

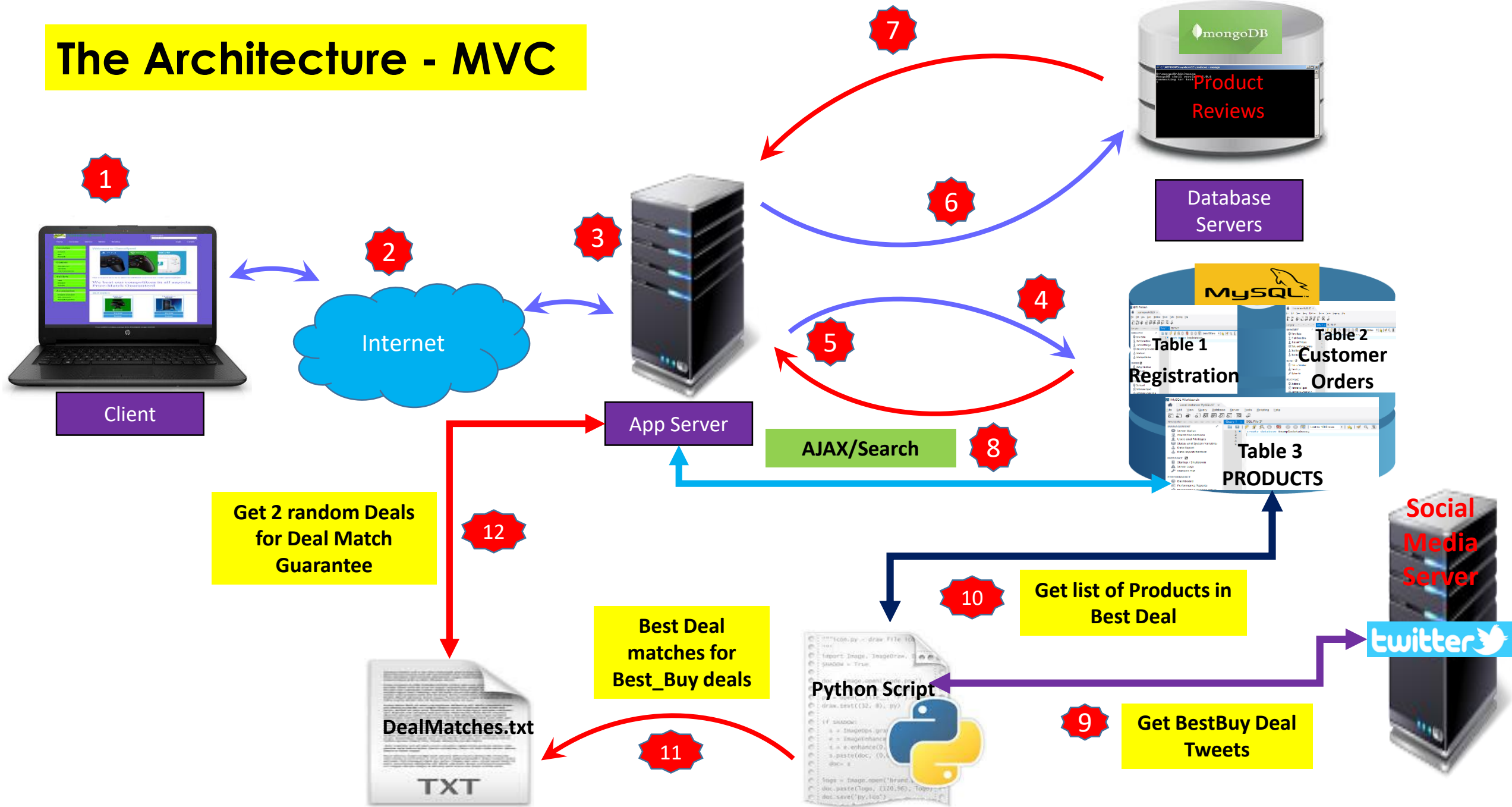
TUTORIAL #6

PYTHON-TWITTER-API

DR. ATEF BADER

**- PRESENTATION BY
SNEHAL PRAJAPATI**

The Architecture - MVC



1. Python – Overview:

- Python is a high-level, interpreted, interactive and object-oriented scripting language. Python is designed to be highly readable.
- It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages.
- Python is Interpreted: Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.
- Python is Interactive: You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.
- Python is Object-Oriented: Python supports Object-Oriented style or technique of programming that encapsulates code within objects.
- Python is a Beginner's Language: Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW browsers to games.

Let us See an Example of Python Code:

```
print "Hello, Python!"
```

12. Anaconda – Download:

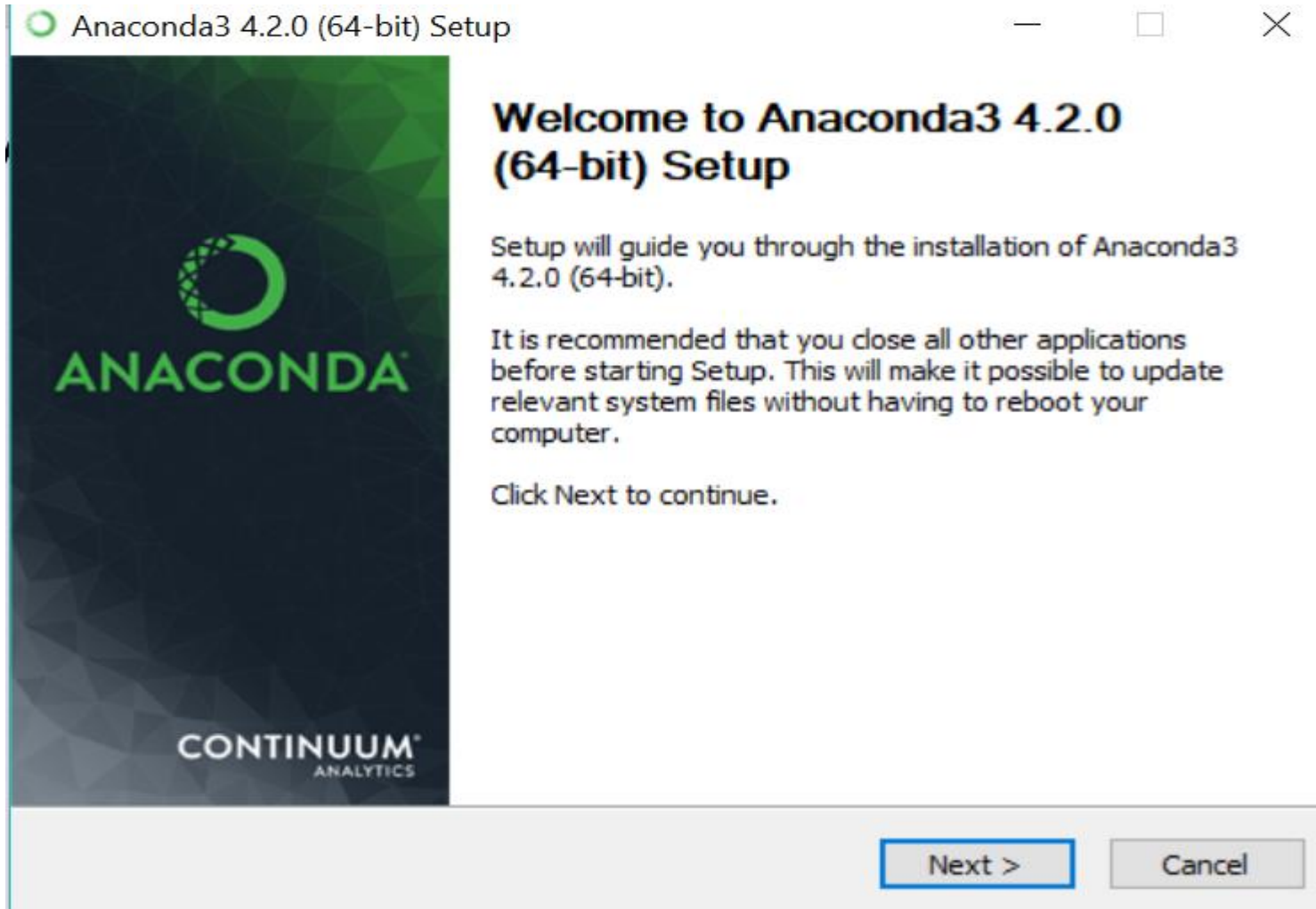
- Go to <https://www.anaconda.com/download/> and click on the 'Download For Windows' button to download Anaconda 64-bit installer (Anaconda 4 or 5 should be fine with Python 3)

Download Anaconda Distribution

Version 5.3 | Release Date: September 28, 2018

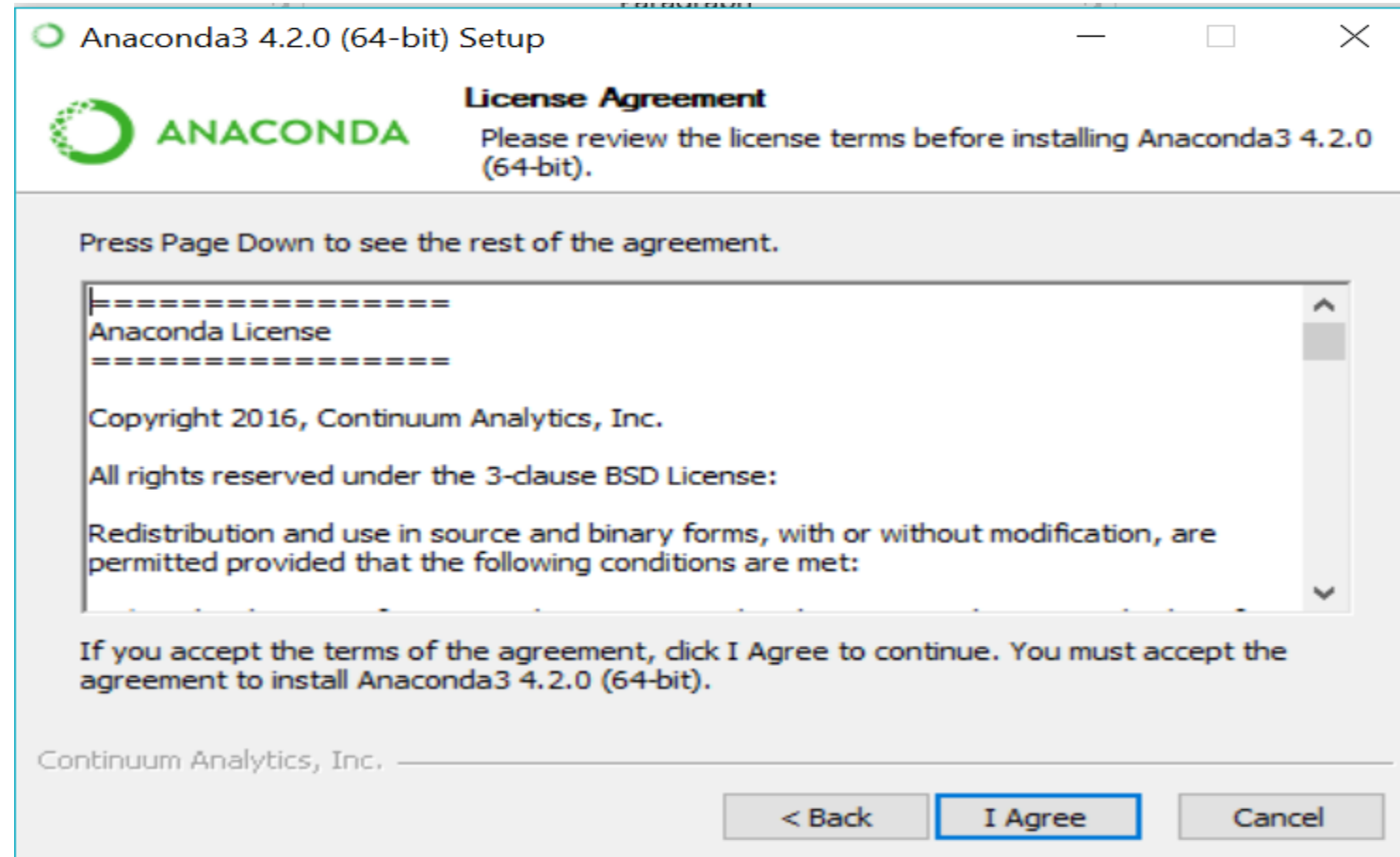
Download For:   

12. Anaconda – Setup:



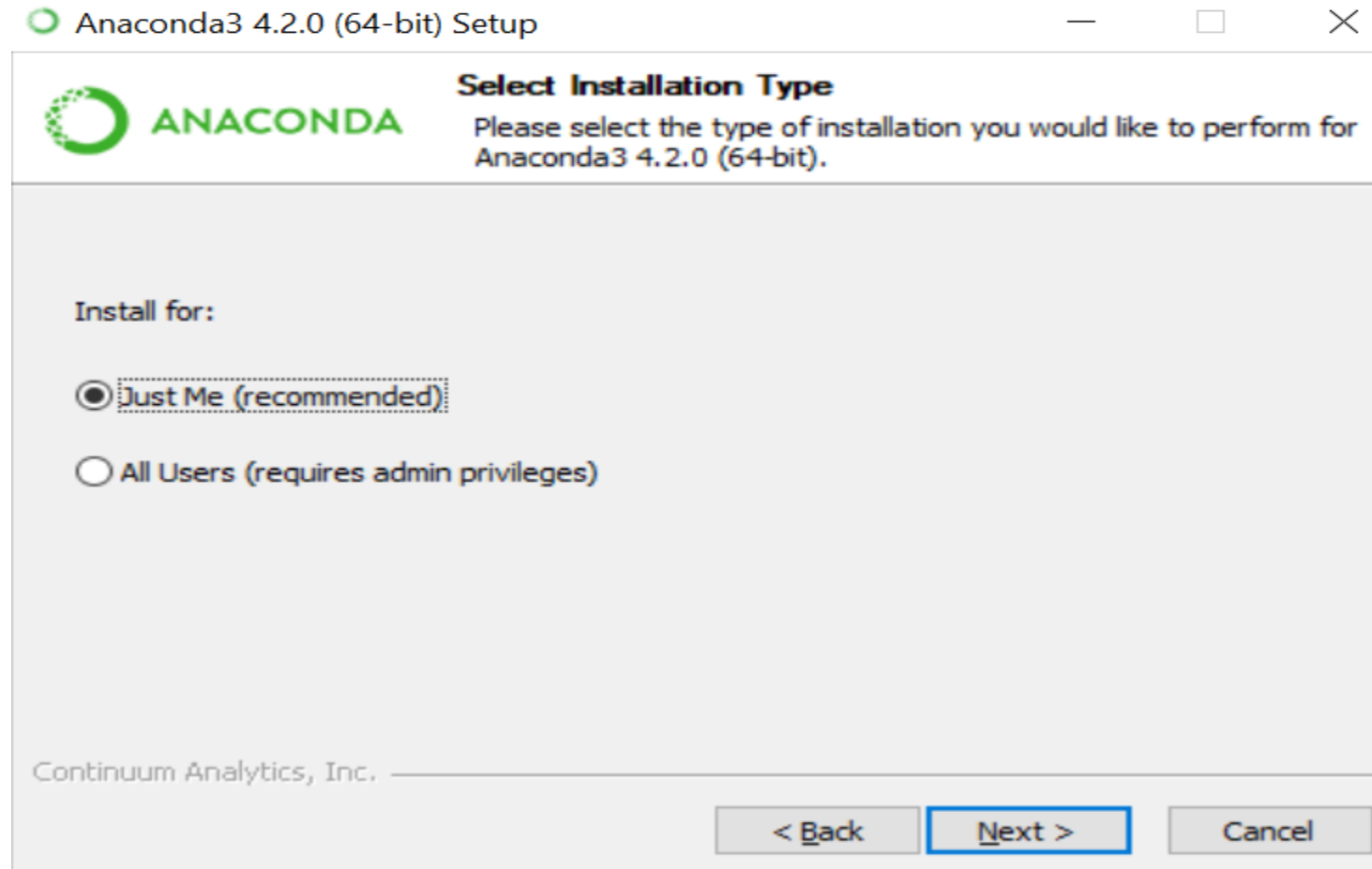
12. Anaconda – Setup:

- Agree to the Terms and Conditions by clicking “I Agree”.



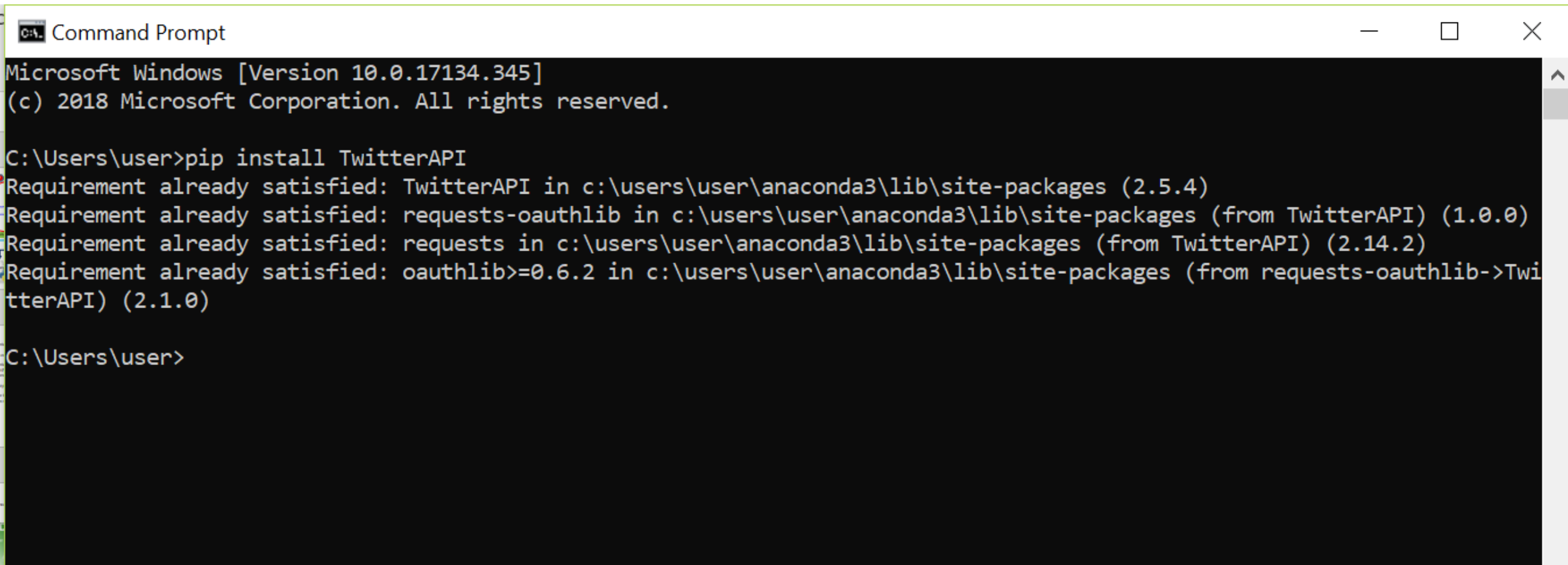
12. Anaconda – Setup :

- Install for “Just Me(recommended)” and click Next to select the destination location and it will install Anaconda in your system.



13. Anaconda – TwitterAPI download:

- Open your command prompt and type “pip install TwitterAPI” which downloads TwitterAPI package inside the Anaconda folder as shown below :



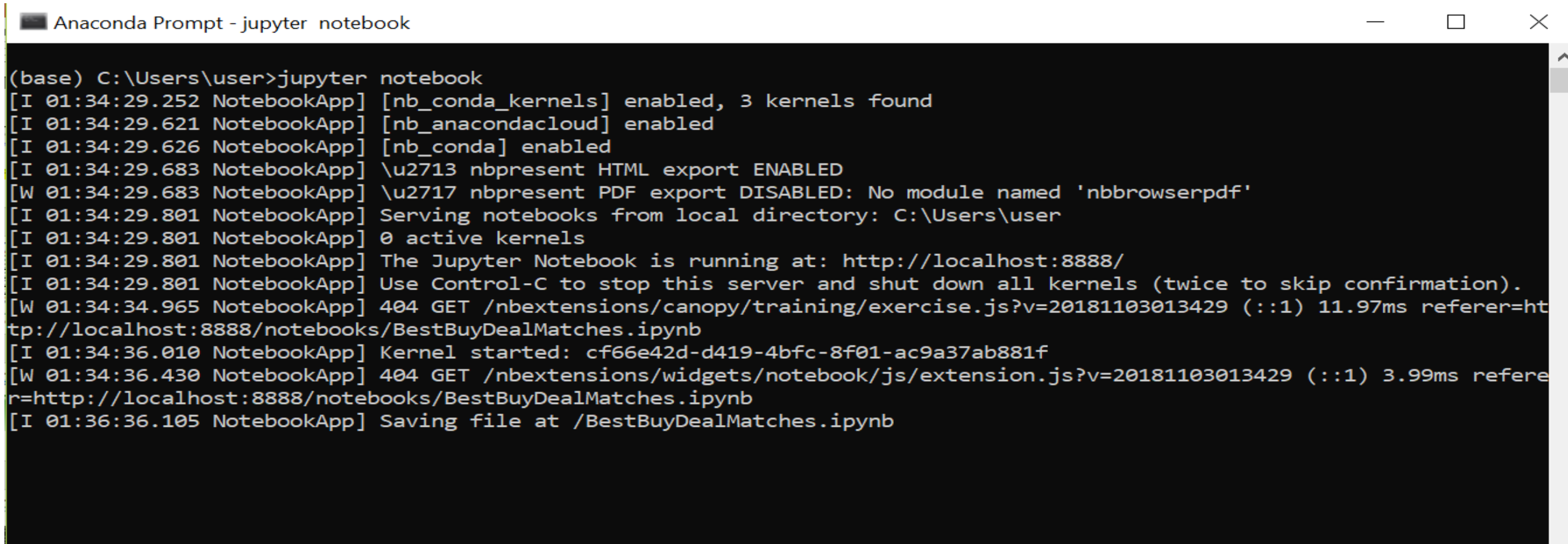
```
Command Prompt
Microsoft Windows [Version 10.0.17134.345]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\user>pip install TwitterAPI
Requirement already satisfied: TwitterAPI in c:\users\user\anaconda3\lib\site-packages (2.5.4)
Requirement already satisfied: requests-oauthlib in c:\users\user\anaconda3\lib\site-packages (from TwitterAPI) (1.0.0)
Requirement already satisfied: requests in c:\users\user\anaconda3\lib\site-packages (from TwitterAPI) (2.14.2)
Requirement already satisfied: oauthlib>=0.6.2 in c:\users\user\anaconda3\lib\site-packages (from requests-oauthlib->TwitterAPI) (2.1.0)

C:\Users\user>
```


14. Anaconda Terminal to open Jupyter notebook:

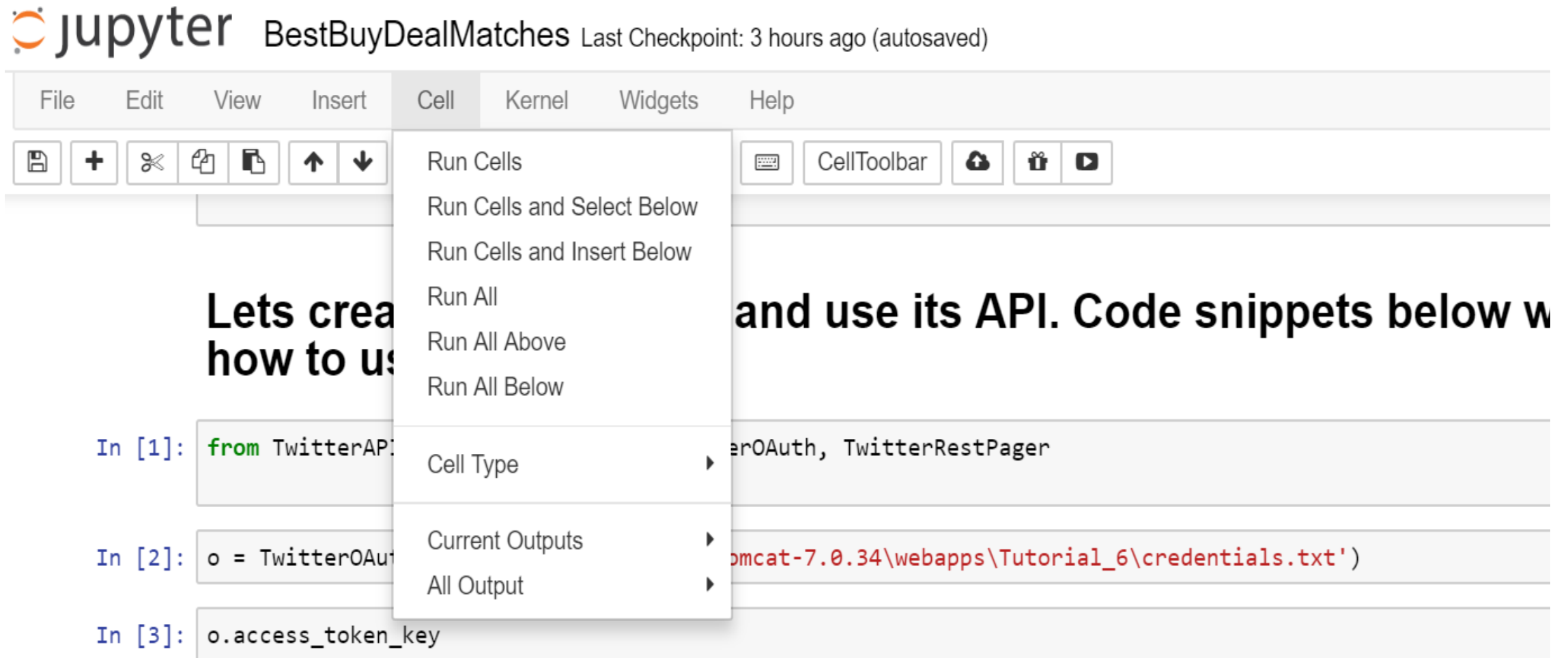
- Type “jupyter notebook” in the Anaconda command prompt which will open jupyter notebook.

A screenshot of the Anaconda Prompt window. The title bar reads "Anaconda Prompt - jupyter notebook". The terminal shows the command "(base) C:\Users\user>jupyter notebook" being executed. The output consists of several status messages from the NotebookApp, including enabling kernels, setting up HTML and PDF export, and starting the server at http://localhost:8888/. It also shows a 404 error for a specific file and a successful file save operation.

```
(base) C:\Users\user>jupyter notebook
[I 01:34:29.252 NotebookApp] [nb_conda_kernels] enabled, 3 kernels found
[I 01:34:29.621 NotebookApp] [nb_anacondacloud] enabled
[I 01:34:29.626 NotebookApp] [nb_conda] enabled
[I 01:34:29.683 NotebookApp] \u2713 nbpresent HTML export ENABLED
[W 01:34:29.683 NotebookApp] \u2717 nbpresent PDF export DISABLED: No module named 'nbbrowserpdf'
[I 01:34:29.801 NotebookApp] Serving notebooks from local directory: C:\Users\user
[I 01:34:29.801 NotebookApp] 0 active kernels
[I 01:34:29.801 NotebookApp] The Jupyter Notebook is running at: http://localhost:8888/
[I 01:34:29.801 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[W 01:34:34.965 NotebookApp] 404 GET /nbextensions/canopy/training/exercise.js?v=20181103013429 (:::1) 11.97ms referer=http://localhost:8888/notebooks/BestBuyDealMatches.ipynb
[I 01:34:36.010 NotebookApp] Kernel started: cf66e42d-d419-4bfc-8f01-ac9a37ab881f
[W 01:34:36.430 NotebookApp] 404 GET /nbextensions/widgets/notebook/js/extension.js?v=20181103013429 (:::1) 3.99ms referer=http://localhost:8888/notebooks/BestBuyDealMatches.ipynb
[I 01:36:36.105 NotebookApp] Saving file at /BestBuyDealMatches.ipynb
```

15.Anaconda – Running the notebook:

- Select Run All from Cell menu.



The screenshot shows the Jupyter Notebook interface. At the top, the Jupyter logo is followed by the text "BestBuyDealMatches" and "Last Checkpoint: 3 hours ago (autosaved)". Below this is a menu bar with "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". The "Cell" menu is open, displaying options: "Run Cells", "Run Cells and Select Below", "Run Cells and Insert Below", "Run All", "Run All Above", and "Run All Below". The "Run All" option is highlighted. Below the menu bar is a toolbar with icons for saving, adding cells, cutting, copying, pasting, and navigating. The notebook content area shows three code cells. The first cell contains the text "Lets crea" and "how to us". The second cell contains the text "and use its API. Code snippets below w". The third cell contains the text "erOAuth, TwitterRestPager". The fourth cell contains the text "omcat-7.0.34\webapps\Tutorial_6\credentials.txt')". The fifth cell contains the text "o.access_token_key".

Jupyter BestBuyDealMatches Last Checkpoint: 3 hours ago (autosaved)

File Edit View Insert Cell Kernel Widgets Help

Run Cells
Run Cells and Select Below
Run Cells and Insert Below
Run All
Run All Above
Run All Below

Cell Type
Current Outputs
All Output

In [1]: `from TwitterAP`

In [2]: `o = TwitterOAuth`

In [3]: `o.access_token_key`

Lets crea
how to us

and use its API. Code snippets below w

erOAuth, TwitterRestPager

omcat-7.0.34\webapps\Tutorial_6\credentials.txt')

o.access_token_key

17.Anaconda – Python 3.x : Things to note :

- If you are using Python 3.x on top of anaconda, syntax is a little different from Python 2.x
- E.x. print “Hello World” is NOT valid in Python 3.x rather print(“Hello World”) is used
- As shown above with Canopy, we no more require encoding of tweets

```
In [32]: import re
import pymysql

cnx = pymysql.connect(user='root', password='InternetSp@92',
                      host='127.0.0.1',
                      database='exampledatabase')

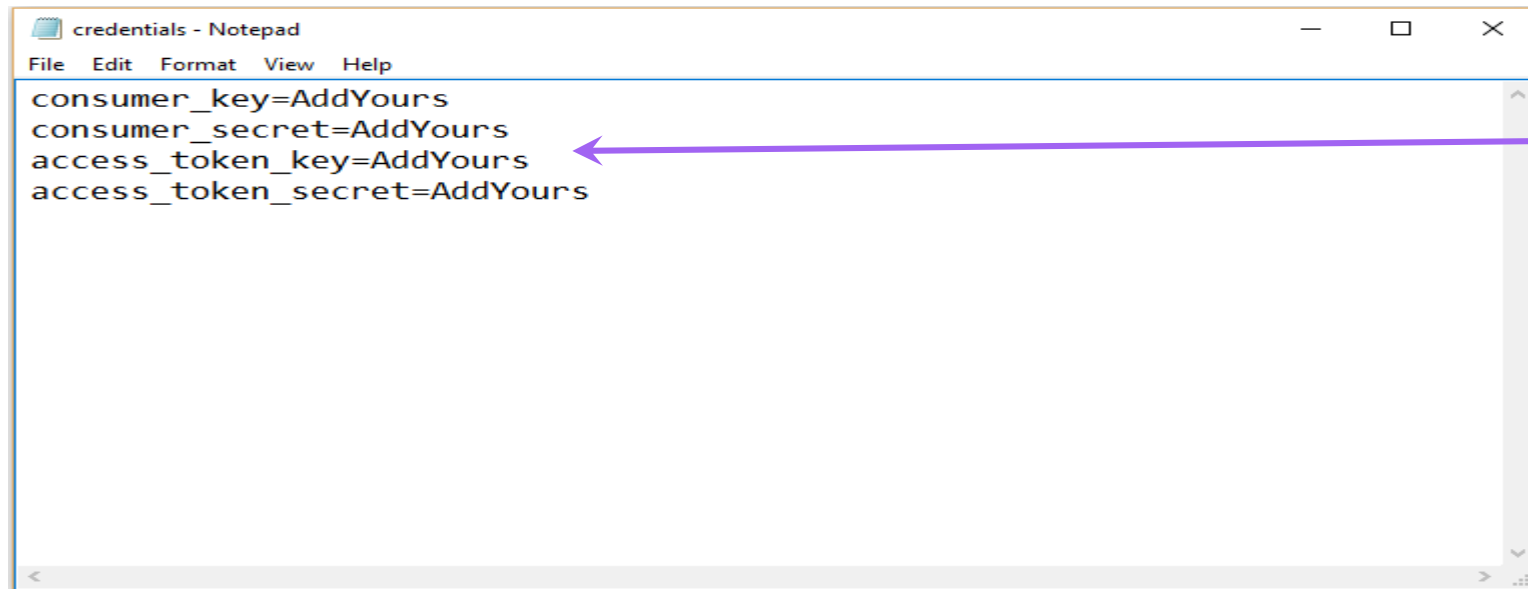
cursor = cnx.cursor()

query = ("SELECT id FROM ProductDetails")
cursor.execute(query)

dealMatchGauranteed=[]
for product in cursor:
    for tweet in timeline:
        deal = (tweet['text'])
        if (len(re.findall('\s'+product[0]+'\\s',deal)) >= 1):
            dealMatchGauranteed = dealMatchGauranteed + [deal]
```

6. Twitter API Creating New Application

- Create an account on <http://twitter.com>
- Generate authentication tokens by following the instructions in <https://apps.twitter.com>
- The new portal for Twitter developer will be : developer.twitter.com
- Add your tokens to the key/token to a file called credentials.txt
- Save credentials.txt file inside your application folder where you save python script



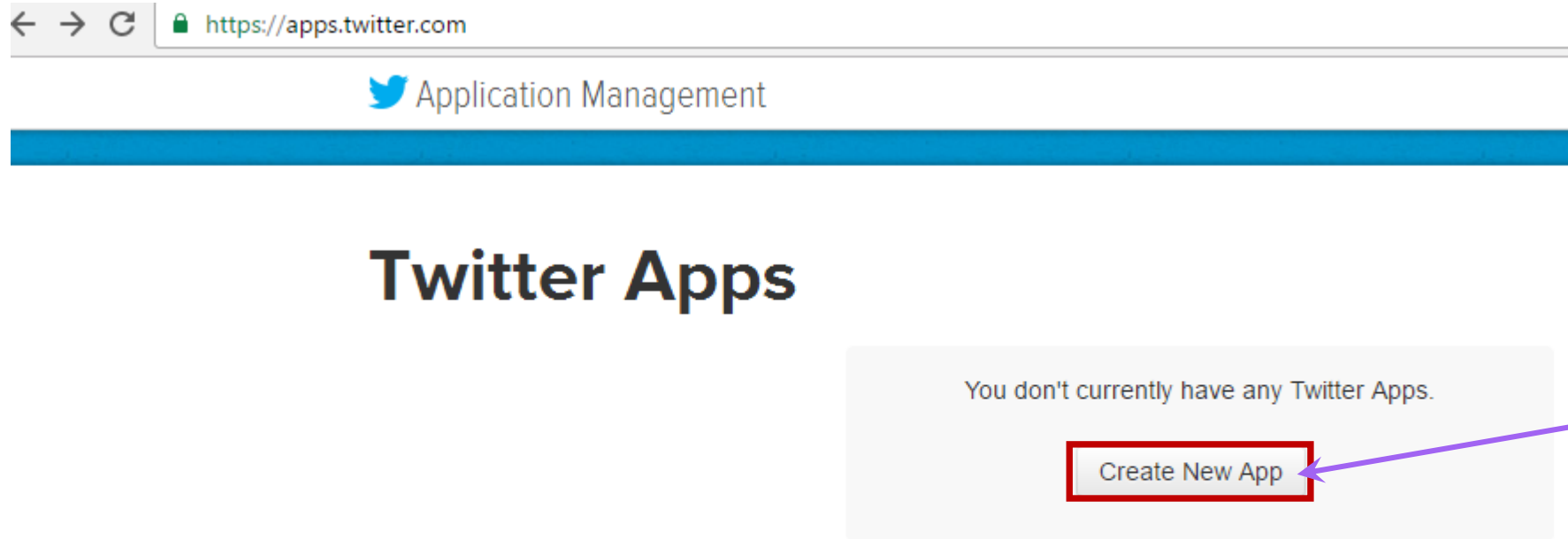
```
credentials - Notepad
File Edit Format View Help
consumer_key=AddYours
consumer_secret=AddYours
access_token_key=AddYours
access_token_secret=AddYours
```

Add your
authentication token
here

6. Twitter API Creating New Application

Create an account on <http://twitter.com>

Go to <https://developer.twitter.com/en/apps> and click button create new app



Create new App by
clicking here

6. Twitter API Creating New Application

- Give the application name and description and click Create your twitter application

Description *

Your application description, which will be shown in user-facing authorization screens. Between 10 and 200 characters max.

Website *

Your application's publicly accessible home page, where users can go to download, make use of, or find out more information about your application. This fully-qualified URL is used in the source attribution for tweets created by your application and will be shown in user-facing authorization screens.
(If you don't have a URL yet, just put a placeholder here but remember to change it later.)

Callback URL

Where should we return after successfully authenticating? [OAuth 1.0a](#) applications should explicitly specify their oauth_callback URL on the request token step, regardless of the value given here. To restrict your application from using callbacks, leave this field blank.

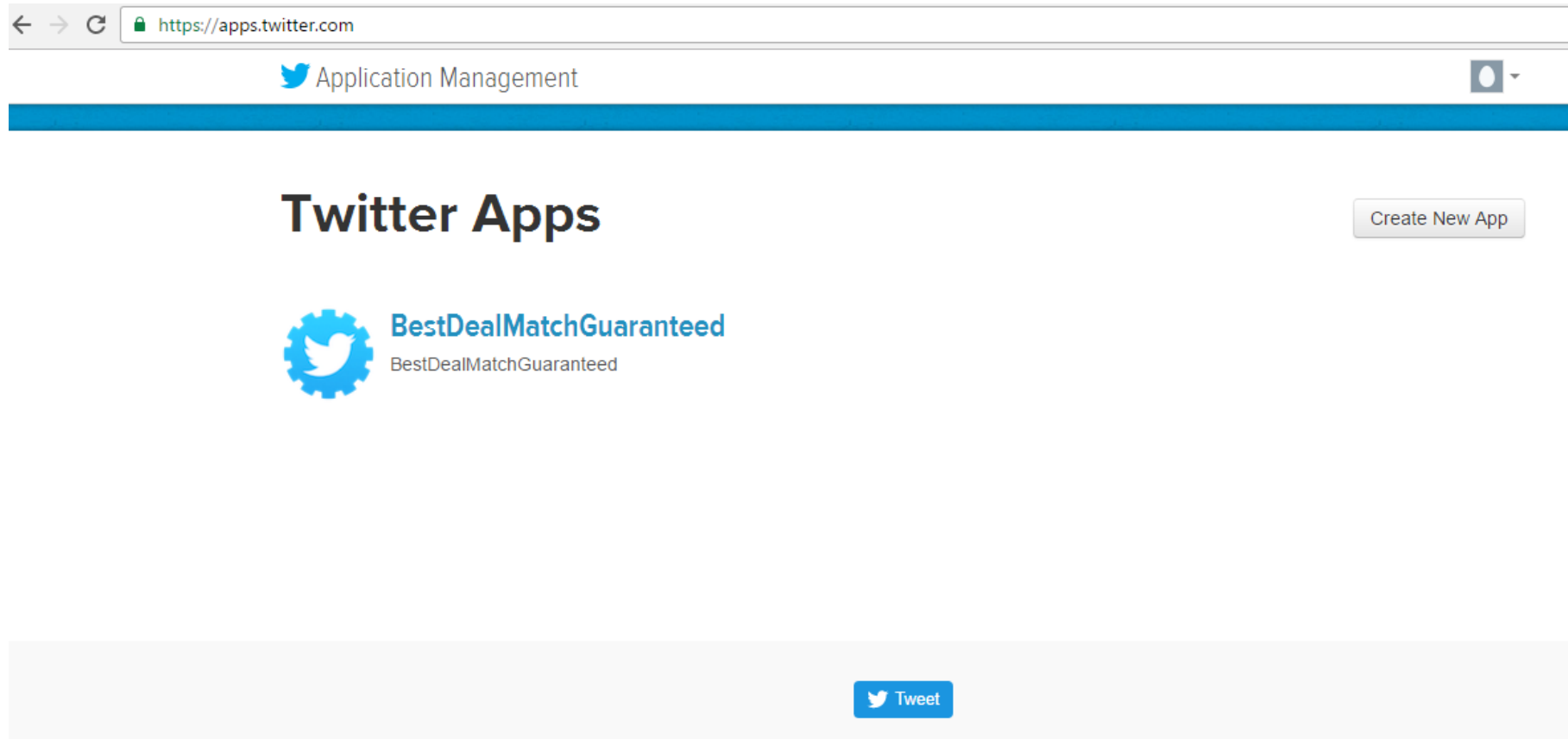
Developer Agreement

☒ Yes, I have read and agree to the [Twitter Developer Agreement](#).

Create your Twitter application

6. Twitter API Creating New Application

- Your Application will be created now you can generate access tokens



7. Generating Access tokens for twitter application

- Click on the application you created
- Click on keys and access tokens tab to create your access tokens

<https://apps.twitter.com/app/13053109/show>

Application Management

BestDealMatchGuaranteed


Test OAuth

Details

Settings

Keys and Access Tokens

Permissions



BestDealMatchGuaranteed
<https://apps.twitter.com/app>

Organization

Information about the organization or company associated with your application. This information is optional.

Organization	None
Organization website	None

Application Settings

Your application's Consumer Key and Secret are used to [authenticate](#) requests to the Twitter Platform.

Access level	Read and write (modify app permissions)
--------------	---

7 .Generating Access tokens for twitter Application:

At the bottom of the next page, you will see a section labeled “**your access token**”:

Your access token

It looks like you haven't authorized this application for your own Twitter account yet. For your convenience, we give you the opportunity to create your OAuth access token here, so you can start signing your requests right away. The access token generated will reflect your application's current permission level.

Click on the “**Create my access token**” button, and an authorized access token and secret will be generated for your account and the current application. These values may be used to [authorize requests to the Twitter API](#).

Your access token

Use the access token string as your “oauth_token” and the access token secret as your “oauth_token_secret” to sign requests with your own Twitter account. Do not share your oauth_token_secret with anyone.

Access token

ddddd-xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Access token secret

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Access level

Read-only

[Recreate my access token](#)

10.Jupyter Notebook:

- Jupyter notebook is a platform a server-client application that allows editing and running python notebook documents via a web browser

bestbuydealmatches

localhost:8968/notebooks/apache-tomcat-7.0.34/webapps/gamespeedservletcss_sax_mysql_mongodbanalytics_ajax_twitter_tutorial/bestbuydealmatches.ipynb

jupyter bestbuydealmatches Last Checkpoint: 9 hours ago (autosaved)

File Edit View Insert Cell Kernel Help

Python 2

Assignment 5

Objective

Learn how to connect to social media network (we will use Twitter as example in this assignment), and collect/preprocess/analyze its data

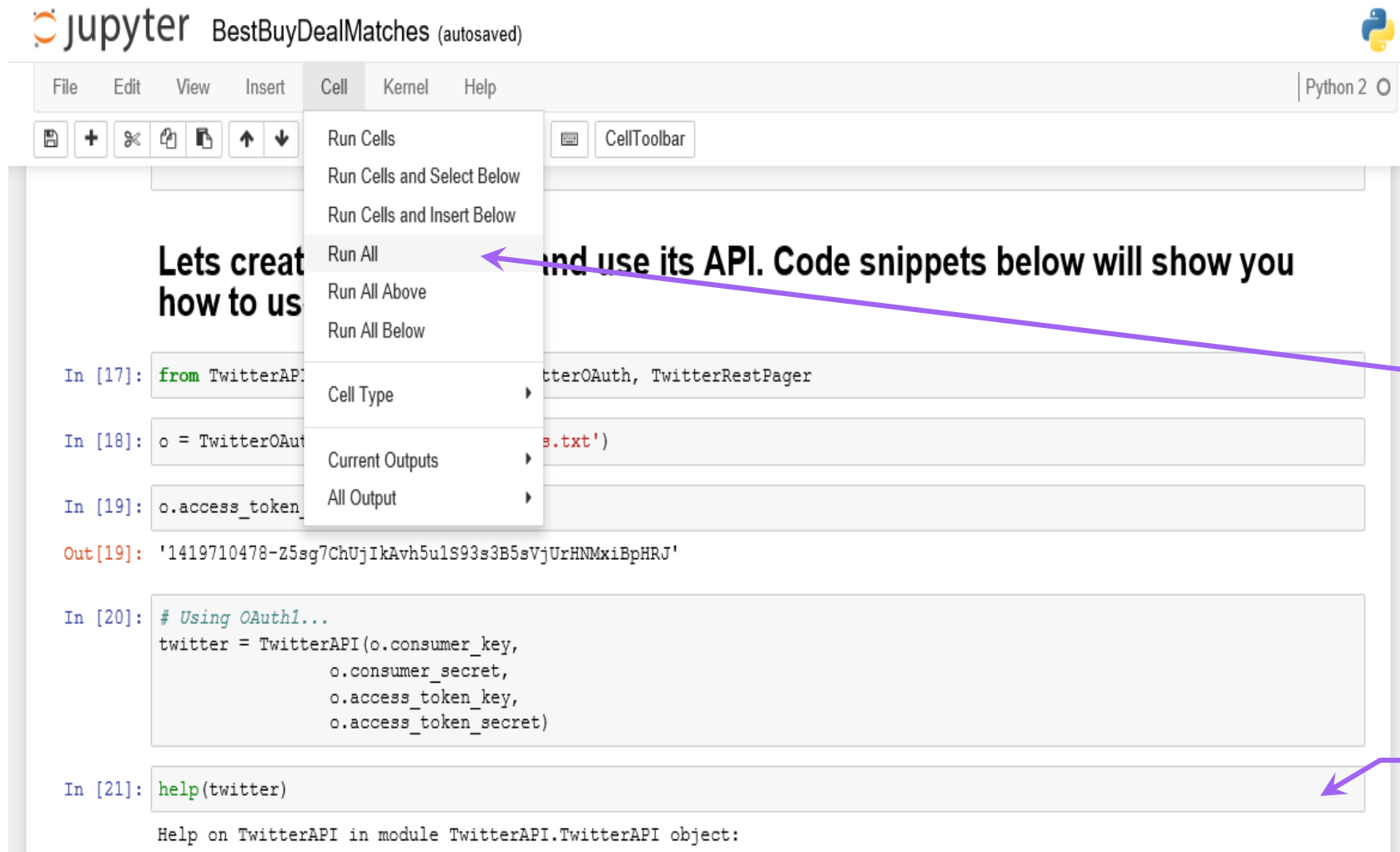
Tweets Data Can be used for different purposes by marketing department and data analytics team. For example:

- Compete with rivals to offer price-match guarantee policy
- Offer same coupons like rivals in the market place

Your application will open with localhost in jupyter notebook

11. Running Python Application

Select the cell for the python script you want to run and execute it



The screenshot shows the Jupyter Notebook interface with the title "BestBuyDealMatches (autosaved)". The "Cell" menu is open, displaying options: "Run Cells", "Run Cells and Select Below", "Run Cells and Insert Below", "Run All", "Run All Above", "Run All Below", "Cell Type", "Current Outputs", and "All Output". A purple arrow points from the "Run All" option to the text "and use its API. Code snippets below will show you". Below the menu, there are several code cells. The first cell (In [17]) contains the code: `from TwitterAPI import TwitterAPI, TwitterOAuth, TwitterRestPager`. The second cell (In [18]) contains the code: `o = TwitterOAuth(consumer_key=consumer_key, consumer_secret=consumer_secret, access_token_key=access_token_key, access_token_secret=access_token_secret)`. The third cell (In [19]) contains the code: `o.access_token_key = access_token_key`. The output of the third cell (Out[19]) is: `'1419710478-z5sg7ChUjIkAvh5u1s93s3B5sVjUrHNMxiBpHRJ'`. The fourth cell (In [20]) contains the code: `# Using OAuth1...
twitter = TwitterAPI(o.consumer_key,
 o.consumer_secret,
 o.access_token_key,
 o.access_token_secret)`. The fifth cell (In [21]) contains the code: `help(twitter)`. The output of the fifth cell is: `Help on TwitterAPI in module TwitterAPI.TwitterAPI object:`. A purple arrow points from the "Run All" option to the text "You can select run all cells or run cells based on code you want to run". Another purple arrow points from the "Run All" option to the text "Each cell is represented by a box".

Jupyter BestBuyDealMatches (autosaved) Python 2

File Edit View Insert Cell Kernel Help

Run Cells
Run Cells and Select Below
Run Cells and Insert Below
Run All
Run All Above
Run All Below
Cell Type
Current Outputs
All Output

and use its API. Code snippets below will show you

You can select run all cells or run cells based on code you want to run

Each cell is represented by a box

11. Running Python Application

Connect to Twitter using the Twitter API access tokens and keys you generated

Lets create twitter object and use its API. Code snippets below will show you how to use this API

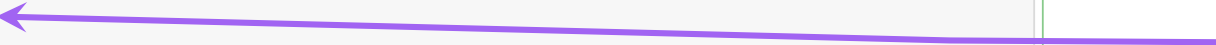
```
In [117]: from TwitterAPI import TwitterAPI, TwitterOAuth, TwitterRestPager
```

```
In [118]: o = TwitterOAuth.read_file('credentials.txt')
```

```
In [*]: # Using OAuth1...|
twitter = TwitterAPI(o.consumer_key,
                    o.consumer_secret,
                    o.access_token_key,
                    o.access_token_secret)
```

```
In [121]: help(twitter)
```

Connecting to twitter
using access tokens
and key



11. Running Python Application

Getting the tweets from best buy twitter account

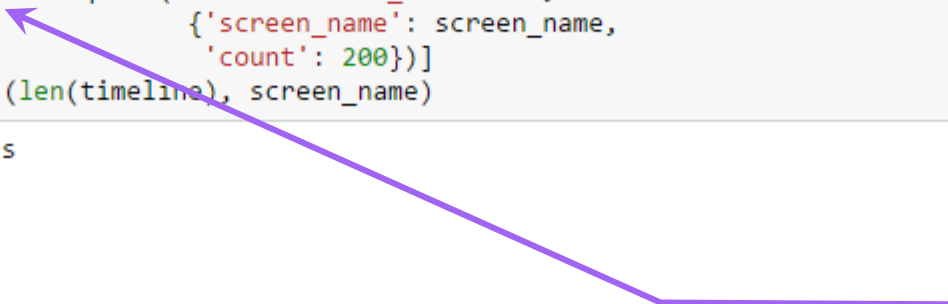
Limitations: Can only search 2 weeks in past But can get up to 3,200 most recent tweets of a user Rate limits! <https://dev.twitter.com/docs/rate-limiting/1.1/limits> e.g., 180 requests in 15 minute window

Get BestBuy timeline for the deals screen-name

This is the screen name for BestBuy_Deals

```
In [143]: # Get BestBuyDeals timeline = ''
screen_name = 'BestBuy_Deals'
timeline = [tweet for tweet in twitter.request('statuses/user_timeline',
                                              {'screen_name': screen_name,
                                               'count': 200})]
print 'got %d tweets for user %s' % (len(timeline), screen_name)

got 200 tweets for user BestBuy_Deals
```



Get all tweets for
Screen_Name
BestBuy_Deals

Find the deals in the BestBuy_Deal tweets that match products in BestDeal MySQL product table

```
In [66]: import re
import pymysql

cnx = pymysql.connect(user='root', password='root',
                      host='127.0.0.1',
                      database='exampledatabase')

cursor = cnx.cursor()

query = ("SELECT productid FROM Product")
cursor.execute(query)

dealMatchGauranteed=[]
for product in cursor:
    for tweet in timeline:
        deal = (tweet['text']).encode('ascii','ignore')
        if (len(re.findall(r'\s'+product[0]+'\\s', deal)) >= 1):
            dealMatchGauranteed = dealMatchGauranteed + [deal]
```

```
In [37]: # Sanity Test that we got some deals
dealMatchGauranteed
```

```
Out[37]: ['Looking for an iPad Mini 2? Download our app to find exclusive savings of $50 for a limited time on select models. https://t.co/1Ae2078TAV',
'Get an iPad Pro today and save $100 on select models. #DailyDeal https://t.co/aZtvSxKTuS',
'Save $100 on Select Models of the iPad Pro 9.7-Inch. #DailyDeal https://t.co/HJhFUBCZOA',
'RT @BestBuy: Buy any Mac product or iPad Pro and save up to $70 on Apple TV. https://t.co/gsvvW8Jvkq https://t.co/84IWByRS1e',
'Save $150 on select 12.9 iPad Pro models. #DailyDeal https://t.co/UJH0R70Yic',
'Get your copy of Overwatch Origins Edition for the PlayStation 4 today. #BuyNow https://t.co/GZ0QRQGHiv']
```

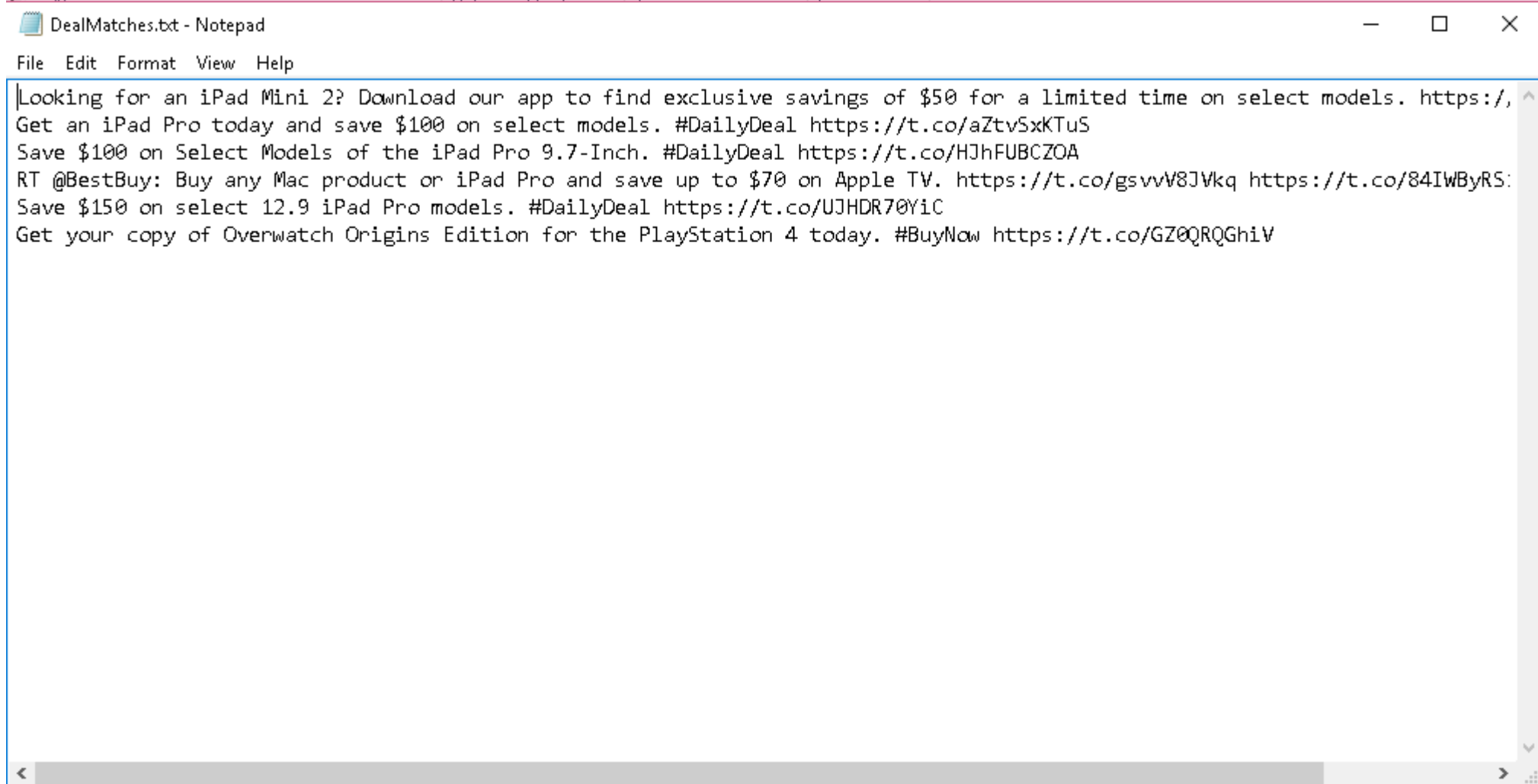
Make sure user and password are correct and table name should be same. Make sure its productid or productname

Match the Product in best buy tweets with the products we have in my sql database

Following products tweets we got in best buy account that match with our records

11. Running Python Application

Save the tweets from python script to a file called DealMatches.txt



```
DealMatches.txt - Notepad
File Edit Format View Help
Looking for an iPad Mini 2? Download our app to find exclusive savings of $50 for a limited time on select models. https://, ^
Get an iPad Pro today and save $100 on select models. #DailyDeal https://t.co/aZtvSxKTuS
Save $100 on Select Models of the iPad Pro 9.7-Inch. #DailyDeal https://t.co/HJhFUBCZOA
RT @BestBuy: Buy any Mac product or iPad Pro and save up to $70 on Apple TV. https://t.co/gsvvV8JVkq https://t.co/84IWByRS:
Save $150 on select 12.9 iPad Pro models. #DailyDeal https://t.co/UJHDR70YiC
Get your copy of Overwatch Origins Edition for the PlayStation 4 today. #BuyNow https://t.co/GZ0QRQGhiV
```

12. Example : Display Tweets and Products

Get the tweets from DealMatches.txt and display in web page

■ Samsung

Accessories

■ Microsoft Accessories

■ Sony Accessories

■ Nintendo Accessories


We beat our competitors in all aspects.
Price-Match Guaranteed

Save \$30 on Grand Theft Auto V for PlayStation 4 and Xbox One! #Deal <https://t.co/EPLJo2bTvw>

Save \$300 on the Microsoft Surface Pro 4 12.3" 128GB Intel Core i5 - Silver #Deal <https://t.co/EPLJo2bTvw>

Deal Matches

Xbox
399.99\$




XBOX ONE

Buy Now

WriteReview

ViewReview

Surface
299.99\$



Surface Pro 3

Buy Now

WriteReview

ViewReview

Display the tweets for products that matches with best buy Products

Display the respective products that are available in best buy tweets

13. Example : Display Tweets and Products

If no tweets are found that match products from database display no offers found

Consoles

■ Microsoft

■ Sony

■ Nintendo

Games

■ Electronic Arts

■ Activision

■ Take Two Interactive

Tablets

■ Apple

■ Microsoft

■ Samsung


Accessories

■ Microsoft Accessories

■ Sony Accessories

■ Nintendo Accessories

Welcome to GameSpeed



The world trusts us to deliver SPEEDY service for video-gaming fans

We beat our competitors in all aspects.
Price-Match Guaranteed

No Offers Found

Deal Matches

No Deals Found

If no data for any product found in best buy twitter account display no offers found

14.What is PrintWriter in Servlet ?

- PrintWriter prints text data to character Stream.
- To send character data we use the PrintWriter object returned by `getWriter()`.
- Example:

```
PrintWriter pw = response.getWriter();
```

- pw is an PrintWriter object.
- `response.getWriter();`
returns the object of PrintWriter Class in which `print(String args)` method is declared to print any thing on the browser's page as a response.

15. Sample Code Snippet for to Display Deals:

DealMatchesUtilities Servlet

```
public class DealMatchesUtilities extends HttpServlet {  
    public void doGet(...)  
    {  
        response.setContentType("text/html");  
        PrintWriter pw = response.getWriter();  
        HashMap<String,Product> selectedproducts=new HashMap<String,Product>();  
        try  
        {  
            pw.print("<div id='content'>");  
            pw.print("<div class='post'>");  
            pw.print("<h2 class='title'>");  
            pw.print("<a href='#'>Welcome to GameSpeed </a></h2>");  
            pw.print("<div class='entry'>");  
            pw.print("<br> <br>");  
            pw.print("<h2>The world trusts us to deliver SPEEDY service for video-gaming fans</h2>");  
            pw.print("<br> <br>");  
            pw.print("<h1>We beat our competitors in all aspects. Price-Match Guaranteed</h2>");  
            String line=null;  
            HashMap<String,Product> productmap=MySQLDataStoreUtilities.getData();  
        }  
    }  
}
```

Get all the products into
hashmap from Database

```

for(Map.Entry<String, Product> entry : productmap.entrySet())
{
    if(selectedproducts.size()<2 && !selectedproducts.containsKey(entry.getKey()))
    {
        BufferedReader reader = new BufferedReader(new FileReader (new
File(TOMCAT_HOME+"\\webapps\\GameSpeedServletCSS_SAX_MySql_MongoDBAnalytics_AJAX_Twitter_Tutorial\\DealM
atches.txt")));

        line=reader.readLine();
        if(line==null)
        { pw.print("<h2 align='center'>No Offers Found</h2>");break;}
        else
        {
            do {
                if(line.contains(entry.getKey()))
                {
                    pw.print("<h2>" + line + "</h2>");
                    pw.print("<br>");
                    selectedproducts.put(entry.getKey(),entry.getValue());
                    break;
                }
            }while((line = reader.readLine()) != null);
        }
    }
}

```

If no products found that matches with best buy display no offers found

Display the tweets for products that matches with best buy