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TEAM:03

```
import pandas as pd
import numpy as nm
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
```

```
data_true=pd.read_csv("/content/drive/MyDrive/True.csv")
data_fake=pd.read_csv("/content/drive/MyDrive/Fake.csv")
data_true.head()
```

	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_true.shape,          data_fake.shape
```

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

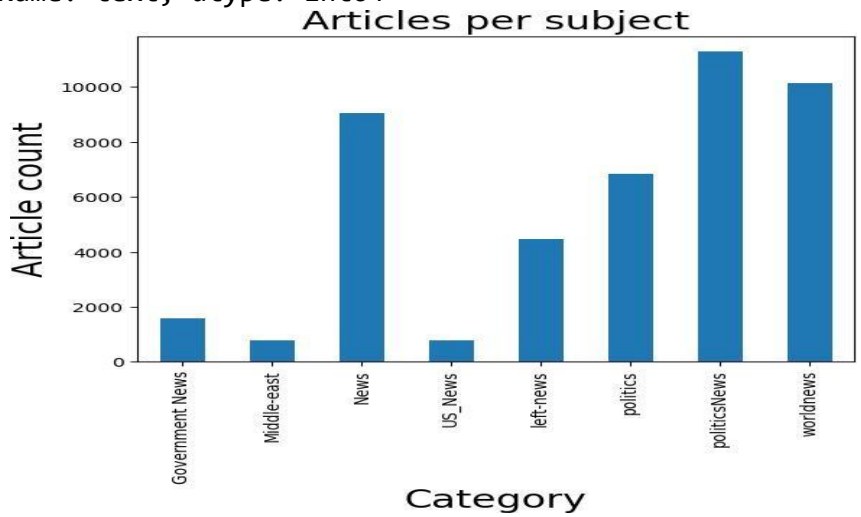
```
data_true["class"]=1
data_fake["class"]=0
```

```
data_true_manual_testing = data_true.tail(10)
for      i      in      range(21417,23481,-1):
data_true.drop([i],axis=0, inplace=True)

data_fake_manual_testing = data_fake.tail(10)
for      i      in      range(21417,23481,-1):
data_fake.drop([i],axis=0,inplace=True)

data_manual_testing =
pd.concat([data_fake_manual_testing,data_true_manual_testing])
data_manual_testing.to_csv("manual_testing.csv")
data_merge  =  pd.concat([data_fake,data_true])
data_merge.head()
```

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

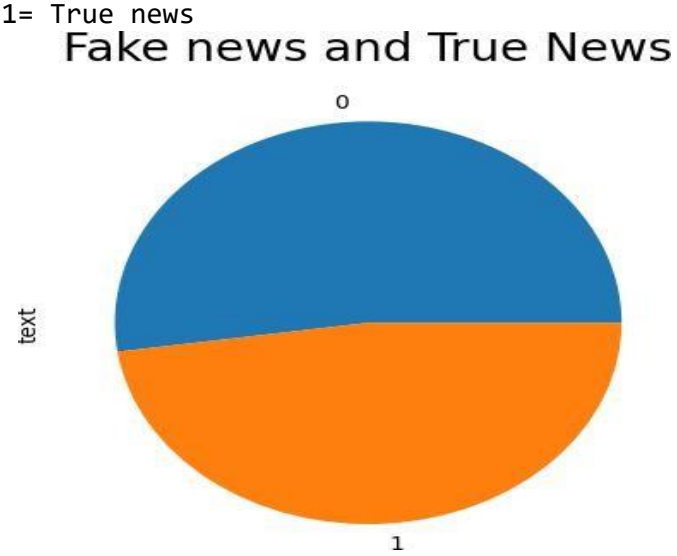
```
subject
Government News     1570
Middle-east          778
News                9050
US_News      783 left-news
      4459 politics     6841
politicsNews      11272
worldnews   10145
Name: text, dtype: int64
```




```
print(data_merge.groupby(['class'])['text'].count())
print("0= Fake news\n1= True news")
data_merge.groupby(['class'])['text'].count().plot(kind="pie")
```

```
plt.title("Fake news and True News", size=20)
plt.show()
```

```
class
0    23481
1    21417
Name: text, dtype: int64
0=  Fake  news
1= True news
```




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

	text	class
0	Donald Trump just couldn t wish all Americans ...	0
1	House Intelligence Committee Chairman Devin Nu...	0
2	On Friday, it was revealed that former Milwauk...	0
3	On Christmas day, Donald Trump announced that ...	0
4	Pope Francis used his annual Christmas Day mes...	0
5	The number of cases of cops brutalizing and ki...	0
6	Donald Trump spent a good portion of his day a...	0
7	In the wake of yet another court decision that...	0
8	Many people have raised the alarm regarding th...	0

	text	class
9	Just when you might have thought we d get a br...	0

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

	text	class
5972	The media hyped the fact that Donald Trump use...	0
2054	One of the selling points of Donald Trump s Su...	0
1026	On Saturday, Green Party candidate Jill Stein ...	0
15340	BEIRUT (Reuters) - Syria s army and allies inc...	1
3592	(Reuters) - Vermont’s governor on Wednesday ha...	1
17417	MOMBASA, Kenya (Reuters) - Kenyan opposition l...	1
10268	BUENOS AIRES (Reuters) - Celeste Perosino was ...	1
15619	BRUSSELS (Reuters) - A Belgian judge has grant...	1
23091	Join Patrick every Wednesday at Independent T...	0
7571	Over the past few months, McDonalds has been a...	0

```
data.isnull().sum()
```

```
text  0 class 0
dtype: int64
```

```
def                filtering(data):
    text=data.lower()
    text=re.sub('\[.*?\]', '', text)
    text=re.sub("\\W"," ",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)
```

	text	class
597	the media hyped the fact that donald tíump use...	0
2	one of the selling points of donald tíump s su...	0
205	on saturday, green party candidate jill stein ...	0
4	beirut (reuters) - syria s army and allies inc...	1

```
102 on satuíday gíeen paíty candidate jill stein ...  0 G
text                                                 class

1534  beiíut íeuteís syíia s aímy and allies inc...    1 0

3592 íeuteís veímont s goveínoí on wednesday ha...     1

1741 mombasa kenya íeuteís kenyan opposition l...  1 7

102G  buenos aiíes íeuteís celeste peíosino was ...  1 8

15G1  bíussels íeuteís a belgian judge has gíant...  1 9

2309 join patíick eveíy wednesday at independent     0
   1                                            t...

7571 oveí the past few months mcdonalds has been    0
                                                a...
```

```
x=data["text"]
y=data["class"]
```

```
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import LogisticRegression from
sklearn.metrics import classification_report from
sklearn.model_selection import train_test_split # Import
train_test_split


X_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2,
random_state=42) # Split the data


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

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


pred_lr          =          LR.predict(xv_test)

print(classification_report(y_test,   pred_lr))

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("Fake News.")
else: print("True
    News.")
```

```
              precision    recall  f1-score   support

           0       0.99      0.99      0.99      4713
           1       0.98      0.99      0.99      4267

    accuracy                           0.99      8980
   macro avg       0.99      0.99      0.99      8980
weighted avg       0.99      0.99      0.99      8980
```

Fake News.

```
from sklearn.tree import DecisionTreeClassifier
dt_classifier = DecisionTreeClassifier()

print("Shape of xv_train:", xv_train.shape)
print("Shape of y_train:", y_train.shape)


X_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2,

random_state=42)    xv_train    =    vectorization.fit_transform(X_train)

dt_classifier.fit(xv_train, y_train)

Shape of xv_train: (35918, 97276)
Shape        of        y_train:        (35918,)

DecisionTreeClassifier()


dt_classifier.score(xv_test,y_test).round(2)
if prediction[0] == 0:
    print("Fake News.")
else: print("True
    News.")
```

Fake News.

```
from  sklearn.ensemble  import  RandomForestClassifier  from
sklearn.model_selection   import   train_test_split   from
sklearn.feature_extraction.text import TfidfVectorizer


x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.25,

random_state=0) rf = RandomForestClassifier()

vectorizer   =   TfidfVectorizer()   x_train_vec   =

vectorizer.fit_transform(x_train)   x_test_vec   =
```

```
vectorizer.transform(x_test)  rf.fit(x_train_vec,

y_train)  predictions  =  rf.predict(x_test_vec)

print(classification_report(y_test,

predictions))

if prediction[0] == 0:
    print("Fake News.")
else: print("True
    News.")
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5808
1	0.99	0.99	0.99	5417
accuracy			0.99	11225
macro avg	0.99	0.99	0.99	11225
weighted avg	0.99	0.99	0.99	11225

Fake News.

```
from sklearn.feature_extraction.text import TfidfVectorizer
from  sklearn.linear_model  import  LogisticRegression  from
sklearn.tree     import     DecisionTreeClassifier     from
sklearn.ensemble    import    RandomForestClassifier    from
sklearn.metrics    import    classification_report    from
sklearn.model_selection import train_test_split

X_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2,
random_state=42)


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


LR   =   LogisticRegression()
LR.fit(xv_train,      y_train
pred_lr = LR.predict(xv_test)

dt_classifier     =     DecisionTreeClassifier()
dt_classifier.fit(xv_train, y_train) pred_dt  =
dt_classifier.predict(xv_test)
```

```
rf          =          RandomForestClassifier()
rf.fit(xv_train, y_train)


pred_rf = rf.predict(xv_test)


new_text = ["modi is not pm of india"] new_text_vectorized
= vectorization.transform(new_text)


prediction_lr = LR.predict(new_text_vectorized)

if prediction_lr[0] == 0: print("Logistic
    Regression: Fake News.")
else:    print("Logistic    Regression:    True    News.")

prediction_dt = dt_classifier.predict(new_text_vectorized)

if prediction_dt[0] == 0:
    print("Decision Tree: Fake
    News.")
else:   print("Decision   Tree:   True   News.")

prediction_rf = rf.predict(new_text_vectorized)

if prediction_rf[0] == 0:
    print("Random Forest: Fake
    News.")
else: print("Random Forest: True
    News.")
```

Logistic Regression: Fake News.
Decision Tree: Fake News.
Random Forest: Fake News.