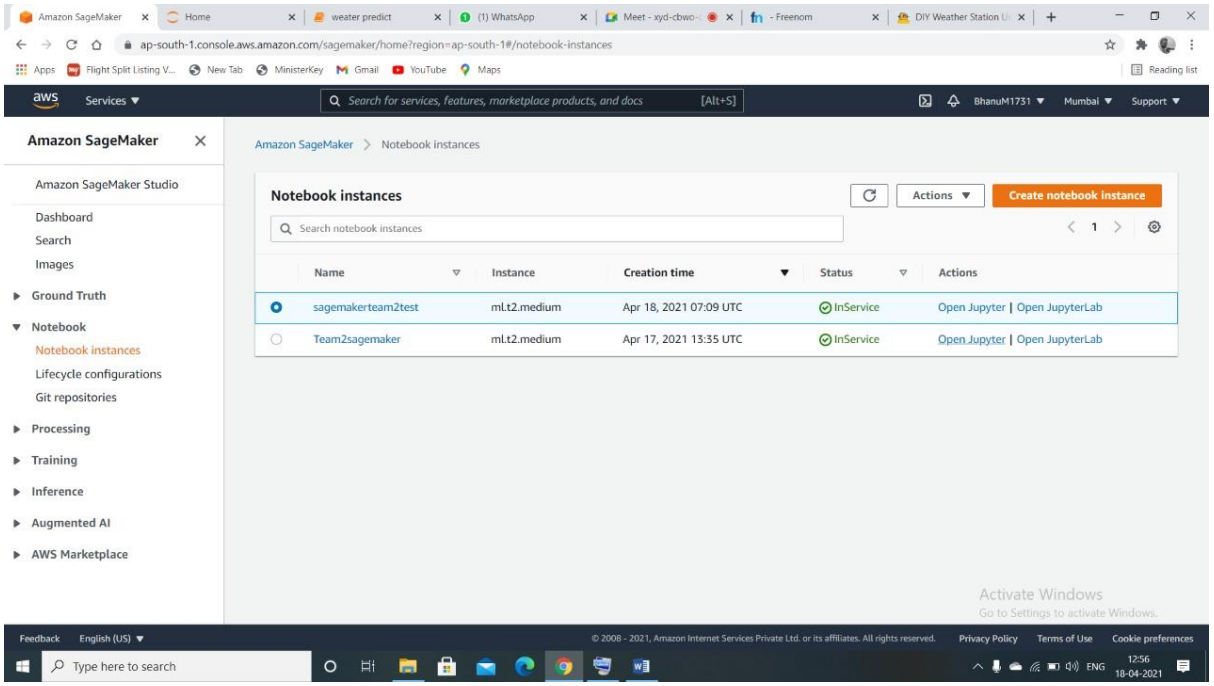
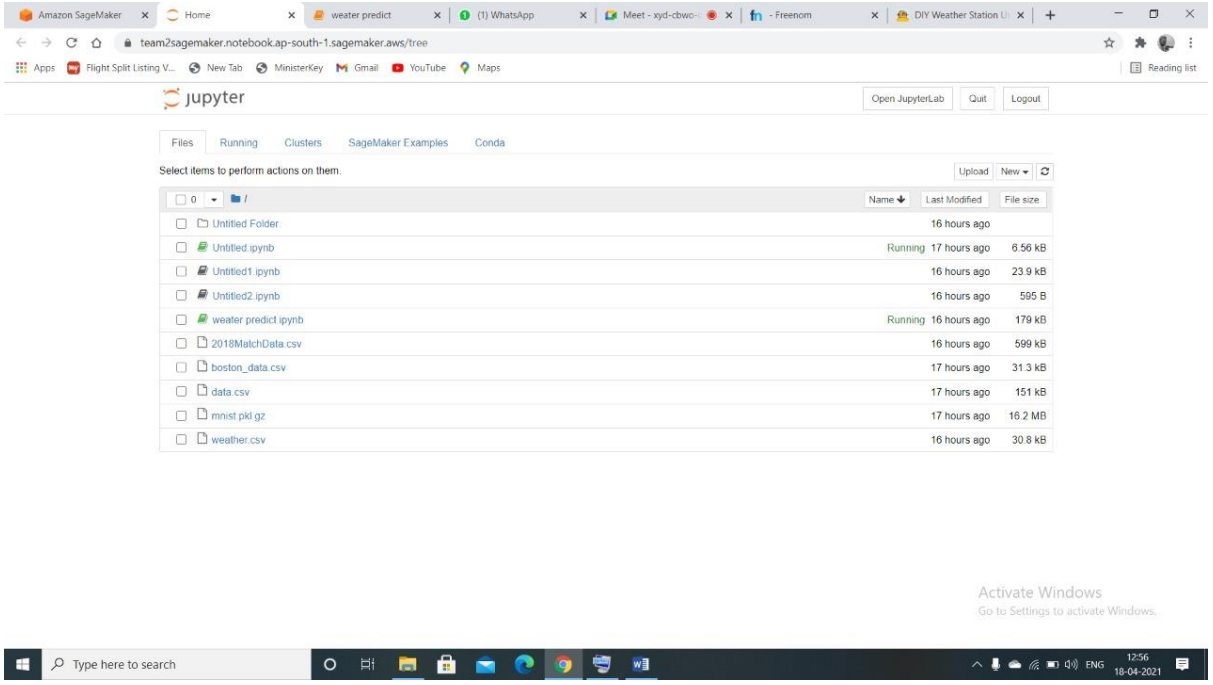
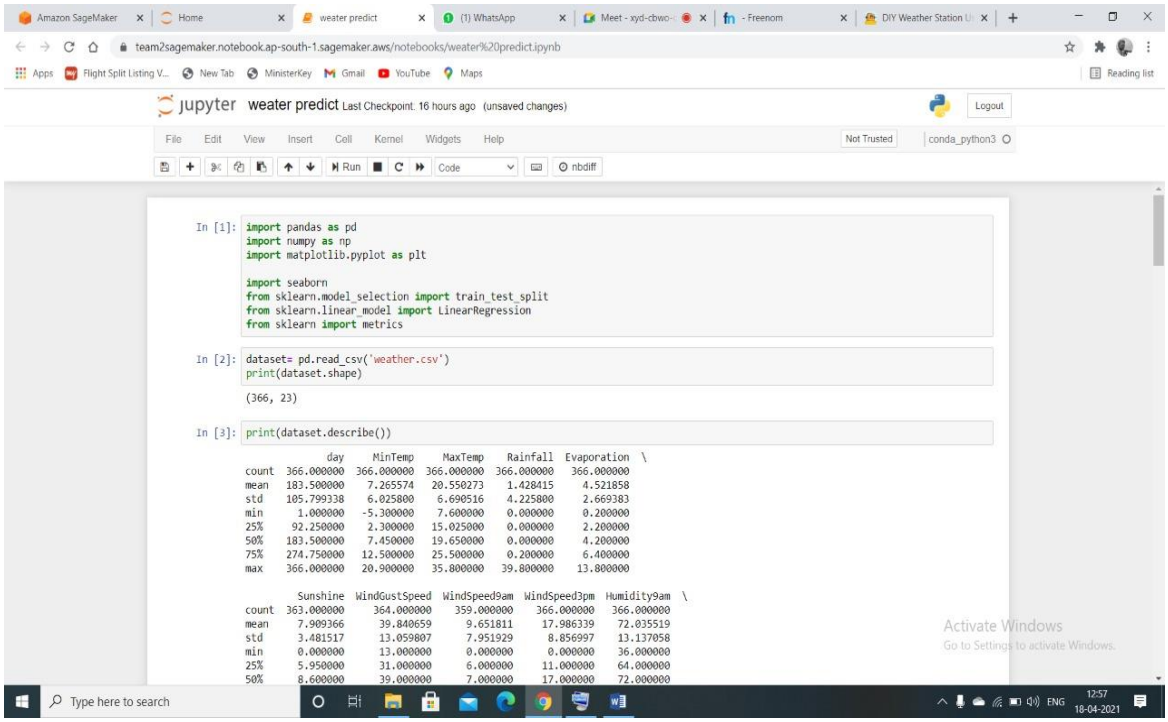
TEAM2 SAGEMAKER







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In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

import seaborn
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn import metrics
```

In [2]:
```
dataset= pd.read_csv('weather.csv')
print(dataset.shape)
```

```
(366, 23)
```

In [3]:
```
print(dataset.describe())
```

```
              day     MinTemp     MaxTemp    Rainfall  Evaporation  \
count  366.000000  366.000000  366.000000  366.000000   366.000000
mean   183.500000    7.265574   20.550273    1.428415     4.521858
std    105.799338    6.025800    6.690516    4.225800     2.669383
min      1.000000   -5.300000    7.600000    0.000000     0.200000
25%     92.250000    2.300000   15.025000    0.000000     2.200000
50%    183.500000    7.450000   19.650000    0.000000     4.200000
75%    274.750000   12.500000   25.500000    0.200000     6.400000
max    366.000000   20.900000   35.800000   39.800000    13.800000

         Sunshine  WindGustSpeed  WindSpeed9am  WindSpeed3pm  Humidity9am  \
count  363.000000     364.000000    359.000000    366.000000   366.000000
mean     7.909366      39.840659      9.651811     17.986339    72.035519
std      3.481517      13.059807      7.951929      8.856997    13.137058
min      0.000000      13.000000      0.000000      0.000000    36.000000
25%      5.950000      31.000000      6.000000     11.000000    64.000000
50%      8.600000      39.000000      7.000000     17.000000    72.000000
```

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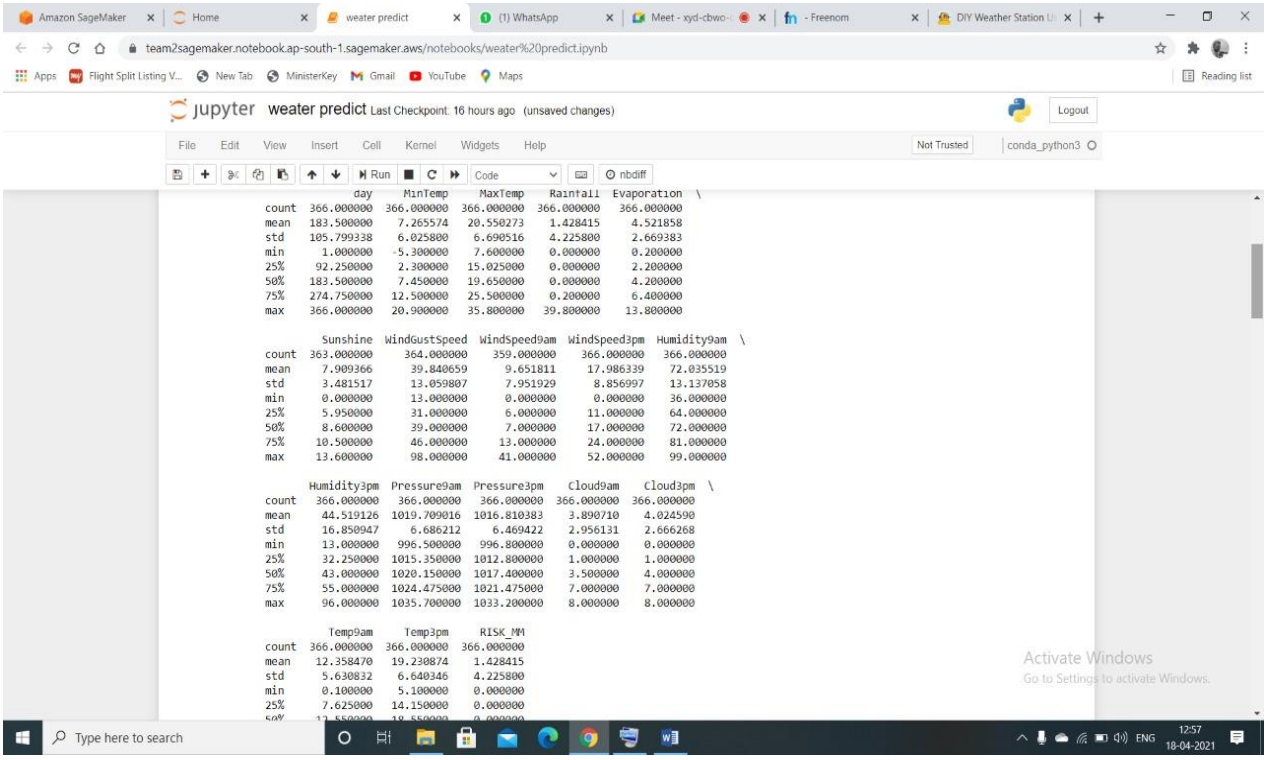

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```
              day     MinTemp     MaxTemp    Rainfall  Evaporation  \
count  366.000000  366.000000  366.000000  366.000000   366.000000
mean   183.500000    7.265574   20.550273    1.428415     4.521858
std    105.799338    6.025800    6.690516    4.225800     2.669383
min      1.000000   -5.300000    7.600000    0.000000     0.200000
25%     92.250000    2.300000   15.025000    0.000000     2.200000
50%    183.500000    7.450000   19.650000    0.000000     4.200000
75%    274.750000   12.500000   25.500000    0.200000     6.400000
max    366.000000   20.900000   35.800000   39.800000    13.800000

         Sunshine  WindGustSpeed  WindSpeed9am  WindSpeed3pm  Humidity9am  \
count  363.000000     364.000000    359.000000    366.000000   366.000000
mean     7.909366      39.840659      9.651811     17.986339    72.035519
std      3.481517      13.059807      7.951929      8.856997    13.137058
min      0.000000      13.000000      0.000000      0.000000    36.000000
25%      5.950000      31.000000      6.000000     11.000000    64.000000
50%      8.600000      39.000000      7.000000     17.000000    72.000000
75%     10.500000      46.000000     13.000000     24.000000    81.000000
max     13.600000      98.000000     41.000000     52.000000    99.000000

       Humidity3pm  Pressure9am  Pressure3pm    Cloud9am    Cloud3pm  \
count   366.000000   366.000000   366.000000  366.000000  366.000000
mean     44.519126  1019.709016  1016.810383    3.890710    4.024590
std      16.850947     6.686212     6.469422    2.956131    2.666268
min      13.000000   996.500000   996.800000    0.000000    0.000000
25%      32.250000  1015.350000  1012.800000    1.000000    1.000000
50%      43.000000  1020.150000  1017.400000    3.500000    4.000000
75%      55.000000  1024.475000  1021.475000    7.000000    7.000000
max      96.000000  1035.700000  1033.200000    8.000000    8.000000

          Temp9am     Temp3pm     RISK_MM
count  366.000000  366.000000  366.000000
mean    12.358470   19.230874    1.428415
std      5.630832    6.640346    4.225800
min      0.100000    5.100000    0.000000
25%      7.625000   14.150000    0.000000
50%     12.150000   18.550000    0.000000
```

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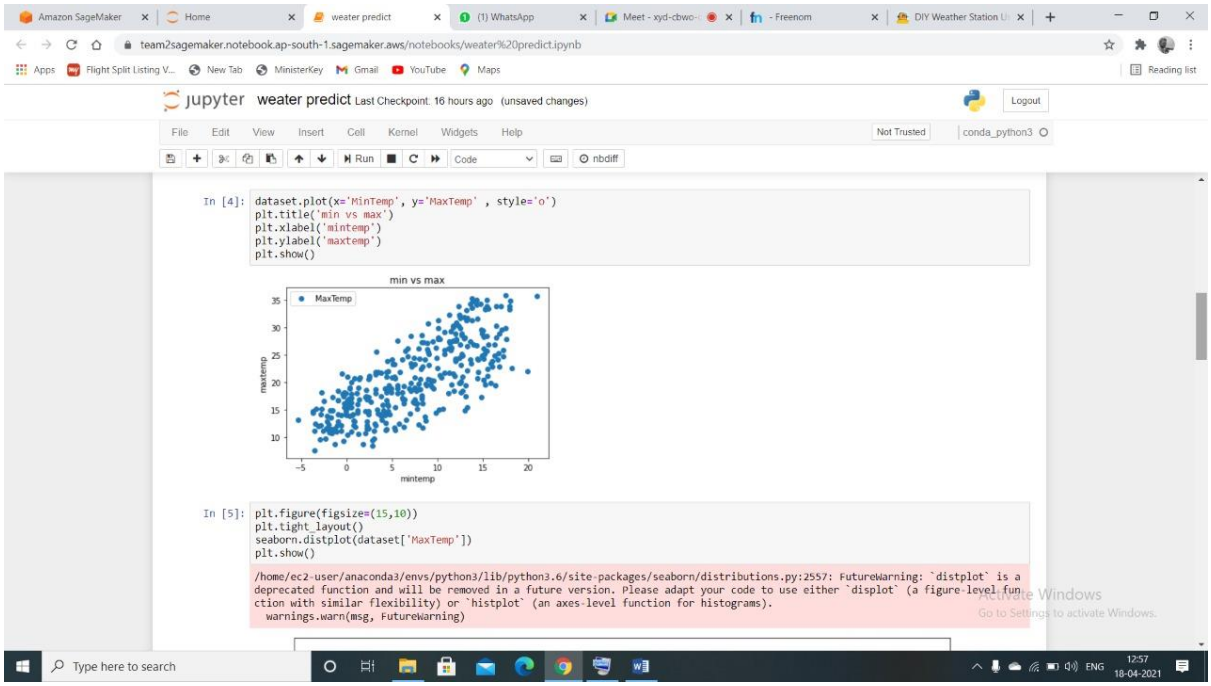
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In [4]:
dataset.plot(x='MinTemp', y='MaxTemp' , style='o')
plt.title('min vs max')
plt.xlabel('mintemp')
plt.ylabel('maxtemp')
plt.show()
min vs max
MaxTemp
maxtemp
mintemp
In [5]:
plt.figure(figsize=(15,10))
plt.tight_layout()
seaborn.distplot(dataset['MaxTemp'])
plt.show()
/home/ec2-user/anaconda3/envs/python3/lib/python3.6/site-packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
warnings.warn(msg, FutureWarning)
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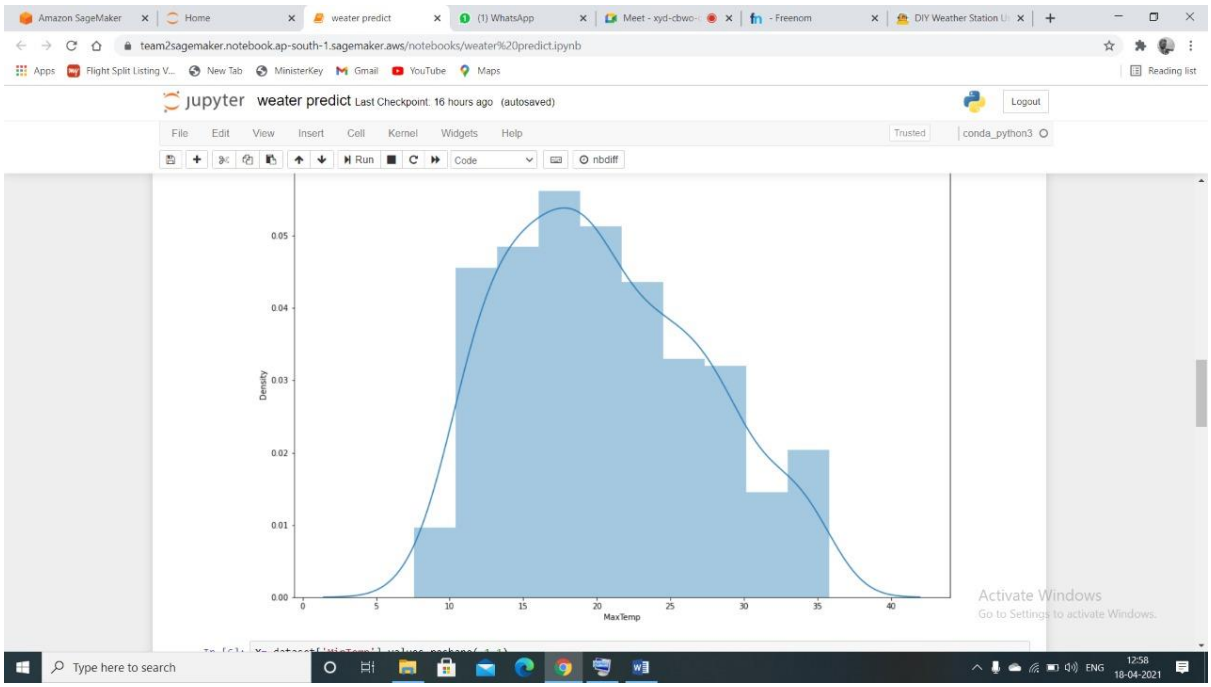
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In [6]:
```
X= dataset['MinTemp'].values.reshape(-1,1)
y= dataset['MaxTemp'].values.reshape(-1,1)
X_train,X_test,y_train,y_test = train_test_split(X,y,test_size=0.2, random_state=0)
```

In [7]:
```
model =LinearRegression()
model.fit(X_train,y_train)
```

Out[7]:
```
LinearRegression()
```

In [8]:
```
print('Intercept is :',model.intercept_)
```

```
Intercept is : [14.56202411]
```

In [9]:
```
print('Coefficient is :' ,model.coef_)
```

```
Coefficient is : [[0.81953755]]
```

In [10]:
```
y_pred= model.predict(X_test)
```

In [11]:
```
df=  pd.DataFrame({'Actual': y_test.flatten(), 'Predicted': y_pred.flatten()})
print(df)
```

```
    Actual  Predicted
0     25.2  23.413030
1     11.5  13.086857
2     21.1  27.264856
3     22.2  25.461874
4     20.4  26.937041
..     ...        ...
69    18.9  20.216833
70    22.8  27.674625
71    16.1  21.446140
72    25.1  24.970151
```

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    Actual  Predicted
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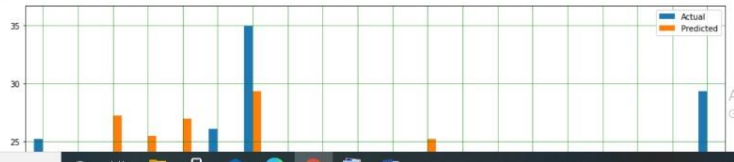
1     11.5  13.086857
2     21.1  27.264856
3     22.2  25.461874
4     20.4  26.937041
..     ...        ...
69    18.9  20.216833
70    22.8  27.674625
71    16.1  21.446140
72    25.1  24.970151
73    12.2  14.070302

[74 rows x 2 columns]
```

In [12]:
```
df1= df.head(20)
df1.plot(kind='bar', figsize=(16,10))
plt.grid(which='major', linestyle='-',linewidth='0.5', color='green')
plt.grid(which='minor', linestyle=':',linewidth='0.5', color='black')
plt.show()
```



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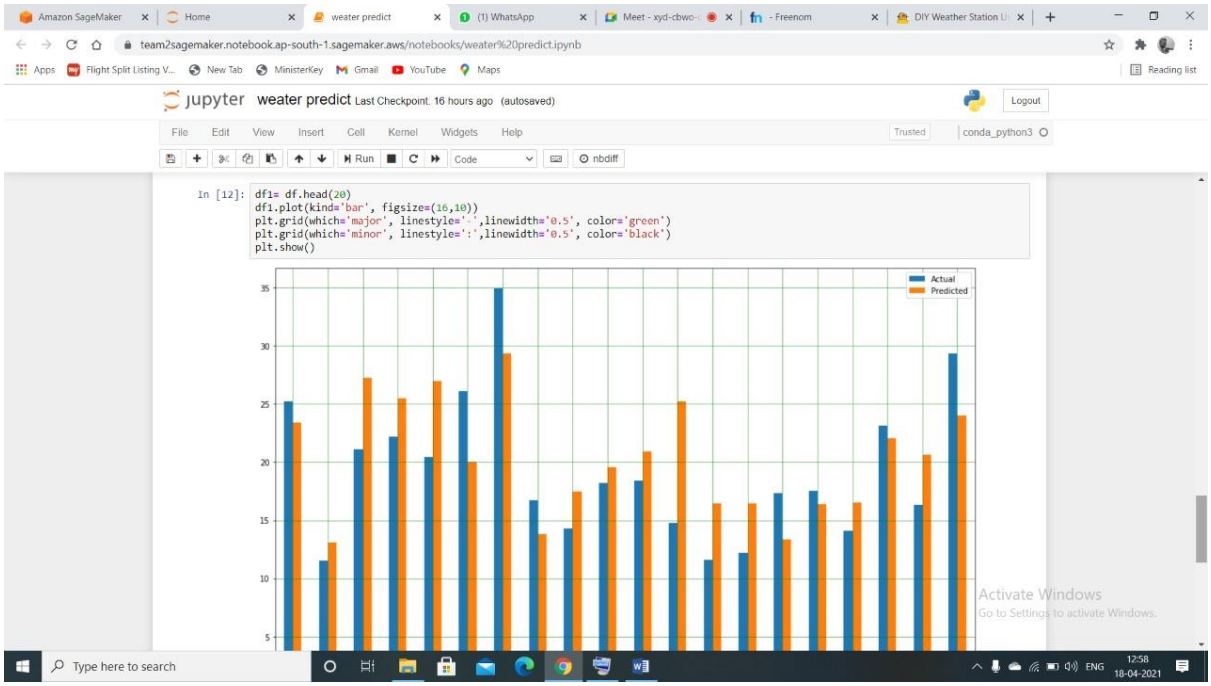
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Actual
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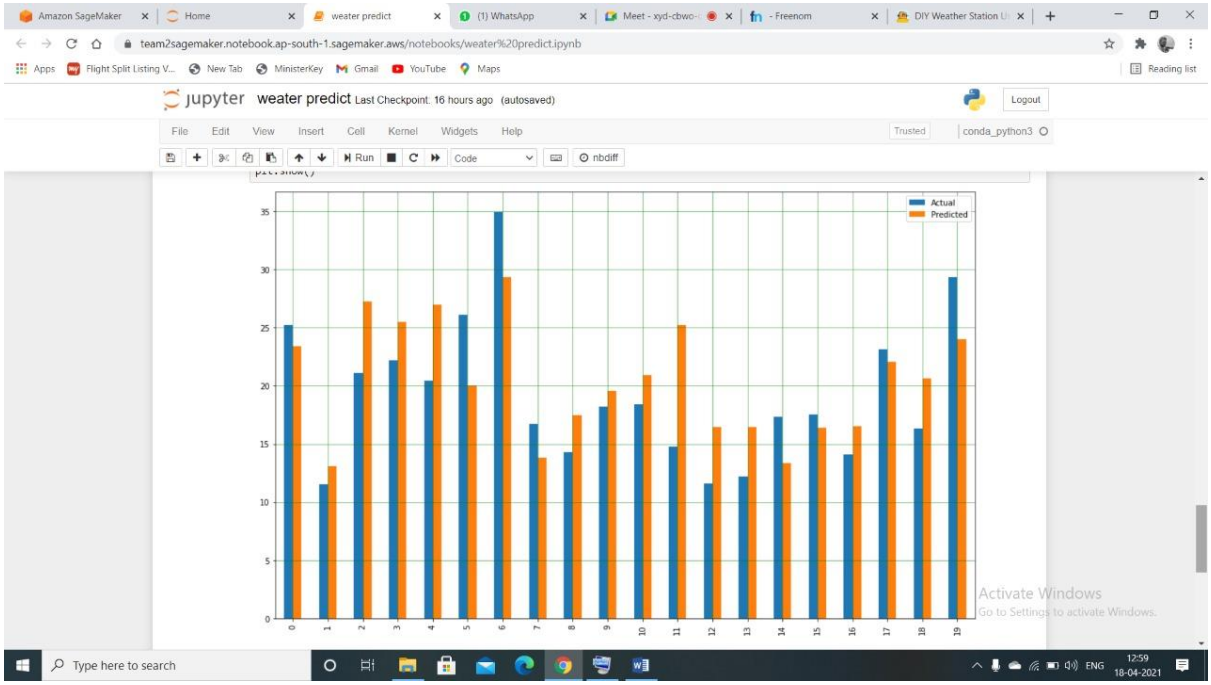
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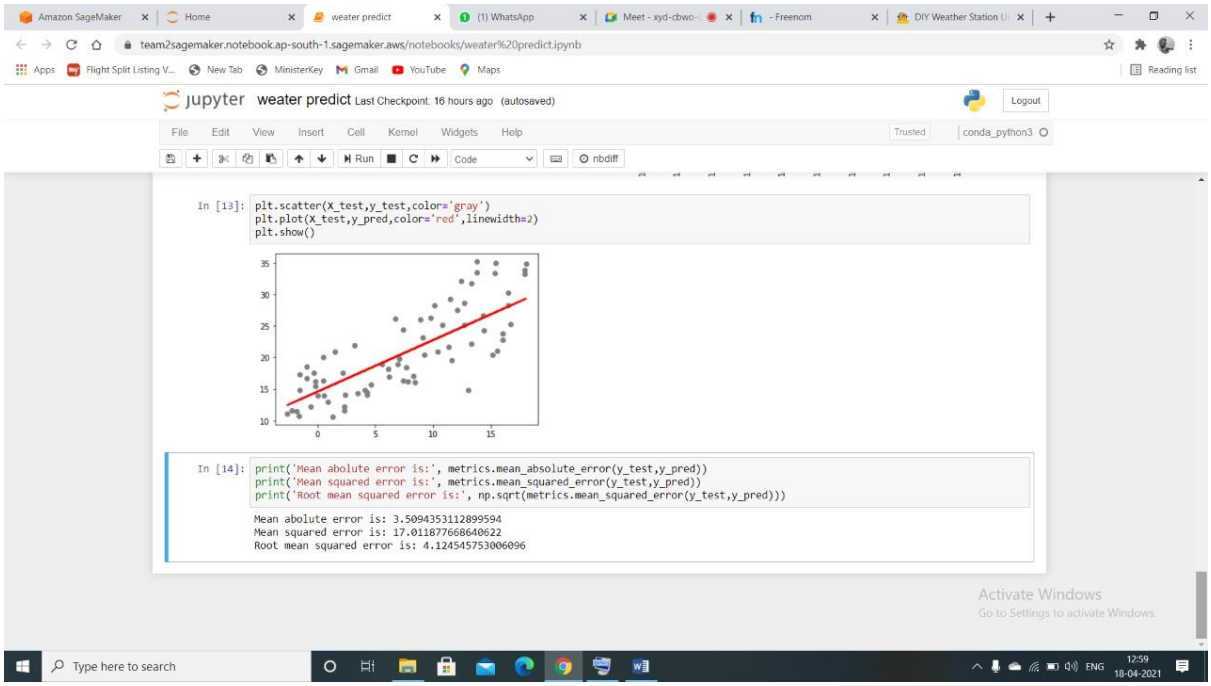

We have deployed weather prediction via Linear Regression (Machine Learning) Algorithm in

AWS Sagemaker

TEAM2

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