

# OUTPUTS:

The screenshot shows a Google Colab notebook titled 'Untitled1.ipynb'. The left sidebar displays a file explorer with a folder named 'sample\_data' containing several CSV files: 'README.md', 'anscombe.json', 'california\_housing\_test.csv', 'california\_housing\_train.csv', 'mnist\_test.csv', 'mnist\_train\_small.csv', and 'flightdata.csv'. The main code area contains the following imports:

```
from sklearn.neighbors import KNeighborsClassifier from sklearn.model_selection import RandomizedSearchCV import
imblearn from sklearn.model_selection import train_test_split from sklearn.preprocessing import StandardScaler from
sklearn.metrics import accuracy_score,classification_report,confusion_matrix,f1_score

import pandas as pd
import numpy as np
import pickle
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
import sklearn
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import GradientBoostingClassifier
from sklearn.neighbors import KNeighborsClassifier
from sklearn.model_selection import RandomizedSearchCV
import imblearn
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import accuracy_score,classification_report,confusion_matrix,f1_score
```

The bottom of the screen shows the Windows taskbar with the system clock at 10:21 PM on 4/10/2023.

The screenshot shows the same Google Colab notebook after running the first code cell. The code cell now contains:

```
data=pd.read_csv("flightdata.csv")
dataset.head()
```

The output of the code cell is a preview of the first five rows of the 'flightdata.csv' dataset, showing columns: YEAR, QUARTER, MONTH, DAY\_OF\_MONTH, DAY\_OF\_WEEK, UNIQUE\_CARRIER, TAIL\_NUM, FL\_NUM, ORIGIN\_AIRPORT\_ID, and ORIGIN. The data shows flights from 2016.

	YEAR	QUARTER	MONTH	DAY_OF_MONTH	DAY_OF_WEEK	UNIQUE_CARRIER	TAIL_NUM	FL_NUM	ORIGIN_AIRPORT_ID	ORIGIN
0	2016	1	1	1	5	DL	N836DN	1399	10397	ATL
1	2016	1	1	1	5	DL	N964DN	1476	11433	DTW
2	2016	1	1	1	5	DL	N813DN	1597	10397	ATL
3	2016	1	1	1	5	DL	N587NW	1768	14747	SEA
4	2016	1	1	1	5	DL	N836DN	1823	14747	SEA

Below the table, it indicates '5 rows x 26 columns'. The bottom of the screen shows the Windows taskbar with the system clock at 11:33 PM on 4/10/2023.

Untitled1.ipynb - Colaboratory x Copy of Welcome To Colaboratory x New Tab

colab.research.google.com/drive/1pNMzQevDiypU5ck4HjPMp2eqvI9Qel4d#scrollTo=7ut6TFeN1sNn

Untitled1.ipynb ☆

File Edit View Insert Runtime Tools Help Last saved at 8:49 AM

Files

- sample\_data
- flightdata.csv

Code

```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11231 entries, 0 to 11230
Data columns (total 26 columns):
#   Column                Non-Null Count  Dtype
---  -
0   YEAR                  11231 non-null  int64
1   QUARTER               11231 non-null  int64
2   MONTH                11231 non-null  int64
3   DAY_OF_MONTH         11231 non-null  int64
4   DAY_OF_WEEK          11231 non-null  int64
5   UNIQUE_CARRIER      11231 non-null  object
6   TAIL_NUM             11231 non-null  object
7   FL_NUM              11231 non-null  int64
8   ORIGIN_AIRPORT_ID    11231 non-null  int64
9   ORIGIN               11231 non-null  object
10  DEST_AIRPORT_ID      11231 non-null  int64
11  DEST                 11231 non-null  object
12  CRS_DEP_TIME         11231 non-null  int64
13  DEP_TIME             11124 non-null  float64
14  DEP_DELAY            11124 non-null  float64
15  DEP_DELAY15          11124 non-null  float64
16  CRS_ARR_TIME         11231 non-null  int64
```

Activate Windows

Go to Settings to activate Windows

Show all

Type here to search

Windows taskbar: File Explorer, Edge, Mail, Word, Chrome, Store, Settings, Task View, Search, Network, Volume, Power, Date/Time: ENG IN 10:26 PM 4/10/2023

Untitled1.ipynb - Colaboratory x TypeError: drop() got an unexpected keyword argument 'axis' x New Tab

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Untitled1.ipynb ☆

File Edit View Insert Runtime Tools Help All changes saved

Files

- config
- ipynb\_checkpoints
- sample\_data
  - README.md
  - anscombe.json
  - california\_housing\_test.csv
  - california\_housing\_train.csv
  - mnist\_test.csv
  - mnist\_train\_small.csv
  - flightdata.csv

Code

```
from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()
dataset['DEST']=le.fit_transform(dataset['DEST'])
dataset['ORIGIN']=le.fit_transform(dataset['ORIGIN'])
dataset.head(5)
```

```
   YEAR  QUARTER  MONTH  DAY_OF_MONTH  DAY_OF_WEEK  UNIQUE_CARRIER  TAIL_NUM  FL_NUM  ORIGIN_AIRPORT_ID  ORIGIN
0  2016         1         1             1             5             DL      N836DN    1399             10397         0
1  2016         1         1             1             5             DL      N964DN    1476             11433         1
2  2016         1         1             1             5             DL      N813DN    1597             10397         0
3  2016         1         1             1             5             DL      N587NW    1768             14747         4
4  2016         1         1             1             5             DL      N836DN    1823             14747         4
```

5 rows x 26 columns

0s completed at 11:42 PM

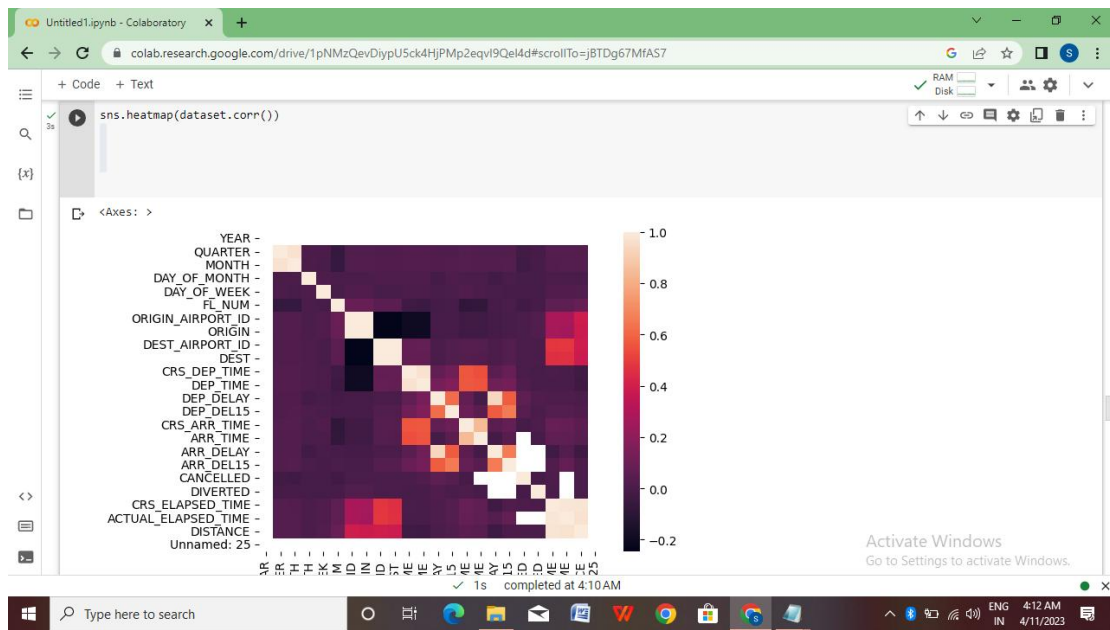
Activate Windows

Go to Settings to activate Windows

Show all

Type here to search

Windows taskbar: File Explorer, Edge, Mail, Word, Chrome, Store, Settings, Task View, Search, Network, Volume, Power, Date/Time: ENG IN 11:42 PM 4/10/2023



Untitled1.ipynb - Colaboratory

colab.research.google.com/drive/1pNMzQevDiypU5ck4HjPMp2eqvI9Qe4d#scrollTo=GKJVxyzHzOgP

```
dataset=dataset.drop('Unnamed: 25',axis=1)  
dataset.isnull().sum()
```

YEAR	0
QUARTER	0
MONTH	0
DAY_OF_MONTH	0
DAY_OF_WEEK	0
UNIQUE_CARRIER	0
TAIL_NUM	0
FL_NUM	0
ORIGIN_AIRPORT_ID	0
ORIGIN	0
DEST_AIRPORT_ID	0
DEST	0
CRS_DEP_TIME	0
DEP_TIME	107
DEP_DELAY	107
DEP_DELAY15	107
CRS_ARR_TIME	0
ARR_TIME	115
ARR_DELAY	188
ARR_DELAY15	188
CANCELLED	0
DIVERTED	0
CRS_ELAPSED_TIME	0
ACTUAL_ELAPSED_TIME	188
DISTANCE	0
dtype:	int64

0s completed at 4:19 AM

Activate Windows  
Go to Settings to activate Windows.

The screenshot shows a Jupyter Notebook interface in Google Colaboratory. The browser address bar displays the URL: `colab.research.google.com/drive/1pNmZQevDiypU5ck4HjPMp2eqvI9QeI4d#scrollTo=9En-ATzCcNgt&uniqifier=3`. The notebook is titled "Untitled1.ipynb". The menu bar includes File, Edit, View, Insert, Runtime, Tools, Help, and All changes saved. The left sidebar shows icons for code, text, and a file explorer. The main code area contains the following code cells:

```
#filter the dataset to eliminate columns that aren't relevant to a predictive model.
dataset=dataset[["FL_NUM","MONTH","DAY_OF_MONTH","DAY_OF_WEEK","ORIGIN","DEST","CRS_ARR_TIME"]]
dataset.isnull().sum()
```

The output of the second cell shows the following data:

```
FL_NUM      0
MONTH        0
DAY_OF_MONTH 0
DAY_OF_WEEK  0
ORIGIN        0
DEST          0
CRS_ARR_TIME  0
dtype: int64
```

```
[ ]
```

```
sns.scatterplot(x='ARR_DELAY',y='ARR_DEL15',data=flight_data)
```

```
[ ]
```

```
[ ] import math
for index,row in dataset.iterrows():
```

The bottom status bar indicates "0s completed at 6:05 AM". An "Activate Windows" watermark is visible in the bottom right corner.

The screenshot shows a Jupyter Notebook interface in Google Colaboratory. The browser address bar displays the URL: `colab.research.google.com/drive/1pNmZQevDiypU5ck4HjPMp2eqvI9QeI4d#scrollTo=9En-ATzCcNgt&uniqifier=3`. The notebook is titled "Untitled1.ipynb". The menu bar includes File, Edit, View, Insert, Runtime, Tools, Help, and Save failed. The left sidebar shows icons for code, text, and a file explorer. The main code area contains the following code cells:

```
[13] print('Prediction: no change of delay.')
```

```
[ ] from sklearn import model_selection
from sklearn.neural_network import MLPClassifier
```

```
[ ] from sklearn.ensemble import RandomForestClassifier
rfc = RandomForestClassifier(n_estimators=10,criterion='entropy')
```

```
#importing the necessary dependencies
from flask import Flask,request,render_template
import numpy as np
import pandas as pd
import pickle
import os
```

```
[6] dfs=[]
models=[
    ('RF',RandomForestClassifier()),
    ('DecisionTree',DecisionTreeClassifier()),
```

The bottom status bar indicates "0s completed at 6:05 AM". An "Activate Windows" watermark is visible in the bottom right corner.

