

```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split as ttp
from sklearn.metrics import classification_report
import re
import string
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
LR=LinearRegression()
```

```
[ ] data_true = pd.read_csv('/content/drive/MyDrive/True.csv')
data_fake = pd.read_csv('/content/drive/MyDrive/Fake.csv')
```

```
[ ] data_true.head(5)
```

		title	text	subject	date
0	As U.S. budget fight looms, Republicans flip t...	WASHINGTON (Reuters) - The head of a conservat...	politicsNews	December 31, 2017	
1	U.S. military to accept transgender recruits o...	WASHINGTON (Reuters) - Transgender people will...	politicsNews	December 29, 2017	
2	Senior U.S. Republican senator: 'Let Mr. Muell...	WASHINGTON (Reuters) - The special counsel inv...	politicsNews	December 31, 2017	
3	FBI Russia probe helped by Australian diplomat...	WASHINGTON (Reuters) - Trump campaign adviser ...	politicsNews	December 30, 2017	
4	Trump wants Postal Service to charge 'much mor...	SEATTLE/WASHINGTON (Reuters) - President Donal...	politicsNews	December 29, 2017	

```
[ ] data_fake.head(5)
```

		title	text	subject	date
0	Donald Trump Sends Out Embarrassing New Year'...	Donald Trump just couldn't wish all Americans ...	News	December 31, 2017	
1	Drunk Bragging Trump Staffer Started Russian ...	House Intelligence Committee Chairman Devin Nu...	News	December 31, 2017	
2	Sheriff David Clarke Becomes An Internet Joke...	On Friday, it was revealed that former Milwauk...	News	December 30, 2017	
3	Trump Is So Obsessed He Even Has Obama's Name...	On Christmas day, Donald Trump announced that ...	News	December 29, 2017	
4	Pope Francis Just Called Out Donald Trump Dur...	Pope Francis used his annual Christmas Day mes...	News	December 25, 2017	

```
[ ] data_true.shape, data_fake.shape
```

```
((21417, 4), (23481, 4))
```

```
data_true['class'] = 0
data_fake['class'] = 1
```

```
[ ] data_true_manual_testing = data_true.iloc[-10:]
data_true = data_true.iloc[:-10]

data_fake_manual_testing = data_fake.iloc[-10:]
data_fake = data_fake.iloc[:-10]
```

```
data_true['class'] = 0
data_fake['class'] = 1
```

+ Code

+ Text

```
[ ] data_true_manual_testing = data_true.iloc[-10:]
data_true = data_true.iloc[:-10]

data_fake_manual_testing = data_fake.iloc[-10:]
data_fake = data_fake.iloc[:-10]
```

```
[ ] data_manual_testing = pd.concat([data_fake_manual_testing,data_true_manual_testing],axis=0)
data_manual_testing.to_csv("manual_testing.csv")
```

```
[ ] data_merge = pd.concat([data_true,data_fake],axis=0)
data_merge.head(10)
```

		title	text	subject	date	class
0	As U.S. budget fight looms, Republicans flip t...	WASHINGTON (Reuters) - The head of a conservat...	politicsNews	December 31, 2017	0	
1	U.S. military to accept transgender recruits o...	WASHINGTON (Reuters) - Transgender people will...	politicsNews	December 29, 2017	0	
2	Senior U.S. Republican senator: 'Let Mr. Muell...	WASHINGTON (Reuters) - The special counsel inv...	politicsNews	December 31, 2017	0	
3	FBI Russia probe helped by Australian diplomat...	WASHINGTON (Reuters) - Trump campaign adviser ...	politicsNews	December 30, 2017	0	
4	Trump wants Postal Service to charge 'much mor...	SEATTLE/WASHINGTON (Reuters) - President Donal...	politicsNews	December 29, 2017	0	
5	White House, Congress prepare for talks on spe...	WEST PALM BEACH, Fla./WASHINGTON (Reuters) - T...	politicsNews	December 29, 2017	0	

3	FBI Russia probe helped by Australian diplomat...	WASHINGTON (Reuters) - Trump campaign adviser ...	politicsNews	December 30, 2017	0
4	Trump wants Postal Service to charge 'much mor...	SEATTLE/WASHINGTON (Reuters) - President Donal...	politicsNews	December 29, 2017	0
5	White House, Congress prepare for talks on spe...	WEST PALM BEACH, Fla./WASHINGTON (Reuters) - T...	politicsNews	December 29, 2017	0
6	Trump says Russia probe will be fair, but time...	WEST PALM BEACH, Fla (Reuters) - President Don...	politicsNews	December 29, 2017	0
7	Factbox: Trump on Twitter (Dec 29) - Approval ...	The following statements were posted to the ve...	politicsNews	December 29, 2017	0
8	Trump on Twitter (Dec 28) - Global Warming	The following statements were posted to the ve...	politicsNews	December 29, 2017	0
9	Alabama official to certify Senator-elect Jone...	WASHINGTON (Reuters) - Alabama Secretary of St...	politicsNews	December 28, 2017	0

```

print(data_merge.groupby(['subject'])['text'].count())
data_merge.groupby(['subject'])['text'].count().plot(kind='bar')
plt.title("Articles per subject",size=20)
plt.xlabel("Category",size=20)
plt.ylabel("Article count",size=20)
plt.show()

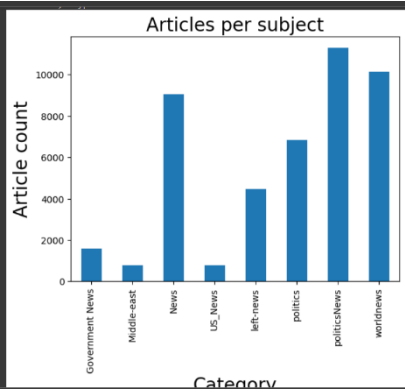
```

```

subject
Government News    1570
Middle-east        768
News               9050
US_News            783
left-news          4459
politics           6841
politicsNews       11272
worldnews          10135
Name: text, dtype: int64

```

Connected to Python 3 Google Compute Engine backend

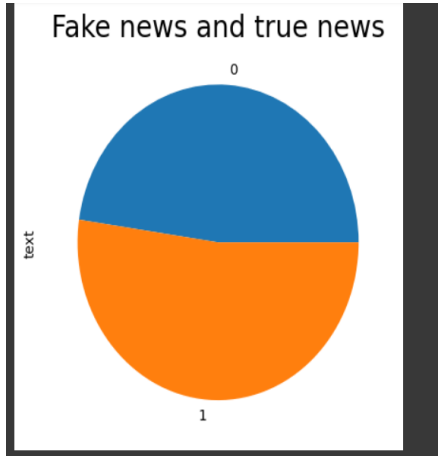


```

date
14-Feb-18
15-Feb-18
16-Feb-18
17-Feb-18
18-Feb-18

```

<https://100percentfedup.com/12-yr-old-black-conservative-whose-video-to-c>
<https://100percentfedup.com/served-roy-moore-vietnamletter-veteran-sets-r>
<https://100percentfedup.com/video-hillary-asked-about-trump-i-just-want-t>
<https://fedup.wpengine.com/wp-content/uploads/2015/04/entitled.jpg>
<https://fedup.wpengine.com/wp-content/uploads/2015/04/hillarystreetart.jp>
Name: text, Length: 2397, dtype: int64
0 = Fake news
1 = True news



```
data = data_merge.drop(['subject','date'],axis=1)
data.head(10)
```

		title	text	class
0	As U.S. budget fight looms, Republicans flip t...	WASHINGTON (Reuters) - The head of a conservat...		0
1	U.S. military to accept transgender recruits o...	WASHINGTON (Reuters) - Transgender people will...		0
2	Senior U.S. Republican senator: 'Let Mr. Muell...	WASHINGTON (Reuters) - The special counsel inv...		0
3	FBI Russia probe helped by Australian diplomat...	WASHINGTON (Reuters) - Trump campaign adviser ...		0
4	Trump wants Postal Service to charge 'much mor...	SEATTLE/WASHINGTON (Reuters) - President Donal...		0
5	White House, Congress prepare for talks on spe...	WEST PALM BEACH, Fla./WASHINGTON (Reuters) - T...		0
6	Trump says Russia probe will be fair, but time...	WEST PALM BEACH, Fla (Reuters) - President Don...		0
7	Factbox: Trump on Twitter (Dec 29) - Approval ...	The following statements were posted to the ve...		0
8	Trump on Twitter (Dec 28) - Global Warming	The following statements were posted to the ve...		0
9	Alabama official to certify Senator-elect Jone...	WASHINGTON (Reuters) - Alabama Secretary of St...		0

```
[ ] data=data.sample(frac=1)
data.head(10)
```

```
[ ] def filtering(data):
    text=data.lower()
    text=re.sub('\.[*?\\]', '', text)
    text=re.sub('https?://\S+|www\S+', '', text)
    text=re.sub('<.*?>+', '', text)
    text=re.sub('[%s]' % re.escape(string.punctuation), '', text)
    text=re.sub('\w*\d\w*', '',text)
    return text
```

```
data["text"]=data["text"].apply(filtering)
data.head(10)
```

		title	text	class
1387	Republicans move on tax reform; Fed officials ...	washington reuters congressional republicans ...		0
6587	Christian Group Admits To Sending Men Into Wo...	across the country conservative groups are wor...		1
18781	Fincantieri, Naval Group may exchange stakes i...	milan reuters italy s fincantieri and france ...		0
610	Obama Admin Official Just Humiliated Trump By...	wednesday morning donald trump started his day...		1
5331	Mattis welcomes naming of Trump's top security...	washington reuters us defense secretary jim m...		0
20000	FEMALE SAILOR FACES DISCIPLINE By US Navy For ...	warningif you watch this video you will encoun...		1
8834	FBI chief says his staff would face discipline...	washington reuters fbi director james comey t...		0
10596	SOCIAL MEDIA EXPLODES After Melania's Birthday...	do you see it right below the word birthday ...		1
17181	REMEMBER WHEN THE LEFT THOUGHT IT WAS 'FUNNY'	because it was a joke before it was politica...		1

```
data=data.sample(frac=1)
data.head(10)
```

		title	text	class
1387	Republicans move on tax reform; Fed officials ...	WASHINGTON (Reuters) - Congressional Republica...		0
6587	Christian Group Admits To Sending Men Into Wo...	Across the country, conservative groups are wo...		1
18781	Fincantieri, Naval Group may exchange stakes i...	MILAN (Reuters) - Italy s Fincantieri and Fran...		0
610	Obama Admin Official Just Humiliated Trump By...	Wednesday morning, Donald Trump started his da...		1
5331	Mattis welcomes naming of Trump's top security...	WASHINGTON (Reuters) - U.S. Defense Secretary ...		0
20000	FEMALE SAILOR FACES DISCIPLINE By US Navy For ...	***WARNING***If you watch this video, you will...		1
8834	FBI chief says his staff would face discipline...	WASHINGTON (Reuters) - FBI Director James Come...		0
10596	SOCIAL MEDIA EXPLODES After Melania's Birthday...	Do you see it? Right below the word birthday ...		1
17181	REMEMBER WHEN THE LEFT THOUGHT IT WAS 'FUNNY' ...	Because it was a joke before it was politica...		1
13849	Medical supplies, U.N. aid workers reach Yemen...	GENEVA/SANAA (Reuters) - Humanitarian aid work...		0

```
[ ] x=data["text"]#independent
    y=data["class"] #dependent

[ ] !pip install scikit-learn
    from sklearn.model_selection import train_test_split

    x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.25) # Split the data into training and testing sets

Requirement already satisfied: scikit-learn in /usr/local/lib/python3.10/dist-packages (1.2.2)
Requirement already satisfied: numpy>=1.17.3 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (1.25.2)
Requirement already satisfied: scipy>=1.3.2 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (1.11.4)
Requirement already satisfied: joblib>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (1.4.2)
Requirement already satisfied: threadpoolctl>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (3.5.0)
```

```
from sklearn.feature_extraction.text import TfidfVectorizer

vectorization = TfidfVectorizer()
xv_train = vectorization.fit_transform(x_train)
xv_test = vectorization.transform(x_test)

# You can now fit a classifier to the vectorized data
# For example, using Logistic Regression:
from sklearn.linear_model import LogisticRegression

LR = LogisticRegression()
LR.fit(xv_train,y_train)

# Predict on the test set
pred_lr=LR.predict(xv_test)

# Evaluate the model
print(classification_report(y_test, pred_lr))

# Vectorize the new input before prediction
new_text = ["modi is not pm of india"]
new_text_vectorized = vectorization.transform(new_text)
prediction = LR.predict(new_text_vectorized)

if prediction[0] == 0:
    print("This news is likely fake.")
else:
    print("This news is likely true.")
```

```
[ ] precision recall f1-score support
0 0.98 0.99 0.99 5347
1 0.99 0.99 0.99 5873

accuracy 0.99 11220
macro avg 0.99 0.99 0.99 11220
weighted avg 0.99 0.99 0.99 11220

This news is likely true.

[ ] from sklearn.ensemble import RandomForestClassifier

[ ] RFC = RandomForestClassifier(random_state=0) # You can set random_state to any integer.
    RFC.fit(xv_train, y_train)

RandomForestClassifier
RandomForestClassifier(random_state=0)

RFC.score(xv_test,y_test)

0.9844028520499108

[ ] pred_RFC = RFC.predict(xv_test)
```

```
[ ] # Evaluate the model
    print(classification_report(y_test, pred_RFC))

precision recall f1-score support
0 0.98 0.98 0.98 5347
1 0.99 0.98 0.99 5873

accuracy 0.98 11220
macro avg 0.98 0.98 0.98 11220
weighted avg 0.98 0.98 0.98 11220

def predict_news(text):
    text_vectorized = vectorization.transform([filtering(text)])
    prediction = RFC.predict(text_vectorized) # Use RFC instead of RF
    if prediction[0] == 1: # Access the prediction result
        return "This news is likely true."
    else:
        return "This news is likely fake."
    user_input = input("Enter news text: ")
    result = predict_news(user_input)
    print(result)

Enter news text: WASHINGTON (Reuters) - The head of a conservative Republican faction in the U.S.
This news is likely fake.
```

```
[ ] from sklearn.tree import DecisionTreeClassifier

[ ] DT = DecisionTreeClassifier()
    DT.fit(xv_train, y_train)

DecisionTreeClassifier
DecisionTreeClassifier()

DT.score(xv_test,y_test).round(2)

0.99

[ ] pred_DT = DT.predict(xv_test)

print(classification_report(y_test, pred_DT))

precision recall f1-score support
0 0.99 1.00 0.99 5347
1 1.00 0.99 0.99 5873

accuracy 0.99 11220
macro avg 0.99 0.99 0.99 11220
weighted avg 0.99 0.99 0.99 11220
```

```
[ ] def predict_news(text):
    text_vectorized = vectorization.transform([filtering(text)])
    prediction = DT.predict(text_vectorized)
    if prediction[0] == 1:
        return "This news is likely true."
    else:
        return "This news is likely fake."
    user_input = input("Enter news text: ")
    result = predict_news(user_input)
    print(result)

Enter news text: WASHINGTON (Reuters) - The head of a conservative Republican faction in the U.S.
This news is likely fake.
```