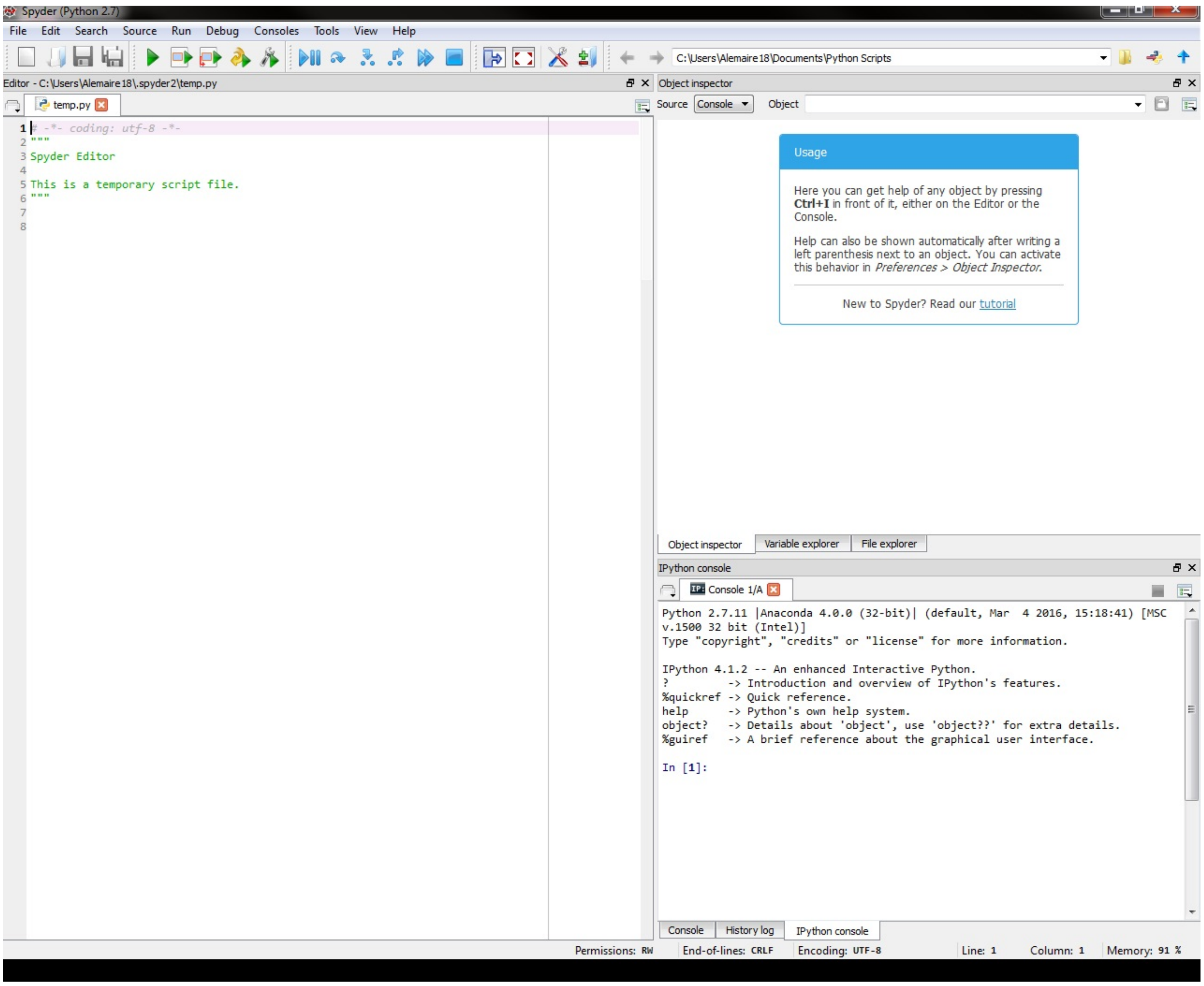
Introduction to python

In this tutorial, I'll go over the basic steps to install python anaconda. This steps will be *crucial* and can save you some time.

To do this homework, you need to download python anaconda 2.7 using the following link https://www.continuum.io/downloads (https://www.continuum.io/downloads) . Installing this process may take some time.

Once this process is completed you'll be looking for the program **spyder** in your computer. Although this process might be different for Mac a quick search for anaconda navigator or spyder should bring up to the following prompt.


Spyder (Python 2.7)
File Edit Search Source Run Debug Consoles Tools View Help
C:\Users\Alemaire18\Documents\Python Scripts
Editor - C:\Users\Alemaire18\.spyder2\temp.py
temp.py
Object inspector
Source Console Object
Object inspector Variable explorer File explorer
IPython console
Console 1/A
Console History log IPython console
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 1 Column: 1 Memory: 91 %

```
# -*- coding: utf-8 -*-
"""
Spyder Editor

This is a temporary script file.
"""
```

Usage

Here you can get help of any object by pressing **Ctrl+I** in front of it, either on the Editor or the Console.

Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in *Preferences > Object Inspector.*

New to Spyder? Read our tutorial

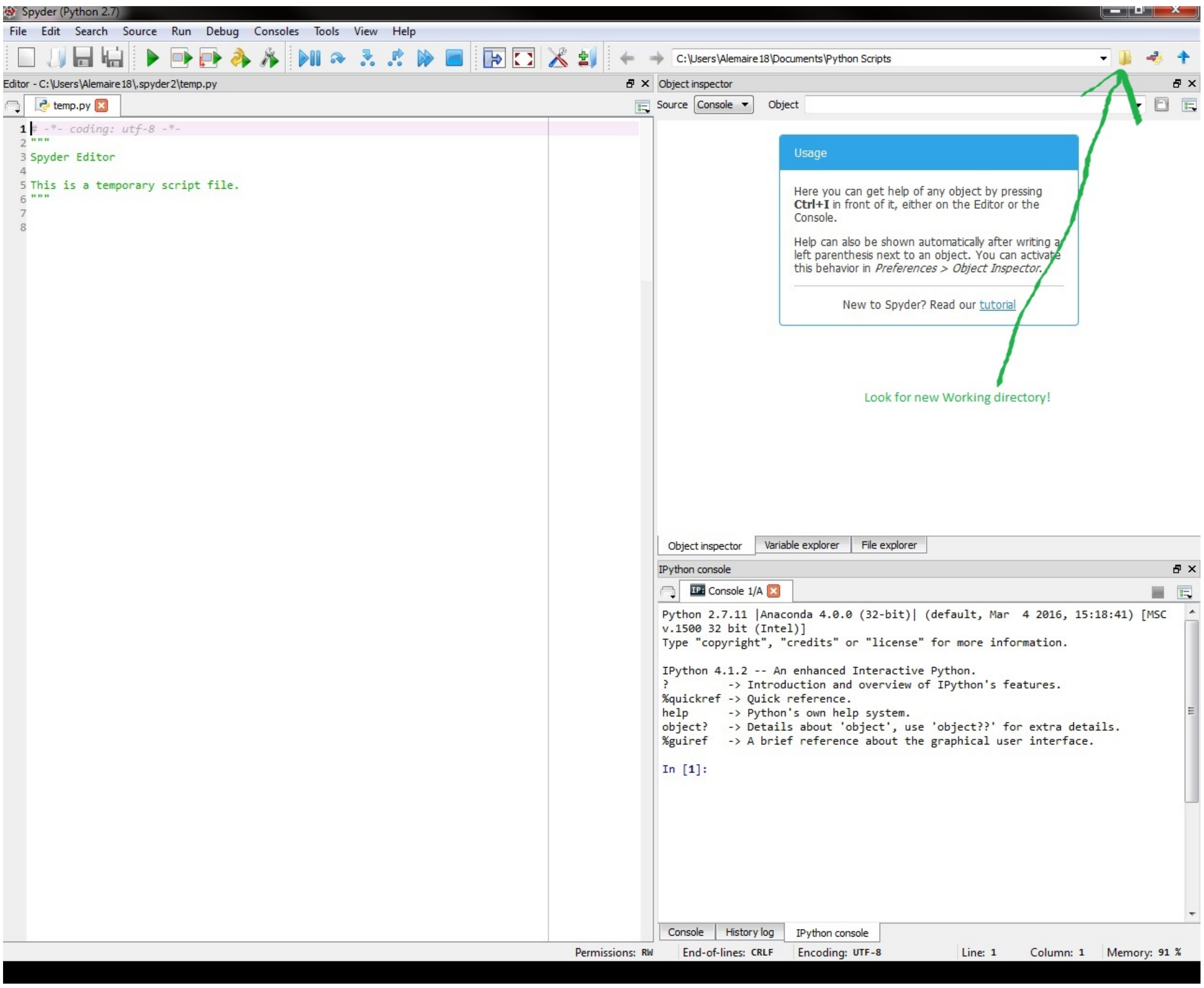
```
Python 2.7.11 |Anaconda 4.0.0 (32-bit)| (default, Mar  4 2016, 15:18:41) [MSC
v.1500 32 bit (Intel)]
Type "copyright", "credits" or "license" for more information.

IPython 4.1.2 -- An enhanced Interactive Python.
?         -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help      -> Python's own help system.
object?   -> Details about 'object', use 'object??' for extra details.
%guiref   -> A brief reference about the graphical user interface.

In [1]:
```

Changing Working Directory

In order to read the files for the homework, you'll need to save all the files given to you(yelp.stop, yelp_homework.csv, etc.) in a directory. To change your working directory you need to change the address bar in the top right of your page by clicking on the "yellow folder" and go to the location you saved all the files provided. you are looking at the **green arrow**


Spyder (Python 2.7)
File Edit Search Source Run Debug Consoles Tools View Help
C:\Users\Alemaire18\Documents\Python Scripts
Editor - C:\Users\Alemaire18\.spyder2\temp.py
temp.py
Object inspector
Source Console Object
Usage
New to Spyder? Read our tutorial
Look for new Working directory!
Object inspector Variable explorer File explorer
IPython console
Console 1/A
Console History log IPython console
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 1 Column: 1 Memory: 91 %

```
# -*- coding: utf-8 -*-
"""
Spyder Editor

This is a temporary script file.
"""
```

Here you can get help of any object by pressing **Ctrl+I** in front of it, either on the Editor or the Console.

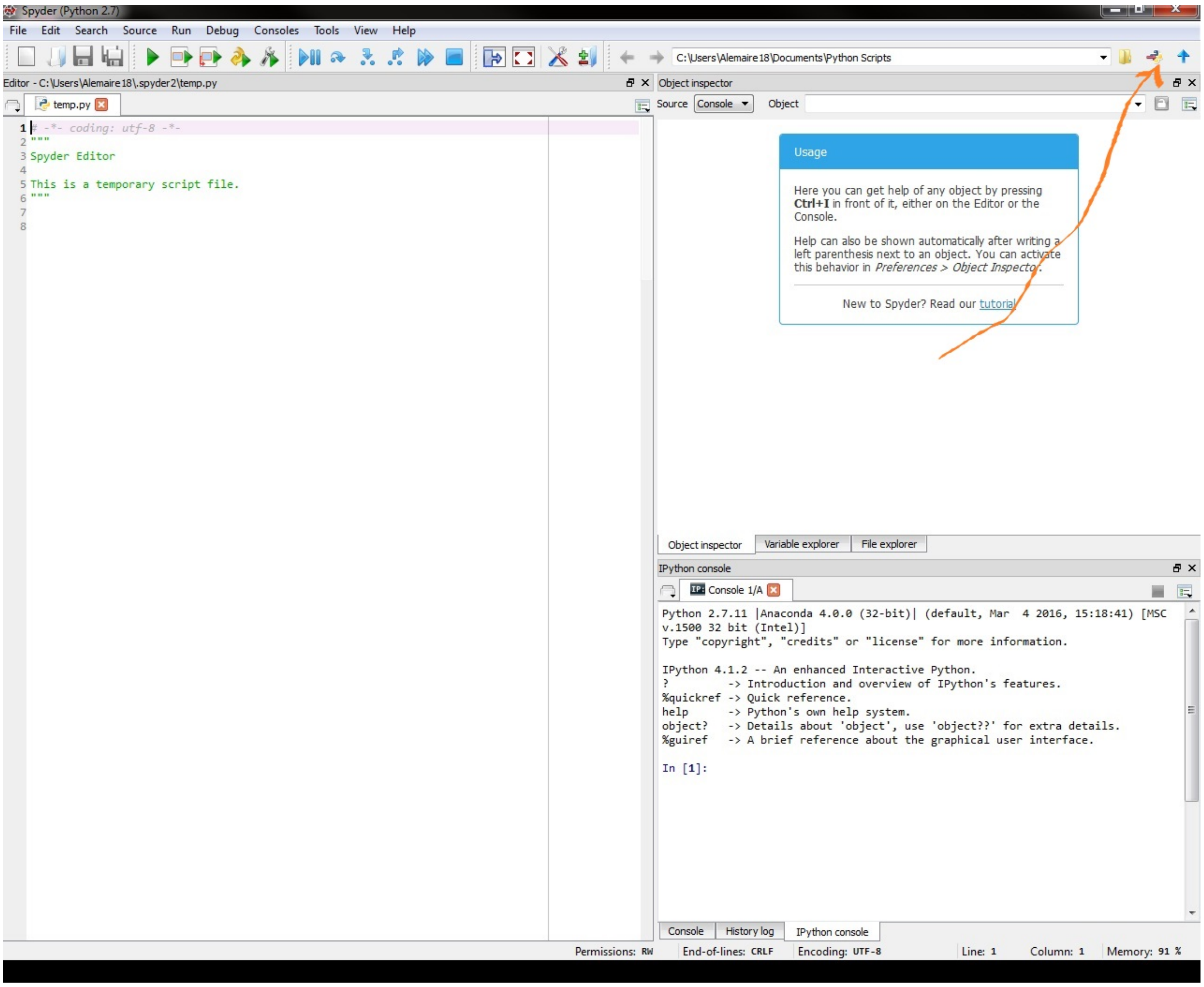
Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in *Preferences > Object Inspector*.

```
Python 2.7.11 |Anaconda 4.0.0 (32-bit)| (default, Mar  4 2016, 15:18:41) [MSC
v.1500 32 bit (Intel)]
Type "copyright", "credits" or "license" for more information.

IPython 4.1.2 -- An enhanced Interactive Python.
?         -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help      -> Python's own help system.
object?   -> Details about 'object', use 'object??' for extra details.
%guiref   -> A brief reference about the graphical user interface.

In [1]:
```

Once you have found the folder where you put all your files, you'll need to set it as your current directory to do so you'll need to now click in the python icon (the blue and yellow icon) next to the yellow folder. See the **orange arrow**


Spyder (Python 2.7)
File Edit Search Source Run Debug Consoles Tools View Help
C:\Users\Alemaire18\Documents\Python Scripts
Editor - C:\Users\Alemaire18\.spyder2\temp.py
temp.py
Object inspector
Source Console Object
Object inspector Variable explorer File explorer
IPython console
Console 1/A
Console History log IPython console
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 1 Column: 1 Memory: 91 %

```
# -*- coding: utf-8 -*-
"""
Spyder Editor

This is a temporary script file.
"""
```

Usage

Here you can get help of any object by pressing **Ctrl+I** in front of it, either on the Editor or the Console.

Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in *Preferences > Object Inspector*.

New to Spyder? Read our tutorial

```
Python 2.7.11 |Anaconda 4.0.0 (32-bit)| (default, Mar  4 2016, 15:18:41) [MSC
v.1500 32 bit (Intel)]
Type "copyright", "credits" or "license" for more information.

IPython 4.1.2 -- An enhanced Interactive Python.
?         -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help      -> Python's own help system.
object?   -> Details about 'object', use 'object??' for extra details.
%guiref   -> A brief reference about the graphical user interface.

In [1]:
```

Success?

To confirm that you have succeeded, then click on the **"File Explorer"** to the right of the screen. If you see the files that are in your directory then you can proceed.

Getting Started with Python Spyder

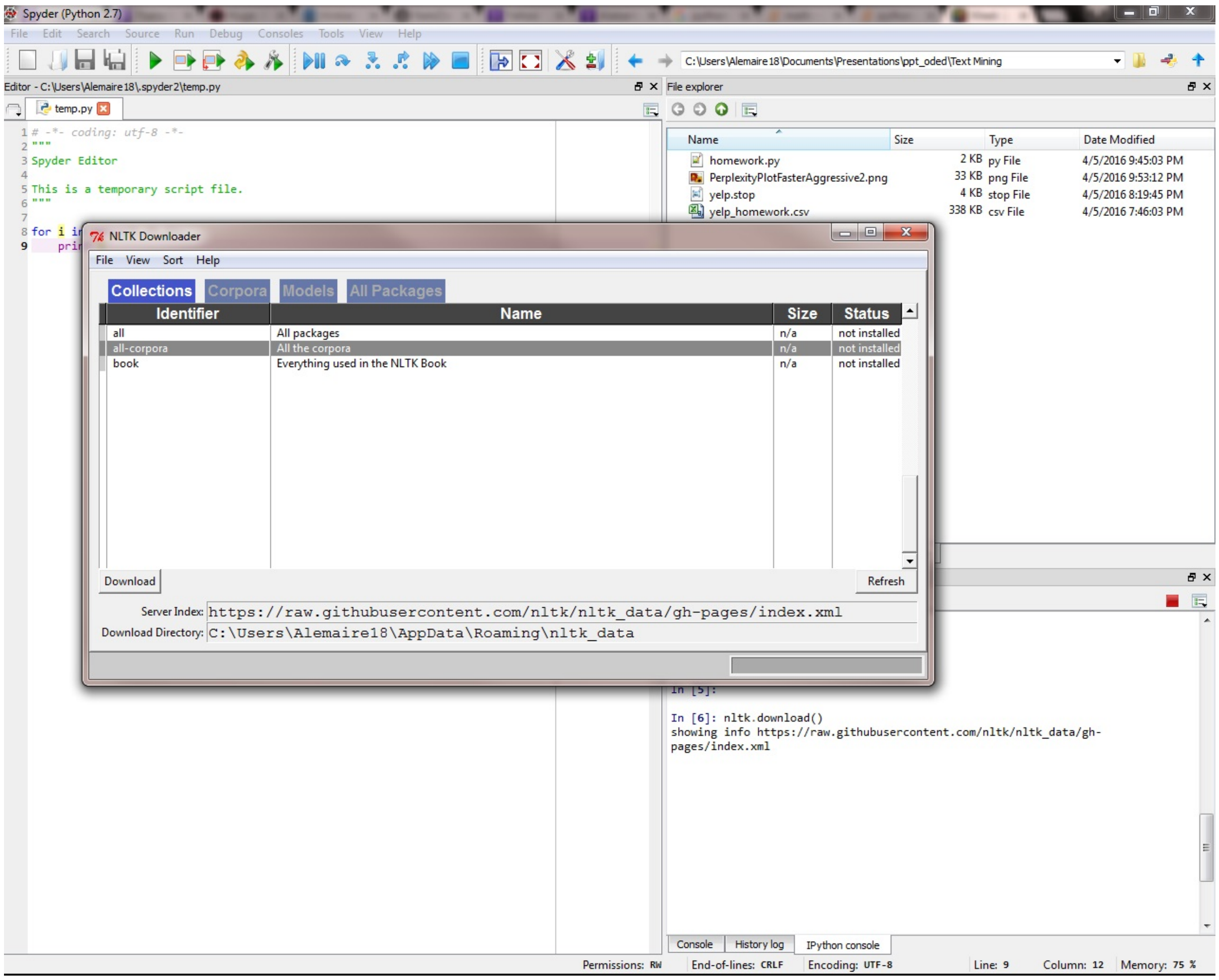
Python spyder should be similar to R-studio at this point. The console should be at the bottom right of the screen with the text editor to the right.

Installing stopwords

Before trying all the codes in the text_analysis.html supplement you need to download the nltk stopwords corpus. This corpora, body of text, contains all off-the-shell stopwords that you need to go over the supplement. Without this you'll get an error when you input the command **stopwords.words("english")**.

To install the stopwords, got to the console and type the commands

nltk.download()



Spyder (Python 2.7)

Editor - C:\Users\Alemaire18\.spyder2\temp.py

```
# -*- coding: utf-8 -*-
"""
Spyder Editor

This is a temporary script file.
"""

for i i
    pri
```

File explorer — C:\Users\Alemaire18\Documents\Presentations\ppt_oded\Text Mining

Name	Size	Type	Date Modified
homework.py	2 KB	py File	4/5/2016 9:45:03 PM
PerplexityPlotFasterAggressive2.png	33 KB	png File	4/5/2016 9:53:12 PM
yelp.stop	4 KB	stop File	4/5/2016 8:19:45 PM
yelp_homework.csv	338 KB	csv File	4/5/2016 7:46:03 PM

NLTK Downloader

Identifier	Name	Size	Status
all	All packages	n/a	not installed
all-corpora	All the corpora	n/a	not installed
book	Everything used in the NLTK Book	n/a	not installed

Server Index: https://raw.githubusercontent.com/nltk/nltk_data/gh-pages/index.xml
Download Directory: C:\Users\Alemaire18\AppData\Roaming\nltk_data

```
In [5]:

In [6]: nltk.download()
showing info https://raw.githubusercontent.com/nltk/nltk_data/gh-
pages/index.xml
```

Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 9 Column: 12 Memory: 75 %

File Edit Search Source Run Debug Consoles Tools View Help
Collections Corpora Models All Packages
File View Sort Help
Download
Refresh
Console History log IPython console

You should see a new prompt(see picture above). click in the collections tab and at this point, you have 2 options either select *all* or *all-corpora* and then hit the download command.

I would suggest downloading the **all** options as you'll not have to this step ever again. But if memory is a issue for your computer then by all means go with *all-corpora*.

***Disclaimer**:This might take a while!

To go over all the material in the class supplement, one can simply copy and paste all the commands and update the file name etc and one should be good.

Python Basics

In order to help you spend the least amount of time possible going over coding issues. I will give you some basic commands that might be useful for the homework. This commands will go from most basics to intermediate.

```
In [3]:  a = 1 # variable decleration
```

```
In [4]: a = 'b' ## setting a to a string
```

```
In [6]:  1+1, 2-1, 2**3, ## basic math operation in python add, substract exponent
Out[6]: (2, 1, 8)
```

```
In [7]: 2/3 ## Division...this is bad  because it returns 0

Out[7]: 0
```

To remedy this issue and return decimal value one of the elements have to be a fraction

```
In [8]: 2/3.0

Out[8]: 0.6666666666666666
```

```
In [9]: 2.0/3 # good!

Out[9]: 0.6666666666666666
```

Reading the stop words

In python there are multiple ways to read the data, but for this homework I suggest using the pandas, read_csv commands.

Now i'll read the yelp.stop files, I will name the only column in the file as "word" and return all of this as a list. which is similar to the R vector data structure.

```
In [12]: import pandas as pd
         stop = pd.read_csv("yelp.stop", names =["words"])
```

In [13]:
```
stop
```

Out[13]:

	words
0	the
1	and
2	to
3	of
4	is
5	for
6	it
7	in
8	was
9	this
10	but
11	my
12	with
13	that
14	on
15	have
16	they
17	you
18	place
19	not
20	good
21	had
22	are
23	food
24	so
25	at
26	be
27	great
28	there
29	we
30	were
31	like
32	if

Although this is nice, we **NEED** the stopwords to be in a list format. Thus to convert the pandas dataframe to list, enter the following commands.

```
In [15]: stop['words'].values.tolist()
```

```
Out[15]: ['the',
          'and',
          'to',
          'of',
          'is',
          'for',
          'it',
          'in',
          'was',
          'this',
          'but',
          'my',
          'with',
          'that',
          'on',
          'have',
          'they',
          'you',
          'place',
          'not',
          'good',
          'had',
          'are',
          'food',
          'so',
          'at',
          'be',
          'great',
          'there',
          'we',
          'were',
          'like',
          'if',
          'here',
          'all',
          'very',
          'out',
          'just',
          'as',
          'get',
          'one',
          'me',
          'service',
          'go',
          'or',
          'time',
          'back',
          'from',
          'when',
          'their',
          'up',
          'really',
          'about',
          'some',
          'an',
          'will',
          'been',
          'would',
          "it's",
          'what',
          'can',
          'more',
          'which',
          'only',
          'also',
          'our',
          "don't",
          'by',
          'your',
          'too',
          'other',
          'no',
          'love',
          'nice',
          'even',
          'has',
          'best',
          'well',
          'because',
          'little',
          "i'm",
          'do',
          'than',
          'friendly',
          'always',
          'try',
          "i've",
          'got',
          'them',
          'much',
          'after',
          'staff',
          'first',
          'went',
          'us',
          'pretty',
          'menu',
          'never',
          'restaurant',
          'people',
          'ordered',
          'could',
          'make',
          'way',
          'know',
          'over',
          'going',
          'order',
          "didn't",
          'better',
          'did',
          'am',
          'think',
          'come',
          'off',
          'came',
          'again',
          'how',
          'then',
          'who',
          'few',
          'right',
          'made',
          'definitely',
          'any',
          'now',
          'want',
          'say',
          'see',
          'two',
          'night',
          'fresh',
          'down',
          'he',
          'while',
          'experience',
          'sure',
          'eat',
          'before',
          'new',
          'still',
          'since',
          'around',
          'lunch',
          'take',
          'next',
          'ever',
          'she',
          'delicious',
          'bar',
          'chicken',
          'her',
          'wait',
          'where',
          'said',
          'a',
          "a's",
          'able',
          'about',
          'above',
          'according',
          'accordingly',
          'across',
          'actually',
          'after',
          'afterwards',
          'again',
          'against',
          "ain't",
          'all',
          'allow',
          'allows',
          'almost',
          'alone',
          'along',
          'already',
          'also',
          'although',
          'always',
          'am',
          'among',
          'amongst',
          'an',
          'and',
          'another',
          'any',
          'anybody',
          'anyhow',
          'anyone',
          'anything',
          'anyway',
          'anyways',
          'anywhere',
          'apart',
          'appear',
          'appreciate',
          'appropriate',
          'are',
          "aren't",
          'around',
          'as',
          'aside',
          'ask',
          'asking',
          'associated',
          'at',
          'available',
          'away',
          'awfully',
          'b',
          'be',
          'became',
          'because',
          'become',
          'becomes',
          'becoming',
          'been',
          'before',
          'beforehand',
          'behind',
          'being',
          'believe',
          'below',
          'beside',
          'besides',
          'best',
          'better',
          'between',
          'beyond',
          'both',
          'brief',
          'but',
          'by',
          'c',
          "c'mon",
          "c's",
          'came',
          'can',
          "can't",
          'cannot',
          'cant',
          'cause',
          'causes',
          'certain',
          'certainly',
          'changes',
          'clearly',
          'co',
          'com',
          'come',
          'comes',
          'concerning',
          'consequently',
          'consider',
          'considering',
          'contain',
          'containing',
          'contains',
          'corresponding',
          'could',
          "couldn't",
          'course',
          'currently',
          'd',
          'definitely',
          'described',
          'despite',
          'did',
          "didn't",
          'different',
          'do',
          'does',
          "doesn't",
          'doing',
          "don't",
          'done',
          'down',
          'downwards',
          'during',
          'e',
          'each',
          'edu',
          'eg',
          'eight',
          'either',
          'else',
          'elsewhere',
          'enough',
          'entirely',
          'especially',
          'et',
          'etc',
          'even',
          'ever',
          'every',
          'everybody',
          'everyone',
          'everything',
          'everywhere',
          'ex',
          'exactly',
          'example',
          'except',
          'f',
          'far',
          'few',
          'fifth',
          'first',
          'five',
          'followed',
          'following',
          'follows',
          'for',
          'former',
          'formerly',
          'forth',
          'four',
          'from',
          'further',
          'furthermore',
          'g',
          'get',
          'gets',
          'getting',
          'given',
          'gives',
          'go',
          'goes',
          'going',
          'gone',
          'got',
          'gotten',
          'greetings',
          'h',
          'had',
          "hadn't",
          'happens',
          'hardly',
          'has',
          "hasn't",
          'have',
          "haven't",
          'having',
          'he',
          "he's",
          'hello',
          'help',
          'hence',
          'her',
          'here',
          "here's",
          'hereafter',
          'hereby',
          'herein',
          'hereupon',
          'hers',
          'herself',
          'hi',
          'him',
          'himself',
          'his',
          'hither',
          'hopefully',
          'how',
          'howbeit',
          'however',
          'i',
          "i'd",
          "i'll",
          "i'm",
          "i've",
          'ie',
          'if',
          'ignored',
          'immediate',
          'in',
          'inasmuch',
          'inc',
          'indeed',
          'indicate',
          'indicated',
          'indicates',
          'inner',
          'insofar',
          'instead',
          'into',
          'inward',
          'is',
          "isn't",
          'it',
          "it'd",
          "it'll",
          "it's",
          'its',
          'itself',
          'j',
          'just',
          'k',
          'keep',
          'keeps',
          'kept',
          'know',
          'knows',
          'known',
          'l',
          'last',
          'lately',
          'later',
          'latter',
          'latterly',
          'least',
          'less',
          'lest',
          'let',
          "let's",
          'like',
          'liked',
          'likely',
          'little',
          'look',
          'looking',
          'looks',
          'ltd',
          'm',
          'mainly',
          'many',
          'may',
          'maybe',
          'me',
          'mean',
          'meanwhile',
          'merely',
          'might',
          'more',
          'moreover',
          'most',
          'mostly',
          'much',
          'must',
          'my',
          'myself',
          'n',
          'name',
          'namely',
          'nd',
          'near',
          'nearly',
          'necessary',
          'need',
          'needs',
          'neither',
          'never',
          'nevertheless',
          'new',
          'next',
          'nine',
          'no',
          'nobody',
          'non',
          'none',
          'noone',
          'nor',
          'normally',
          'not',
          'nothing',
          'novel',
          'now',
          'nowhere',
          'o',
          'obviously',
          'of',
          'off',
          'often',
          'oh',
          'ok',
          'okay',
          'old',
          'on',
          'once',
          'one',
          'ones',
          'only',
          'onto',
          'or',
          'other',
          'others',
          'otherwise',
          'ought',
          'our',
          'ours',
          'ourselves',
          'out',
          'outside',
          'over',
          'overall',
          'own',
          'p',
          'particular',
          'particularly',
          'per',
          'perhaps',
          'placed',
          'please',
          'plus',
          'possible',
          'presumably',
          'probably',
          'provides',
          'q',
          'que',
          'quite',
          'qv',
          'r',
          'rather',
          'rd',
          're',
          'really',
          'reasonably',
          'regarding',
          'regardless',
          'regards',
          'relatively',
          'respectively',
          'right',
          's',
          'said',
          'same',
          'saw',
          'say',
          'saying',
          'says',
          'second',
          'secondly',
          'see',
          'seeing',
          'seem',
          'seemed',
          'seeming',
          'seems',
          'seen',
          'self',
          'selves',
          'sensible',
          'sent',
          'serious',
          'seriously',
          'seven',
          'several',
          'shall',
          'she',
          'should',
          "shouldn't",
          'since',
          'six',
          'so',
          'some',
          'somebody',
          'somehow',
          'someone',
          'something',
          'sometime',
          'sometimes',
          'somewhat',
          'somewhere',
          'soon',
          'sorry',
          'specified',
          'specify',
          'specifying',
          'still',
          'sub',
          'such',
          'sup',
          'sure',
          't',
          "t's",
          'take',
          'taken',
          'tell',
          'tends',
          'th',
          'than',
          'thank',
          'thanks',
          'thanx',
          'that',
          "that's",
          'thats',
          'the',
          'their',
          'theirs',
          'them',
          'themselves',
          'then',
          'thence',
          'there',
          "there's",
          'thereafter',
          'thereby',
          'therefore',
          'therein',
          'theres',
          'thereupon',
          'these',
          'they',
          "they'd",
          "they'll",
          "they're",
          "they've",
          'think',
          'third',
          'this',
          'thorough',
          'thoroughly',
          'those',
          'though',
          'three',
          'through',
          'throughout',
          'thru',
          'thus',
          'to',
          'together',
          'too',
          'took',
          'toward',
          'towards',
          'tried',
          'tries',
          'truly',
          'try',
          'trying',
          'twice',
          'two',
          'u',
          'un',
          'under',
          'unfortunately',
          'unless',
          'unlikely',
          'until',
          'unto',
          'up',
          'upon',
          'us',
          'use',
          'used',
          'useful',
          'uses',
          'using',
          'usually',
          'uucp',
          'v',
          'value',
          'various',
          'via',
          'viz',
          'vs',
          'w',
          'want',
          'wants',
          'was',
          "wasn't",
          'way',
          'we',
          "we'd",
          "we'll",
          "we're",
          "we've",
          'welcome',
          'well',
          'went',
          'were',
          "weren't",
          'what',
          "what's",
          'whatever',
          'when',
          'whence',
          'whenever',
          'where',
          "where's",
          'whereafter',
          'whereas',
          'whereby',
          'wherein',
          'whereupon',
          'wherever',
          'whether',
          'which',
          'while',
          'whither',
          'who',
          "who's",
          'whoever',
          'whole',
          'whom',
          'whose',
          'why',
          'will',
          'willing',
          'wish',
          'with',
          'within',
          'without',
          "won't",
          'wonder',
          'would',
          'would',
          "wouldn't",
          'x',
          'y',
          'yes',
          'yet',
          'you',
          "you'd",
          "you'll",
          "you're",
          "you've",
          'your',
          'yours',
          'yourself',
          'yourselves',
          'z',
          'zero']
```

Thus in order to drop the stopwords, one can enter the above commands in the stopwords line of countvectorizer.

for-Loop in python

In python, in order to do a for loop of increment i, one only need the *range function* to iterate over the number. The syntax for range is range(beginning,end, increment). Example

```
In [17]: for number in range(0,10,3):
             print number
```

```
0
3
6
9
```

another example this time squaring the output and over a longer range

```
In [20]: for number in range(5,25,5):
             print number**2
```

```
25
100
225
400
```

Always Remember to indent everything that is in the for loop.

Plotting

In python sometimes, it is helpful to plot function so that one can see relations. To see this let us create some fake data. In this fake data the first columns (x-axis) will go from -10 to + 10 and the second columns (y axis) will be equal to x^2,

In [25]:
```
data = pd.DataFrame()
data["X-axis"] =range(-10,10,1)
data["Y-axis"]= data['X-axis']**2
data
```

Out[25]:

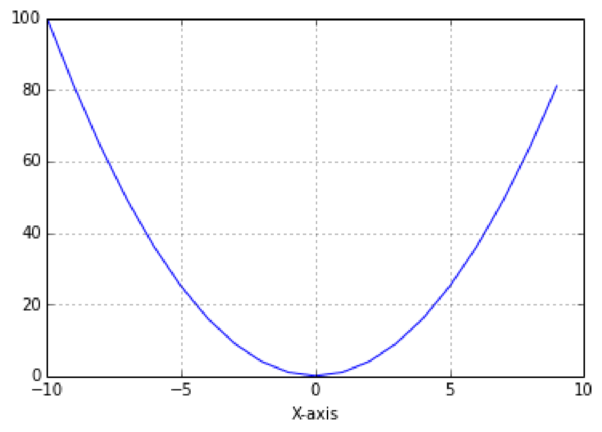
	X-axis	Y-axis
0	-10	100
1	-9	81
2	-8	64
3	-7	49
4	-6	36
5	-5	25
6	-4	16
7	-3	9
8	-2	4
9	-1	1
10	0	0
11	1	1
12	2	4
13	3	9
14	4	16
15	5	25
16	6	36
17	7	49
18	8	64
19	9	81

20 rows × 2 columns

Since now we have our data, We will need to import our plotting package in python this is called matplotlib. **NOTES** the line matplotlib inline was used only to insert the picture in this document.

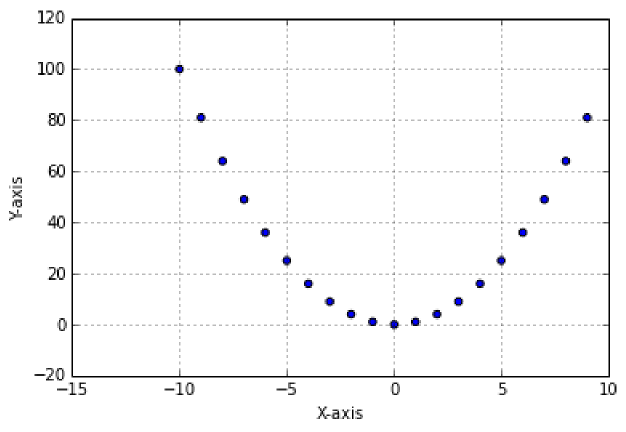
In [33]:
```
import matplotlib
%matplotlib inline
from matplotlib import pyplot as plt
```

```
In [34]: data.plot(x= "X-axis", y ="Y-axis")
Out[34]: <matplotlib.axes.AxesSubplot at 0xb01d824c>
```



what if you wanted a scatter plot??

```
In [35]: data.plot(kind ='scatter', x="X-axis", y= "Y-axis")
Out[35]: <matplotlib.axes.AxesSubplot at 0xaef5f26c>
```



Nice huh?.. When doing this in spyder it is *IMPORTANT* to call plt.show() to display the graph after running the command above.

Conclusion

```
In [ ]: I hope this tutorial is helpful and will reduce the barrier to entry to python for you.
```