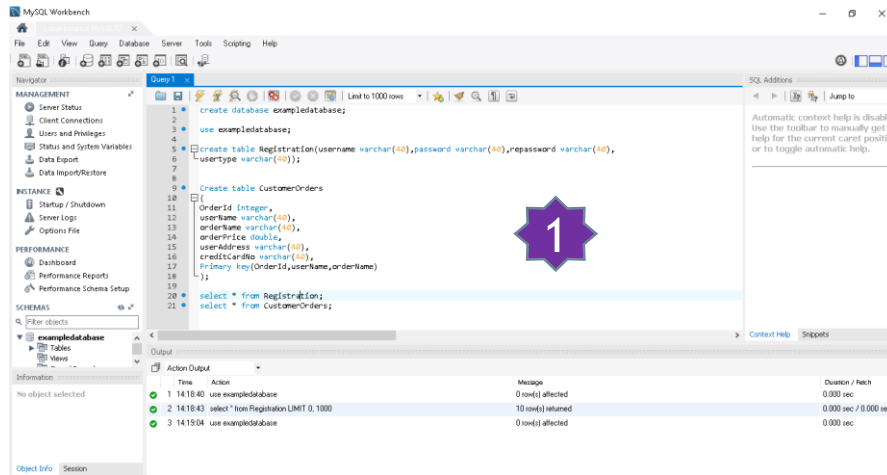
```
set TOMCAT_HOME=C:\apache-tomcat-7.0.34
```

```
set CATALINA_HOME=C:\apache-tomcat-7.0.34
```



Things to Remember Before Running your Application in localhost:

- Check **MySQL Server** is up and Running or else start the **MySQL Server**.
- Check **MongoDB Server** is up and Running or else start the **MongoDB Server**.
- Check **Apache Tomcat** is up and Running or else start the **Apache Tomcat**.



6. Example – Write Review:

To write a review for the product, click on ‘Write Review’ button on the products page

[Home](#) [Consoles](#) [Games](#) [Tablets](#) [Trending](#) [Hello, Customer1](#) [Account](#) [Logout](#) [Cart\(0\)](#)

Consoles


- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Microsoft Consoles

XBox 360
\$299.0




Buy Now

WriteReview

ViewReview

XBox One
\$399.0



Buy Now

WriteReview

ViewReview



6. Example – Write Review:

On clicking the WriteReview Button from products page user will be directed to WriteReview webpage where he can give review for product.

Click the SubmitReview button to store the review in Mongo database

Consoles

Microsoft

Sony

Nintendo

Games

Electronic Arts

Activision

Take-Two Interactive

ViewOrder

Hello, Customer1

Account

Logout

Cart(1)

Review

Product Name:	xbox360
Product Type:	consoles
Product Maker:	microsoft

Review Rating: 2 ▼

Review Date: 10/04/2016

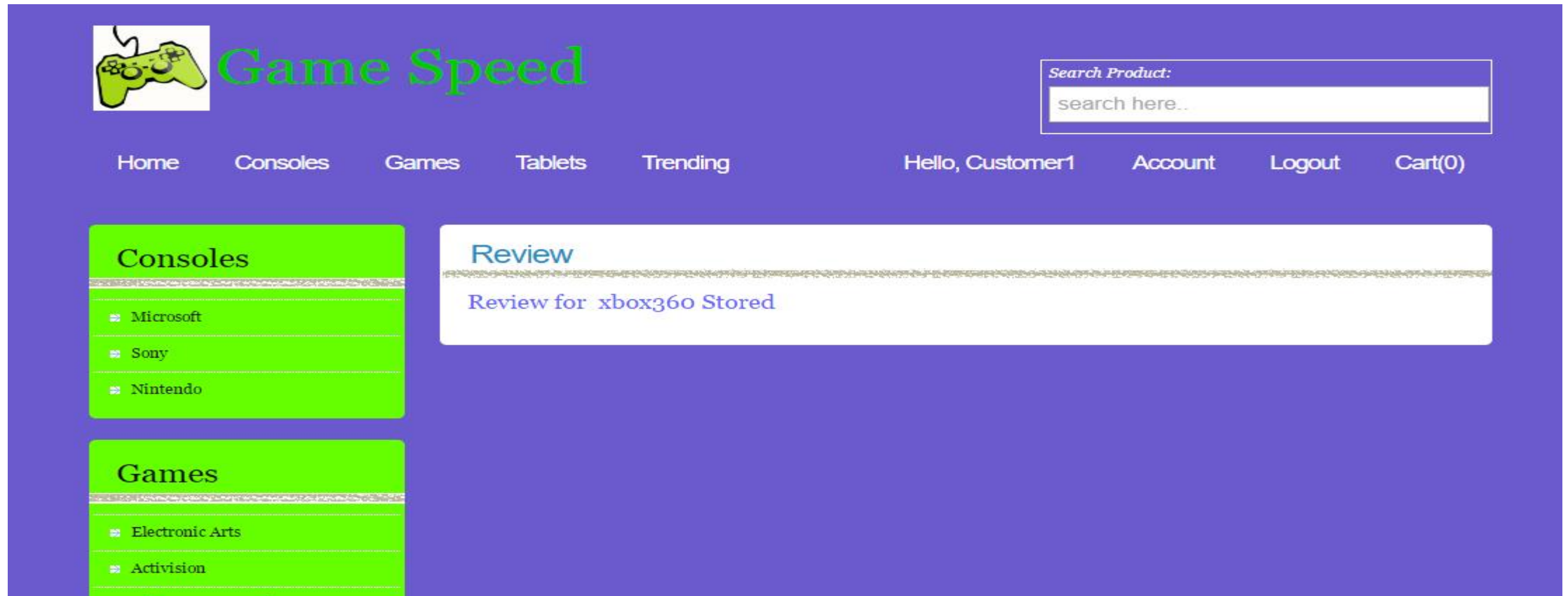
Review Text: Nice Game to Play

SubmitReview



6. Example – Write Review:

On clicking the SubmitReview button user will get response that reviews for product is stored in database



6. Example – Write Review:

Submitting one more Review for product

[Home](#) [Consoles](#) [Games](#) [Tablets](#) [Trending](#) [Hello, Customer1](#) [Account](#) [Logout](#) [Cart\(0\)](#)

Consoles

- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Review

Product Name:	xbox360
Product Type:	consoles
Product Maker:	microsoft

Review Rating: 5 ▼

Review Date: 09/13/2016

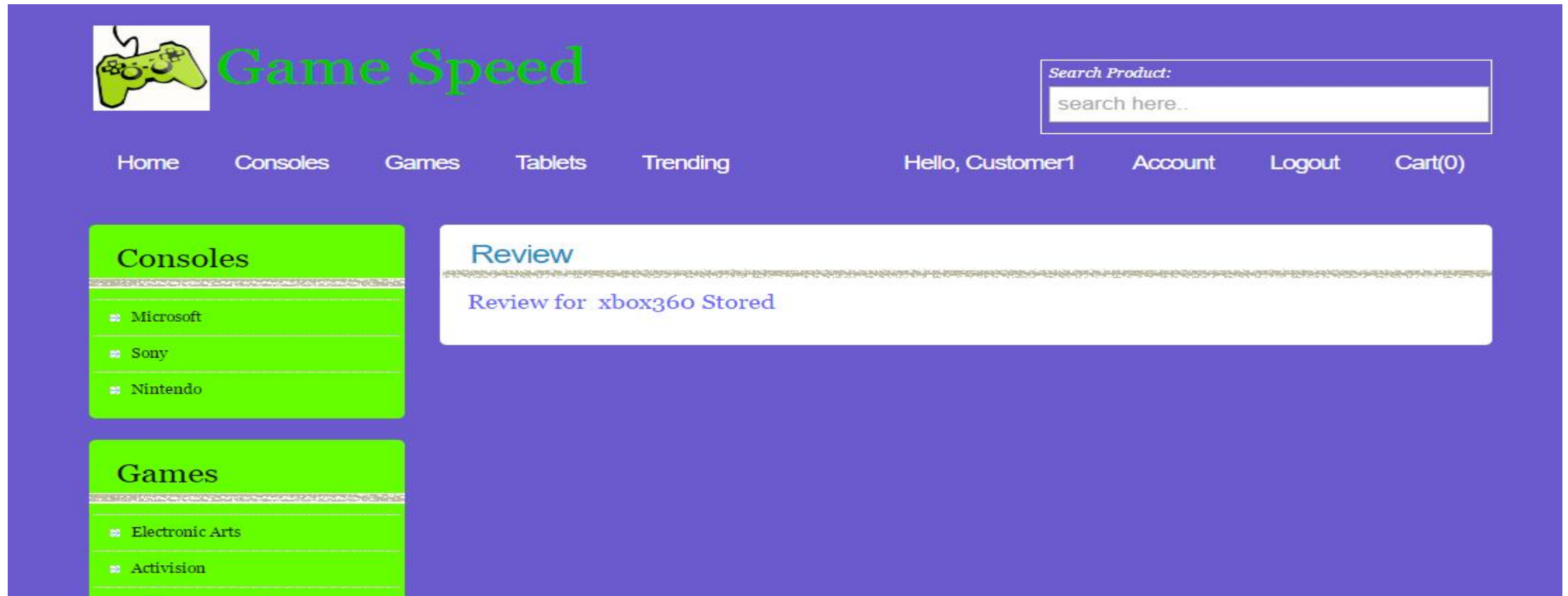
Review Text:

[SubmitReview](#)



6. Example – Write Review:

On clicking the SubmitReview button user will get response that reviews for product is stored in database



6. Example – View Review:

You can view the review submitted by clicking on ViewReview button on products page

The screenshot displays a web application interface with a purple header and a green sidebar. The header contains navigation links: Home, Consoles, Games, Tablets, Trending, and user information: Hello, Customer1, Account, Logout, and Cart(0). The sidebar has two sections: 'Consoles' with links to Microsoft, Sony, and Nintendo, and 'Games' with links to Electronic Arts, Activision, and Take-Two Interactive. The main content area is titled 'Microsoft Consoles' and features two product cards. The first card is for the 'XBox 360' priced at '\$299.0', showing an image of the console and a controller. The second card is for the 'XBox One' priced at '\$399.0', showing an image of the console and a controller. Both cards have three buttons: 'Buy Now', 'WriteReview', and 'ViewReview'. The 'ViewReview' button for the Xbox 360 is highlighted with a red rectangle.

Home Consoles Games Tablets Trending Hello, Customer1 Account Logout Cart(0)

Consoles


- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive


Microsoft Consoles

XBox 360
\$299.0



Buy Now
WriteReview
ViewReview

XBox One
\$399.0



Buy Now
WriteReview
ViewReview



6. Example – View Review:

All the reviews for the product will be retrieved from mongo db and displayed in web page

The screenshot shows a web application interface with a purple header and a green sidebar. The header contains links: ViewOrder, Hello, Customer1, Account, Logout, and Cart(2). The sidebar has three sections: Consoles (with Microsoft, Sony, and Nintendo), Games (with Electronic Arts, Activision, and Take-Two Interactive), and Tablets. The main content area is titled 'Review' and displays two review entries for the product 'xbox360'.

Review	
Product Name:	xbox360
userName:	customer1
Review Rating:	2
Review Date:	2016-10-04
Review Text:	Nice Game to Play
Product Name:	xbox360
userName:	customer1
Review Rating:	5
Review Date:	2016-09-13
Review Text:	Amazing Game to Play

Both the reviews are showed in web page



6. Example – View Review:

Check in the mongo shell if the myReviews collection is created inside example database and data for two reviews is stored in it



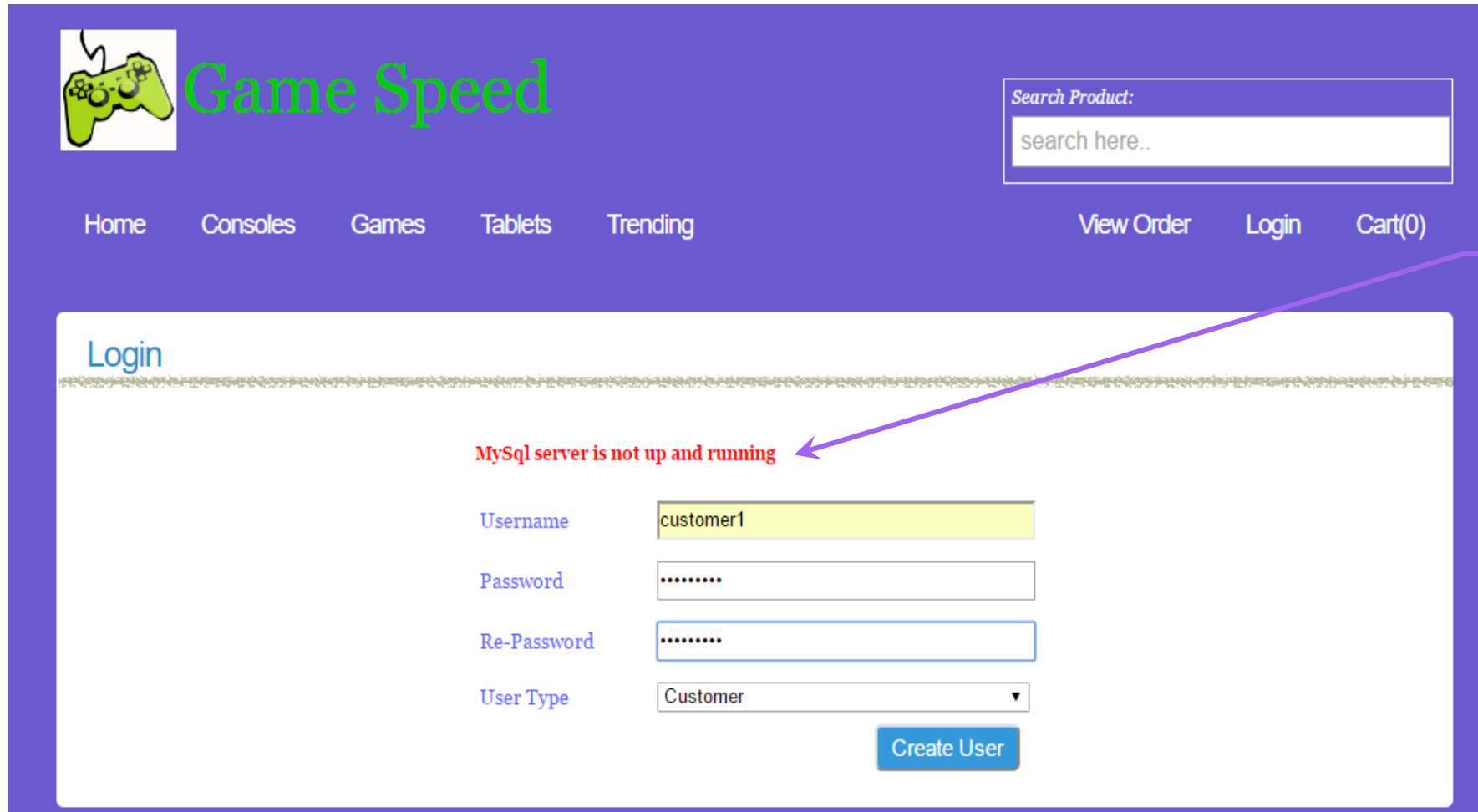
```
C:\Program Files\MongoDB\Server\3.2\bin\mongo.exe

> db.myReviews.find()
{ "_id" : ObjectId("57f4495441e5be0344609c42"), "title" : "myReviews", "userName" : "customer1", "productName" : "xbox360", "productType" : "consoles", "productMaker" : "microsoft", "reviewRating" : "2", "reviewDate" : "2016-10-04", "reviewText" : " Nice Game to Play" }
{ "_id" : ObjectId("57f4498341e5be0344609c45"), "title" : "myReviews", "userName" : "customer1", "productName" : "xbox360", "productType" : "consoles", "productMaker" : "microsoft", "reviewRating" : "5", "reviewDate" : "2016-09-13", "reviewText" : " Amazing Game to Play" }
>
```



6. Example - Server Not Running For Registration:

Trying to Register when server is not up and running



The screenshot shows the 'Game Speed' website interface. At the top, there is a green game controller icon and the text 'Game Speed' in green. To the right is a search bar labeled 'Search Product:' with the placeholder text 'search here..'. Below this is a navigation bar with links: Home, Consoles, Games, Tablets, Trending, View Order, Login, and Cart(0). The main content area is titled 'Login' and contains a registration form. The form has four fields: Username (with the value 'customer1'), Password (masked with dots), Re-Password (masked with dots), and User Type (a dropdown menu set to 'Customer'). A blue 'Create User' button is at the bottom of the form. A red error message, 'MySql server is not up and running', is displayed above the form fields. A purple arrow points from a text box on the right to this error message.

Game Speed

Search Product:
search here..

Home Consoles Games Tablets Trending View Order Login Cart(0)

Login

MySql server is not up and running

Username customer1

Password

Re-Password

User Type Customer ▼


Create User

If mySql server not running gives an error message



6. Example - Server Not Running For Orders:

Trying to Place order when server is not up and running



Game Speed

[Home](#) [Consoles](#) [Games](#) [Tablets](#) [Trending](#)

[ViewOrder](#) [Hello,Customer1](#) [Account](#) [Logout](#) [Cart\(1\)](#)

Consoles

- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Order

Customer Name:	customer1
Product Purchased:	xbox360
Product Price:	399.99
Total Order Cost	399.99

Credit/accountNo

80456666

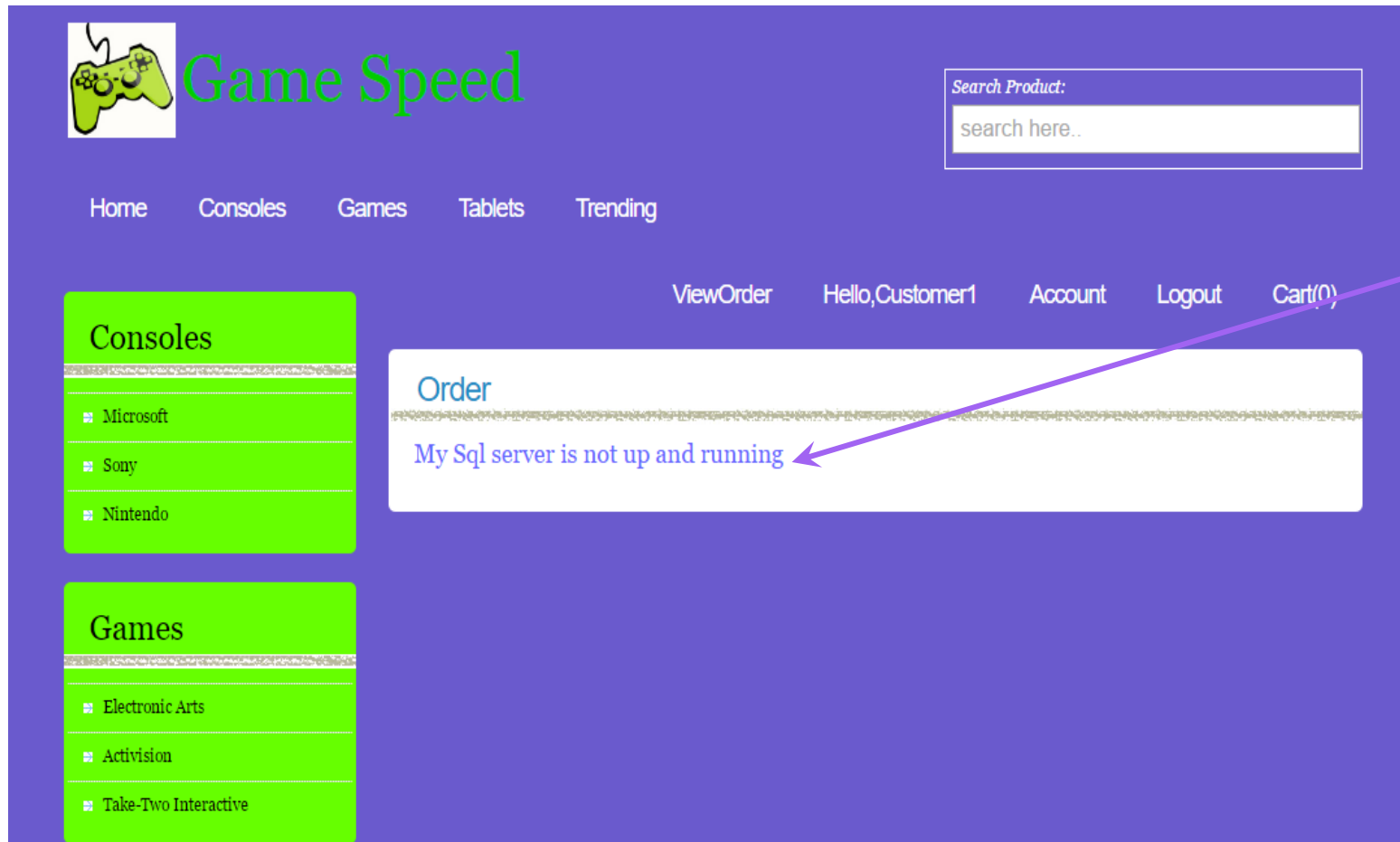
Customer Address

Chicago Illinois

Submit

6. Example - Server Not Running For Orders:

Trying to Place order when server is not up and running




If MySql server not running gives an error message



6. Example – Write Review when MongoDB Server not running:

Trying to submit review for Product



Game Speed

[Home](#) [Consoles](#) [Games](#) [Tablets](#) [Trending](#)

[ViewOrder](#) [Hello, Customer1](#) [Account](#) [Logout](#) [Cart\(0\)](#)

Consoles

- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Review

Product Name:	xbox360
Product Type:	consoles
Product Maker:	microsoft

Review Rating:

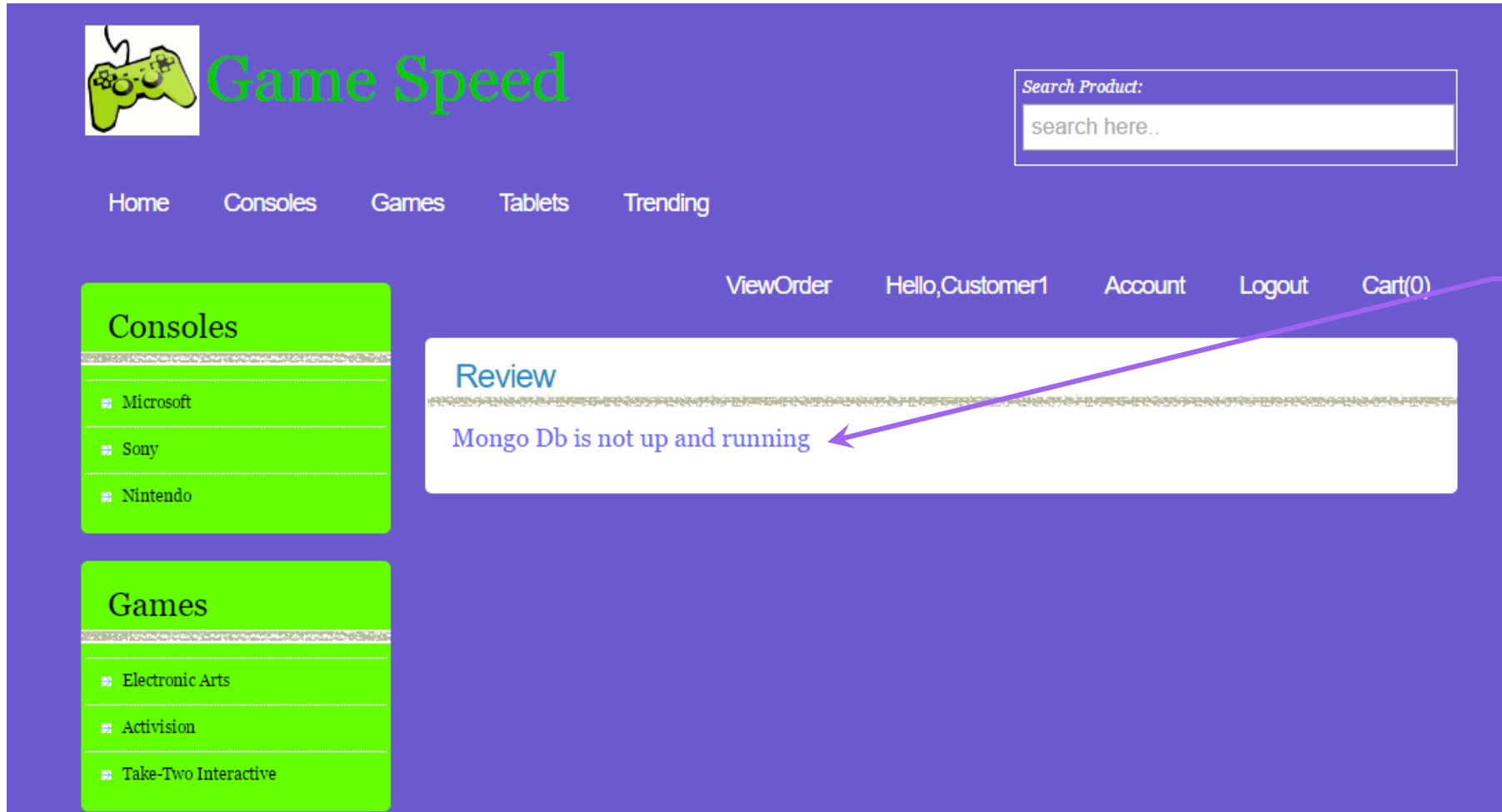
Review Date:

Review Text:



6. Example – Write Review when MongoDB Server not running:

Trying to submit review for Product



If MongoDB server not running gives an error message



6. Example – View Review when MongoDB Server not running:

Trying to view review for Product

[Home](#) [Consoles](#) [Games](#) [Tablets](#) [Trending](#) Hello, Customer1 [Account](#) [Logout](#) [Cart\(0\)](#)

Consoles


- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Microsoft Consoles

XBox 360
\$299.0




Buy Now

WriteReview

ViewReview

XBox One
\$399.0



Buy Now

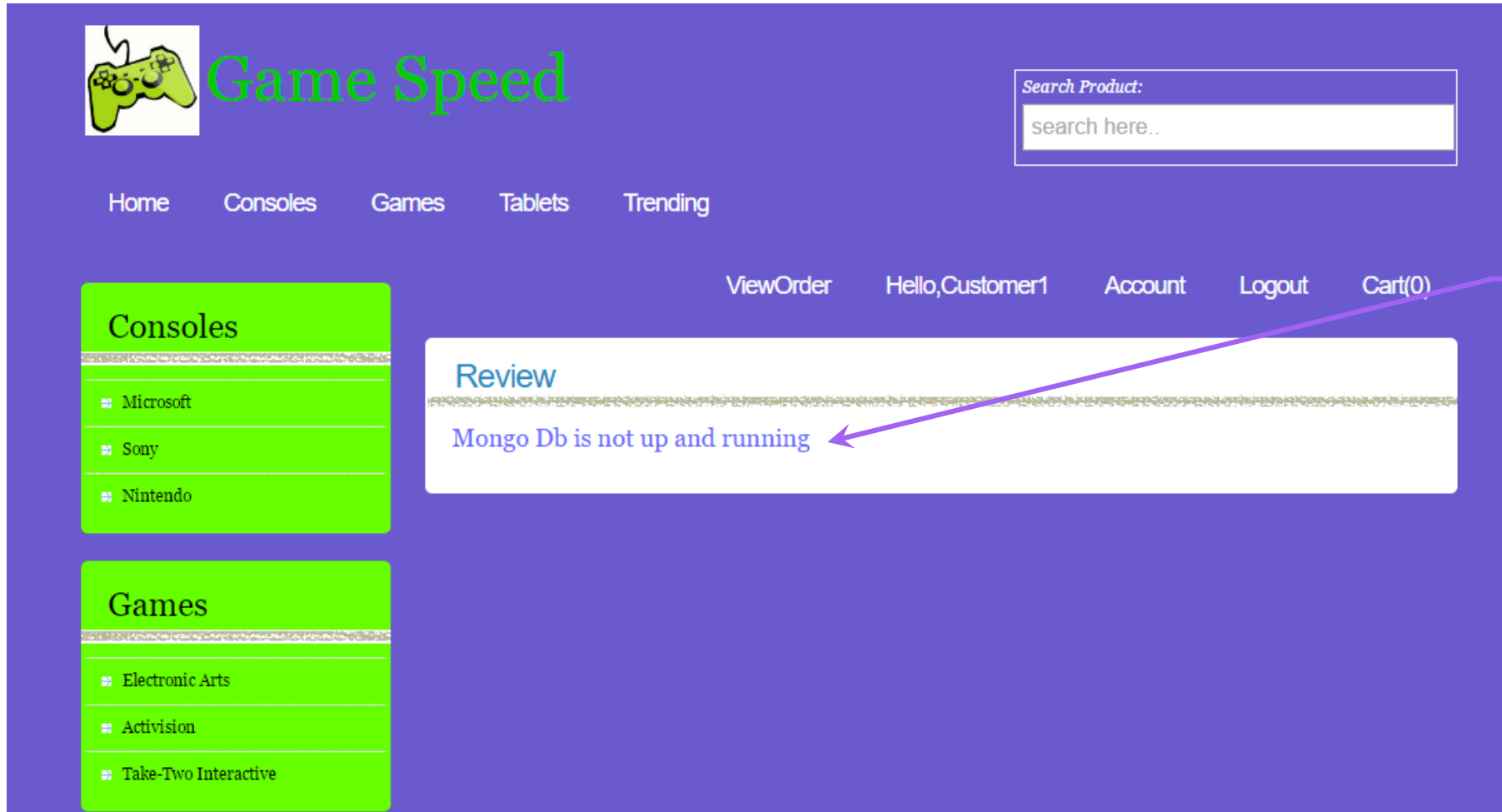
WriteReview

ViewReview



6. Example – View Review when MongoDB Server not running:

Trying to view review for Product



If MongoDB server not running gives an error message



7. Code Snippet

Walkthrough to get connect to
Database from Servlet



MongoDBDataStoreUtilities class to connect Database from Servlet

```
public class MongoDBDataStoreUtilities
{
    static DBCollection myReviews;
    public static void getConnection()
    {
        MongoClient mongo;
        mongo = new MongoClient("localhost", 27017);

        DB db = mongo.getDB("CustomerReviews");
        myReviews= db.getCollection("myReviews");
    }
}
```

Connecting to
CustomerReviews
database

Getting Reviews data
to DbCollection object

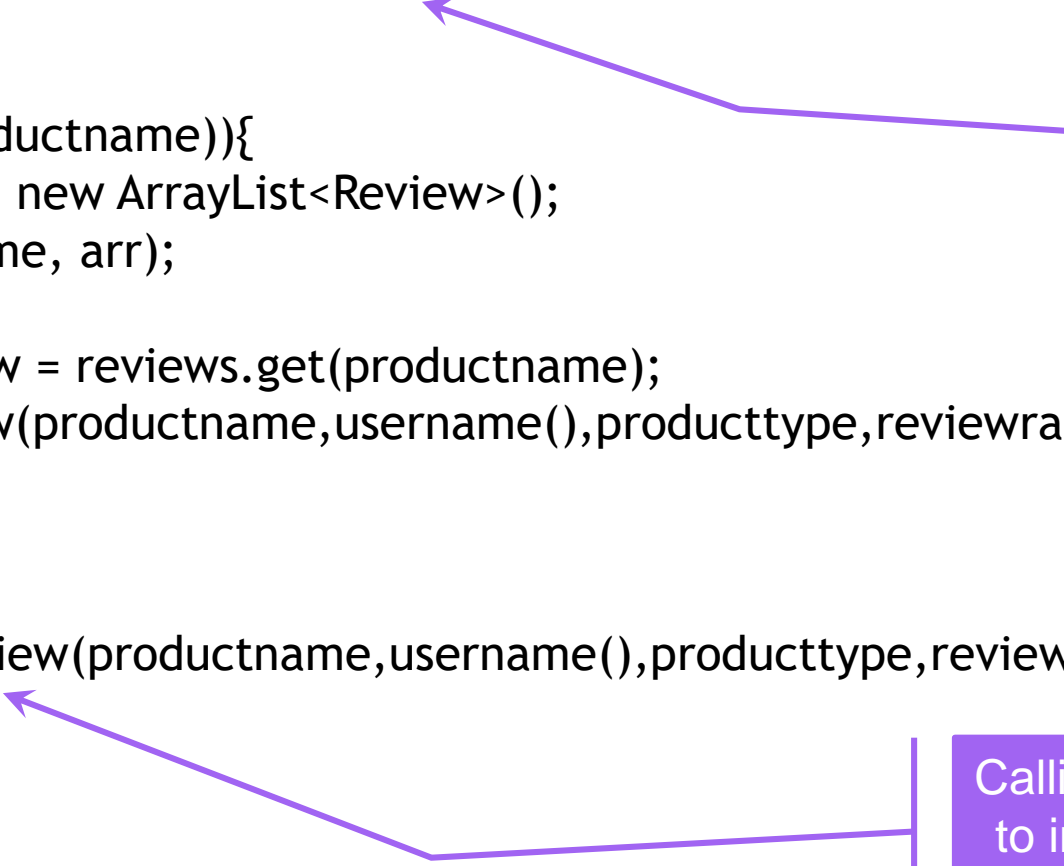


Walkthrough for Storing Reviews Code Snippet



Walkthrough for Storing reviews

```
public void storeReview(String productname,String producttype,String reviewrating,String reviewdate,String
reviewtext)
{
    HashMap<String, ArrayList<Review>> reviews= new HashMap<String, ArrayList<Review>>();
    try
    {reviews=MongoDBDataStoreUtilities.selectReview();}
    catch(Exception e)
    {}
    if(!reviews.containsKey(productname)){
        ArrayList<Review> arr = new ArrayList<Review>();
        reviews.put(productname, arr);
    }
    ArrayList<Review> listReview = reviews.get(productname);
    Review review = new Review(productname,username(),producttype,reviewrating,reviewdate,reviewtext);
    listReview.add(review);
    try
    {
MongoDBDataStoreUtilities.insertReview(productname,username(),producttype,reviewrating,reviewdate,reviewtext,
    }
    catch(Exception e)
    { }
}
```



Calling utility function to select data from database and storing reviews in hashmap

Calling utility function to inserting reviews in database



Utility Function for Selecting Review Data into Hashmap

```
public static HashMap<String, ArrayList<Review>> selectReview()
{
    getConnection();
    HashMap<String, ArrayList<Review>> reviewHashmap=new HashMap<String, ArrayList<Review>>();
    DBCursor cursor = myReviews.find();
    while (cursor.hasNext())
    {
        BasicDBObject obj = (BasicDBObject) cursor.next();
        if(! reviewHashmap.containsKey(obj.getString("productName")))
        {
            ArrayList<Review> arr = new ArrayList<Review>();
            reviewHashmap.put(obj.getString("productName"), arr);
        }
        ArrayList<Review> listReview = reviewHashmap.get(obj.getString("productName"));
        Review review =new
Review(obj.getString("productName"),obj.getString("userName"),obj.getString("productType"),obj.getStr
ing("reviewRating"),obj.getString("reviewDate"),obj.getString("reviewText"));
            listReview.add(review);
        }
    return reviewHashmap;
}
```

DBCursor used to store table data obtained from database in servlet

Iterate through Cursor and Store each review into class object



Utility Function for Writing Reviews into Mongo database

```
public static void insertReview(String productname,String username,String  
producttype,String reviewrating,String reviewdate,String reviewtext)  
{  
    getConnection();  
    BasicDBObject doc = new BasicDBObject("title", "myReviews").  
        append("userName", username).  
        append("productName", productname).  
        append("productType", producttype).  
        append("reviewRating", reviewrating).  
        append("reviewDate", reviewdate).  
        append("reviewText", reviewtext);  
    myReviews.insert(doc);  
}
```

Creating a
BasicObject to insert
data into database

Specifying each
column to insert
value

DbCollection.insert()
Will insert data into
database



Questions?

