CODE FILE OF FAKE NEWS DETECTION USING PYTHON

```
[1] from google.colab import files


    uploaded = files.upload()
```

```
Choose Files  train.csv
• train.csv(text/csv) - 98628550 bytes, last modified: 5/8/2022 - 100% done
Saving train.csv to train.csv
```

Importing the Dependencies

```
import numpy as np
import pandas as pd
import re
from nltk.corpus import stopwords
from nltk.stem.porter import PorterStemmer
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score
```

```
[ ] import nltk
    nltk.download('stopwords')
```

```
[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data]   Unzipping corpora/stopwords.zip.
True
```

```
[ ] # printing the stopwords in English
    print(stopwords.words('english'))
```

```
['i', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', "you're", "you've", "you'll", "you'd", 'your', 'yours', 'yourself', 'yourselves', 'he', 'him', 'his', 'himself', 'she', "she's", 'her', '
```

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RAM Disk

Data Pre-processing

```
[ ] # loading the dataset to a pandas DataFrame
    news_dataset = pd.read_csv('/content/train.csv')
```

```
[ ] news_dataset.shape
```

```
(20800, 5)
```

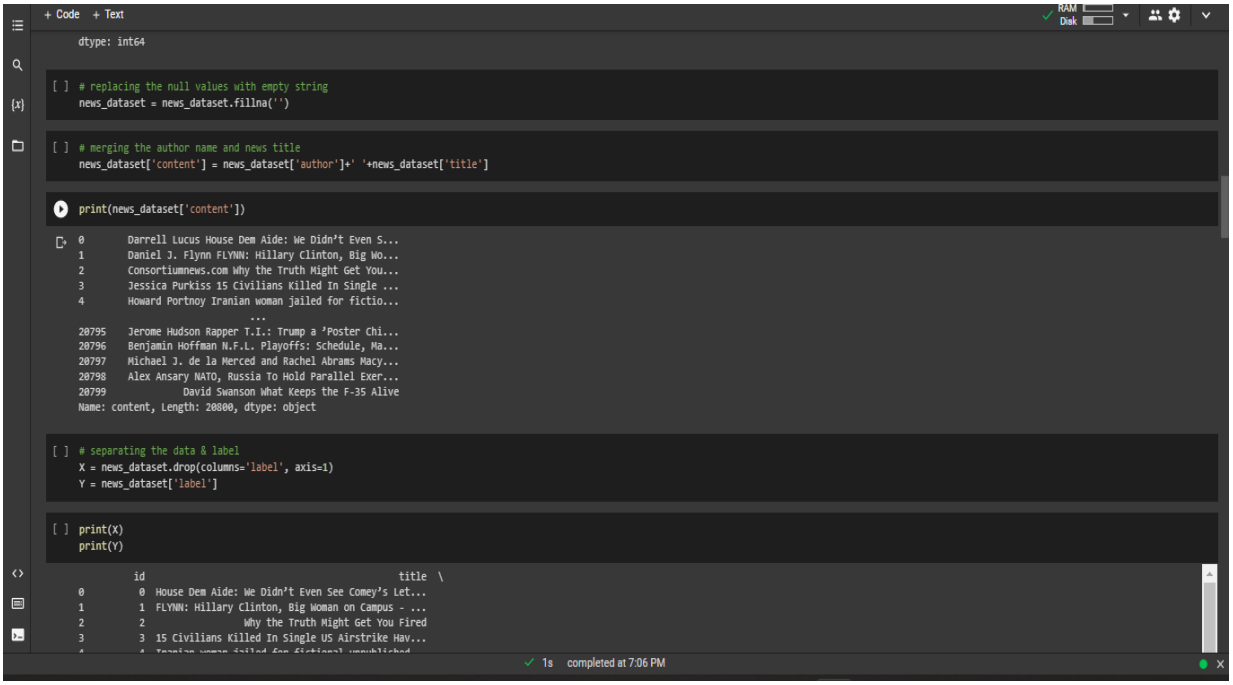
```
[ ] # print the first 5 rows of the dataframe
    news_dataset.head()
```

	id	title	author	text	label
0	0	House Dem Aide: We Didn't Even See Comey's Let...	Darrell Lucus	House Dem Aide: We Didn't Even See Comey's Let...	1
1	1	FLYNN: Hillary Clinton, Big Woman on Campus - ...	Daniel J. Flynn	Ever get the feeling your life circles the rou...	0
2	2	Why the Truth Might Get You Fired	Consortiumnews.com	Why the Truth Might Get You Fired October 29, ...	1
3	3	15 Civilians Killed In Single US Airstrike Hav...	Jessica Purkiss	Videos 15 Civilians Killed In Single US Airstr...	1
4	4	Iranian woman jailed for fictional unpublished...	Howard Portnoy	Print \nAn Iranian woman has been sentenced to...	1

```
[ ] # counting the number of missing values in the dataset
    news_dataset.isnull().sum()
```

```
id          0
title     558
author   1957
text       39
label       0
dtype: int64
```

```
# replacing the null values with empty string
news_dataset = news_dataset.fillna('')
```


+ Code + Text
RAM
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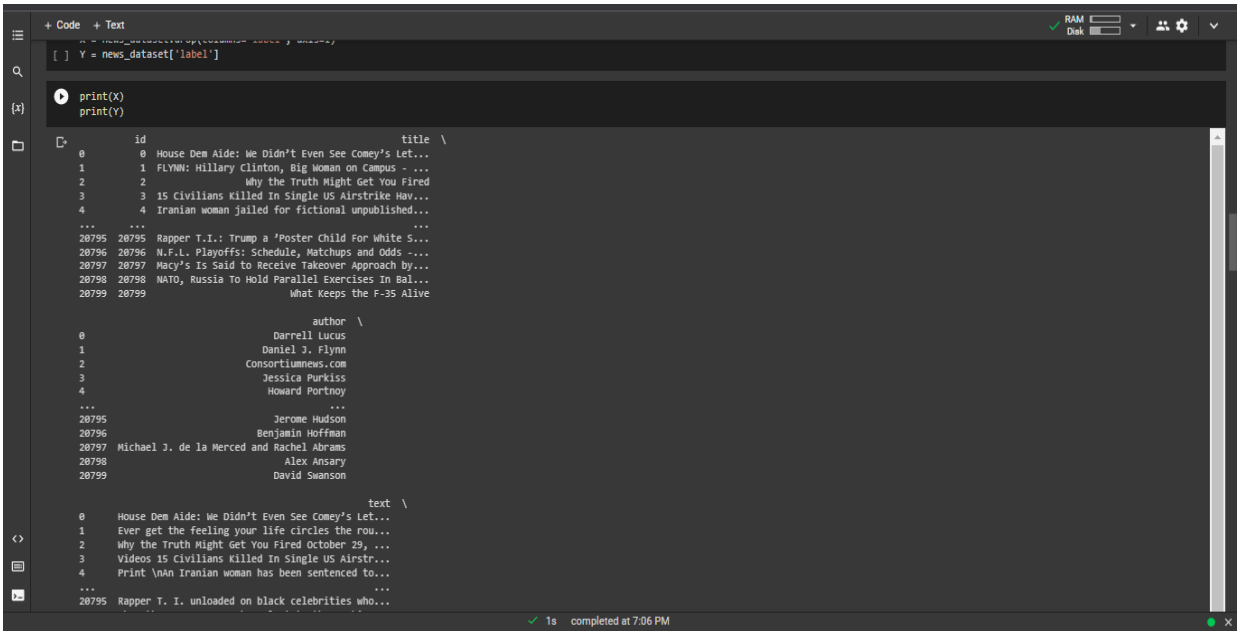
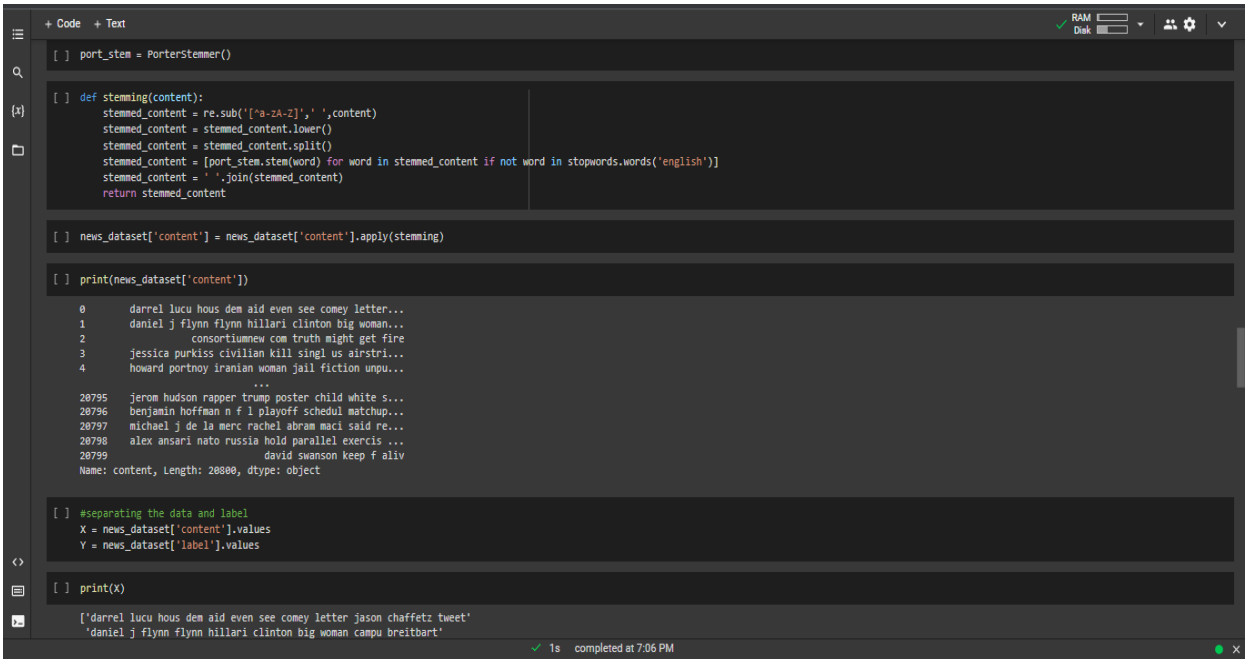
dtype: int64
[ ] # replacing the null values with empty string
news_dataset = news_dataset.fillna('')
[ ] # merging the author name and news title
news_dataset['content'] = news_dataset['author']+' '+news_dataset['title']
print(news_dataset['content'])
0 Darrell Lucus House Dem Aide: We Didn't Even S...
1 Daniel J. Flynn FLYNN: Hillary Clinton, Big Wo...
2 Consortiumnews.com Why the Truth Might Get You...
3 Jessica Purkiss 15 Civilians Killed In Single ...
4 Howard Portnoy Iranian woman jailed for fictio...
...
20795 Jerome Hudson Rapper T.I.: Trump a 'Poster Chi...
20796 Benjamin Hoffman N.F.L. Playoffs: Schedule, Ma...
20797 Michael J. de la Merced and Rachel Abrams Macy...
20798 Alex Ansary NATO, Russia To Hold Parallel Exer...
20799 David Swanson What Keeps the F-35 Alive
Name: content, Length: 20800, dtype: object
[ ] # separating the data & label
X = news_dataset.drop(columns='label', axis=1)
Y = news_dataset['label']
[ ] print(X)
print(Y)
id title \
0 0 House Dem Aide: We Didn't Even See Comey's Let...
1 1 FLYNN: Hillary Clinton, Big Woman on Campus - ...
2 2 Why the Truth Might Get You Fired
3 3 15 Civilians Killed In Single US Airstrike Hav...
1s completed at 7:06 PM


+ Code + Text
RAM
Disk
[ ] Y = news_dataset['label']
print(X)
print(Y)
id title \
0 0 House Dem Aide: We Didn't Even See Comey's Let...
1 1 FLYNN: Hillary Clinton, Big Woman on Campus - ...
2 2 Why the Truth Might Get You Fired
3 3 15 Civilians Killed In Single US Airstrike Hav...
4 4 Iranian woman jailed for fictional unpublished...
... ...
20795 20795 Rapper T.I.: Trump a 'Poster Child For White S...
20796 20796 N.F.L. Playoffs: Schedule, Matchups and Odds -...
20797 20797 Macy's Is Said to Receive Takeover Approach by...
20798 20798 NATO, Russia To Hold Parallel Exercises In Bal...
20799 20799 What Keeps the F-35 Alive
author \
0 Darrell Lucus
1 Daniel J. Flynn
2 Consortiumnews.com
3 Jessica Purkiss
4 Howard Portnoy
...
20795 Jerome Hudson
20796 Benjamin Hoffman
20797 Michael J. de la Merced and Rachel Abrams
20798 Alex Ansary
20799 David Swanson
text \
0 House Dem Aide: We Didn't Even See Comey's Let...
1 Ever get the feeling your life circles the rou...
2 Why the Truth Might Get You Fired October 29, ...
3 Videos 15 Civilians Killed In Single US Airstr...
4 Print \nAn Iranian woman has been sentenced to...
...
20795 Rapper T. I. unloaded on black celebrities who...
1s completed at 7:06 PM



```
[ ] port_stem = PorterStemmer()

[ ] def stemming(content):
        stemmed_content = re.sub('[^a-zA-Z]',' ',content)
        stemmed_content = stemmed_content.lower()
        stemmed_content = stemmed_content.split()
        stemmed_content = [port_stem.stem(word) for word in stemmed_content if not word in stopwords.words('english')]
        stemmed_content = ' '.join(stemmed_content)
        return stemmed_content

[ ] news_dataset['content'] = news_dataset['content'].apply(stemming)

[ ] print(news_dataset['content'])

0        darrel lucu hous dem aid even see comey letter...
1        daniel j flynn flynn hillari clinton big woman...
2                  consortiumnew com truth might get fire
3        jessica purkiss civilian kill singl us airstri...
4        howard portnoy iranian woman jail fiction unpu...
                               ...
20795    jerom hudson rapper trump poster child white s...
20796    benjamin hoffman n f l playoff schedul matchup...
20797    michael j de la merc rachel abram maci said re...
20798    alex ansari nato russia hold parallel exercis ...
20799                              david swanson keep f aliv
Name: content, Length: 20800, dtype: object

[ ] #separating the data and label
    X = news_dataset['content'].values
    Y = news_dataset['label'].values

[ ] print(X)

['darrel lucu hous dem aid even see comey letter jason chaffetz tweet'
 'daniel j flynn flynn hillari clinton big woman campu breitbart'
```

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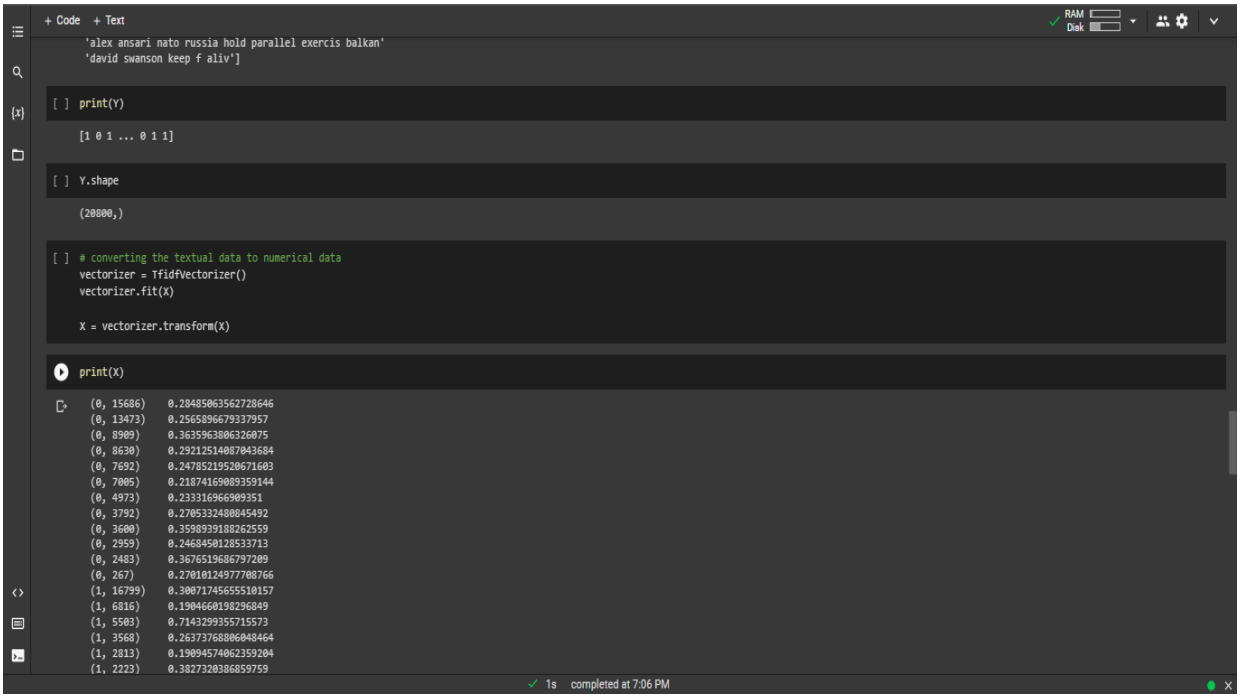

```
 'alex ansari nato russia hold parallel exercis balkan'
 'david swanson keep f aliv']

[ ] print(Y)

[1 0 1 ... 0 1 1]

[ ] Y.shape

(20800,)

[ ] # converting the textual data to numerical data
    vectorizer = TfidfVectorizer()
    vectorizer.fit(X)

    X = vectorizer.transform(X)

    print(X)

  (0, 15686)    0.28485063562728646
  (0, 13473)    0.2565896679337957
  (0, 8909)     0.3635963806326075
  (0, 8630)     0.29212514087043684
  (0, 7692)     0.24785219520671603
  (0, 7005)     0.21874169089359144
  (0, 4973)     0.233316966909351
  (0, 3792)     0.2705332480845492
  (0, 3600)     0.3598939188262559
  (0, 2959)     0.2468450128533713
  (0, 2483)     0.3676519686797209
  (0, 267)      0.2701012477708766
  (1, 16799)    0.30071745655510157
  (1, 6816)     0.1904660198296849
  (1, 5503)     0.7143299355715573
  (1, 3568)     0.26373768806048464
  (1, 2813)     0.19094574062359204
  (1, 2223)     0.3827320386859759
```

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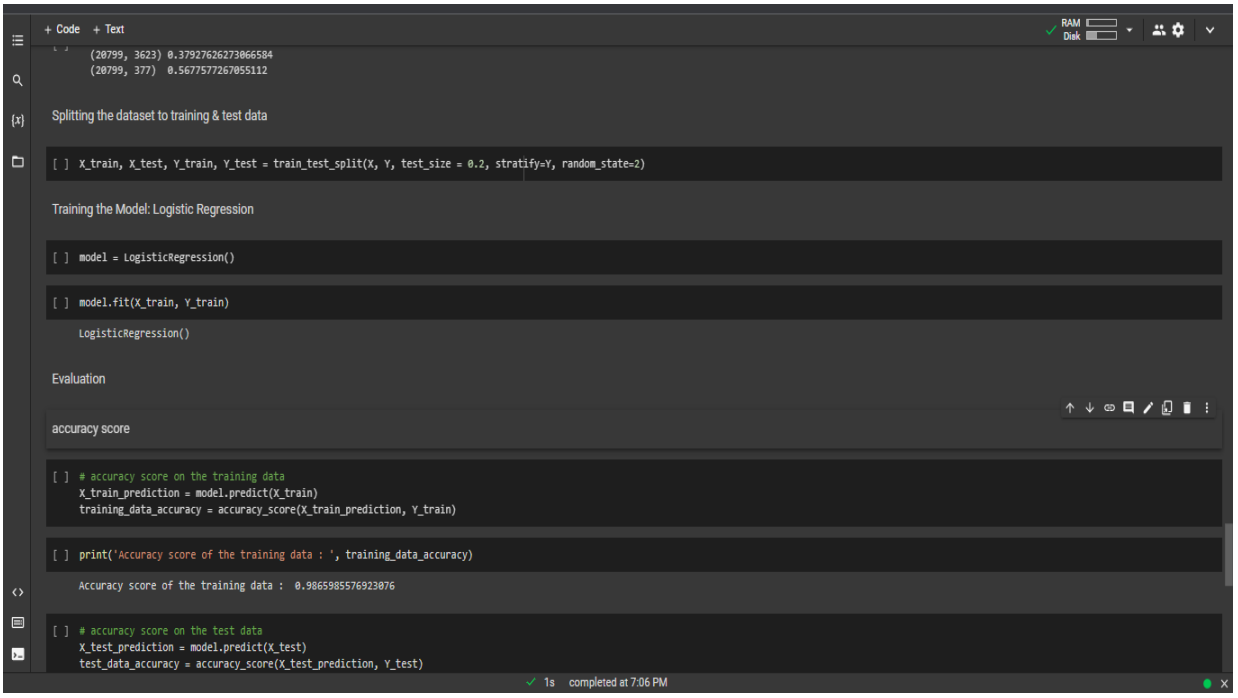
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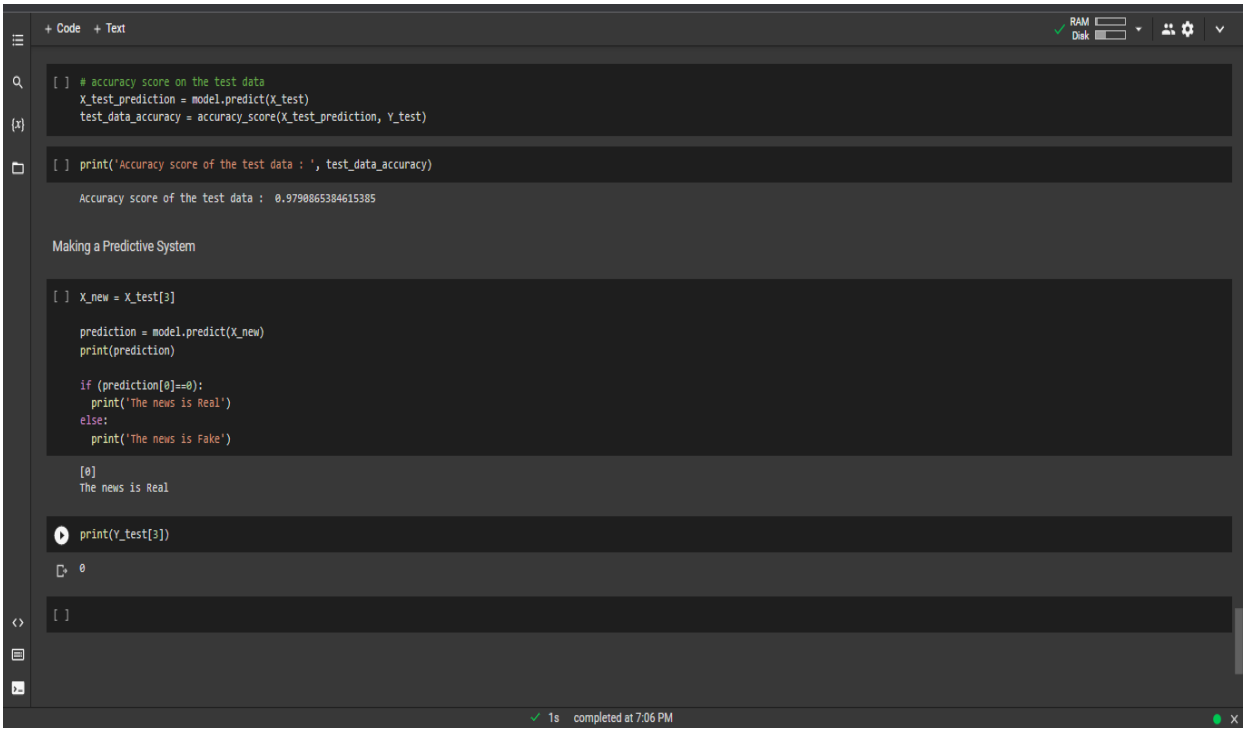
(20799, 3623) 0.3792762627306658
(20799, 377) 0.5677577267055112
Splitting the dataset to training & test data
[ ] X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size = 0.2, stratify=Y, random_state=2)
Training the Model: Logistic Regression
[ ] model = LogisticRegression()
[ ] model.fit(X_train, Y_train)
LogisticRegression()
Evaluation
accuracy score
[ ] # accuracy score on the training data
X_train_prediction = model.predict(X_train)
training_data_accuracy = accuracy_score(X_train_prediction, Y_train)
[ ] print('Accuracy score of the training data : ', training_data_accuracy)
Accuracy score of the training data : 0.9865985576923076
[ ] # accuracy score on the test data
X_test_prediction = model.predict(X_test)
test_data_accuracy = accuracy_score(X_test_prediction, Y_test)
1s completed at 7:06 PM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[ ] # accuracy score on the test data
X_test_prediction = model.predict(X_test)
test_data_accuracy = accuracy_score(X_test_prediction, Y_test)
[ ] print('Accuracy score of the test data : ', test_data_accuracy)
Accuracy score of the test data : 0.9790865384615385
Making a Predictive System
[ ] X_new = X_test[3]
prediction = model.predict(X_new)
print(prediction)
if (prediction[0]==0):
print('The news is Real')
else:
print('The news is Fake')
[0]
The news is Real
print(Y_test[3])
0
[ ]
1s completed at 7:06 PM