# MACHINE LEARNING LAB ASSIGNMENT

# [DS7A-709]

WEEK-1

## MASTER OF TECHNOLOGY

In

## DATA SCIENCE


***Submitted by***

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***Submitted To***

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# Milestone 1: Downloading NLP libraries (NLTK)

NLTK is a leading platform for building Python programs to work with human language data. It provides easy-to-use interfaces to over 50 corpora and lexical resources such as WordNet, along with a suite of text processing libraries for classification, tokenization, stemming, tagging, parsing, and semantic reasoning, wrappers for industrial-strength NLP libraries, and an active discussion forum.

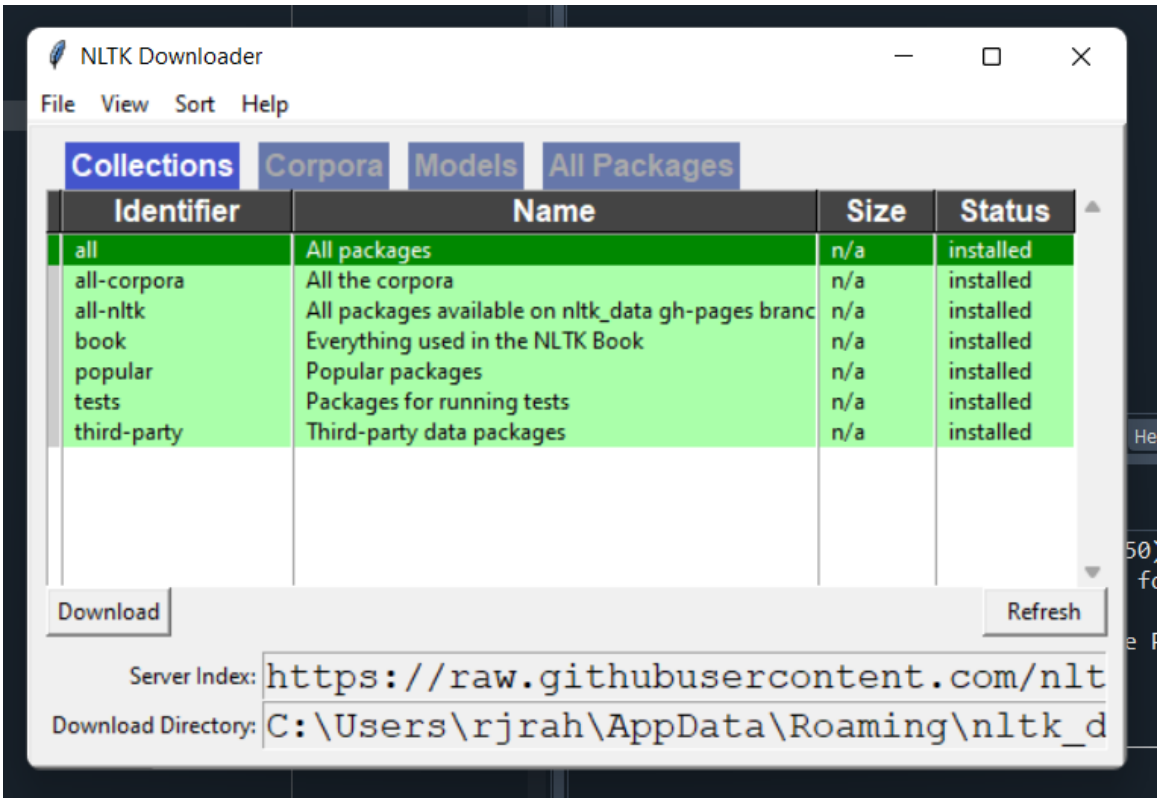
## Interactive installer

Run the Python interpreter and type the commands:

```
import nltk
```

```
nltk.download()
```

A new window opened, showing the NLTK Downloader. Clicked on the File menu and select Change Download Directory where we want to download.




Installing the whole package. Once the package is installed.

Firstly, imported the corpus:

```
from nltk.corpus import names
```

```
print (names.words()[:10])
```

*Output:*

```
['Abagael', 'Abagail', 'Abbe', 'Abbey', 'Abbi', 'Abbie', 'Abby', 'Abigael', 'Abigail', 'Abigale']
```

*Code#*

```
print(len(names.words()))
```

*Output:*

```
7944
```

There are in total 7944 names

## Stemming

Stemming is a process of reverting an inflected or derived word to its root form. Stemmers remove morphological affixes from words, leaving only the word stem.

### PorterStemmer Interface

The Porter stemming algorithm is a process for removing the commoner morphological and inflexional endings from words in English.

*Code#*

```
from nltk.stem.porter import PorterStemmer
ps = PorterStemmer()
```

Test the stemmer on various pluralised words.

```
words=['machines', 'learning','stating', 'owned', 'agreed','reference']
for w in words:
    print(w, " : ", ps.stem(w))
```

*Output:*

```
machines  :  machin
learning  :  learn
stating  :  state
owned  :  own
agreed  :  agre
reference  :  refer
```

Noted that, stemming sometimes involves chopping off letters, if necessary, as we can see in machin.

Now import a lemmatization algorithm based on Wordnet corpus built-in, and initialize a lemmatizer.

## WordNet Interface

WordNet is just another NLTK corpus reader, and can be imported like this:

*Code#*

```
from nltk.stem import WordNetLemmatizer
wnl = WordNetLemmatizer()
print("machines :", wnl.lemmatize("machines"))
print("learning :", wnl.lemmatize("learning"))
```

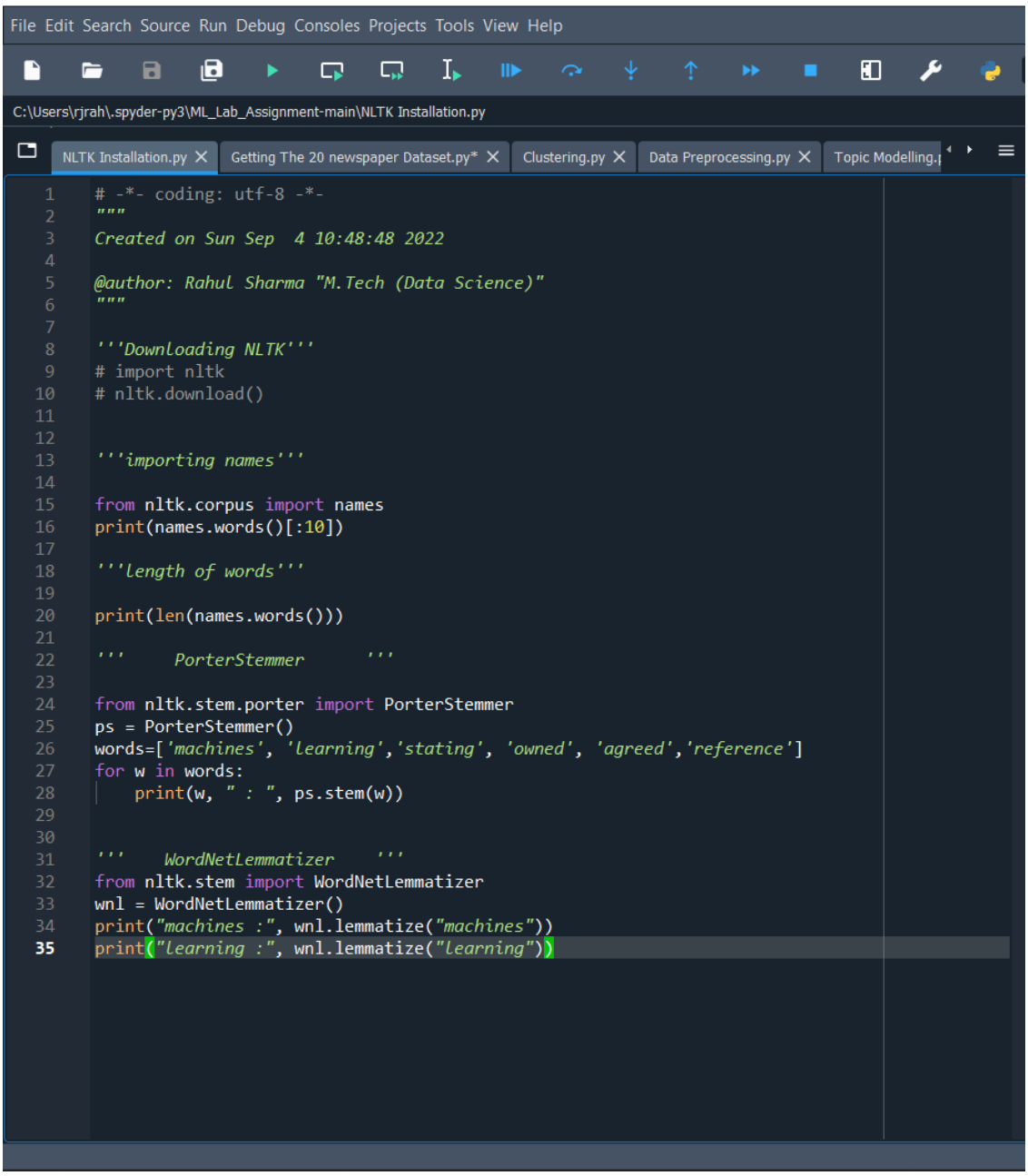
*Output:*

```
machines : machine
learning : learning
```

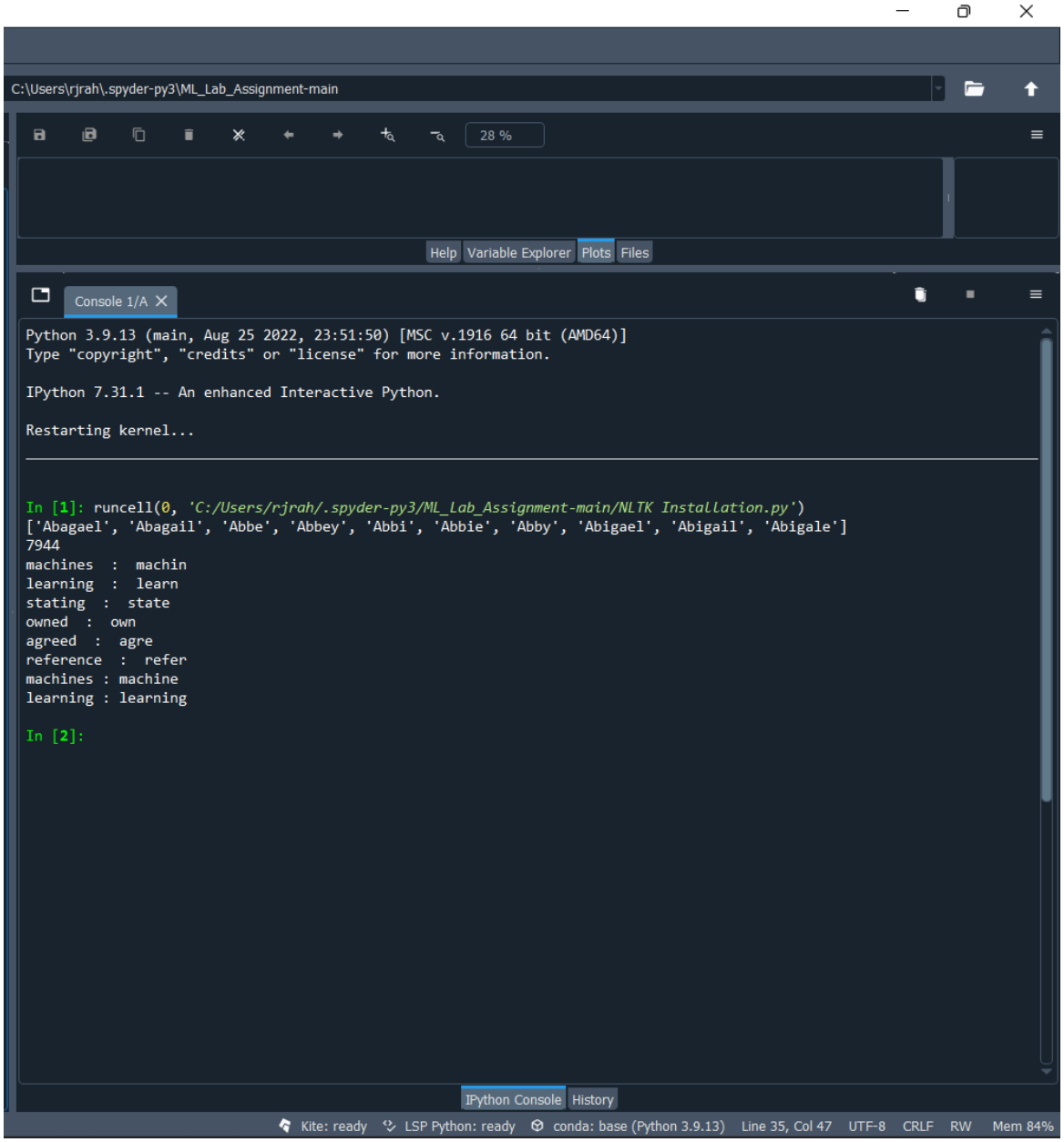
It turns out that this algorithm only lemmatizes on nouns by default.

## *Source Code#*

Spyder (Python 3.9)



*Output*:


C:\Users\rjrah\.spyder-py3\ML_Lab_Assignment-main
28 %
Help
Variable Explorer
Plots
Files
Console 1/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
Restarting kernel...
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/NLTK Installation.py')
['Abagael', 'Abagail', 'Abbe', 'Abbey', 'Abbi', 'Abbie', 'Abby', 'Abigael', 'Abigail', 'Abigale']
7944
machines : machin
learning : learn
stating : state
owned : own
agreed : agre
reference : refer
machines : machine
learning : learning
In [2]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 35, Col 47
UTF-8
CRLF
RW
Mem 84%

## Milestone 2: The 20 Newsgroups data set

The 20 newsgroups dataset comprises around 18000 newsgroups posts on 20 topics split into two subsets: one for training (or development) and the other one for testing (or for performance evaluation). The split between the train and test set is based on a message posted before and after a specific date.

| | | |
|---|---|---|
| comp.graphics<br>comp.os.ms-windows.misc<br>comp.sys.ibm.pc.hardware<br>comp.sys.mac.hardware<br>comp.windows.x | rec.autos<br>rec.motorcycles<br>rec.sport.baseball<br>rec.sport.hockey | sci.crypt<br>sci.electronics<br>sci.med<br>sci.space |
| misc.forsale | talk.politics.misc<br>talk.politics.guns<br>talk.politics.mideast | talk.religion.misc<br>alt.atheism<br>soc.religion.christian |

The data available here are in .tar.gz bundles. You will need tar and gunzip to open them 20news-bydate.tar.gz - 20 Newsgroups sorted by date; duplicates and some headers removed (18846 documents)

## Milestone 3: Getting the data

To load the data, we can import the loader function for the 20 newsgroups data as follows:

```
from sklearn.datasets import fetch_20newsgroups

groups = fetch_20newsgroups()
```

## Milestone 4: Thinking about features

*Code#*

```
print(groups.keys())

print(groups['target_names'])

print(groups.target)
```

*Output:*

```
dict_keys(['data', 'filenames', 'target_names', 'target', 'DESCR'])

['alt.atheism', 'comp.graphics', 'comp.os.ms-windows.misc', 'comp.sys.ibm.pc.hardware', 'comp.sys.mac.hardware', 'comp.windows.x', 'misc.forsale', 'rec.autos', 'rec.motorcycles', 'rec.sport.baseball', 'rec.sport.hockey', 'sci.crypt', 'sci.electronics', 'sci.med', 'sci.space',
```

'soc.religion.christian', 'talk.politics.guns', 'talk.politics.mideast', 'talk.politics.misc', 'talk.religion.misc']

[7 4 4 ... 3 1 8]

*Code#*

```
import numpy as np

print(np.unique(groups.target))

print(groups.data[0])
```

*Output:*

[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19]

From: lerxst@wam.umd.edu (where's my thing)
Subject: WHAT car is this!?
Nntp-Posting-Host: rac3.wam.umd.edu
Organization: University of Maryland, College Park
Lines: 15
I was wondering if anyone out there could enlighten me on this car I saw
the other day. It was a 2-door sports car, looked to be from the late 60s/
early 70s. It was called a Bricklin. The doors were really small. In addition,
the front bumper was separate from the rest of the body. This is
all I know. If anyone can tellme a model name, engine specs, years
of production, where this car is made, history, or whatever info you
have on this funky looking car, please e-mail.
Thanks,
- IL
---- brought to you by your neighborhood Lerxst ----

*Code#*

```
print(groups.target[0])

print(groups.target_names[groups.target[0]])

print(len(groups.data[0]))

print(len(groups.data[1]))
```

Output:

7

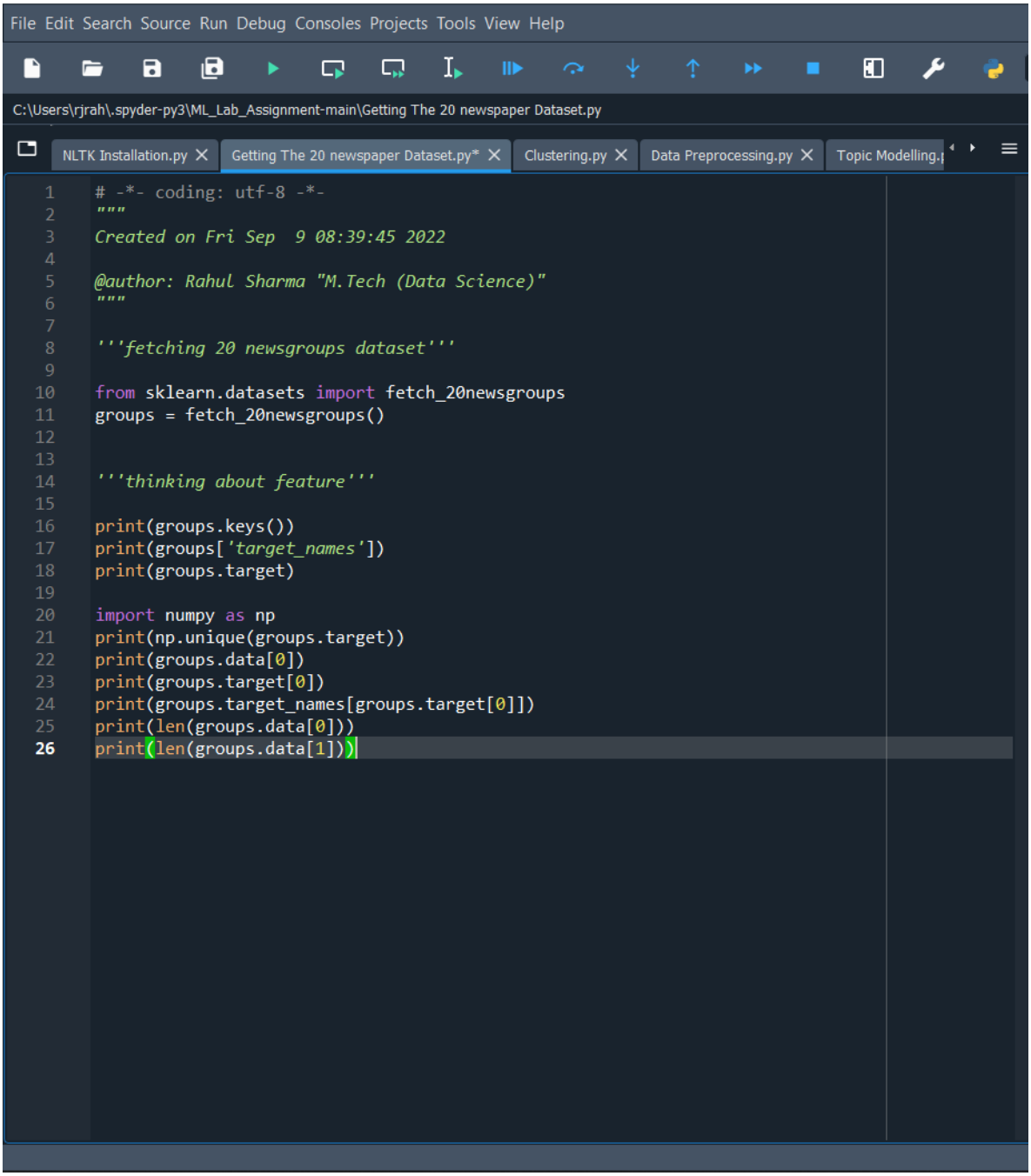
rec.autos

721

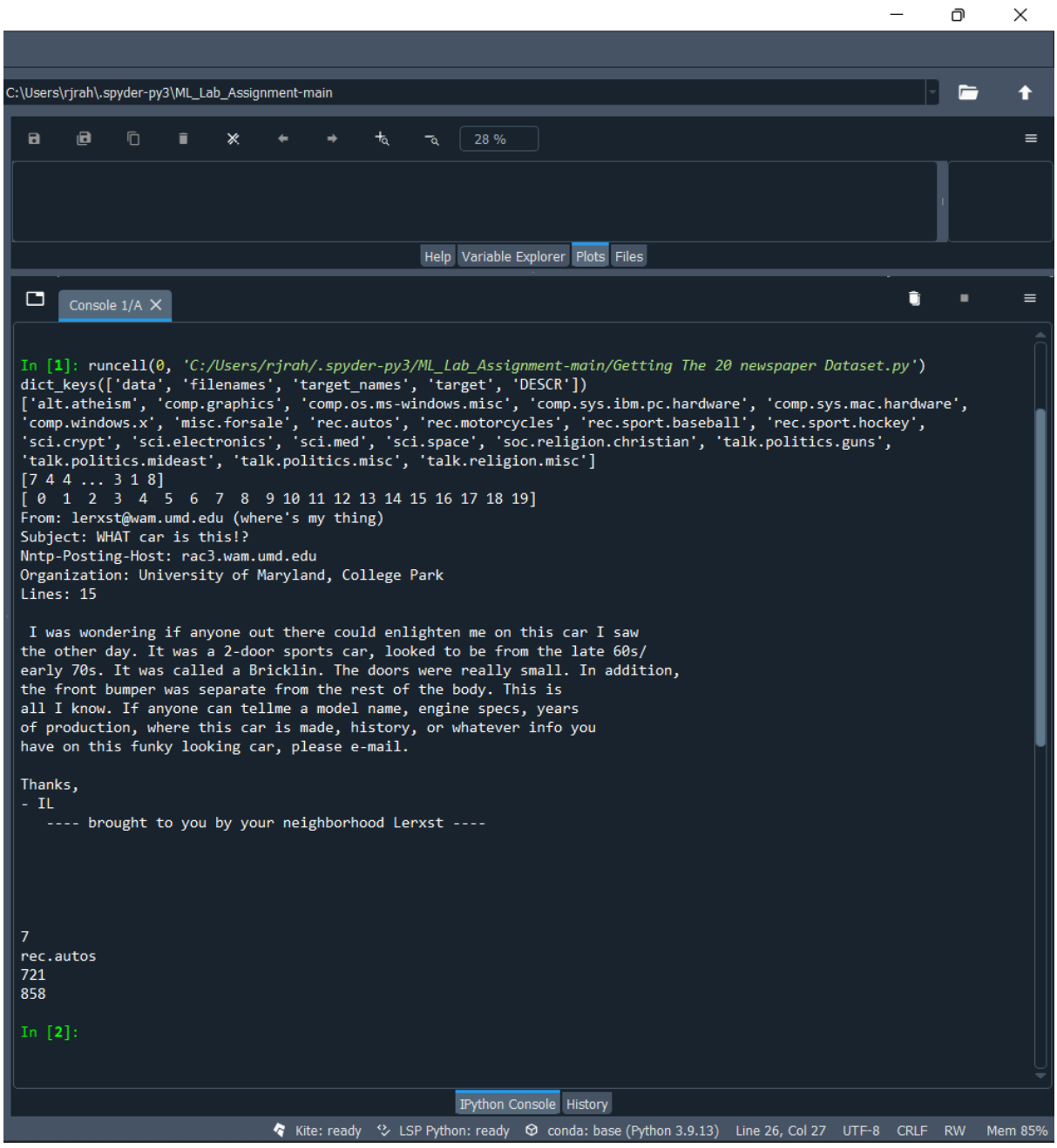
858

*Source Code#*

Spyder (Python 3.9)



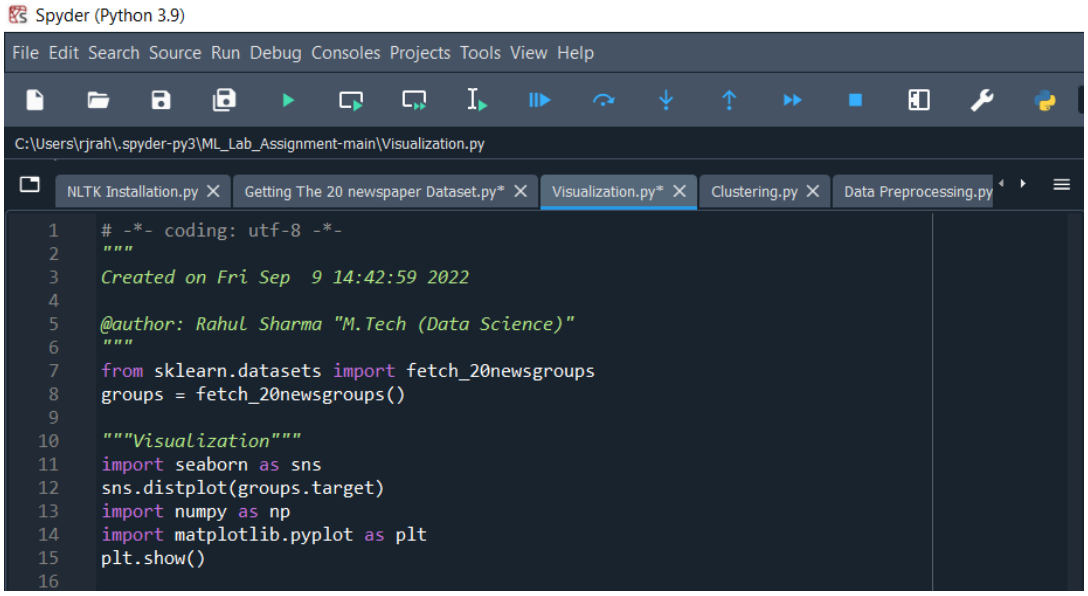
*Output:*


C:\Users\rjrah\.spyder-py3\ML_Lab_Assignment-main
28 %
Help
Variable Explorer
Plots
Files
Console 1/A
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Getting The 20 newspaper Dataset.py')
dict_keys(['data', 'filenames', 'target_names', 'target', 'DESCR'])
['alt.atheism', 'comp.graphics', 'comp.os.ms-windows.misc', 'comp.sys.ibm.pc.hardware', 'comp.sys.mac.hardware',
'comp.windows.x', 'misc.forsale', 'rec.autos', 'rec.motorcycles', 'rec.sport.baseball', 'rec.sport.hockey',
'sci.crypt', 'sci.electronics', 'sci.med', 'sci.space', 'soc.religion.christian', 'talk.politics.guns',
'talk.politics.mideast', 'talk.politics.misc', 'talk.religion.misc']
[7 4 4 ... 3 1 8]
[ 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19]
From: lerxst@wam.umd.edu (where's my thing)
Subject: WHAT car is this!?
Nntp-Posting-Host: rac3.wam.umd.edu
Organization: University of Maryland, College Park
Lines: 15
I was wondering if anyone out there could enlighten me on this car I saw
the other day. It was a 2-door sports car, looked to be from the late 60s/
early 70s. It was called a Bricklin. The doors were really small. In addition,
the front bumper was separate from the rest of the body. This is
all I know. If anyone can tellme a model name, engine specs, years
of production, where this car is made, history, or whatever info you
have on this funky looking car, please e-mail.
Thanks,
- IL
---- brought to you by your neighborhood Lerxst ----
7
rec.autos
721
858
In [2]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 26, Col 27
UTF-8
CRLF
RW
Mem 85%

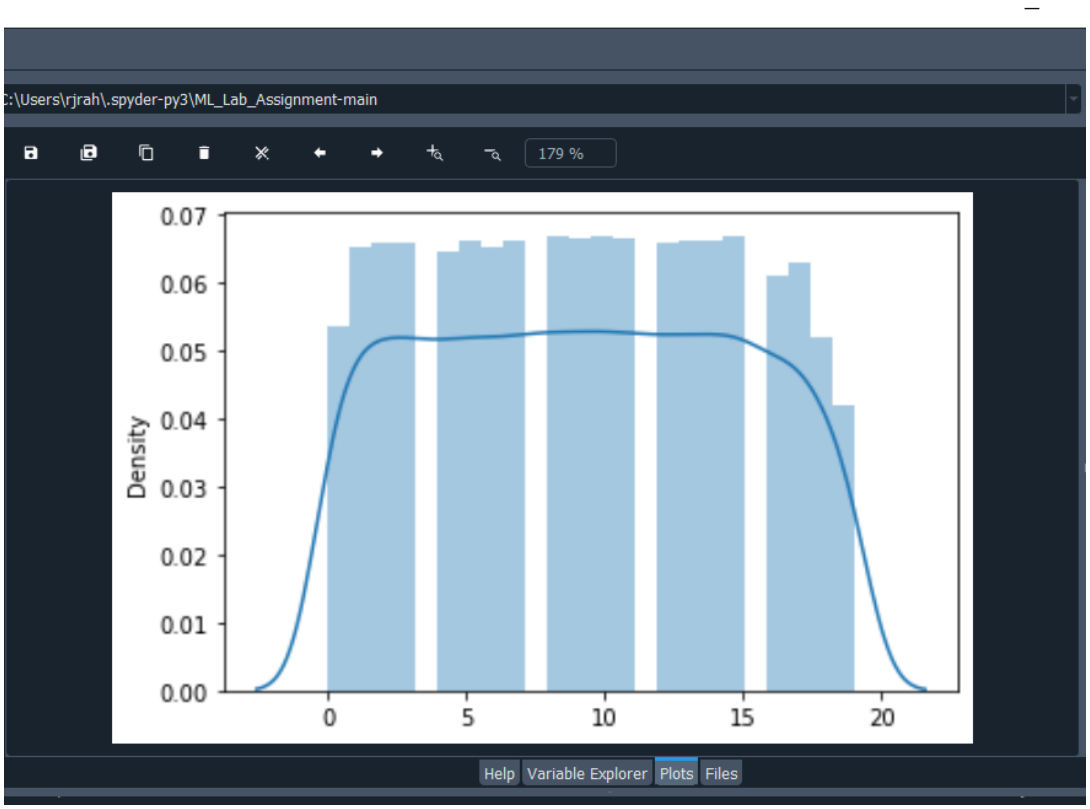
# Milestone 5: Visualization

It's good to visualize to get a general idea of how the data is structured, what possible issues may arise, and if there are any irregularities that we have to take care of:

*Source Code#*



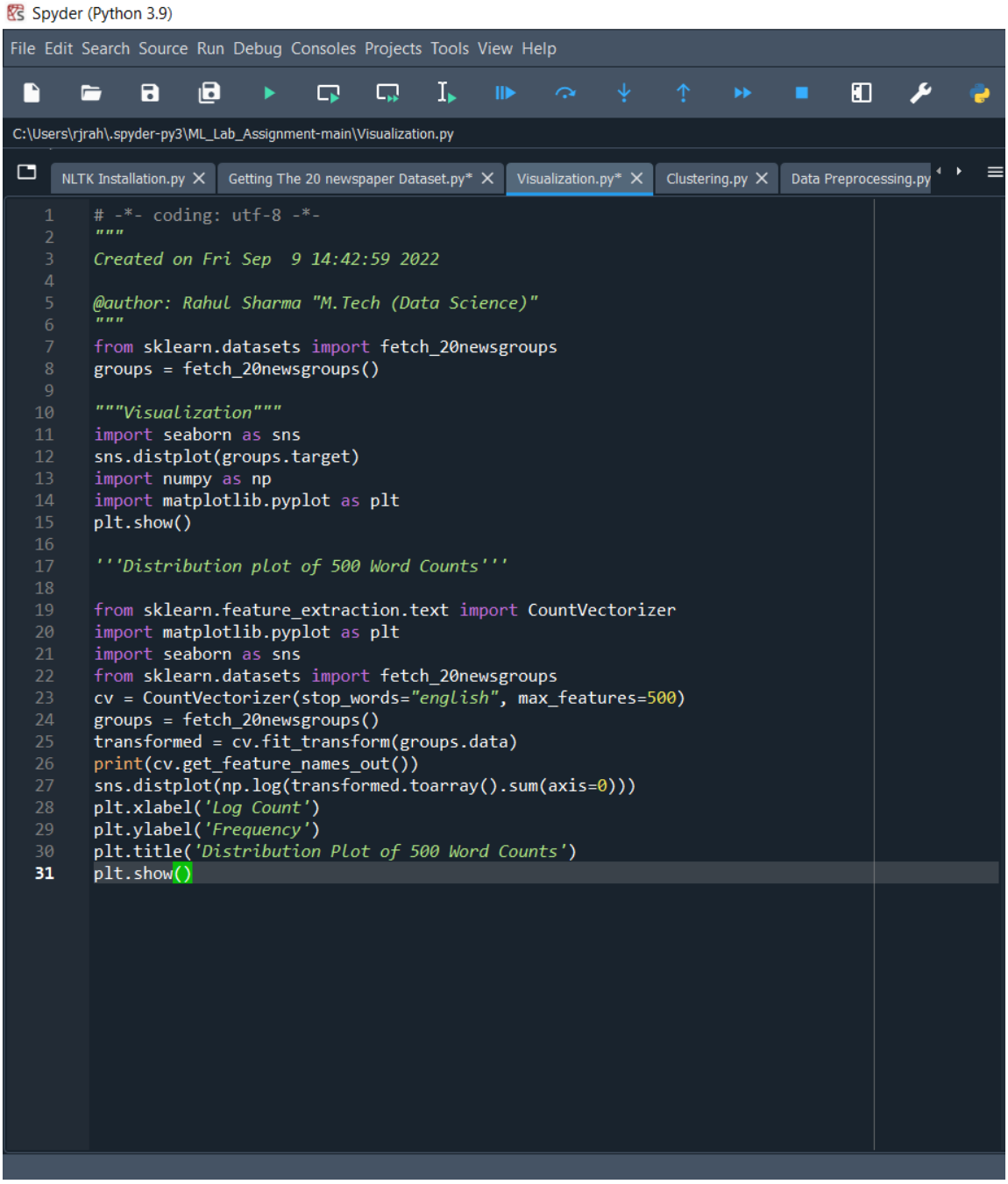

*Output:*



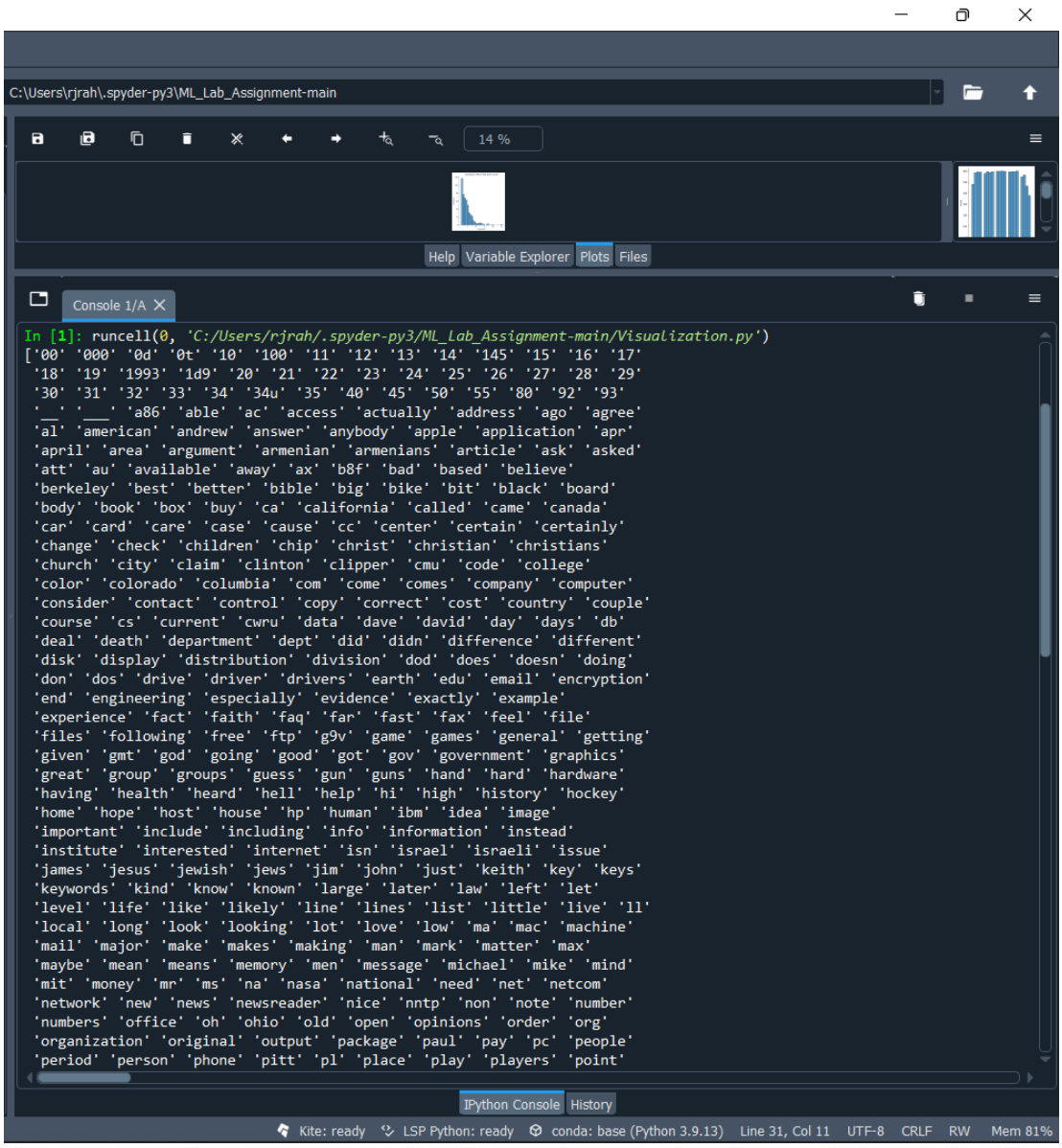

We can see, that the distribution is (approximately) uniform.

The following code displays a histogram of the 500 highest word counts:

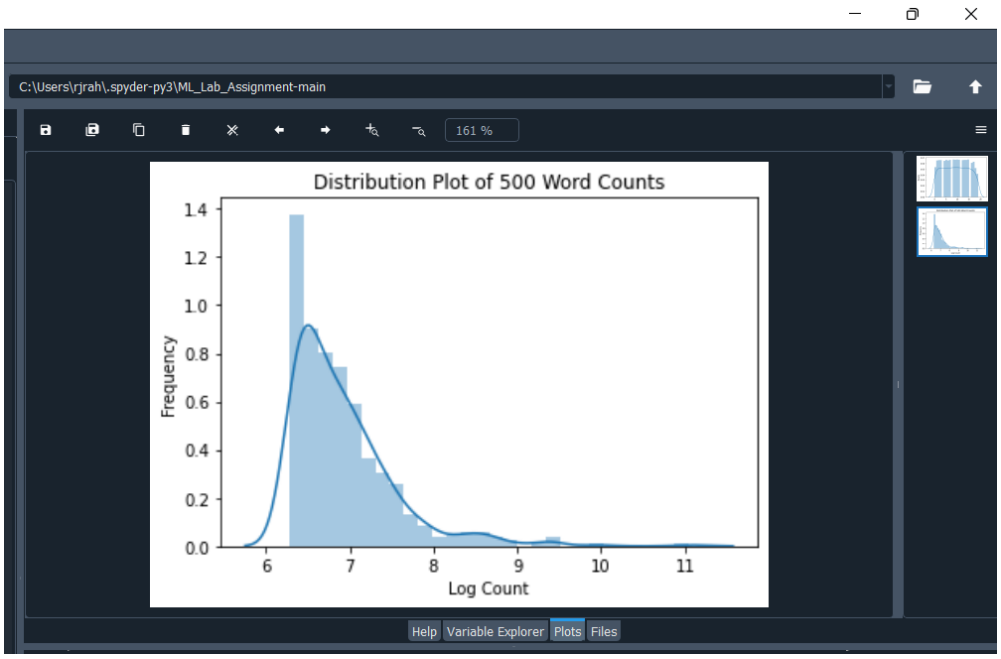
*Source code#*



*Output: list of 500 words*



*Distribution Plot of 500 Word Counts*



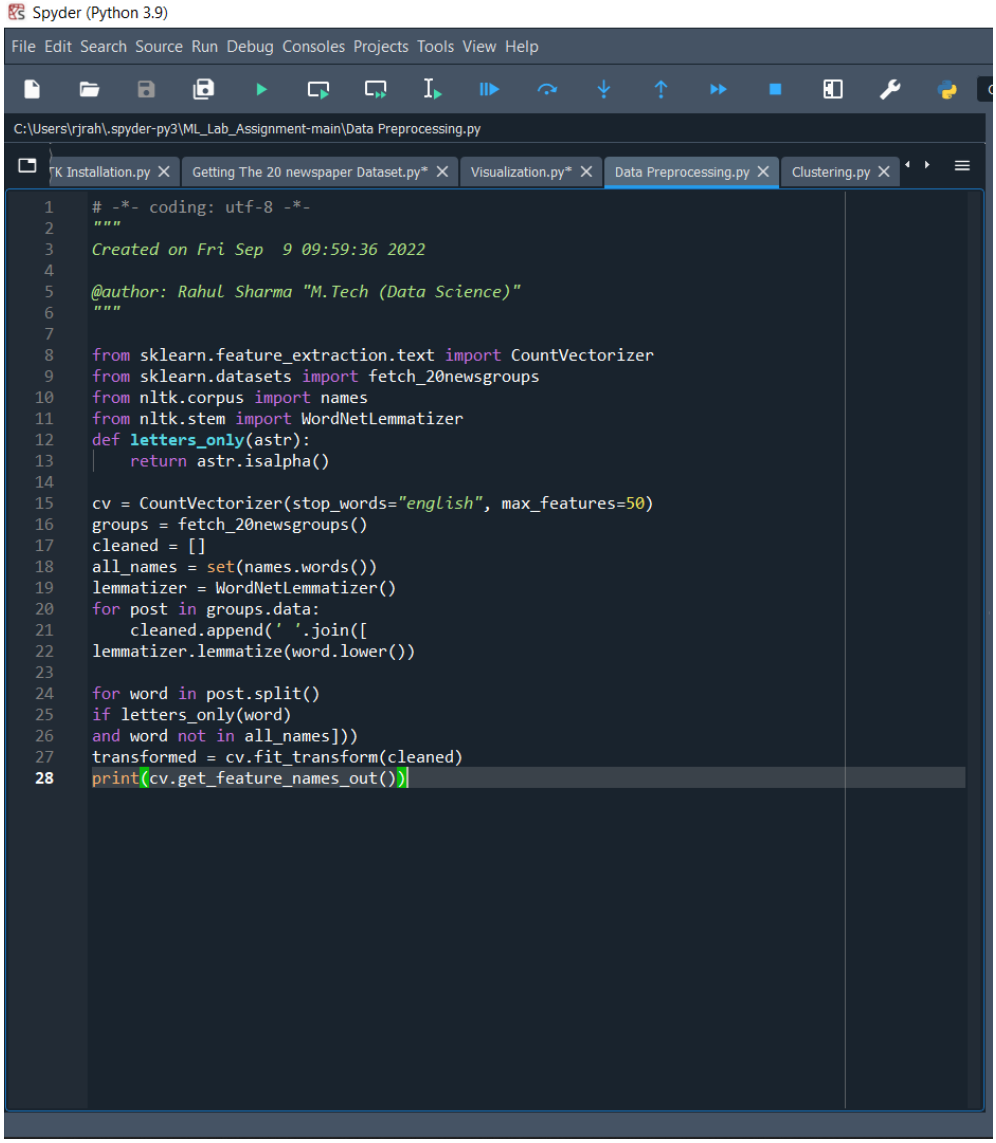
# Milestone 6: Data Pre-processing

We see items, which are not words, such as 00 and 000. Maybe we should ignore items that contain only digits. However, 0d and 0t are also not words. We also see items as __, so maybe we should only allow items that consist only of letters.

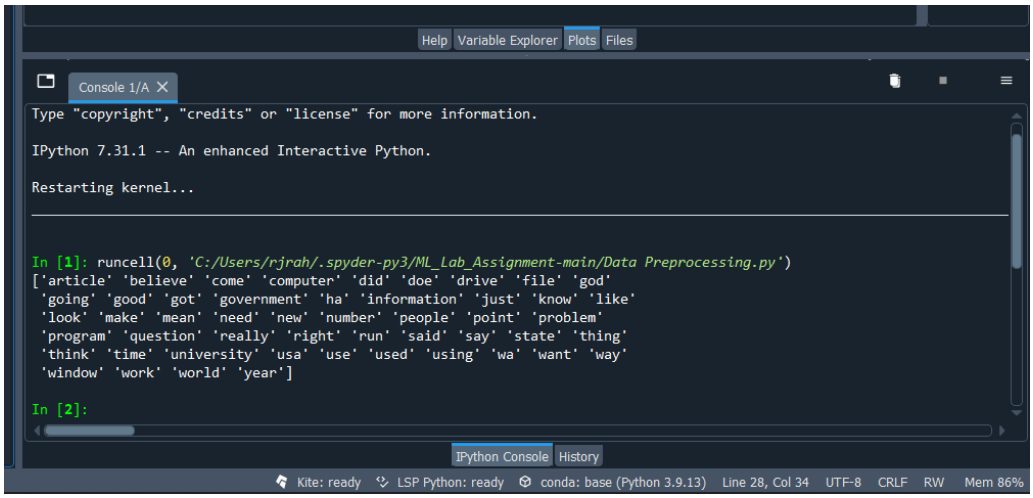
The posts contain names such as andrew as well. We can filter names with the Names corpus from NLTK.

With every filtering we apply, we have to make sure that we don't lose information. Finally, we see words that are very similar, such as include and including, and make and makes.

*Source Code#*



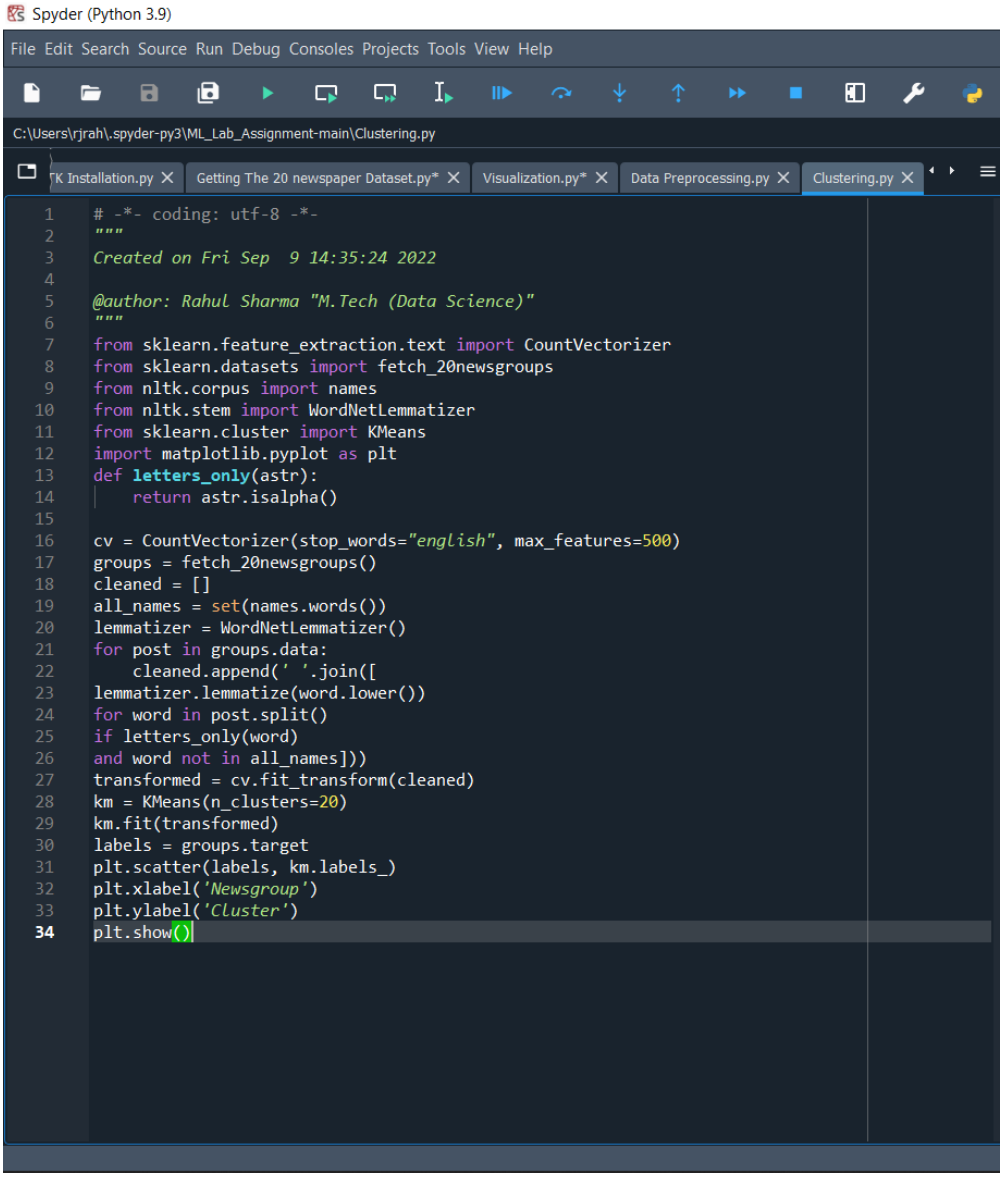
*Output*:


Help
Variable Explorer
Plots
Files
Console 1/A
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
Restarting kernel...
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Data Preprocessing.py')
['article' 'believe' 'come' 'computer' 'did' 'doe' 'drive' 'file' 'god'
'going' 'good' 'got' 'government' 'ha' 'information' 'just' 'know' 'like'
'look' 'make' 'mean' 'need' 'new' 'number' 'people' 'point' 'problem'
'program' 'question' 'really' 'right' 'run' 'said' 'say' 'state' 'thing'
'think' 'time' 'university' 'usa' 'use' 'used' 'using' 'wa' 'want' 'way'
'window' 'work' 'world' 'year']
In [2]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 28, Col 34
UTF-8
CRLF
RW
Mem 86%

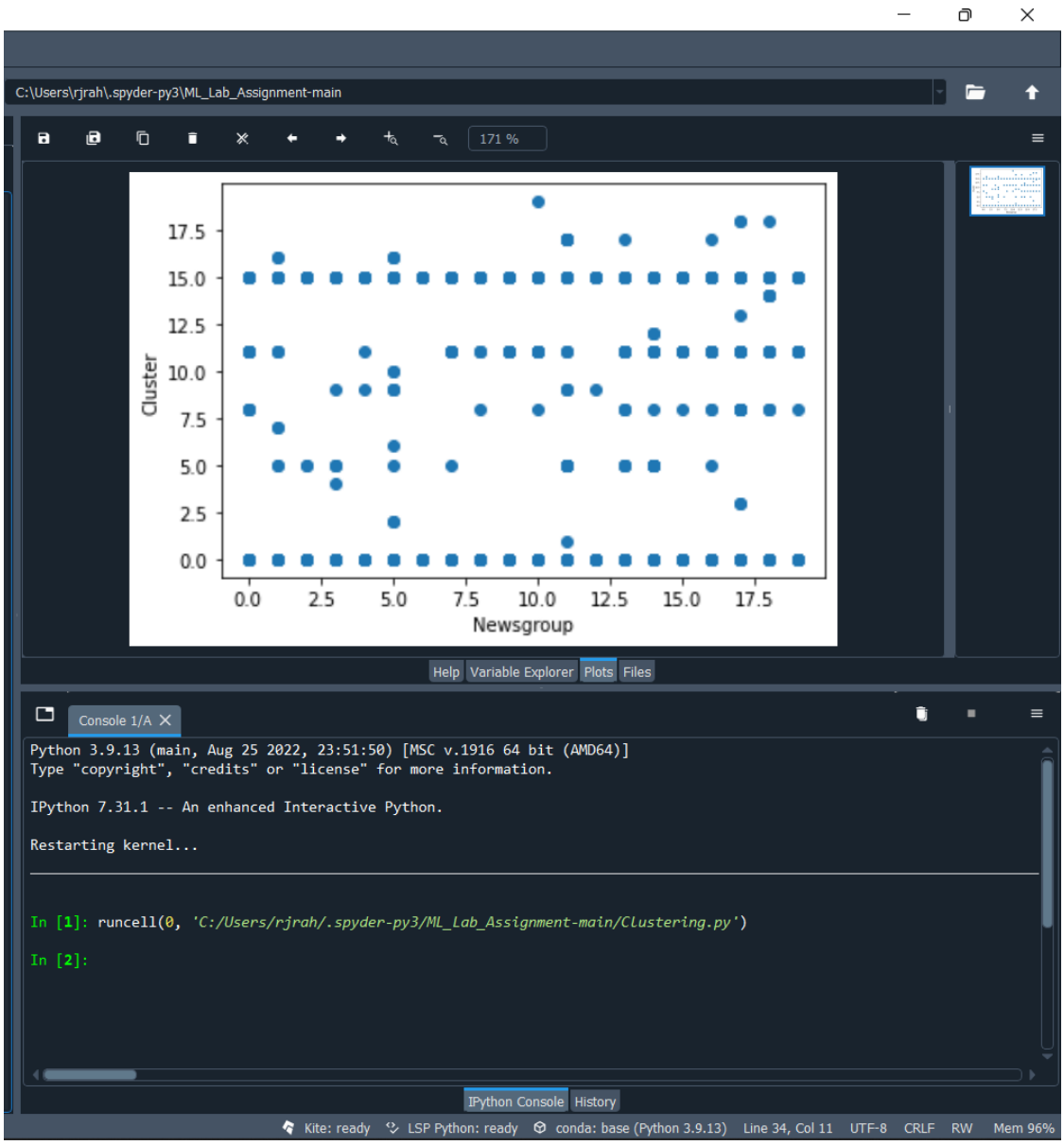
# Milestone 7: Clustering

Clustering is the task of dividing the population or data points into several groups such that data points in the same groups are more similar to other data points in the same group and dissimilar to the data points in other groups. It is a collection of objects based on similarity and dissimilarity between them.

*Source Code#*



*Output/Plot:*


C:\Users\rjrah\.spyder-py3\ML_Lab_Assignment-main
171 %
Cluster
Newsgroup
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Help
Variable Explorer
Plots
Files
Console 1/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
Restarting kernel...
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Clustering.py')
In [2]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 34, Col 11
UTF-8
CRLF
RW
Mem 96%

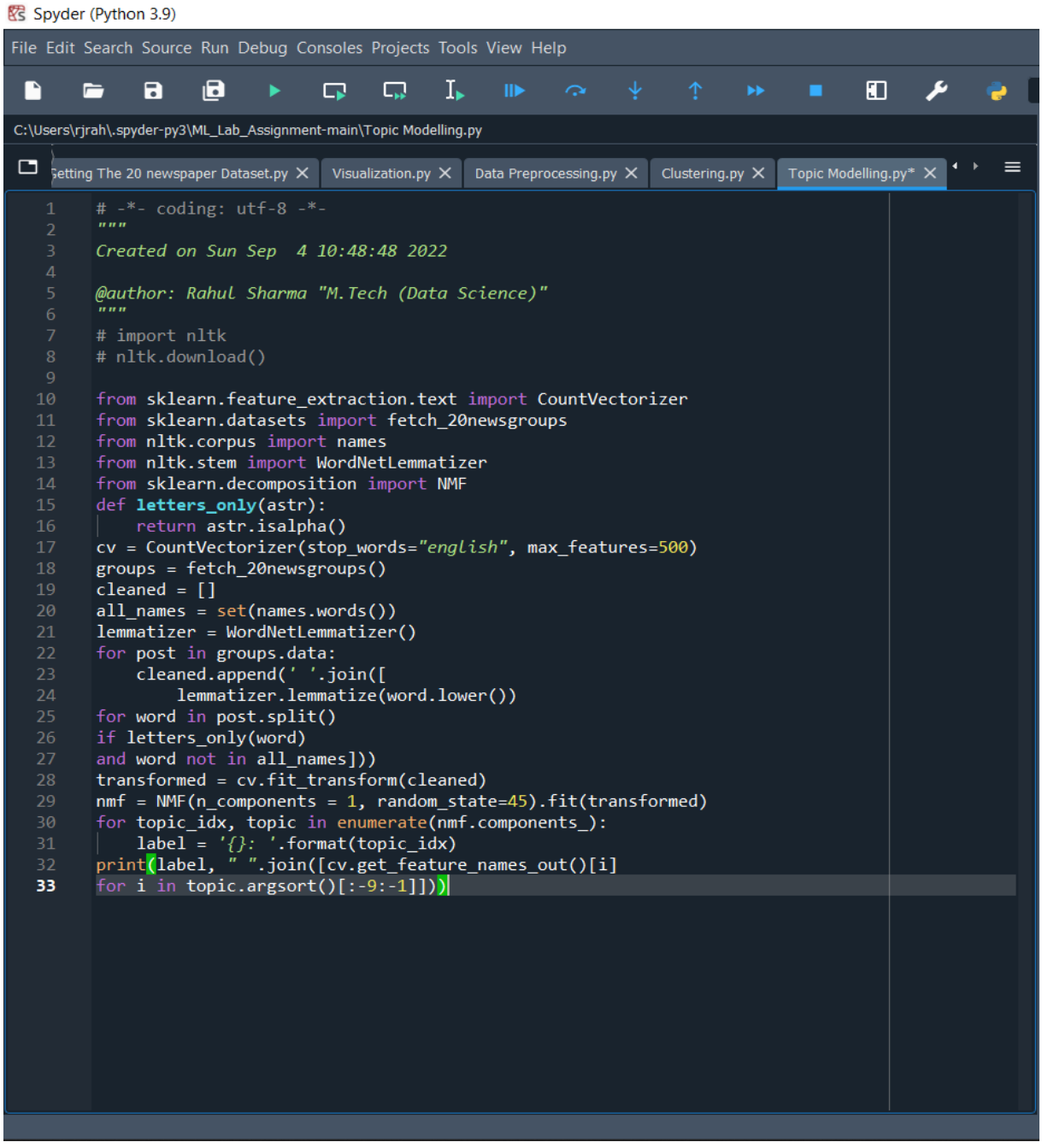
# Milestone 8: Topic Modeling

Topic Modeling falls under unsupervised machine learning where the documents are processed to obtain the relative topics. It is a very important concept of the traditional Natural Processing Approach because of its potential to obtain a semantic relationship between words in the document clusters. In addition, it has numerous other applications in NLP.

Now let us have a look at the Non-Negative Matrix Factorization. NMP is a statistical method to reduce the dimension of the input corpora. It uses the factor analysis method to provide comparatively less weightage to the words with less coherence.

*Source Code#*

***Note:*** "By changing the value n_component with a positive integer"



*Output:*

0: wa ha people know just like use think

1: db bit data stuff place add time line

2: file use ha program image available version information

3: file image program available use entry version window

4: drive disk hard controller support card scsi head

5: ha think people new make president doe just

6: new anonymous ha use information computer hockey service

7: image file available version data color program software

8: window widget use available application version set server

9: anonymous use information computer internet user service posting

10: people god ha doe just article like make

11: gun state use law new united control government

12: gun state use law new control united national

13: space nasa data ha center national research technology

14: anonymous posting information internet user computer email service

15: people like just think want good make know

16: people like just think know want thing right

17: widget application value data set type use return

18: health medical center number university child research use

19: ha article new like time year doe wa

20: key encryption government technology law use security chip

21: president think going ha wa know said russian

22: use need ground power box usually used doe

23: russian government new american program state way support

24: ibm scsi memory color use card hardware program

25: anonymous posting internet user information email computer service

26: la win san year game period power shot

27: new military war state time united world attack

28: encryption technology government law new use access data

29: drive scsi tape single using driver mode data
30: god atheist believe doe belief religion religious say
31: god atheist believe doe belief religion religious say
32: god atheist believe doe belief religion religious say
33: university center research new medical science article institute
34: university center research new medical institute study science
35: water city new car division san list high
36: good like think just make time really better
37: article university know post read doe usa science
38: good car like better make time year just
39: drive scsi single head mode set using model
40: israeli arab question jew human true attack state
41: like just dod make time look thing really
42: know just like going went come woman came
43: graphic send mail message server support computer package
44: graphic send mail message server support computer package
45: article university post read doe usa discussion world
46: right israeli state human government arab second law
47: power period second game shot got play goal
48: dod time question number computer member list bike
49: article university post read usa world discussion opinion
50: doe say argument make question word point mean
51: just time going maybe make come start got
52: information san said police group league political including
53: israeli arab jew question human attack policy true
54: make thing little le difference better way sure
55: university computer science general department engineering thanks state
56: article university post read world usa discussion opinion
57: university science computer state general department thanks engineering
58: gun control crime rate weapon house american united

59: people say said come tell government live woman
60: graphic send mail message server support package line
61: just start maybe going want really thought woman
62: information san said police group league political including
63: want thing need work help really going school
64: san said information police group league political including
65: game team got win play shot year run
66: article university post read usa world discussion opinion
67: new york year question sale change service old
68: article usa read world post opinion discussion sure
69: san information police said group league political government
70: say word believe mean thing did christian point
71: point way human case child different line better
72: car driver speed change better number high point
73: want need help let really thing better point
74: chip unit clipper serial number disk algorithm bit
75: article post usa world read opinion discussion sure
76: university science general thanks department computer engineering texas
77: say word believe mean christian did act point
78: believe belief christian truth evidence church claim different
79: need help phone kind able needed thanks bike
80: israeli arab human attack policy true state fact
81: university science general department thanks engineering computer texas
82: say word believe christian mean did act day
83: wa did thought used later order seen early
84: want need help let really life better reason
85: university science general thanks department engineering computer texas
86: power period second san special le play shot
87: time long lot better having able order actually
88: card driver video support mouse mode board bus

89: did death let fact money body place man

90: woman men world muslim life religion man great

91: believe belief christian truth evidence claim different church

92: like look really sound better going long little

93: gun rate crime city death study control difference

94: really better lot player probably little best big

95: going come way mean sure working look kind

96: point way different line better algorithm issue view

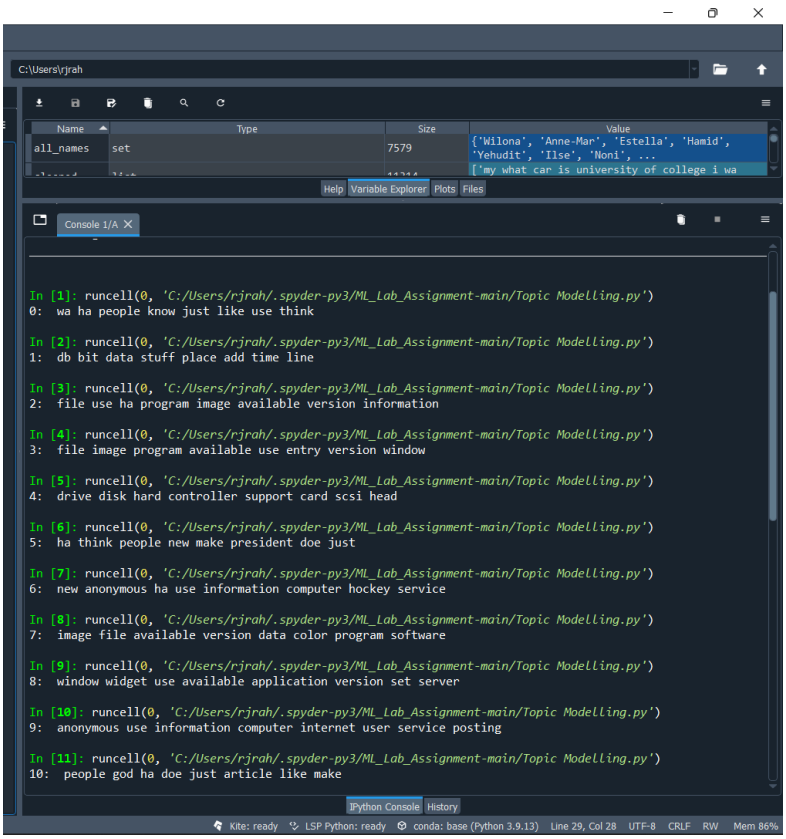
97: just maybe start woman big thought probably getting

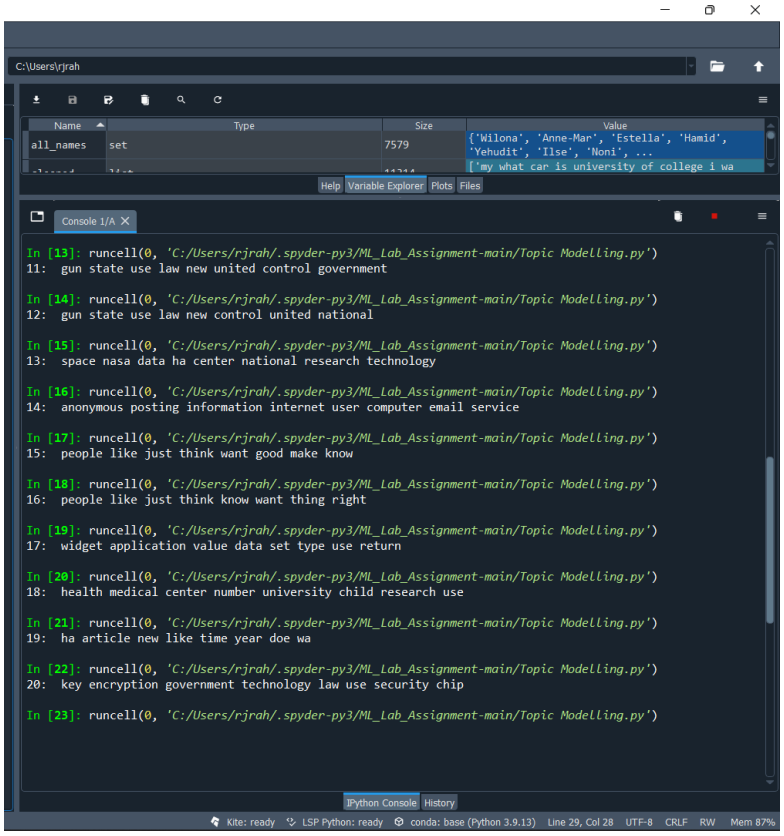
98: government political federal free sure private local country

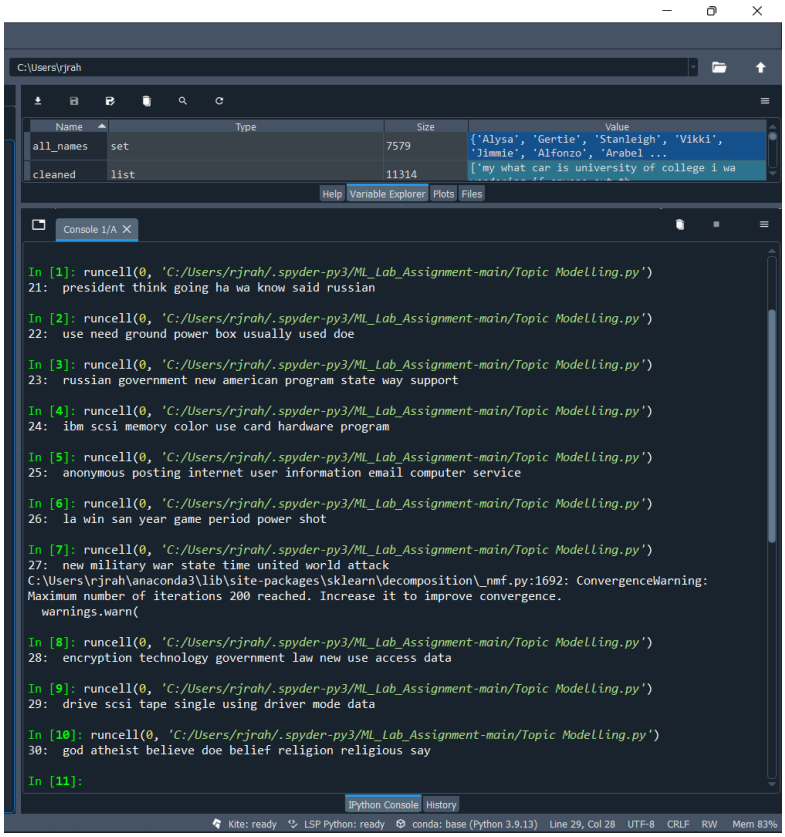
99: article read world usa opinion post discussion sure

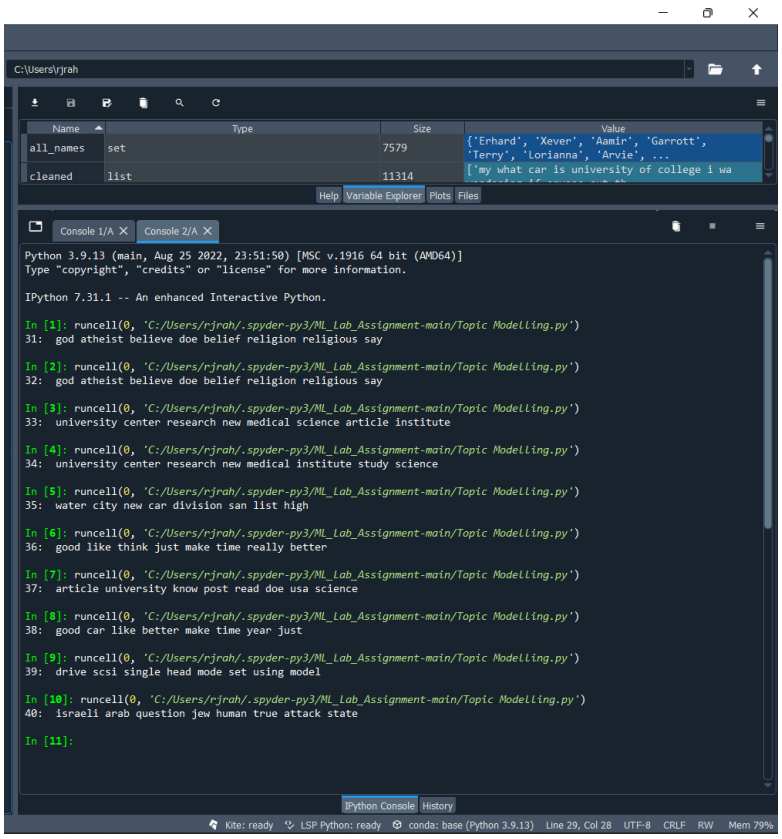
100: state united public national political federal member local

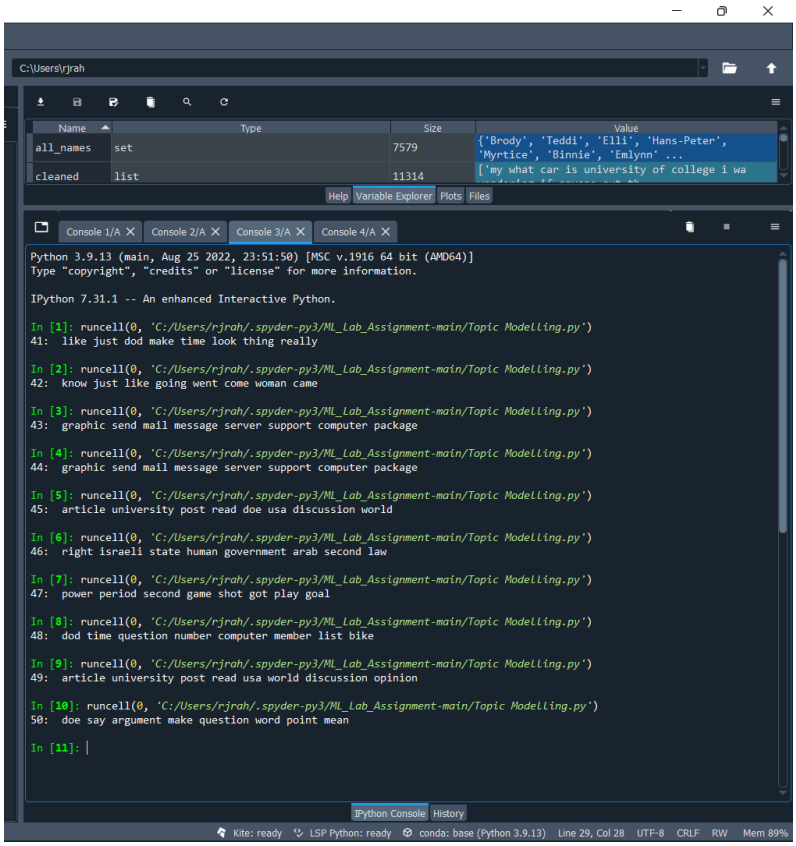
*Screenshots of the above given Output*

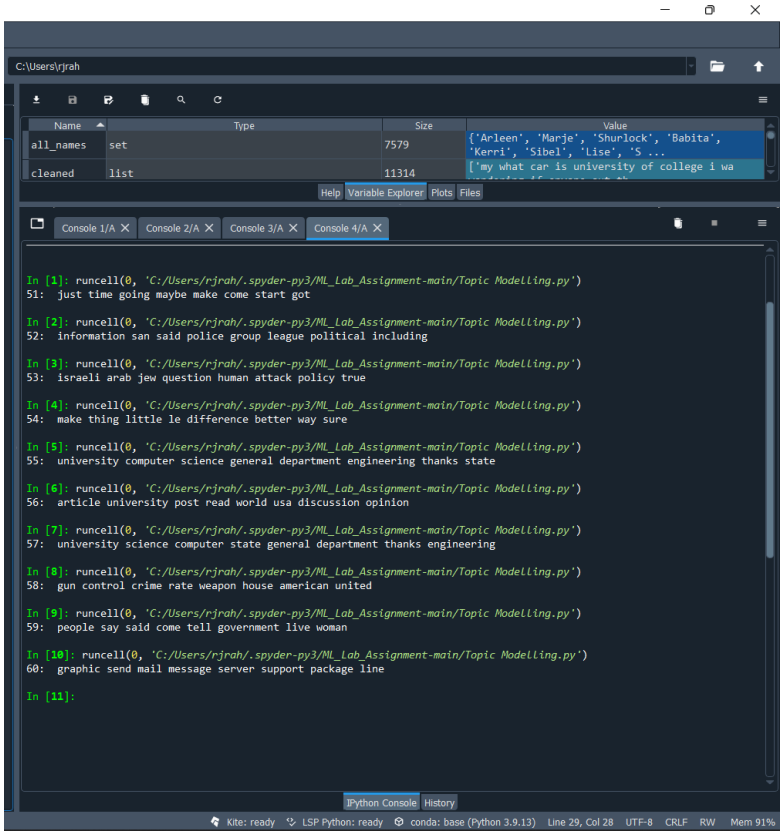


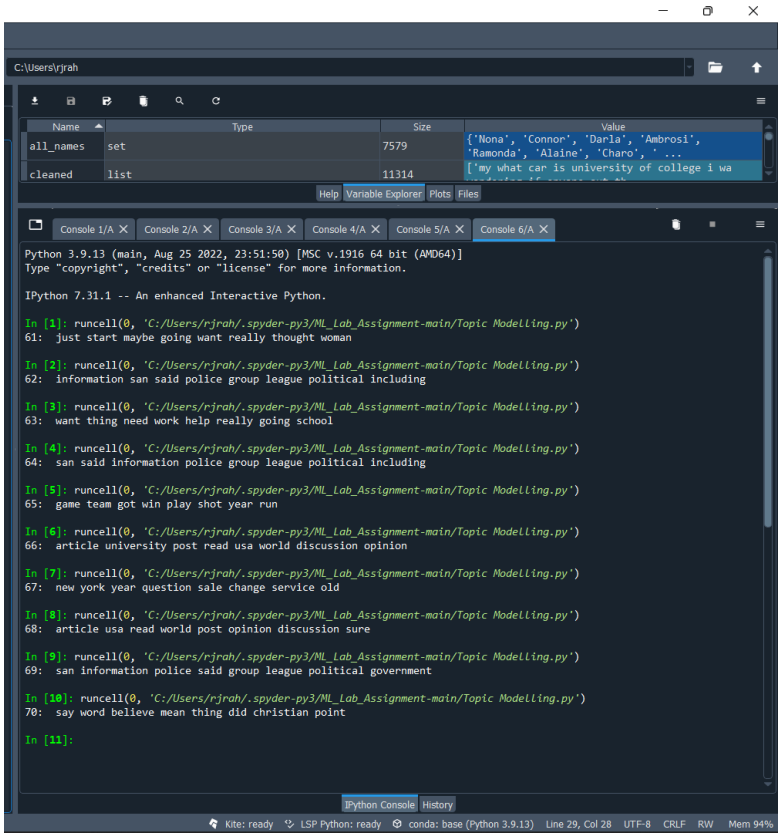

C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Wilona', 'Anne-Mar', 'Estella', 'Hamid', 'Yehudit', 'Ilse', 'Noni', ...
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
In [13]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
11: gun state use law new united control government
In [14]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
12: gun state use law new control united national
In [15]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
13: space nasa data ha center national research technology
In [16]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
14: anonymous posting information internet user computer email service
In [17]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
15: people like just think want good make know
In [18]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
16: people like just think know want thing right
In [19]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
17: widget application value data set type use return
In [20]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
18: health medical center number university child research use
In [21]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
19: ha article new like time year doe wa
In [22]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
20: key encryption government technology law use security chip
In [23]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 87%

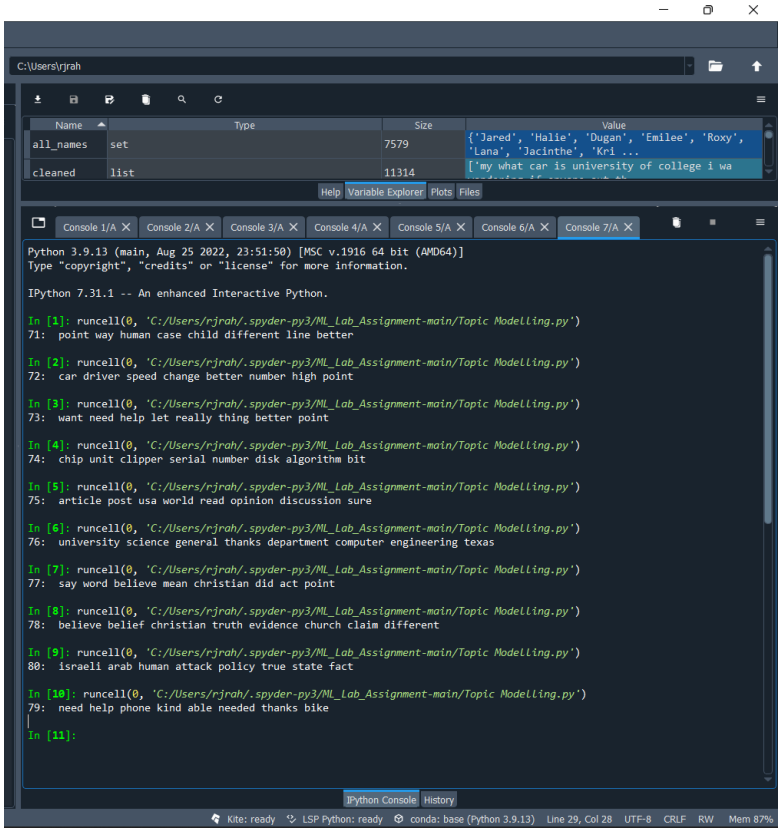

C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Alysa', 'Gertie', 'Stanleigh', 'Vikki', 'Jimmie', 'Alfonzo', 'Arabel ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
21: president think going ha wa know said russian
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
22: use need ground power box usually used doe
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
23: russian government new american program state way support
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
24: ibm scsi memory color use card hardware program
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
25: anonymous posting internet user information email computer service
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
26: la win san year game period power shot
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
27: new military war state time united world attack
C:\Users\rjrah\anaconda3\lib\site-packages\sklearn\decomposition_nmf.py:1692: ConvergenceWarning:
Maximum number of iterations 200 reached. Increase it to improve convergence.
warnings.warn(
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
28: encryption technology government law new use access data
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
29: drive scsi tape single using driver mode data
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
30: god atheist believe doe belief religion religious say
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 83%

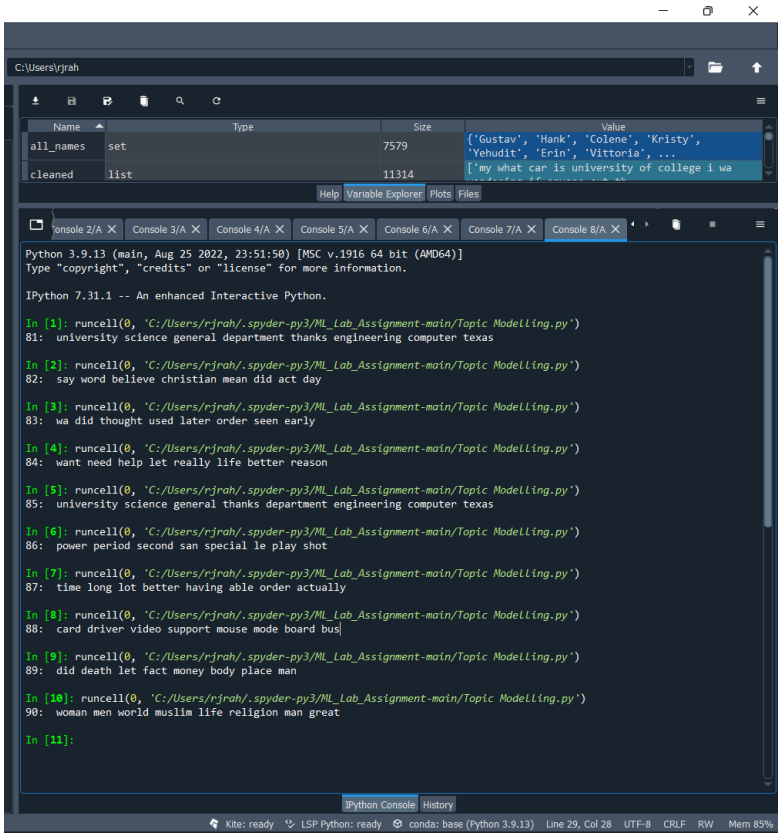

C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Erhard', 'Xever', 'Aamir', 'Garrott', 'Terry', 'Lorianna', 'Arvie', ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
Console 2/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
31: god atheist believe doe belief religion religious say
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
32: god atheist believe doe belief religion religious say
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
33: university center research new medical science article institute
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
34: university center research new medical institute study science
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
35: water city new car division san list high
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
36: good like think just make time really better
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
37: article university know post read doe usa science
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
38: good car like better make time year just
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
39: drive scsi single head mode set using model
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
40: israeli arab question jew human true attack state
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 79%

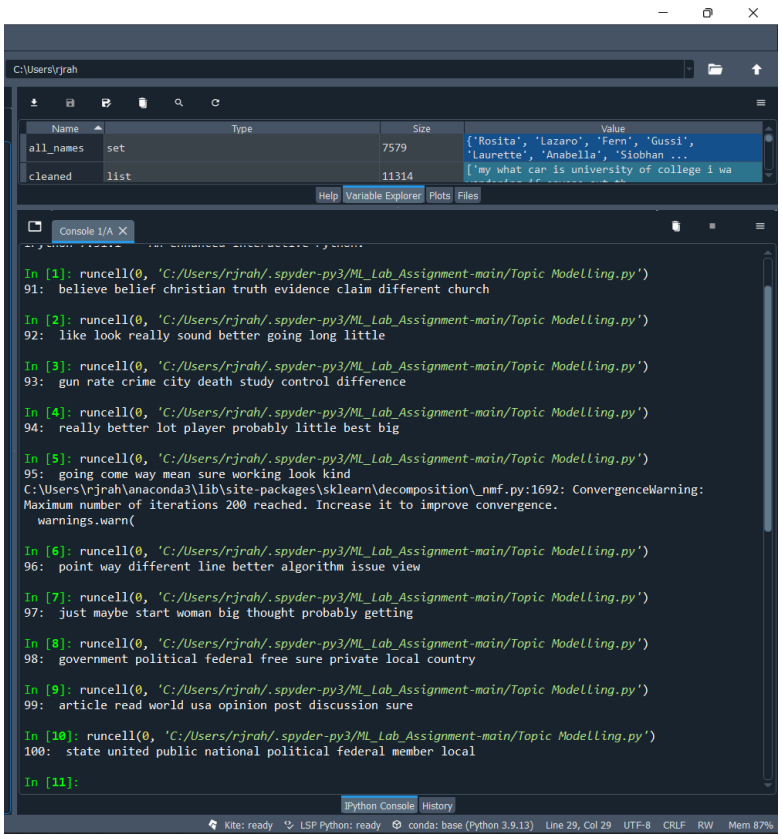

C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Brody', 'Teddi', 'Elli', 'Hans-Peter', 'Myrtice', 'Binnie', 'Emlynn' ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
Console 2/A
Console 3/A
Console 4/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
41: like just dod make time look thing really
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
42: know just like going went come woman came
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
43: graphic send mail message server support computer package
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
44: graphic send mail message server support computer package
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
45: article university post read doe usa discussion world
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
46: right israeli state human government arab second law
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
47: power period second game shot got play goal
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
48: dod time question number computer member list bike
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
49: article university post read usa world discussion opinion
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
50: doe say argument make question word point mean
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 89%


C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Arleen', 'Marje', 'Shurlock', 'Babita', 'Kerri', 'Sibel', 'Lise', 'S ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
Console 2/A
Console 3/A
Console 4/A
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
51: just time going maybe make come start got
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
52: information san said police group league political including
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
53: israeli arab jew question human attack policy true
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
54: make thing little le difference better way sure
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
55: university computer science general department engineering thanks state
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
56: article university post read world usa discussion opinion
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
57: university science computer state general department thanks engineering
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
58: gun control crime rate weapon house american united
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
59: people say said come tell government live woman
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
60: graphic send mail message server support package line
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 91%


C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Nona', 'Connor', 'Darla', 'Ambrosi', 'Ramonda', 'Alaine', 'Charo', ' ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
Console 2/A
Console 3/A
Console 4/A
Console 5/A
Console 6/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
61: just start maybe going want really thought woman
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
62: information san said police group league political including
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
63: want thing need work help really going school
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
64: san said information police group league political including
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
65: game team got win play shot year run
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
66: article university post read usa world discussion opinion
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
67: new york year question sale change service old
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
68: article usa read world post opinion discussion sure
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
69: san information police said group league political government
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
70: say word believe mean thing did christian point
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 94%


C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Jared', 'Halie', 'Dugan', 'Emilee', 'Roxy', 'Lana', 'Jacinthe', 'Kri ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 1/A
Console 2/A
Console 3/A
Console 4/A
Console 5/A
Console 6/A
Console 7/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
71: point way human case child different line better
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
72: car driver speed change better number high point
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
73: want need help let really thing better point
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
74: chip unit clipper serial number disk algorithm bit
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
75: article post usa world read opinion discussion sure
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
76: university science general thanks department computer engineering texas
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
77: say word believe mean christian did act point
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
78: believe belief christian truth evidence church claim different
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
80: israeli arab human attack policy true state fact
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
79: need help phone kind able needed thanks bike
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 87%


C:\Users\rjrah
Name
Type
Size
Value
all_names
set
7579
{'Gustav', 'Hank', 'Colene', 'Kristy', 'Yehudit', 'Erin', 'Vittoria', ...
cleaned
list
11314
['my what car is university of college i wa
Help
Variable Explorer
Plots
Files
Console 2/A
Console 3/A
Console 4/A
Console 5/A
Console 6/A
Console 7/A
Console 8/A
Python 3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 7.31.1 -- An enhanced Interactive Python.
In [1]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
81: university science general department thanks engineering computer texas
In [2]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
82: say word believe christian mean did act day
In [3]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
83: wa did thought used later order seen early
In [4]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
84: want need help let really life better reason
In [5]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
85: university science general thanks department engineering computer texas
In [6]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
86: power period second san special le play shot
In [7]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
87: time long lot better having able order actually
In [8]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
88: card driver video support mouse mode board bus
In [9]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
89: did death let fact money body place man
In [10]: runcell(0, 'C:/Users/rjrah/.spyder-py3/ML_Lab_Assignment-main/Topic Modelling.py')
90: woman men world muslim life religion man great
In [11]:
IPython Console
History
Kite: ready
LSP Python: ready
conda: base (Python 3.9.13)
Line 29, Col 28
UTF-8
CRLF
RW
Mem 85%




***GitHub-Repository:***

This link redirect to my all-ML Lab Assignment's source code repository on GitHub

https://github.com/cse-rahulsharma/ML_Lab_Assignment.git