SPRINT-2

Date	17 November 22
Team ID	PNT2022TMID46686
Project Tittle	Developing A Flight Delay Prediction Using Machine Learning

Development Phase:

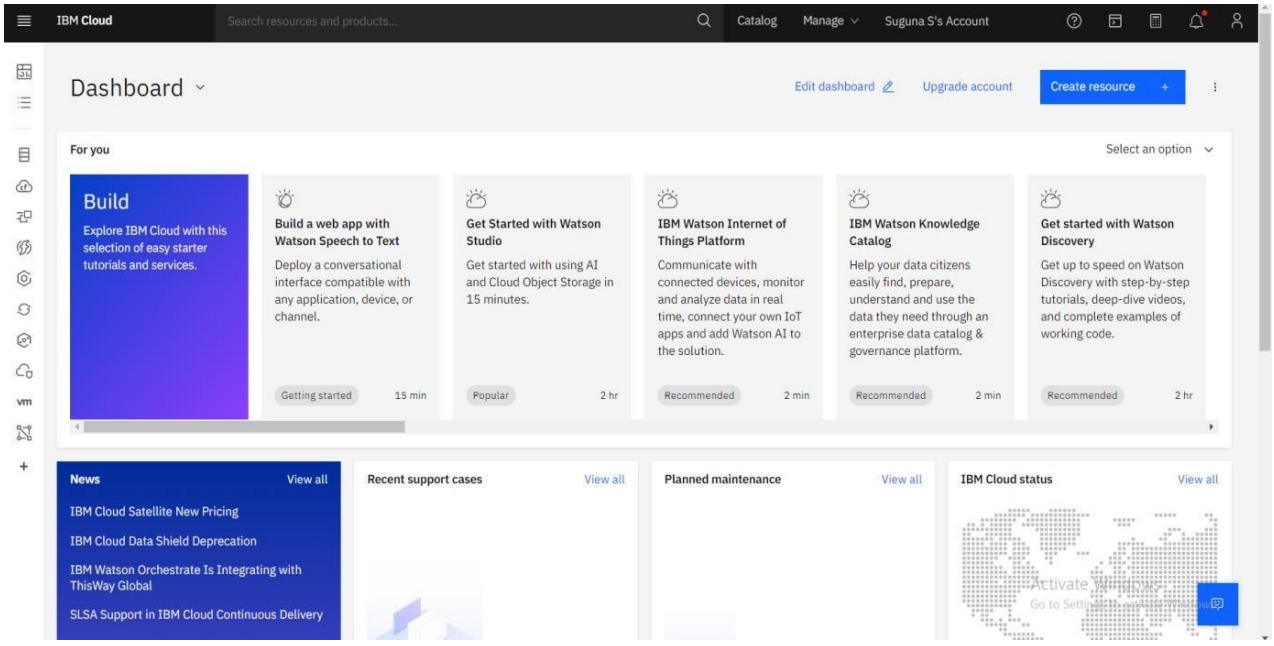
Sprint-2:

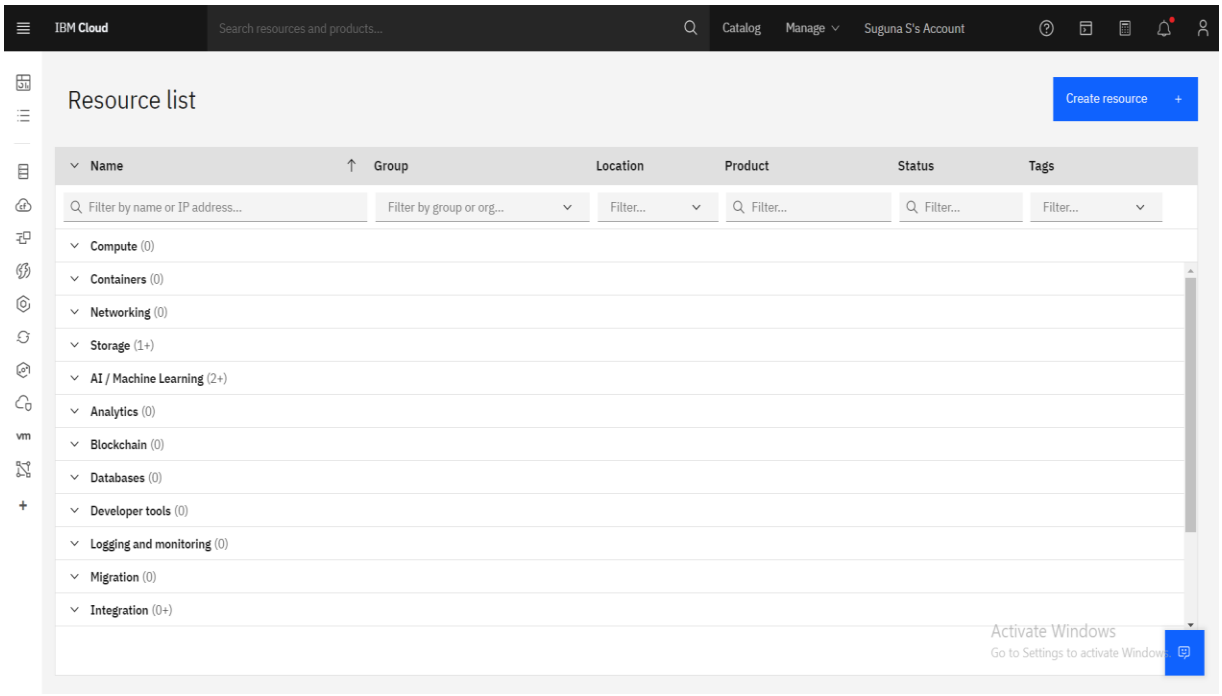
- Creating IBM cloud account and Required Resource
- Deploy our model in IBM Watson
- Creating Dashboard using HTML/ CSS
- Create web app and Hosting in Flask

Creating IBM cloud account &Required Resources:

Creating IBM cloud account:

First need to create IBM cloud account by using SI mail id and SI password which is provided by IBM in profile.




IBM Cloud
Search resources and products...
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Manage
Suguna S's Account
Resource list
Create resource
Name
Group
Location
Product
Status
Tags
Filter by name or IP address...
Filter by group or org...
Filter...
Compute (0)
Containers (0)
Networking (0)
Storage (1+)
AI / Machine Learning (2+)
Analytics (0)
Blockchain (0)
Databases (0)
Developer tools (0)
Logging and monitoring (0)
Migration (0)
Integration (0+)
Activate Windows
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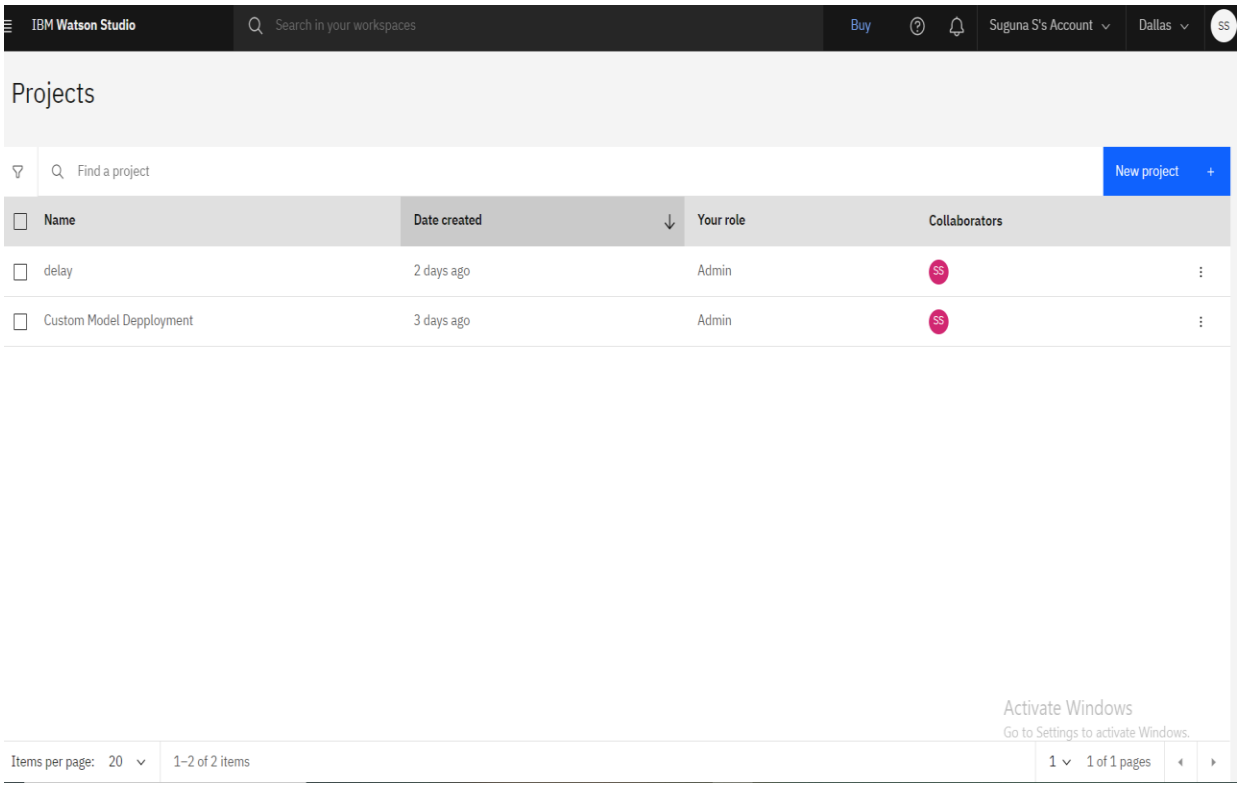
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Name
Date created
Your role
Collaborators
delay
2 days ago
Admin
Custom Model Depployment
3 days ago
Admin
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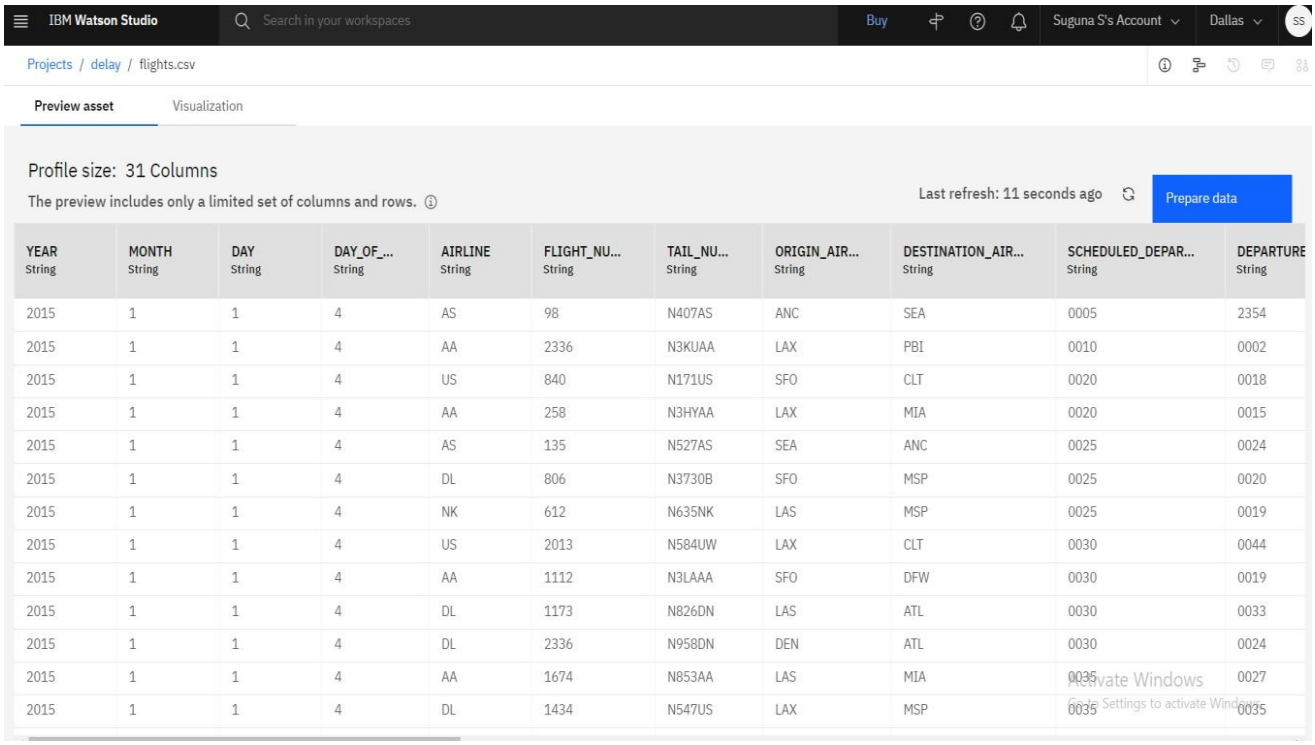
Items per page: 20
1–2 of 2 items
1
1 of 1 pages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Projects / delay / flights.csv
Preview asset
Visualization
Profile size: 31 Columns
The preview includes only a limited set of columns and rows.
Last refresh: 11 seconds ago
Prepare data
YEAR String
MONTH String
DAY String
DAY_OF_... String
AIRLINE String
FLIGHT_NU... String
TAIL_NU... String
ORIGIN_AIR... String
DESTINATION_AIR... String
SCHEDULED_DEPAR... String
DEPARTURE String
2015 1 1 4 AS 98 N407AS ANC SEA 0005 2354
2015 1 1 4 AA 2336 N3KUAA LAX PBI 0010 0002
2015 1 1 4 US 840 N171US SFO CLT 0020 0018
2015 1 1 4 AA 258 N3HYAA LAX MIA 0020 0015
2015 1 1 4 AS 135 N527AS SEA ANC 0025 0024
2015 1 1 4 DL 806 N3730B SFO MSP 0025 0020
2015 1 1 4 NK 612 N635NK LAS MSP 0025 0019
2015 1 1 4 US 2013 N584UW LAX CLT 0030 0044
2015 1 1 4 AA 1112 N3LAAA SFO DFW 0030 0019
2015 1 1 4 DL 1173 N826DN LAS ATL 0030 0033
2015 1 1 4 DL 2336 N958DN DEN ATL 0030 0024
2015 1 1 4 AA 1674 N853AA LAS MIA 0035 0027
2015 1 1 4 DL 1434 N547US LAX MSP 0035 0035
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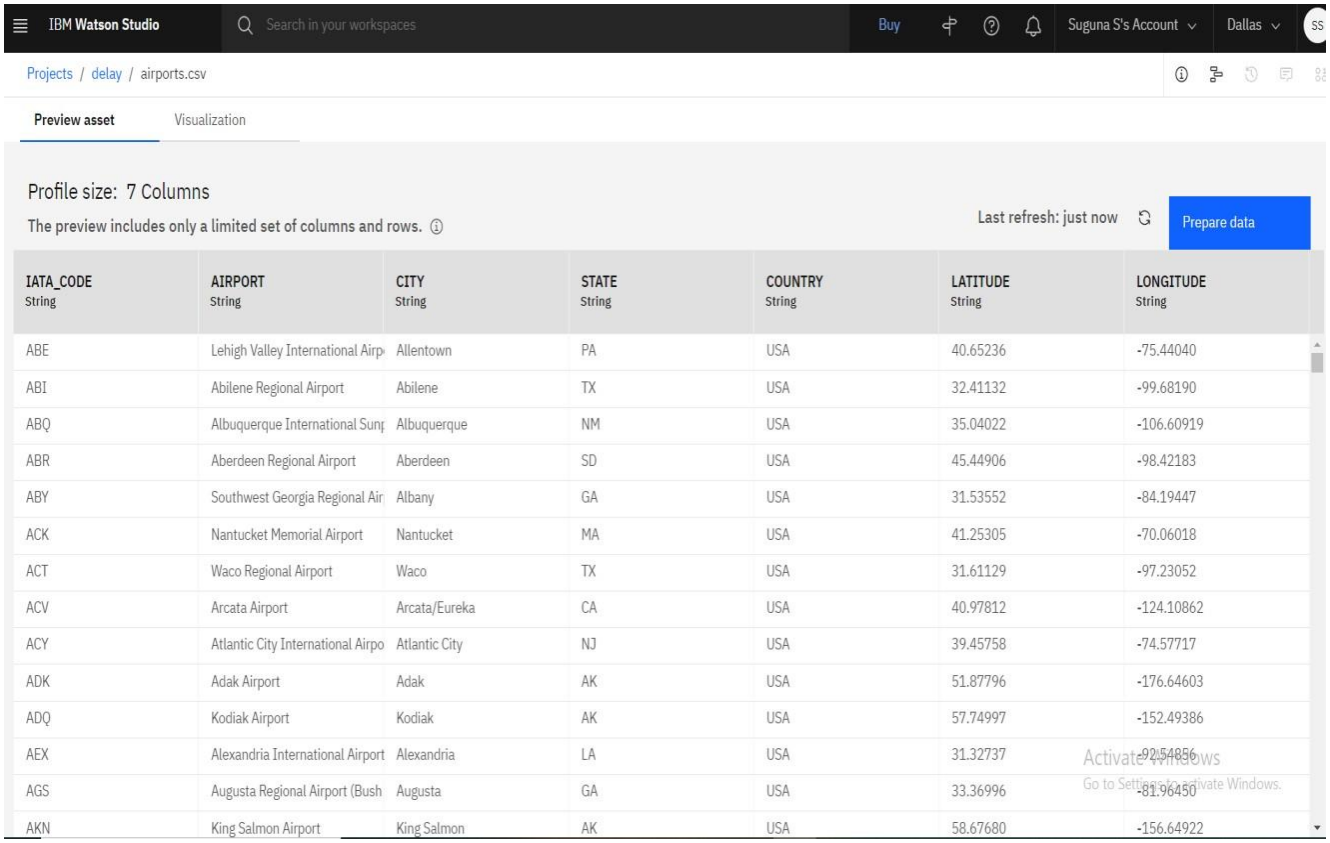
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Preview asset
Visualization
Profile size: 7 Columns
The preview includes only a limited set of columns and rows.
Last refresh: just now
Prepare data
IATA_CODE String
AIRPORT String
CITY String
STATE String
COUNTRY String
LATITUDE String
LONGITUDE String
ABE Lehigh Valley International Airp Allentown PA USA 40.65236 -75.44040
ABI Abilene Regional Airport Abilene TX USA 32.41132 -99.68190
ABQ Albuquerque International Sunp Albuquerque NM USA 35.04022 -106.60919
ABR Aberdeen Regional Airport Aberdeen SD USA 45.44906 -98.42183
ABY Southwest Georgia Regional Air Albany GA USA 31.53552 -84.19447
ACK Nantucket Memorial Airport Nantucket MA USA 41.25305 -70.06018
ACT Waco Regional Airport Waco TX USA 31.61129 -97.23052
ACV Arcata Airport Arcata/Eureka CA USA 40.97812 -124.10862
ACY Atlantic City International Airpo Atlantic City NJ USA 39.45758 -74.57717
ADK Adak Airport Adak AK USA 51.87796 -176.64603
ADQ Kodiak Airport Kodiak AK USA 57.74997 -152.49386
AEX Alexandria International Airport Alexandria LA USA 31.32737 -92.54856
AGS Augusta Regional Airport (Bush Augusta GA USA 33.36996 -81.96450
AKN King Salmon Airport King Salmon AK USA 58.67680 -156.64922
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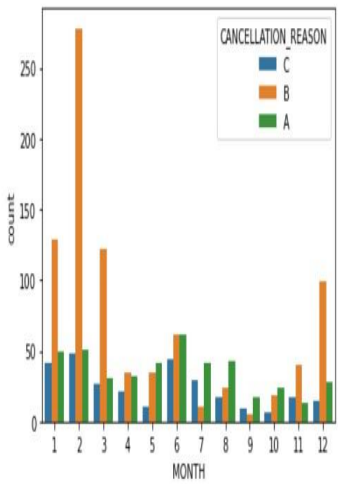
Out[125]: True

In [126…
```
#Checking how many null values are there in each columns
flights.isnull().sum()
```

Out[126]:
```
YEAR                    0
MONTH                   0
DAY                     0
DAY_OF_WEEK             0
AIRLINE                 0
FLIGHT_NUMBER           0
TAIL_NUMBER           257
ORIGIN_AIRPORT          0
DESTINATION_AIRPORT     0
SCHEDULED_DEPARTURE     0
DEPARTURE_TIME       1491
DEPARTURE_DELAY      1491
TAXI_OUT             1552
WHEELS_OFF           1552
SCHEDULED_TIME          0
ELAPSED_TIME         1816
AIR_TIME             1816
DISTANCE                0
WHEELS_ON            1615
TAXI_IN              1615
SCHEDULED_ARRIVAL       0
ARRIVAL_TIME         1615
ARRIVAL_DELAY        1816
DIVERTED                0
CANCELLED               0
CANCELLATION_REASON    98427
AIR_SYSTEM_DELAY       81706
SECURITY_DELAY         81706
AIRLINE_DELAY          81706
LATE_AIRCRAFT_DELAY    81706
WEATHER_DELAY          81706
dtype: int64
```


In [128…
```
sns.countplot(x="MONTH",hue="CANCELLATION_REASON",data=flights)
```

Out[128]: <AxesSubplot:xlabel='MONTH', ylabel='count'>



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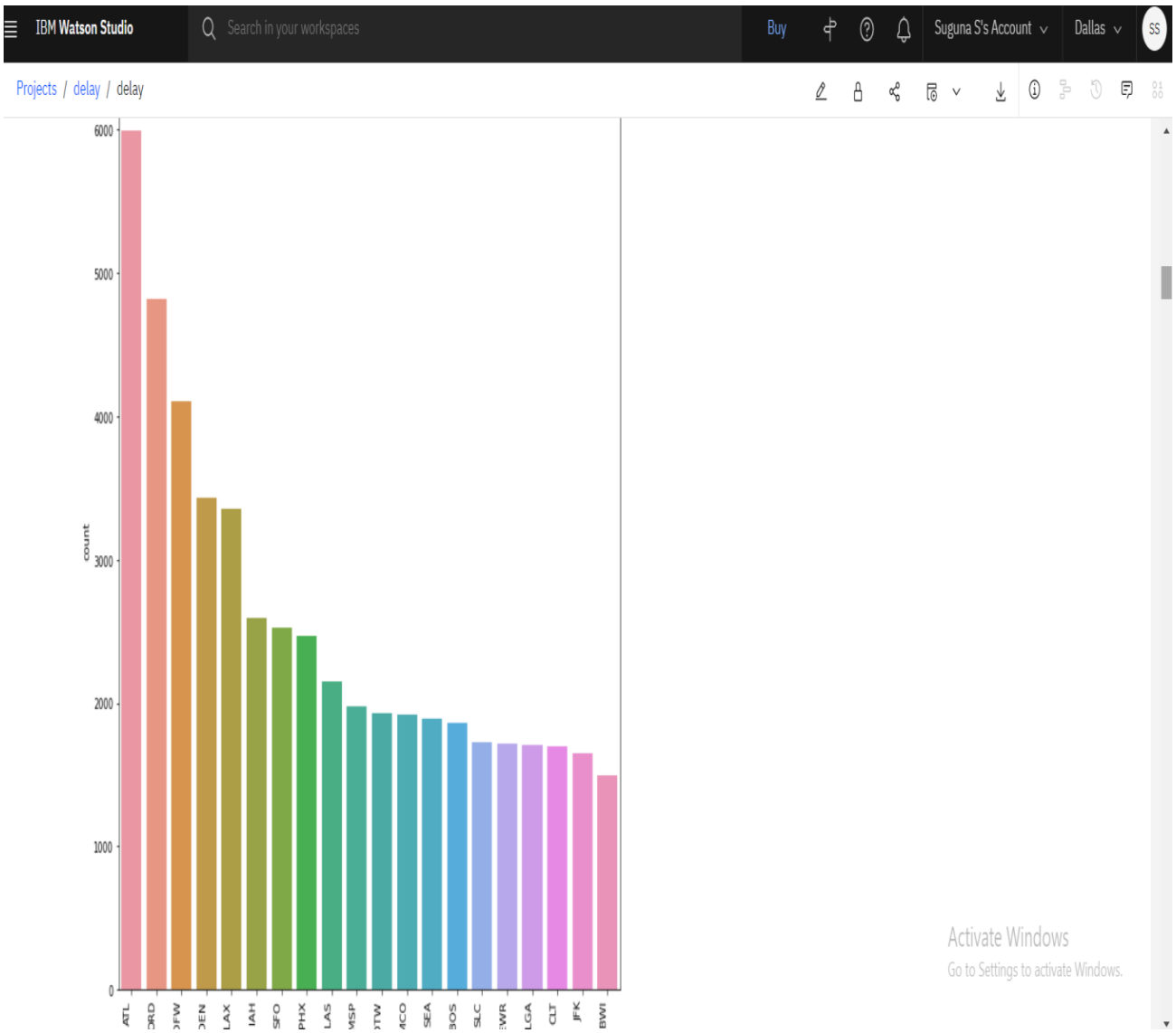
In [129…
```
plt.figure(figsize=(10, 10))
axis = sns.countplot(x=flights['ORIGIN_AIRPORT'], data =flights, order=flights['ORIGIN_AIRPORT'].value_counts().iloc[:20].index)
axis.set_xticklabels(axis.get_xticklabels(), rotation=90, ha="right")
plt.tight_layout()
plt.show()
```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count
6000
5000
4000
3000
2000
1000
0
ATL
ORD
DFW
DEN
LAX
IAH
SFO
PHX
LAS
MSP
DTW
MCO
SEA
BOS
SLC
EWR
LGA
CLT
JFK
BWI
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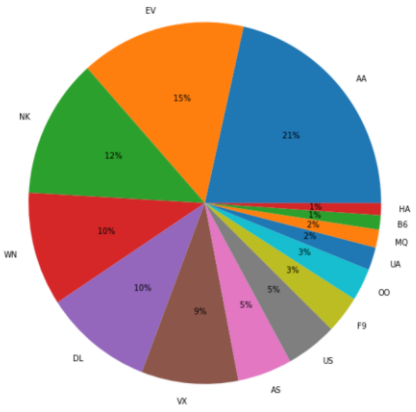
In [130…

```
axis = plt.subplots(figsize=(10,14))
Name = flights["AIRLINE"].unique()
size = flights["AIRLINE"].value_counts()
plt.pie(size,labels=Name,autopct='%5.0f%%')
plt.show()
```



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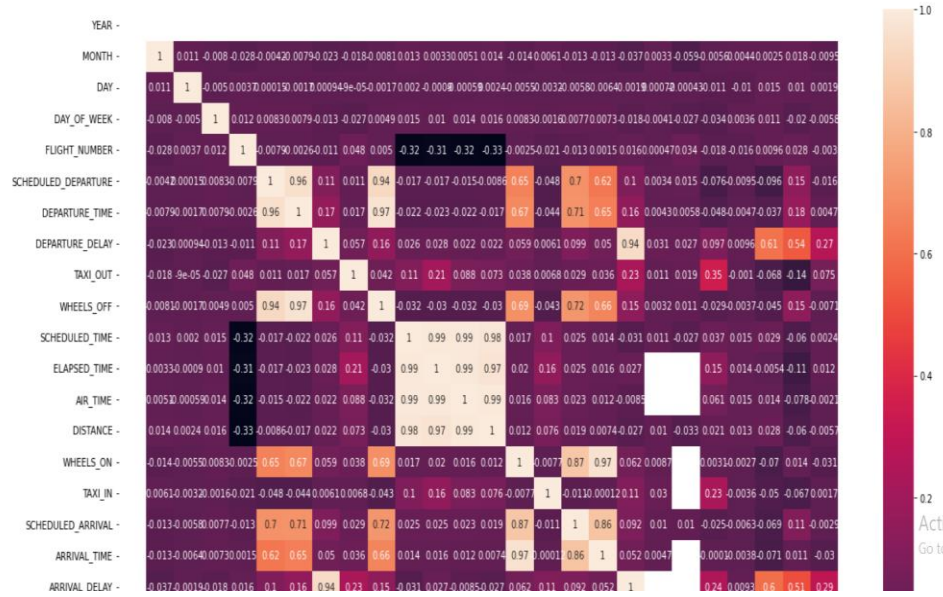
In [131…

```
axis = plt.subplots(figsize=(20,14))
sns.heatmap(flights.corr(),annot = True)
plt.show()
```



Very High Correlation Between Arrival Delay and Departure Delay

It shows that maximum of the Arrival Delays are due to the Departure Delays.

In [132…
```
corr=flights.corr()
corr
```

Out[132]:

	YEAR	MONTH	DAY	DAY_OF_WEEK	FLIGHT_NUMBER	SCHEDULED_DEPARTURE	DEPARTURE_TIME	DEPARTURE_DELAY	TAXI_OUT	WHEELS_OFF	...	SCHEDULED_ARRIVAL	ARRIVAL_TIME	ARRIVA
YEAR	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	
MONTH	NaN	1.000000	0.011153	-0.008015	-0.027701	-0.004210	-0.007888	-0.022869	-0.017812	-0.008080	...	-0.012722	-0.013057	-
DAY	NaN	0.011153	1.000000	-0.005012	0.003735	0.000148	-0.001734	0.000936	-0.000090	-0.001730	...	-0.005766	-0.006379	-
DAY_OF_WEEK	NaN	-0.008015	-0.005012	1.000000	0.011809	0.008337	0.007895	-0.012553	-0.026787	0.004926	...	0.007653	0.007332	-
FLIGHT_NUMBER	NaN	-0.027701	0.003735	0.011809	1.000000	-0.007933	-0.002590	-0.010903	0.048186	0.005024	...	-0.013216	0.001463	
SCHEDULED_DEPARTURE	NaN	-0.004210	0.000148	0.008337	-0.007933	1.000000	0.962237	0.109404	0.010858	0.935609	...	0.701890	0.624584	
DEPARTURE_TIME	NaN	-0.007888	-0.001734	0.007895	-0.002590	0.962237	1.000000	0.167134	0.017172	0.970906	...	0.706025	0.645159	
DEPARTURE_DELAY	NaN	-0.022869	0.000936	-0.012553	-0.010903	0.109404	0.167134	1.000000	0.057351	0.155539	...	0.099325	0.049568	
TAXI_OUT	NaN	-0.017812	-0.000090	-0.026787	0.048186	0.010858	0.017172	0.057351	1.000000	0.041900	...	0.028552	0.036181	
WHEELS_OFF	NaN	-0.008080	-0.001730	0.004926	0.005024	0.935609	0.970906	0.155539	0.041900	1.000000	...	0.716370	0.664687	
SCHEDULED_TIME	NaN	0.012815	0.001993	0.014531	-0.316624	-0.016681	-0.022267	0.025591	0.112607	-0.031522	...	0.024796	0.013658	-
ELAPSED_TIME	NaN	0.003279	-0.000895	0.010041	-0.306548	-0.017331	-0.022737	0.028421	0.205129	-0.029646	...	0.024945	0.016438	
AIR_TIME	NaN	0.005071	-0.000590	0.013793	-0.319166	-0.015389	-0.021991	0.021704	0.087903	-0.032190	...	0.023060	0.012488	-
DISTANCE	NaN	0.013987	0.002362	0.016323	-0.330516	-0.008556	-0.016964	0.022051	0.072947	-0.029986	...	0.019124	0.007391	-
WHEELS_ON	NaN	-0.014054	-0.005518	0.008267	-0.002455	0.652256	0.673558	0.059385	0.038460	0.693404	...	0.872758	0.966288	
TAXI_IN	NaN	0.006086	-0.003178	-0.001606	-0.021153	-0.048041	-0.044294	0.006104	0.006773	-0.043245	...	0.011151	0.000115	
SCHEDULED_ARRIVAL	NaN	-0.012722	-0.005766	0.007653	-0.013216	0.701890	0.706025	0.099325	0.028552	0.716370	...	1.000000	0.862004	
ARRIVAL_TIME	NaN	-0.013057	-0.006379	0.007332	0.001463	0.624584	0.645159	0.049568	0.036181	0.664687	...	0.862004	1.000000	

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In [138…
```
flights.shape
```

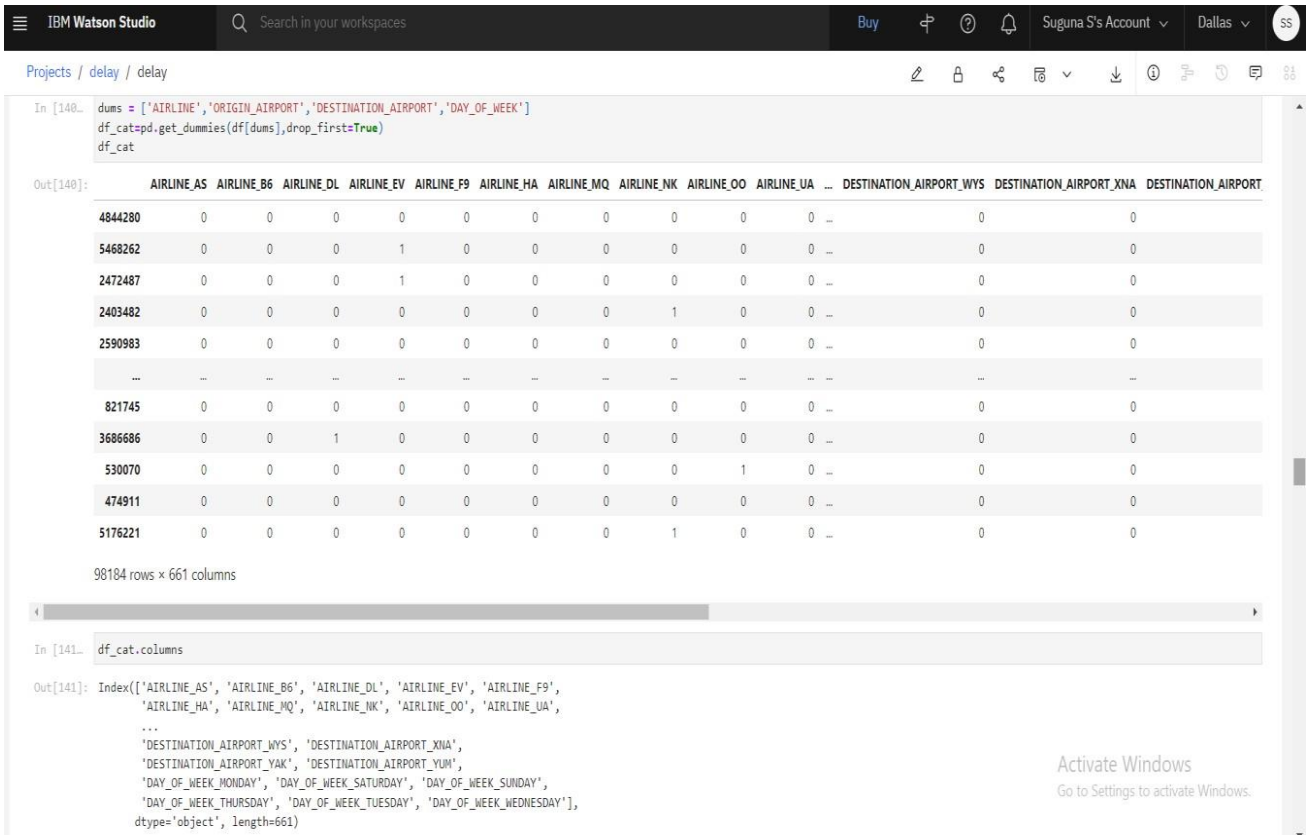
Out[138]: (98184, 10)

In [139…
```
df=pd.DataFrame(flights)
df['DAY_OF_WEEK']= df['DAY_OF_WEEK'].apply(str)
df["DAY_OF_WEEK"].replace({"1":"SUNDAY", "2": "MONDAY", "3": "TUESDAY", "4":"WEDNESDAY", "5":"THURSDAY", "6":"FRIDAY", "7":"SATURDAY"},inplace=True)
flights
```

Out[139]:

	MONTH	DAY	DAY_OF_WEEK	AIRLINE	ORIGIN_AIRPORT	DESTINATION_AIRPORT	SCHEDULED_DEPARTURE	DEPARTURE_DELAY	DISTANCE	ARRIVAL_DELAY
4844280	10	30	THURSDAY	AA	OTHER	OTHER	530	-1.0	257	-7.0
5468262	12	9	TUESDAY	EV	EVV	DTW	1045	7.0	363	13.0
2472487	6	6	FRIDAY	EV	IAH	CLE	720	-7.0	1091	-21.0
2403482	6	2	MONDAY	NK	IAH	ORD	605	9.0	925	72.0
2590983	6	13	FRIDAY	WN	DEN	LAX	825	-2.0	862	-9.0
...	...	...	...	...	...	...	...	...	...	...
821745	2	24	MONDAY	WN	DAL	BWI	600	0.0	1209	-8.0
3686686	8	17	SUNDAY	DL	MSP	MEM	1358	-5.0	700	-4.0
530070	2	5	WEDNESDAY	OO	BJI	MSP	505	-1.0	199	-19.0
474911	2	1	SATURDAY	AA	LAX	DFW	1145	3.0	1235	8.0
5176221	11	20	THURSDAY	NK	DTW	IAH	710	23.0	1075	23.0

98184 rows × 10 columns



In [140…
```
dums = ['AIRLINE','ORIGIN_AIRPORT','DESTINATION_AIRPORT','DAY_OF_WEEK']
df_cat=pd.get_dummies(df[dums],drop_first=True)
df_cat
```

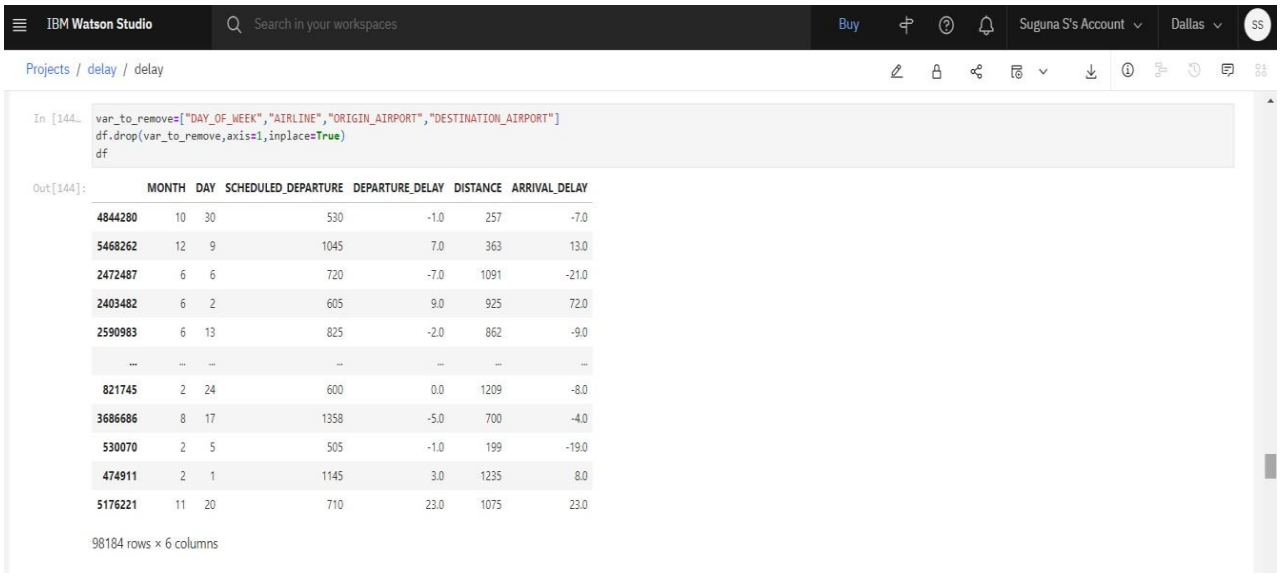
Out[140]:

	AIRLINE_AS	AIRLINE_B6	AIRLINE_DL	AIRLINE_EV	AIRLINE_F9	AIRLINE_HA	AIRLINE_MQ	AIRLINE_NK	AIRLINE_OO	AIRLINE_UA	…	DESTINATION_AIRPORT_WYS	DESTINATION_AIRPORT_XNA	DESTINATION_AIRPORT
4844280	0	0	0	0	0	0	0	0	0	0	…	0	0	
5468262	0	0	0	1	0	0	0	0	0	0	…	0	0	
2472487	0	0	0	1	0	0	0	0	0	0	…	0	0	
2403482	0	0	0	0	0	0	0	1	0	0	…	0	0	
2590983	0	0	0	0	0	0	0	0	0	0	…	0	0	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	
821745	0	0	0	0	0	0	0	0	0	0	…	0	0	
3686686	0	0	1	0	0	0	0	0	0	0	…	0	0	
530070	0	0	0	0	0	0	0	0	1	0	…	0	0	
474911	0	0	0	0	0	0	0	0	0	0	…	0	0	
5176221	0	0	0	0	0	0	0	1	0	0	…	0	0	

98184 rows × 661 columns

In [141…
```
df_cat.columns
```

Out[141]:
```
Index(['AIRLINE_AS', 'AIRLINE_B6', 'AIRLINE_DL', 'AIRLINE_EV', 'AIRLINE_F9',
       'AIRLINE_HA', 'AIRLINE_MQ', 'AIRLINE_NK', 'AIRLINE_OO', 'AIRLINE_UA',
       ...
       'DESTINATION_AIRPORT_WYS', 'DESTINATION_AIRPORT_XNA',
       'DESTINATION_AIRPORT_YAK', 'DESTINATION_AIRPORT_YUM',
       'DAY_OF_WEEK_MONDAY', 'DAY_OF_WEEK_SATURDAY', 'DAY_OF_WEEK_SUNDAY',
       'DAY_OF_WEEK_THURSDAY', 'DAY_OF_WEEK_TUESDAY', 'DAY_OF_WEEK_WEDNESDAY'],
      dtype='object', length=661)
```

In [144…
```
var_to_remove=["DAY_OF_WEEK","AIRLINE","ORIGIN_AIRPORT","DESTINATION_AIRPORT"]
df.drop(var_to_remove,axis=1,inplace=True)
df
```

Out[144]:

	MONTH	DAY	SCHEDULED_DEPARTURE	DEPARTURE_DELAY	DISTANCE	ARRIVAL_DELAY
4844280	10	30	530	-1.0	257	-7.0
5468262	12	9	1045	7.0	363	13.0
2472487	6	6	720	-7.0	1091	-21.0
2403482	6	2	605	9.0	925	72.0
2590983	6	13	825	-2.0	862	-9.0
…	…	…	…	…	…	…
821745	2	24	600	0.0	1209	-8.0
3686686	8	17	1358	-5.0	700	-4.0
530070	2	5	505	-1.0	199	-19.0
474911	2	1	1145	3.0	1235	8.0
5176221	11	20	710	23.0	1075	23.0

98184 rows × 6 columns

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In [145…
```
data=pd.concat([df,df_cat],axis=1)
data
```

Out[145]:

	MONTH	DAY	SCHEDULED_DEPARTURE	DEPARTURE_DELAY	DISTANCE	ARRIVAL_DELAY	AIRLINE_AS	AIRLINE_B6	AIRLINE_DL	AIRLINE_EV	…	DESTINATION_AIRPORT_WYS	DESTINATION_AIRPORT_XNA	DESTINATION
4844280	10	30	530	-1.0	257	-7.0	0	0	0	0	…	0	0	
5468262	12	9	1045	7.0	363	13.0	0	0	0	1	…	0	0	
2472487	6	6	720	-7.0	1091	-21.0	0	0	0	1	…	0	0	
2403482	6	2	605	9.0	925	72.0	0	0	0	0	…	0	0	
2590983	6	13	825	-2.0	862	-9.0	0	0	0	0	…	0	0	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	
821745	2	24	600	0.0	1209	-8.0	0	0	0	0	…	0	0	
3686686	8	17	1358	-5.0	700	-4.0	0	0	1	0	…	0	0	
530070	2	5	505	-1.0	199	-19.0	0	0	0	0	…	0	0	
474911	2	1	1145	3.0	1235	8.0	0	0	0	0	…	0	0	
5176221	11	20	710	23.0	1075	23.0	0	0	0	0	…	0	0	

98184 rows × 667 columns

In [146…
```
data.shape
```

Out[146]: (98184, 667)

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In [136…
```
print(flights.ORIGIN_AIRPORT.nunique())
print(flights.DESTINATION_AIRPORT.nunique())
print(flights.AIRLINE.nunique())
```

```
322
322
14
```

In [137…
```
flights=flights.dropna()
flights
```

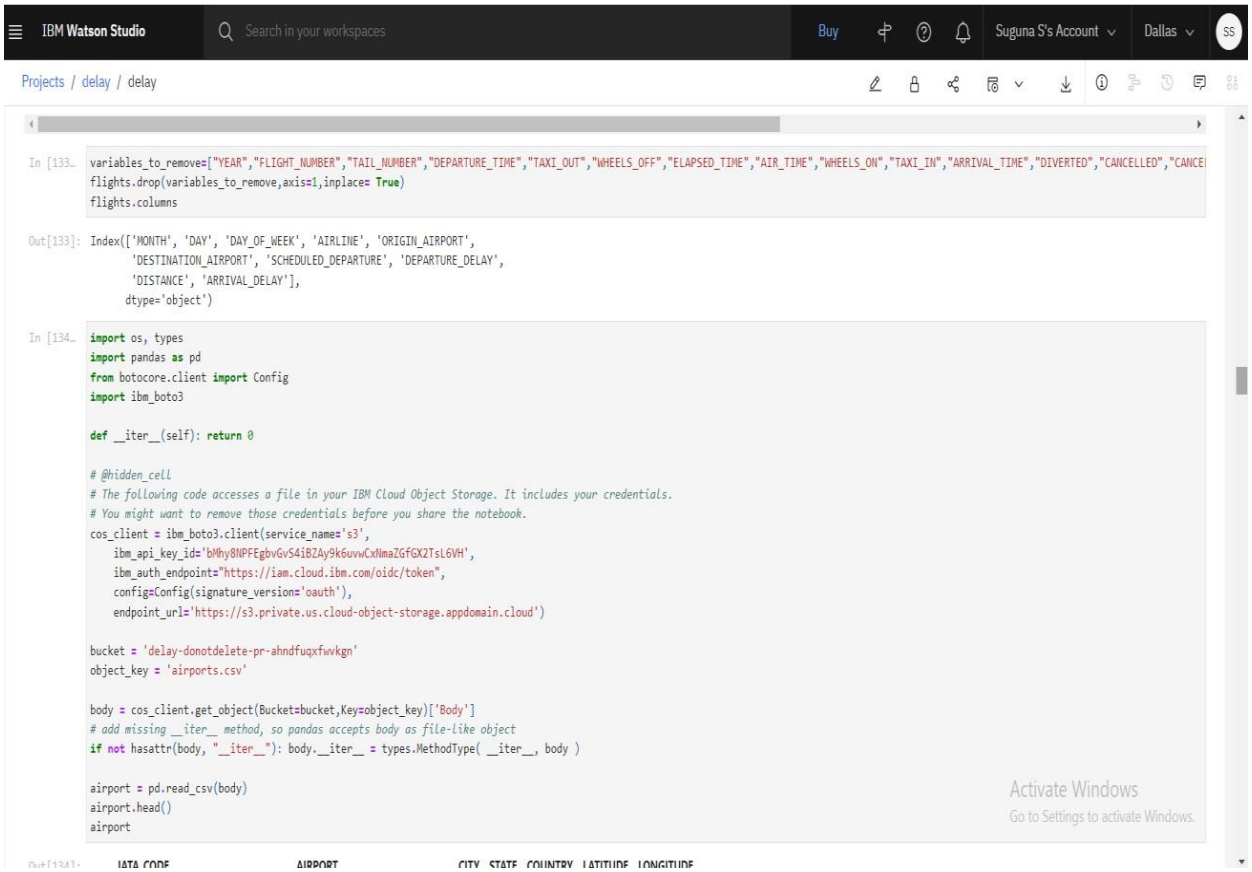
Out[137]:

	MONTH	DAY	DAY_OF_WEEK	AIRLINE	ORIGIN_AIRPORT	DESTINATION_AIRPORT	SCHEDULED_DEPARTURE	DEPARTURE_DELAY	DISTANCE	ARRIVAL_DELAY
4844280	10	30	5	AA	OTHER	OTHER	530	-1.0	257	-7.0
5468262	12	9	3	EV	EVV	DTW	1045	7.0	363	13.0
2472487	6	6	6	EV	IAH	CLE	720	-7.0	1091	-21.0
2403482	6	2	2	NK	IAH	ORD	605	9.0	925	72.0
2590983	6	13	6	WN	DEN	LAX	825	-2.0	862	-9.0
…	…	…	…	…	…	…	…	…	…	…
821745	2	24	2	WN	DAL	BWI	600	0.0	1209	-8.0
3686686	8	17	1	DL	MSP	MEM	1358	-5.0	700	-4.0
530070	2	5	4	OO	BJI	MSP	505	-1.0	199	-19.0
474911	2	1	7	AA	LAX	DFW	1145	3.0	1235	8.0
5176221	11	20	5	NK	DTW	IAH	710	23.0	1075	23.0

98184 rows × 10 columns

In [138…
```
flights.shape
```

Out[138]: (98184, 10)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In [133…
variables_to_remove=["YEAR","FLIGHT_NUMBER","TAIL_NUMBER","DEPARTURE_TIME","TAXI_OUT","WHEELS_OFF","ELAPSED_TIME","AIR_TIME","WHEELS_ON","TAXI_IN","ARRIVAL_TIME","DIVERTED","CANCELLED","CANCE
flights.drop(variables_to_remove,axis=1,inplace= True)
flights.columns
Out[133]:
Index(['MONTH', 'DAY', 'DAY_OF_WEEK', 'AIRLINE', 'ORIGIN_AIRPORT',
'DESTINATION_AIRPORT', 'SCHEDULED_DEPARTURE', 'DEPARTURE_DELAY',
'DISTANCE', 'ARRIVAL_DELAY'],
dtype='object')
In [134…
import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3
def __iter__(self): return 0
# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
cos_client = ibm_boto3.client(service_name='s3',
ibm_api_key_id='bMhy8NPFEgbvGvS4iBZAy9k6uvwCxNmaZGfGX2TsL6VH',
ibm_auth_endpoint="https://iam.cloud.ibm.com/oidc/token",
config=Config(signature_version='oauth'),
endpoint_url='https://s3.private.us.cloud-object-storage.appdomain.cloud')
bucket = 'delay-donotdelete-pr-ahndfuqxfwvkgn'
object_key = 'airports.csv'
body = cos_client.get_object(Bucket=bucket,Key=object_key)['Body']
# add missing __iter__ method, so pandas accepts body as file-like object
if not hasattr(body, "__iter__"): body.__iter__ = types.MethodType(__iter__, body)
airport = pd.read_csv(body)
airport.head()
airport
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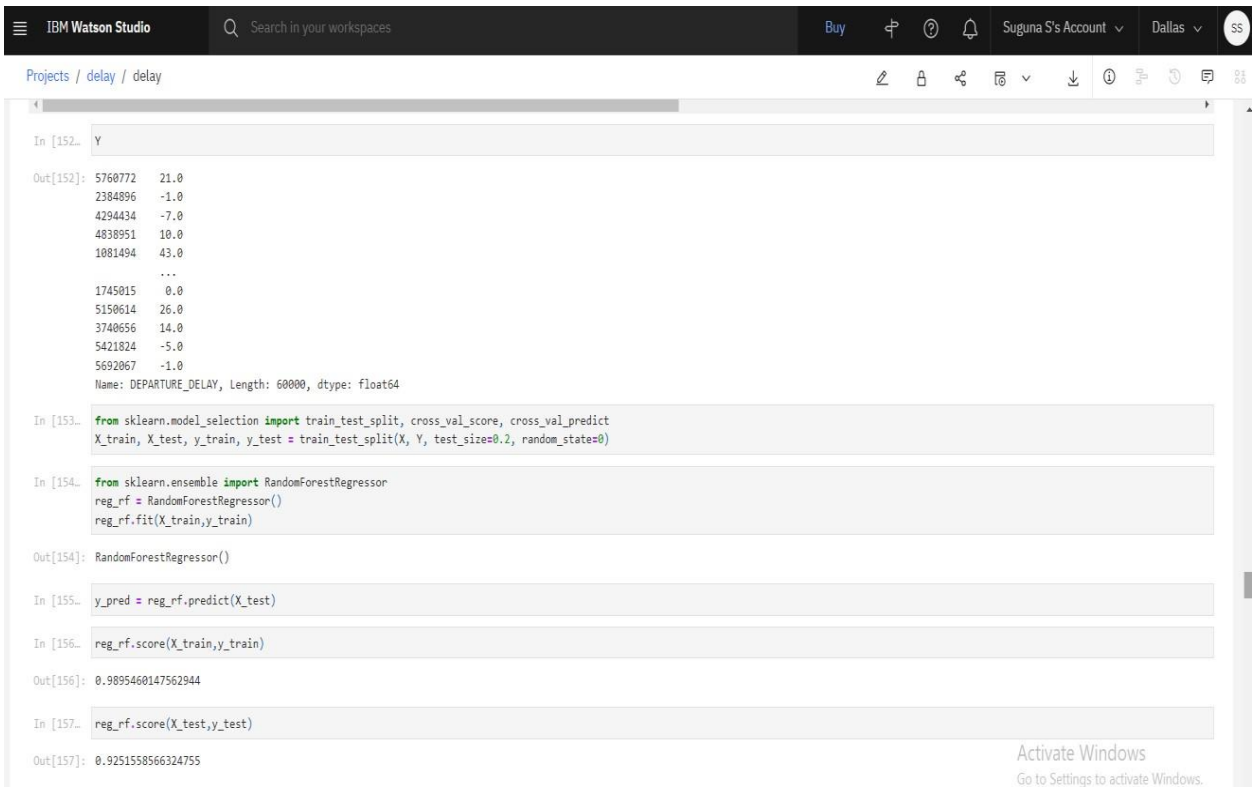
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In [152…
Y
Out[152]:
5760772 21.0
2384896 -1.0
4294434 -7.0
4838951 10.0
1081494 43.0
...
1745015 0.0
5150614 26.0
3740656 14.0
5421824 -5.0
5692067 -1.0
Name: DEPARTURE_DELAY, Length: 60000, dtype: float64
In [153…
from sklearn.model_selection import train_test_split, cross_val_score, cross_val_predict
X_train, X_test, y_train, y_test = train_test_split(X, Y, test_size=0.2, random_state=0)
In [154…
from sklearn.ensemble import RandomForestRegressor
reg_rf = RandomForestRegressor()
reg_rf.fit(X_train,y_train)
Out[154]:
RandomForestRegressor()
In [155…
y_pred = reg_rf.predict(X_test)
In [156…
reg_rf.score(X_train,y_train)
Out[156]:
0.9895460147562944
In [157…
reg_rf.score(X_test,y_test)
Out[157]:
0.9251558566324755
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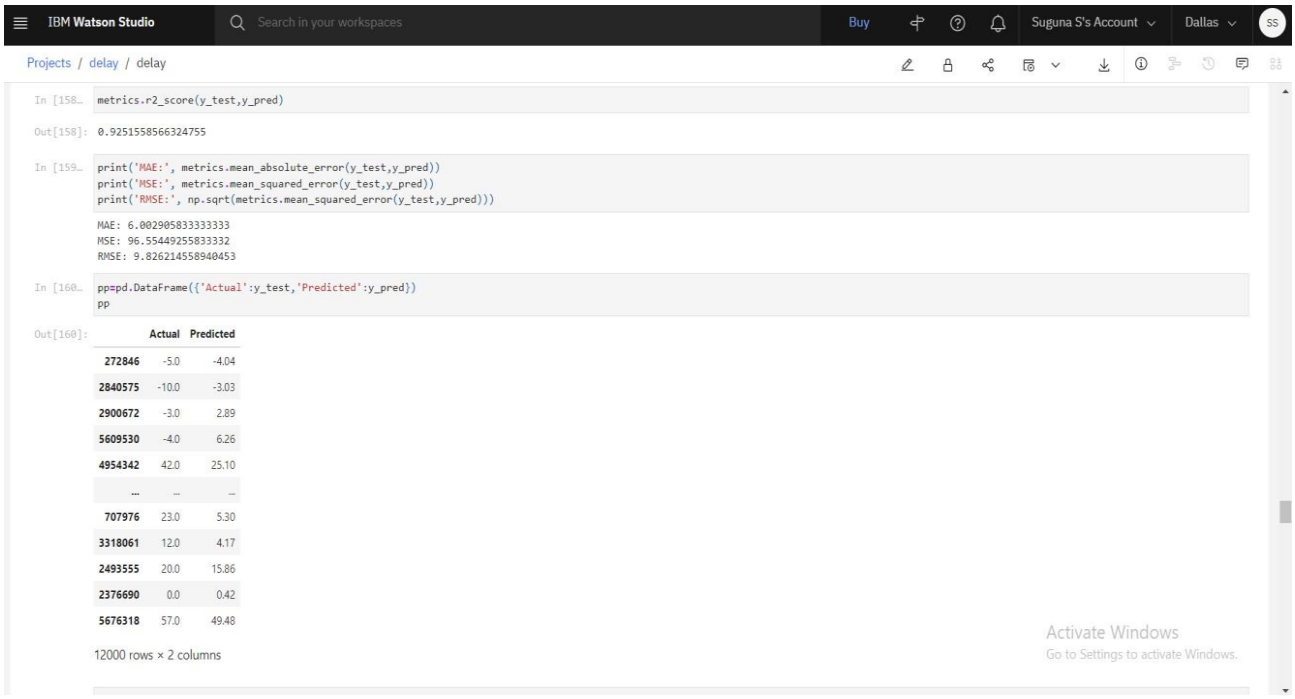
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In [158…
metrics.r2_score(y_test,y_pred)
Out[158]:
0.9251558566324755
In [159…
print('MAE:', metrics.mean_absolute_error(y_test,y_pred))
print('MSE:', metrics.mean_squared_error(y_test,y_pred))
print('RMSE:', np.sqrt(metrics.mean_squared_error(y_test,y_pred)))
MAE: 6.002905833333333
MSE: 96.55449255833332
RMSE: 9.826214558940453
In [160…
pp=pd.DataFrame({'Actual':y_test,'Predicted':y_pred})
pp
Out[160]:
Actual Predicted
272846 -5.0 -4.04
2840575 -10.0 -3.03
2900672 -3.0 2.89
5609530 -4.0 6.26
4954342 42.0 25.10
... ...
707976 23.0 5.30
3318061 12.0 4.17
2493555 20.0 15.86
2376690 0.0 0.42
5676318 57.0 49.48
12000 rows × 2 columns
Activate Windows
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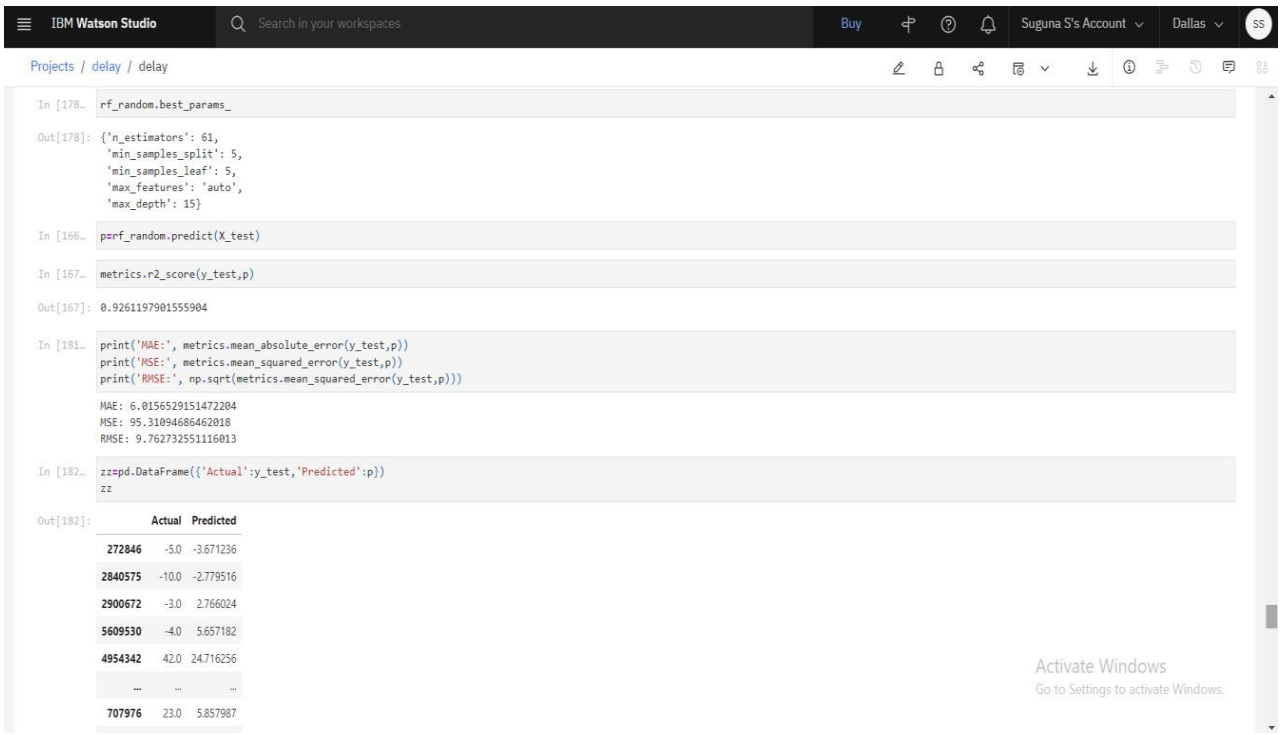
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In [178…
rf_random.best_params_
Out[178]:
{'n_estimators': 61,
'min_samples_split': 5,
'min_samples_leaf': 5,
'max_features': 'auto',
'max_depth': 15}
In [166…
p=rf_random.predict(X_test)
In [167…
metrics.r2_score(y_test,p)
Out[167]:
0.9261197901555904
In [181…
print('MAE:', metrics.mean_absolute_error(y_test,p))
print('MSE:', metrics.mean_squared_error(y_test,p))
print('RMSE:', np.sqrt(metrics.mean_squared_error(y_test,p)))
MAE: 6.015529151472204
MSE: 95.31094686462018
RMSE: 9.762732551116013
In [182…
zz=pd.DataFrame({'Actual':y_test,'Predicted':p})
zz
Out[182]:
Actual Predicted
272846 -5.0 -3.671236
2840575 -10.0 -2.779516
2900672 -3.0 2.766024
5609530 -4.0 5.657182
4954342 42.0 24.716256
... ...
707976 23.0 5.857987
Activate Windows
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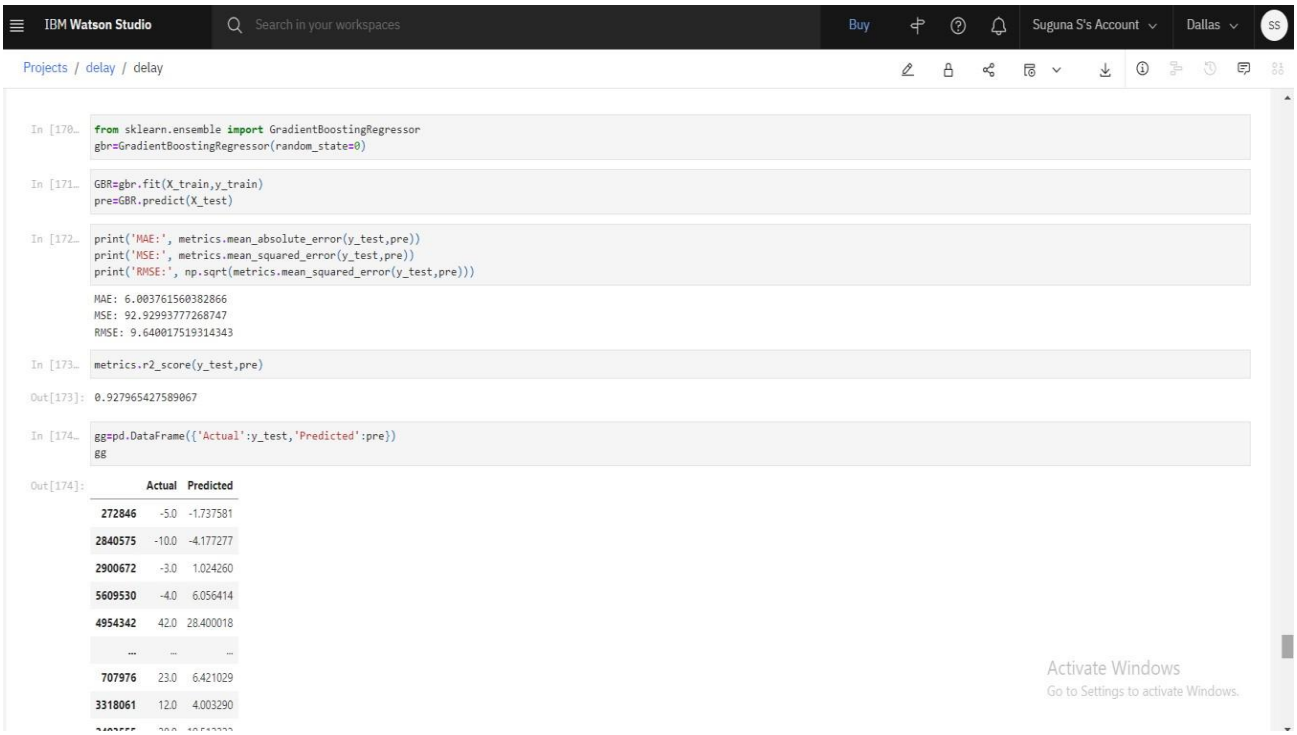
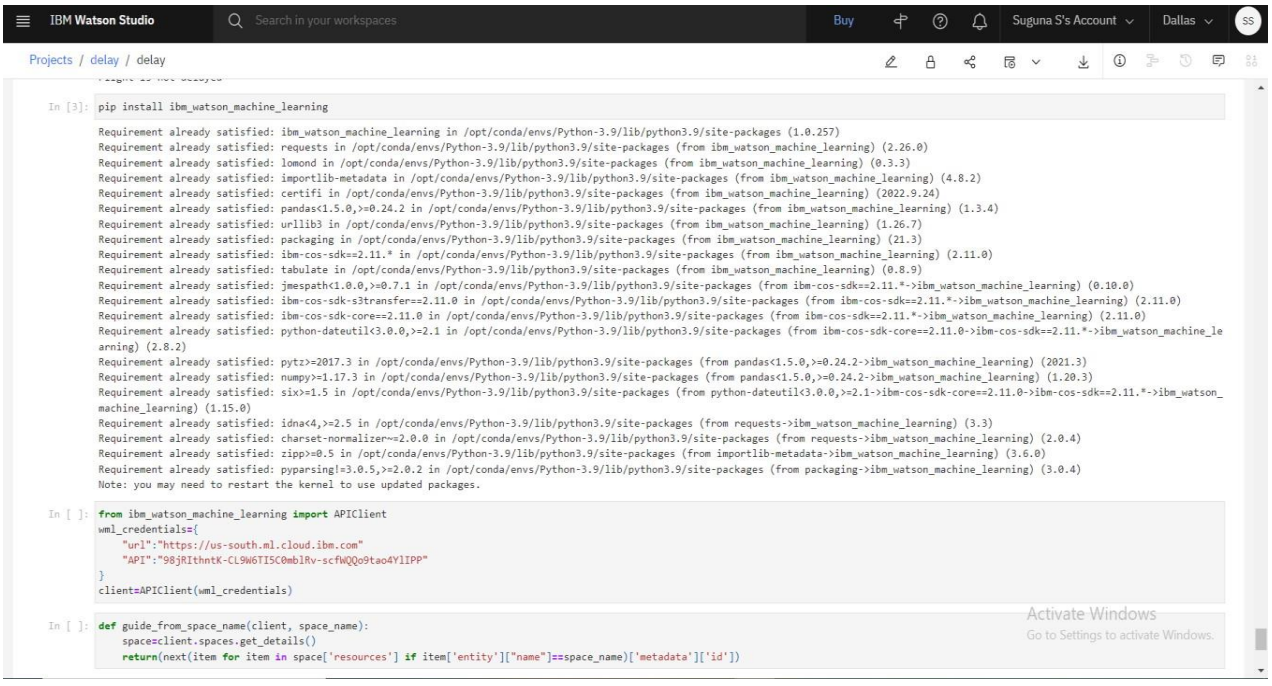


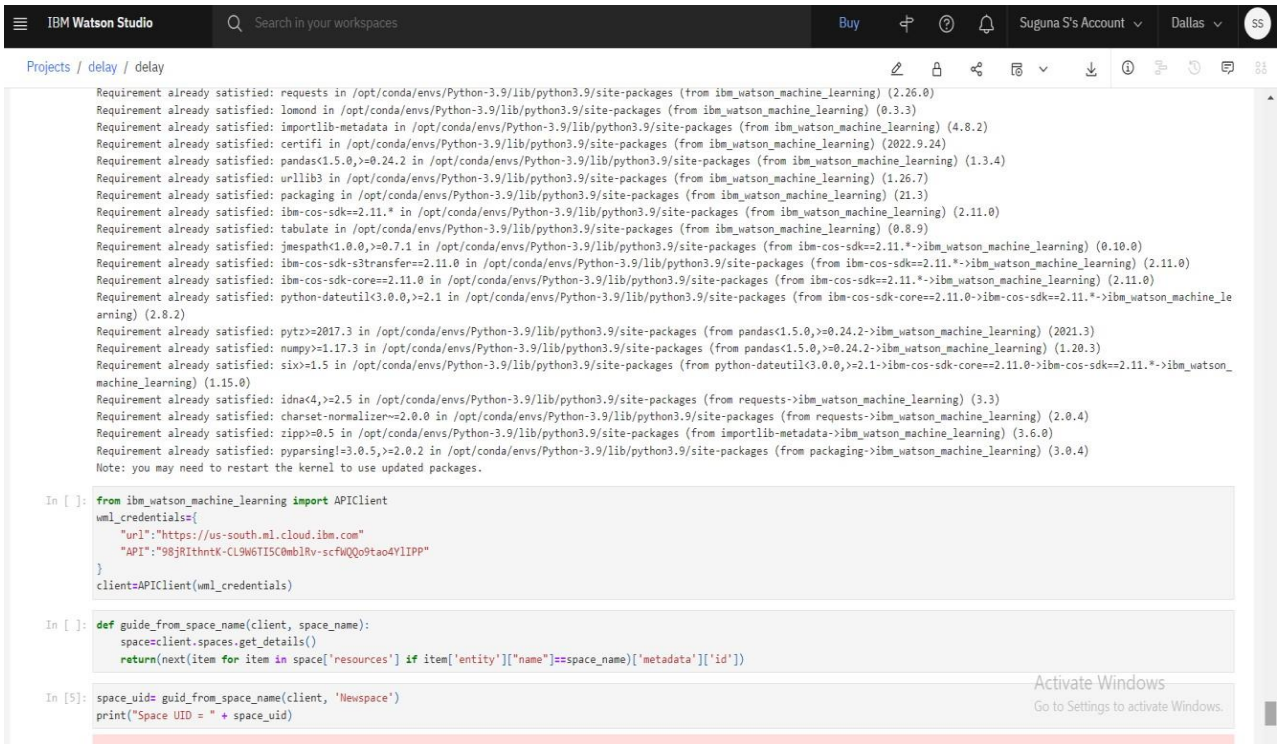

```
In [170…
from sklearn.ensemble import GradientBoostingRegressor
gbr=GradientBoostingRegressor(random_state=0)

In [171…
GBR=gbr.fit(X_train,y_train)
pre=GBR.predict(X_test)

In [172…
print('MAE:', metrics.mean_absolute_error(y_test,pre))
print('MSE:', metrics.mean_squared_error(y_test,pre))
print('RMSE:', np.sqrt(metrics.mean_squared_error(y_test,pre)))

MAE: 6.003761560382866
MSE: 92.92993777268747
RMSE: 9.640017519314343

In [173…
metrics.r2_score(y_test,pre)

Out[173]:
0.927965427589067

In [174…
gg=pd.DataFrame({'Actual':y_test,'Predicted':pre})
gg
```

Out[174]:

	Actual	Predicted
272846	-5.0	-1.737581
2840575	-10.0	-4.177277
2900672	-3.0	1.024260
5609530	-4.0	6.056414
4954342	42.0	28.400018
...	...	...
707976	23.0	6.421029
3318061	12.0	4.003290




```
In [3]:
pip install ibm_watson_machine_learning

Requirement already satisfied: ibm_watson_machine_learning in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (1.0.257)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (2.26.0)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (0.3.3)
Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (4.8.2)
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (2022.9.24)
Requirement already satisfied: pandas<1.5.0,>=0.24.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (1.3.4)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (1.26.7)
Requirement already satisfied: packaging in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (21.3)
Requirement already satisfied: ibm-cos-sdk==2.11.* in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (2.11.0)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (0.8.9)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk==2.11.*->ibm_watson_machine_learning) (0.10.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk==2.11.*->ibm_watson_machine_learning) (2.11.0)
Requirement already satisfied: ibm-cos-sdk-core==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk==2.11.*->ibm_watson_machine_learning) (2.11.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk-core==2.11.0->ibm-cos-sdk==2.11.*->ibm_watson_machine_learning) (2.8.2)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas<1.5.0,>=0.24.2->ibm_watson_machine_learning) (2021.3)
Requirement already satisfied: numpy>=1.17.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas<1.5.0,>=0.24.2->ibm_watson_machine_learning) (1.20.3)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from python-dateutil<3.0.0,>=2.1->ibm-cos-sdk-core==2.11.0->ibm-cos-sdk==2.11.*->ibm_watson_machine_learning) (1.15.0)
Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->ibm_watson_machine_learning) (3.3)
Requirement already satisfied: charset-normalizer~=2.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->ibm_watson_machine_learning) (2.0.4)
Requirement already satisfied: zipp>=0.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from importlib-metadata->ibm_watson_machine_learning) (3.6.0)
Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from packaging->ibm_watson_machine_learning) (3.0.4)
Note: you may need to restart the kernel to use updated packages.

In [ ]:
from ibm_watson_machine_learning import APIClient
wml_credentials={
    "url":"https://us-south.ml.cloud.ibm.com"
    "API":"98jRIthntK-CL9W6TI5C0mblRv-scfWQQo9tao4YlIPP"
}
client=APIClient(wml_credentials)

In [ ]:
def guide_from_space_name(client, space_name):
    space=client.spaces.get_details()
    return(next(item for item in space['resources'] if item['entity']["name"]==space_name)['metadata']['id'])
```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Requirement already satisfied: requests in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (2.26.0)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (0.3.3)
Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (4.8.2)
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Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (1.26.7)
Requirement already satisfied: packaging in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (21.3)
Requirement already satisfied: ibm-cos-sdk==2.11.* in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learning) (2.11.0)
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Requirement already satisfied: ibm-cos-sdk-core==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk==2.11.*->ibm_watson_machine_learning) (2.11.0)
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Requirement already satisfied: numpy>=1.17.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas<1.5.0,>=0.24.2->ibm_watson_machine_learning) (1.20.3)
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Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->ibm_watson_machine_learning) (3.3)
Requirement already satisfied: charset-normalizer~=2.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->ibm_watson_machine_learning) (2.0.4)
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Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from packaging->ibm_watson_machine_learning) (3.0.4)
Note: you may need to restart the kernel to use updated packages.
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"url":"https://us-south.ml.cloud.ibm.com"
"API":"98jRIthntK-CL9W6TI5C0mblRv-scfWQQo9tao4YlIPP"
}
client=APIClient(wml_credentials)
In [ ]:
def guide_from_space_name(client, space_name):
space=client.spaces.get_details()
return(next(item for item in space['resources'] if item['entity']["name"]==space_name)['metadata']['id'])
In [5]:
space_uid= guid_from_space_name(client, 'Newspace')
print("Space UID = " + space_uid)
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