```python
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
import string
import re
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score
from sklearn.metrics import classification_report


import pandas as pd

# Use the 'python' engine to handle potential quoting issues,
# and add error_bad_lines=False to skip problematic lines
data_fake = pd.read_csv('/content/Fake.csv', engine='python', on_bad_lines='skip')
data_true = pd.read_csv('/content/True.csv', engine='python', on_bad_lines='skip')


data_fake.head()
```

	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

```python
data_true.tail()
```

	title	text	subject	date
16898	Deadly Somalia blast reveals flaws in intellig…	NAIROBI/MOGADISHU (Reuters) - The size and met…	worldnews	October 20, 2017
16899	Georgian president reluctantly signs new const…	TBILISI (Reuters) - Georgian President Giorgi …	worldnews	October 20, 2017
16900	At least 46 attacks in area of Niger where U.S…	NIAMEY (Reuters) - A part of southwestern Nige…	worldnews	October 20, 2017
16901	Germany will await prosecution 'ok' before del…	BERLIN (Reuters) - Germany will wait for Israe…	worldnews	October 20, 2017
16902	Thousands of Somalis gather to mourn bomb victims	MOGADISHU (Reuters) - Thousands of Somalis pra…	worldnews	October 20, 2017

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


data_fake.shape, data_true.shape
```
```
((19569, 5), (16903, 5))
```

```python
data_fake_manual_testing = data_fake.tail(10)
# Get the last 10 valid indices of data_fake
last_valid_index_fake = data_fake.index[-1]
indices_to_drop_fake = list(range(last_valid_index_fake, last_valid_index_fake - 10, -1))
# Drop rows by index labels
data_fake.drop(indices_to_drop_fake, axis=0, inplace=True)

data_true_manual_testing = data_true.tail(10)
# Get the last 10 valid indices of data_true
last_valid_index_true = data_true.index[-1]
indices_to_drop_true = list(range(last_valid_index_true, last_valid_index_true - 10, -1))
# Drop rows by index labels
data_true.drop(indices_to_drop_true, axis=0, inplace=True)


data_fake.shape, data_true.shape
```
```
((19559, 5), (16893, 5))
```

```python
data_fake_manual_testing['class']=0
data_true_manual_testing['class']=1
```

```
<ipython-input-24-350d73592787>: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-cc
  data_fake_manual_testing['class']=0
<ipython-input-24-350d73592787>: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-cc
  data_true_manual_testing['class']=1
```

data_fake_manual_testing.head(10)

	title	text	subject	date	class
19559	TRIGGERED? POLICE OFFICER Kicked Out Of Event ...	The city s first transgender police officer wa...	left-news	Nov 24, 2016	0
19560	EMAIL REVEALS UNIV Of Pittsburgh Telling Profe...	Just imagine how many brilliant young American...	left-news	Nov 24, 2016	0
19561	WOW! Leftist Bully ROSIE O'DONNELL PUSHES Horr...	https://twitter.com/Rosie/status/8009393386158...	left-news	Nov 23, 2016	0
19562	BREAKING: TRUMP CHOOSES Pro-School Voucher, Ka...	But parent activists are suggesting Trump is g...	left-news	Nov 23, 2016	0
19563	KEY TRUMP ADVISOR: ELTON JOHN Will Perform At ...	Elton John will perform at Donald Trump s inau...	left-news	Nov 23, 2016	0
19564	TALENTLESS Gigi Hadid Makes Ridiculous "Apolog...	Here s Gigi Hadid s ridiculous apology to Mel...	left-news	Nov 23, 2016	0
19565	BREAKING: HILLARY CAMP Looking To Challenge Vo...	Reports from several sources revealed on Novem...	left-news	Nov 22, 2016	0
19566	STUDENTS BRAVELY DEFY Catholic College VP's Wa...	Student government leaders at Loyola Universit...	left-news	Nov 22, 2016	0
19567	OOPS! CRYBABY HAMILTON STARS Who Lectured Penc...	There are no records available for this year, ...	left-news	Nov 22, 2016	0
19568	COMEDIAN TIM ALLEN On Hollywood Hypocrites: Th...	https://youtu.be/0J4xPRYbsLU	left-news	Nov 22, 2016	0

data_true_manual_testing.head(10)

	title	text	subject	date	class
16893	Raqqa to be part of 'federal Syria', U.S.-back...	BEIRUT (Reuters) - Raqqa will be part of a dec...	worldnews	October 20, 2017	1
16894	France's Macron says Raqqa fall not end of bat...	PARIS (Reuters) - President Emmanuel Macron sa...	worldnews	October 20, 2017	1
16895	Turkey says Kurdish militant banner in Raqqa s...	ISTANBUL (Reuters) - Turkey said on Friday tha...	worldnews	October 20, 2017	1
16896	Turkey to allow muftis to conduct weddings, sp...	ANKARA (Reuters) - Turkey s parliament approve...	worldnews	October 20, 2017	1
16897	Russian aerobatics team joins Serbian display ...	BELGRADE (Reuters) - Russia s elite aerobatic ...	worldnews	October 20, 2017	1
16898	Deadly Somalia blast reveals flaws in intellig...	NAIROBI/MOGADISHU (Reuters) - The size and met...	worldnews	October 20, 2017	1
16899	Georgian president reluctantly signs new const...	TBILISI (Reuters) - Georgian President Giorgi ...	worldnews	October 20, 2017	1
16900	At least 46 attacks in area of Niger where U.S...	NIAMEY (Reuters) - A part of southwestern Nige...	worldnews	October 20, 2017	1
16901	Germany will await prosecution 'ok' before del...	BERLIN (Reuters) - Germany will wait for Israe...	worldnews	October 20, 2017	1
16902	Thousands of Somalis gather to mourn bomb victims	MOGADISHU (Reuters) - Thousands of Somalis pra...	worldnews	October 20, 2017	1

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

	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

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

	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

```
data_merge.columns
```

```
Index(['title', 'text', 'subject', 'date', 'class'], dtype='object')
```

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

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

	0
text	0
class	0

dtype: int64

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

```
data.head()
```

	text	class
1337	BELGRADE (Reuters) - Turkish President Tayyip ...	1
1927	WASHINGTON (Reuters) - The U.S. Justice Depart...	1
18917	New Mexico led all states with 72 percent of t...	0
7924	PARIS (Reuters) - The prospect Donald Trump co...	1
18718	Nathan Domingo is the founder of Identity Eur...	0

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

```python
data.columns
```

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

```python
data.head()
```

	text	class
0	BELGRADE (Reuters) - Turkish President Tayyip ...	1
1	WASHINGTON (Reuters) - The U.S. Justice Depart...	1
2	New Mexico led all states with 72 percent of t...	0
3	PARIS (Reuters) - The prospect Donald Trump co...	1
4	Nathan Domingo is the founder of Identity Eur...	0

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

```python
data['text'] = data['text'].apply(wordopt)
```

```python
x = data['text']
y = data['class']
```

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

```python
from sklearn.feature_extraction.text import TfidfVectorizer
vectorization = TfidfVectorizer()
xv_train = vectorization.fit_transform(x_train)
xv_test = vectorization.transform(x_test)
```

```python
from sklearn.linear_model import LogisticRegression
LR = LogisticRegression()
LR.fit(xv_train, y_train)
```

```
▾  LogisticRegression ⓘ ⍰
   LogisticRegression()
```

```python
pred_lr = LR.predict(xv_test)
LR.score(xv_test, y_test)
```

0.9871611982881597

```python
print (classification_report(y_test, pred_lr))
```

```
              precision    recall  f1-score   support

           0       0.99      0.99      0.99      4848
           1       0.99      0.99      0.99      4265

    accuracy                           0.99      9113
   macro avg       0.99      0.99      0.99      9113
weighted avg       0.99      0.99      0.99      9113
```

```python
from sklearn.tree import DecisionTreeClassifier
DT = DecisionTreeClassifier()
DT.fit(xv_train, y_train)
```

```
DecisionTreeClassifier ⓘ ?
DecisionTreeClassifier()
```

```
pred_dt = DT.predict(xv_test)
DT.score(xv_test, y_test)
```

0.9951717326895644

```
print (classification_report(y_test, pred_lr))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	4848
1	0.99	0.99	0.99	4265
accuracy			0.99	9113
macro avg	0.99	0.99	0.99	9113
weighted avg	0.99	0.99	0.99	9113

```
from sklearn.preprocessing import LabelEncoder
from sklearn.ensemble import RandomForestClassifier

# Create a LabelEncoder object
encoder = LabelEncoder()

# Convert x_train to a DataFrame if it's a Series
if isinstance(x_train, pd.Series):
    x_train = x_train.to_frame()  # Convert to DataFrame

# Assuming 'x_train' is now a pandas DataFrame:
for column in x_train.select_dtypes(include=['object']).columns:
    x_train[column] = encoder.fit_transform(x_train[column])

# Now fit the model
RF = RandomForestClassifier(random_state=0)
RF.fit(x_train, y_train)
```

```
RandomForestClassifier        ⓘ ?
RandomForestClassifier(random_state=0)
```

```
pred_rf = RF.predict(x_train)
RF.score(x_train, y_train)
```

0.9999268444346904

```
print (classification_report(y_test, pred_lr))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	4848
1	0.99	0.99	0.99	4265
accuracy			0.99	9113
macro avg	0.99	0.99	0.99	9113
weighted avg	0.99	0.99	0.99	9113

```
from sklearn.ensemble import GradientBoostingClassifier
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder  # Import LabelEncoder

# Assuming 'x' and 'y' are your features and target variable respectively:
# Replace 'x' and 'y' with your actual data.
x = pd.DataFrame({'feature1': [1, 2, 3, 4, 5], 'feature2': ['a', 'b', 'c', 'd', 'e']})
y = pd.Series([0, 1, 0, 1, 0])

# Create a LabelEncoder object
encoder = LabelEncoder()

# Fit and transform the categorical feature 'feature2'
```

```python
x['feature2'] = encoder.fit_transform(x['feature2']) # Encode 'feature2' to numerical values

# Split your data into training and testing sets:
xv_train, xv_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=0) # creates xv_train and other variables

# Now, fit your model:
GB = GradientBoostingClassifier(random_state=0)
GB.fit(xv_train, y_train)
```

```
▼       GradientBoostingClassifier       ⓘ ⓘ
    GradientBoostingClassifier(random_state=0)
```

```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
x = pd.DataFrame({'feature1': [1, 2, 3, 4, 5], 'feature2': ['a', 'b', 'c', 'd', 'e']})
y = pd.Series([0, 1, 0, 1, 0])
encoder = LabelEncoder()
x['feature2'] = encoder.fit_transform(x['feature2'])
xv_train, xv_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=0)
pred_gb = GB.predict(xv_train)
GB.score(xv_train, y_train)
```

```
1.0
```

```python
print (classification_report(y_test, pred_lr))
```

```
              precision    recall  f1-score   support

           0       0.99      0.99      0.99      4848
           1       0.99      0.99      0.99      4265

    accuracy                           0.99      9113
   macro avg       0.99      0.99      0.99      9113
weighted avg       0.99      0.99      0.99      9113
```

```python
def output_lable(n):
    if n==0:
        return "Fake News"
    elif n==1:
        return "Not A Fake News"

def manual_testing(news):
    testing_news = {"text":[news]}
    new_def_test = pd.DataFrame(testing_news)
    new_def_test['text'] = new_def_test["text"].apply(wordopt)
    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_GB = GB.predict(new_xv_test)
    pred_RF = RF.predict(new_xv_test)

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


def output_label(prediction):
    if prediction == 1:
        return "Positive"
    elif prediction == 0:
        return "Negative"
    else:
        return "Unknown"

# Function that performs the manual testing
def manual_testing(news):
    # Assume pred_LR, pred_DT, pred_GB, and pred_RF are predictions from different models
    pred_LR = 1  # Example prediction for Logistic Regression
    pred_DT = 0  # Example prediction for Decision Tree
    pred_GB = 1  # Example prediction for Gradient Boosting
```

```
        pred_RF = 0  # Example prediction for Random Forest (added)

        # Return results in a structured way
        results = {
            "LR Prediction": output_label(pred_LR),
            "DT Prediction": output_label(pred_DT),
            "GBC Prediction": output_label(pred_GB),
            "RF Prediction": output_label(pred_RF),  # Added Random Forest
        }
        return results

# Main part of the code
news = input("Enter news text: ")
results = manual_testing(news)
for model, prediction in results.items():
    print(f"{model}: {prediction}")
```

⮒ Enter news text: Federal health officials told the AP they have not received any reports of Ebola cases at the Nevada event. A screensho
    LR Prediction: Positive
    DT Prediction: Negative
    GBC Prediction: Positive
    RF Prediction: Negative

◀ ▬▬▬   ▶