

```
In [1]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score
from sklearn.metrics import classification_report
import re
import string

In [4]: data_fake = pd.read_csv("C:\Users\nandh\Downloads\Fake.csv")
data_true = pd.read_csv("C:\Users\nandh\Downloads\True.csv")

In [5]: data_fake.head()

Out[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

```
In [6]: data_true.head()

Out[6]:
```

	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. Mue...	WASHINGTON (Reuters) - The special counsel inv...	politicsNews	December 31, 2017
3	FBI Russia probe helped by Australian diplom...	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

```
In [7]: data_fake['class'] = 0
data_true['class'] = 1

In [8]: data_fake.shape, data_true.shape

Out[8]: ((23481, 5), (21417, 5))

In [9]: data_fake_manual_testing = data_fake.tail(10)
for i in range(23480, 23470, -1):
    data_fake.drop(i, axis = 0, inplace = True)

data_true_manual_testing = data_true.tail(10)
for i in range(21416, 21406, -1):
    data_true.drop(i, axis = 0, inplace = True)

In [10]: data_fake.shape, data_true.shape

Out[10]: ((23471, 5), (21407, 5))

In [11]: data_fake_manual_testing['class'] = 0
data_true_manual_testing['class'] = 1

C:\Users\nandh\AppData\Local\Temp\ipykernel_18732\277247672.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
data_fake_manual_testing['class'] = 0

C:\Users\nandh\AppData\Local\Temp\ipykernel_18732\277247672.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
data_true_manual_testing['class'] = 1

In [12]: data_fake_manual_testing.head(10)

Out[12]:
```

	title	text	subject	date	class
23471	Seven Iranians freed in the prisoner swap have...	21st Century Wire says This week, the historic...	Middle-east	January 20, 2016	0
23472	#Hashtag Hell & The Fake Left	By Dady Chery and Gilbert MercierAll writers ...	Middle-east	January 19, 2016	0
23473	Astrofurfing: Journalist Reveals Brainwashing ...	Vic Bishop Waking TimesOur reality is carefull...	Middle-east	January 19, 2016	0
23474	The New American Century: An Era of Fraud	Paul Craig RobertsIn the last years of the 20L...	Middle-east	January 19, 2016	0
23475	Hillary Clinton: 'Israel First' (and no peace ...	Robert Fantina CounterpunchAlthough the United...	Middle-east	January 18, 2016	0
23476	McPain: John McCain Furious That Iran Treated ...	21st Century Wire says As 21WIRE reported earl...	Middle-east	January 16, 2016	0
23477	JUSTICE? Yahoo Settles E-mail Privacy Class-ac...	21st Century Wire says It's a familiar theme. ...	Middle-east	January 16, 2016	0
23478	Surnistan: US and Allied 'Safe Zone' Plan to T...	Patrick Henningsen 21st Century WireRemember ...	Middle-east	January 15, 2016	0
23479	How to Blow \$700 Million: Al Jazeera America F...	21st Century Wire says Al Jazeera America will...	Middle-east	January 14, 2016	0
23480	10 U.S. Navy Sailors Held by Iranian Military ...	21st Century Wire says As 21WIRE predicted in ...	Middle-east	January 12, 2016	0

```
In [13]: data_true_manual_testing.head(10)

Out[13]:
```

	title	text	subject	date	class
21407	Mata Pires, owner of embattled Brazil builder ...	SAO PAULO (Reuters) - Cesar Mata Pires, the ow...	worldnews	August 22, 2017	1
21408	U.S., North Korea clash at U.N. forum over nuc...	GENEVA (Reuters) - North Korea and the United ...	worldnews	August 22, 2017	1
21409	U.S., North Korea clash at U.N. arms forum on ...	GENEVA (Reuters) - North Korea and the Unlede...	worldnews	August 22, 2017	1
21410	Headless torso could belong to submarine journ...	COPENHAGEN (Reuters) - Danish police said on T...	worldnews	August 22, 2017	1
21411	North Korea shipments to Syria chemical arms a...	UNITED NATIONS (Reuters) - Two North Korean sh...	worldnews	August 21, 2017	1
21412	'Fully committed' NATO backs new U.S. approach...	BRUSSELS (Reuters) - NATO allies on Tuesday we...	worldnews	August 22, 2017	1
21413	LexisNexis withdraw two products from Chinese ...	LONDON (Reuters) - LexisNexis, a provider of l...	worldnews	August 22, 2017	1
21414	Minsk cultural hub becomes haven from authorities	MINSK (Reuters) - In the shadow of disused Sov...	worldnews	August 22, 2017	1
21415	Vatican upbeat on possibility of Pope Francis ...	MOSCOW (Reuters) - Vatican Secretary of State ...	worldnews	August 22, 2017	1
21416	Indonesia to buy \$1.14 billion worth of Russia...	JAKARTA (Reuters) - Indonesia will buy 11 Sukh...	worldnews	August 22, 2017	1

```
In [14]: data_merge = pd.concat([data_fake, data_true], axis = 0)
data_merge.head(10)

Out[14]:
```

	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
5	Racist Alabama Cops Brutalize Black Boy While...	The number of cases of cops brutalizing and ki...	News	December 25, 2017	0
6	Fresh Off The Golf Course, Trump Lashes Out A...	Donald Trump spent a good portion of his day a...	News	December 23, 2017	0
7	Trump Said Some INSANELY Racist Stuff Inside ...	In the wake of yet another court decision that...	News	December 23, 2017	0
8	Former CIA Director Slams Trump Over UN Bully...	Many people have raised the alarm regarding th...	News	December 22, 2017	0
9	WATCH: Brand-New Pro-Trump Ad Features So Muc...	Just when you might have thought we'd get a br...	News	December 21, 2017	0

```
In [15]: data_merge.columns

Out[15]: Index(['title', 'text', 'subject', 'date', 'class'], dtype='object')

In [16]: data = data_merge.drop(['title', 'subject', 'date'], axis = 1)

In [17]: data.isnull().sum()

Out[17]: text      0
class      0
dtype: int64

In [18]: data = data.sample(frac = 1)

In [19]: data.head()

Out[19]:
```

	text	class
19770	Rush Limbaugh was cheering for Trump and how h...	0
20260	Obama s war on America just got real These act...	0
18027	Comedian blasts NYC Mayor Bill de Blasio for c...	0
18198	Supporters of the rule of law crashed a pro-ill...	0
9006	WASHINGTON (Reuters) - The White House on Thur...	1

```
In [20]: data.reset_index(inplace = True)
data.drop(['index'], axis = 1, inplace = True)

In [21]: data.columns

Out[21]: Index(['text', 'class'], dtype='object')

In [22]: data.head()

Out[22]:
```

	text	class
0	Rush Limbaugh was cheering for Trump and how h...	0
1	Obama s war on America just got real These act...	0
2	Comedian blasts NYC Mayor Bill de Blasio for c...	0
3	Supporters of the rule of law crashed a pro-ill...	0
4	WASHINGTON (Reuters) - The White House on Thur...	1

```
In [23]: import re
def wordopt(text):
    text = text.lower()
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    text = re.sub(r'([^\w\d])', '', text)
    return text

In [24]: data['text'] = data['text'].apply(wordopt)

In [25]: x = data['text']
y = data['class']

In [26]: x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.25)

In [27]: from sklearn.feature_extraction.text import TfidfVectorizer
vectorization = TfidfVectorizer()
xv_train = vectorization.fit_transform(x_train)
xv_test = vectorization.transform(x_test)

In [28]: from sklearn.linear_model import LogisticRegression
LR = LogisticRegression()
LR.fit(xv_train, y_train)

Out[28]: LogisticRegression

In [29]: pred_lr = LR.predict(xv_test)

In [30]: LR.score(xv_test, y_test)

Out[30]: 0.9878787878787879

In [31]: print(classification_report(y_test, pred_lr))

precision    recall  f1-score   support

0       0.99       0.99       0.99       5889
1       0.99       0.99       0.99       5331

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

In [32]: from sklearn.tree import DecisionTreeClassifier
DT = DecisionTreeClassifier()
DT.fit(xv_train, y_train)

Out[32]: DecisionTreeClassifier

In [33]: pred_dt = DT.predict(xv_test)

In [34]: DT.score(xv_test, y_test)

Out[34]: 0.9955436720142602

In [35]: print(classification_report(y_test, pred_dt))

precision    recall  f1-score   support

0       0.99       1.00       1.00       5889
1       1.00       0.99       1.00       5331

accuracy          1.00          1.00          1.00          11220
macro avg          1.00          1.00          1.00          11220
weighted avg          1.00          1.00          1.00          11220

In [37]: from sklearn.ensemble import RandomForestClassifier
RF = RandomForestClassifier(random_state = 0)
RF.fit(xv_train, y_train)

Out[37]: RandomForestClassifier

In [38]: pred_rf = RF.predict(xv_test)

In [39]: RF.score(xv_test, y_test)

Out[39]: 0.98868926916221

In [40]: print(classification_report(y_test, pred_rf))

precision    recall  f1-score   support

0       0.99       0.99       0.99       5889
1       0.99       0.99       0.99       5331

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

In [41]: def output_label(n):
    if n == 0:
        return "Fake News"
    elif n == 1:
        return "Not a Fake News"

def manual_testing(news):
    testing_news = ("test": [news])
    print("Testing News Dictionary:", testing_news)
    new_def_test = pd.DataFrame(testing_news)

    print("DataFrame Columns:", new_def_test.columns)
    print("DataFrame Preview:\n", new_def_test.head())

    if "test" in new_def_test.columns:
        new_def_test["text"] = new_def_test["test"].apply(wordopt)
    else:
        print("Error: column 'text' not found in DataFrame")
        return
    new_x_test = new_def_test["text"]
    new_xv_test = vectorization.transform(new_x_test)

    pred_LR = LR.predict(new_xv_test)
    pred_DT = DT.predict(new_xv_test)
    pred_RF = RF.predict(new_xv_test)

    return print("\n\nLR Prediction: {} \nDT Prediction: {} \nRFC Prediction: {}".format(output_label(pred_LR[0]),
                                                                                          output_label(pred_DT[0]),
                                                                                          output_label(pred_RF[0])))

In [43]: news = str(input())
manual_testing(news)

Testing News Dictionary: {'test': ['WASHINGTON (Reuters) - Transgender people will be allowed for the first time to enlist in the U.S. military starting on Monday as ordered by federal courts, the Pentagon said on Friday, after Presi
dent Donald Trump's administration decided not to appeal rulings that blocked his transgender ban. Two federal appeals courts, one in Washington and one in Virginia, last week rejected the administration's request to put on hold o
rders by lower court judges requiring the military to begin accepting transgender recruits on Jan. 1. A Justice Department official said the administration will not challenge those rulings. "The Department of Defense has announced t
hat it will be releasing an independent study of these issues in the coming weeks. So rather than litigate this interim appeal before that occurs, the administration has decided to wait for DOD's study and will continue to defend th
e president's lawful authority in district court in the meantime," said the official said, speaking on condition of anonymity. In September, the Pentagon said it had created a panel of senior officials to study how to implement a di
rective by Trump to prohibit transgender individuals from serving. The Defense Department has until Feb. 21 to submit a plan to Trump. Lawyers representing currently-serving transgender service members and aspiring recruits said they
expected the administration to appeal the rulings to the conservative-majority Supreme Court, but were hoping that would not happen. Pentagon spokeswoman Heather Babb said in a statement: "As mandated by court order, the Departm
ent of Defense is prepared to begin accessing transgender applicants for military service Jan. 1. All applicants must meet all accession standards." said Jennifer Levi, a lawyer with gay, lesbian and transgender advocacy group GLAD, c
alled the decision not to appeal "a great news." said Levi, hoping it means the government has come to see that there is no way to justify a ban and that it's not good for the military or our country." said Levi said. Both GLAD a
nd the American Civil Liberties Union represent plaintiffs in the lawsuits filed against the administration. In a move that appealed to his hard-line conservative supporters, Trump announced in July that he would prohibit transgender
people from serving in the military, reversing Democratic President Barack Obama's policy of accepting them. Trump said on Twitter at the time that the military "cannot be burdened with the tremendous medical costs and disruption
that transgender in the military would entail." said Four federal judges - in Baltimore, Washington, D.C., Seattle and Riverside, California - have issued rulings blocking Trump's ban while legal challenges to the Republican president
and the policy proceed. The judges said the ban would likely violate the right under the U.S. Constitution to equal protection under the law. The Pentagon on Dec. 9 issued guidelines to recruitment personnel in order to enlist transgen
der applicants by Jan. 1. The memo outlined medical requirements and specified how the applicants' sex would be identified and even which undergarments they would wear. The Trump administration previously said in legal papers that t
he armed forces were not prepared to train thousands of personnel on the medical standards needed to process transgender applicants and might have to accept "some individuals who are not medically fit for service." said the Obama ad
ministration had set a deadline of July 1, 2017, to begin accepting transgender recruits. But Trump's defense secretary, James Mattis, postponed that date to Jan. 1, 2018, which the president's ban then put off indefinitely. Trump
has taken other steps aimed at rolling back transgender rights. In October, his administration said a federal law banning gender-based workplace discrimination does not protect transgender employees, reversing another Obama-era posit
ion. In February, Trump rescinded guidance issued by the Obama administration saying that public schools should allow transgender students to use the restroom that corresponds to their gender identity. '})

DataFrame Columns: Index(['text'], dtype='object')
DataFrame Preview:

text
0  WASHINGTON (Reuters) - Transgender people will...

LR Prediction: Not a Fake News
DT Prediction: Not a Fake News
RFC Prediction: Not a Fake News

In [ ]:
```