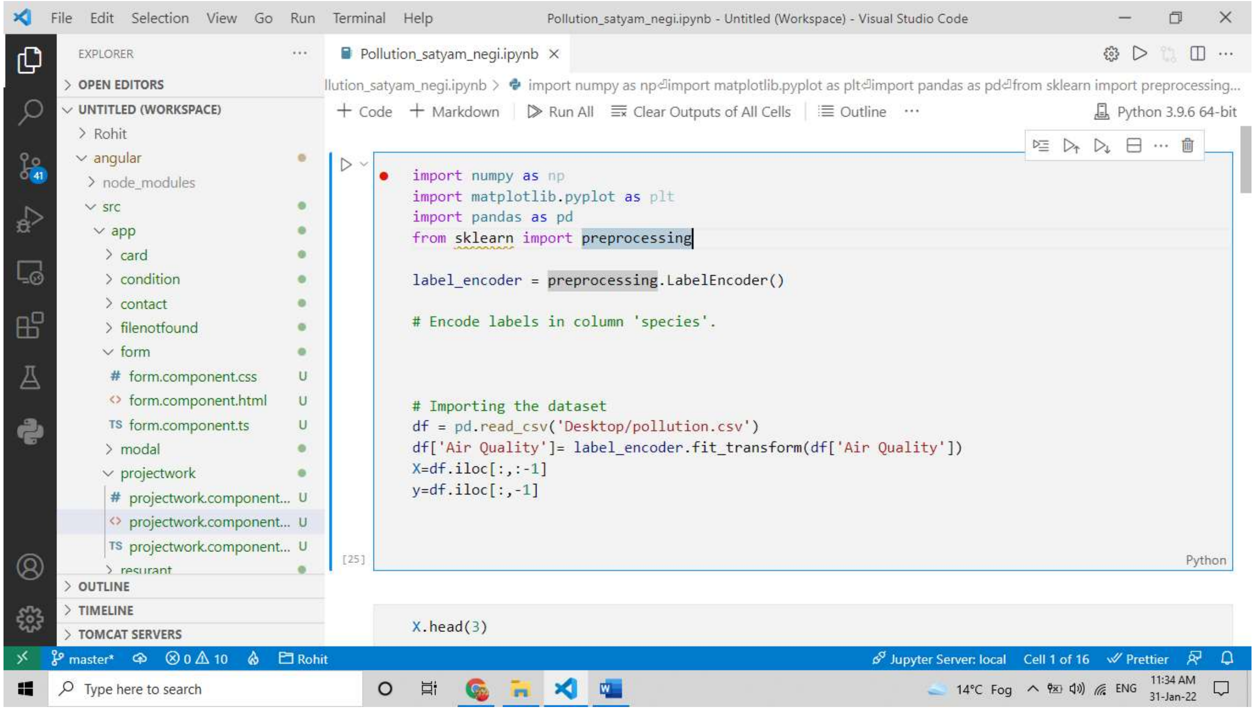
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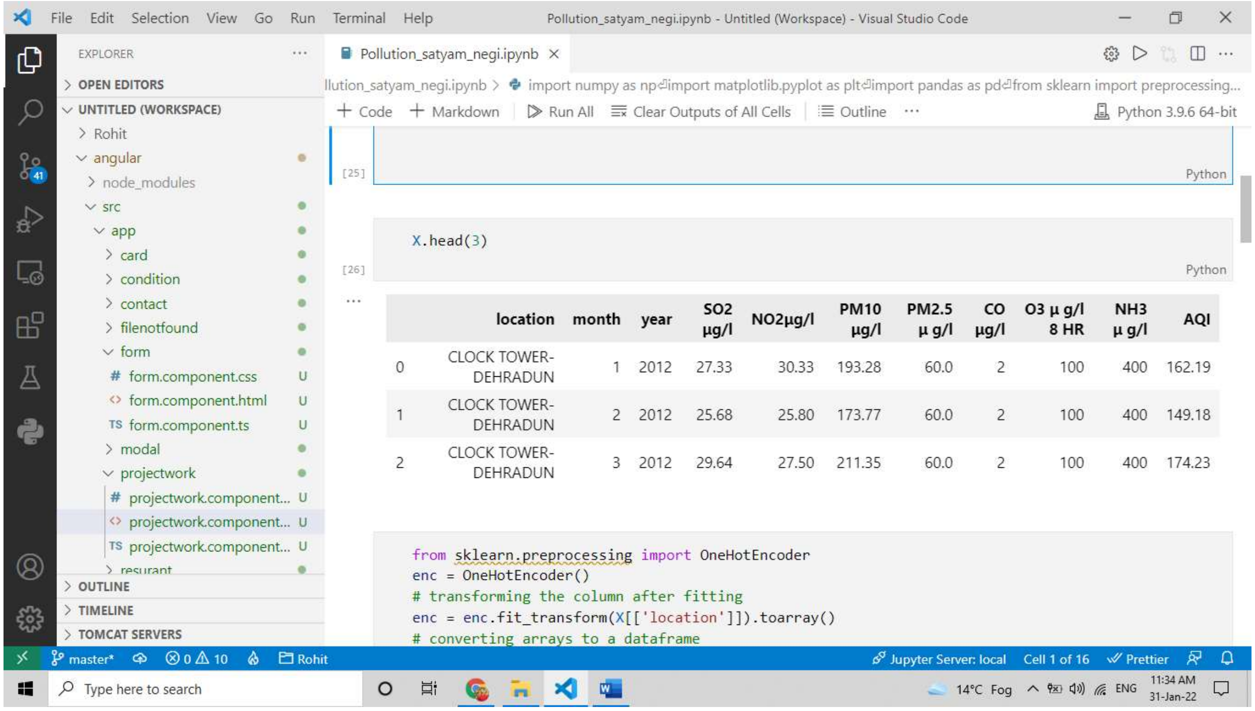
```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from sklearn import preprocessing

label_encoder = preprocessing.LabelEncoder()

# Encode labels in column 'species'.



# Importing the dataset
df = pd.read_csv('Desktop/pollution.csv')
df['Air Quality']= label_encoder.fit_transform(df['Air Quality'])
X=df.iloc[:,:-1]
y=df.iloc[:,-1]
```

```
X.head(3)
```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Python
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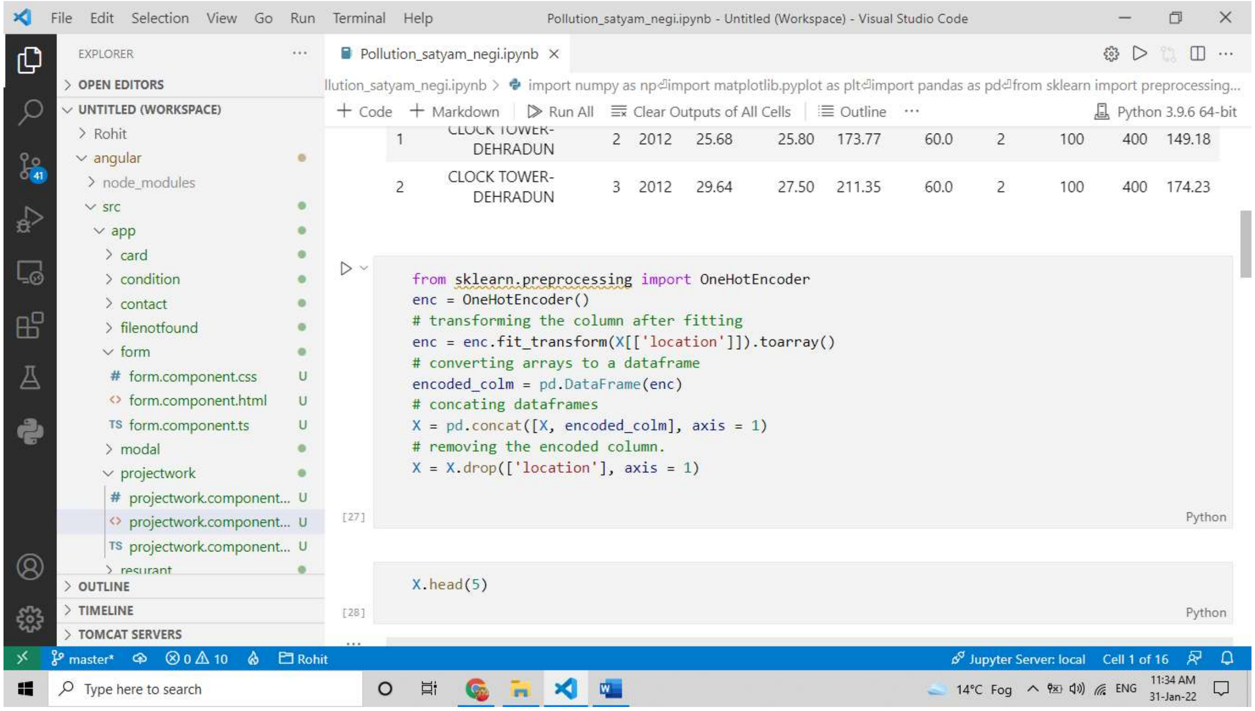
```
X.head(3)
```

	location	month	year	SO2 µg/l	NO2µg/l	PM10 µg/l	PM2.5 µ g/l	CO µg/l	O3 µ g/l 8 HR	NH3 µ g/l	AQI
0	CLOCK TOWER-DEHRADUN	1	2012	27.33	30.33	193.28	60.0	2	100	400	162.19
1	CLOCK TOWER-DEHRADUN	2	2012	25.68	25.80	173.77	60.0	2	100	400	149.18
2	CLOCK TOWER-DEHRADUN	3	2012	29.64	27.50	211.35	60.0	2	100	400	174.23

```
from sklearn.preprocessing import OneHotEncoder
enc = OneHotEncoder()
# transforming the column after fitting
enc = enc.fit_transform(X[['location']]).toarray()
# converting arrays to a dataframe
```



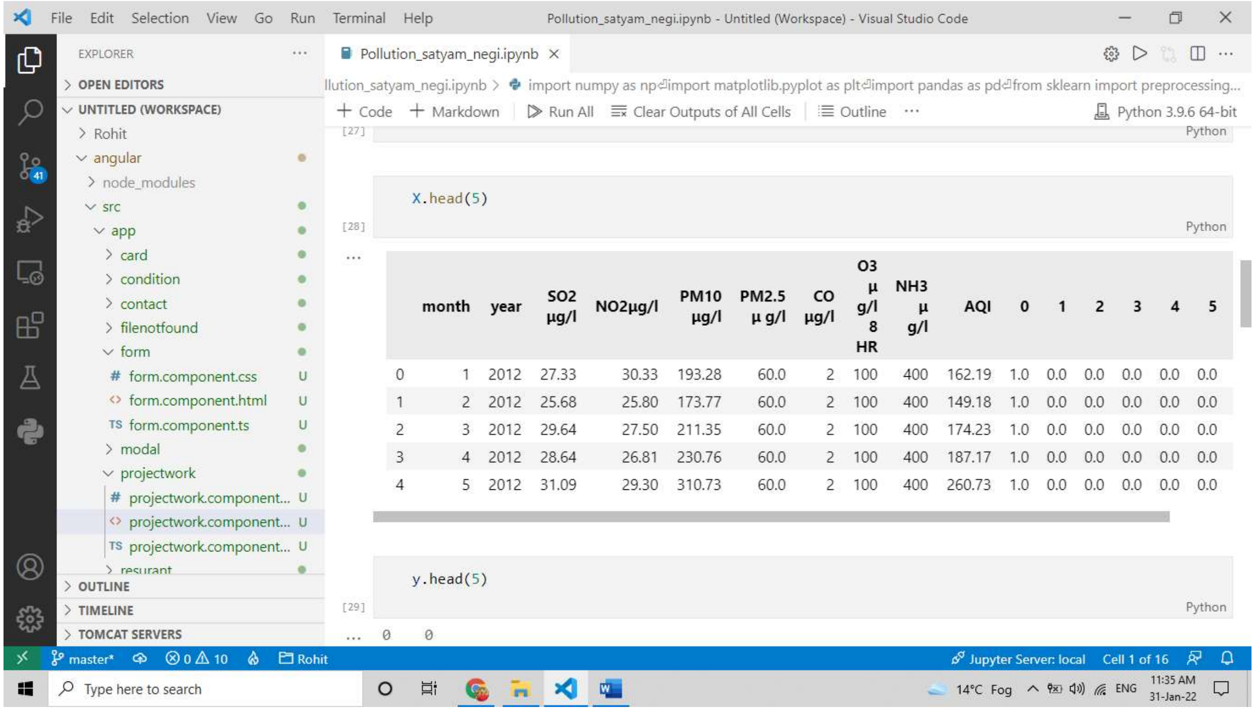
1	CLOCK TOWER-DEHRADUN	2	2012	25.68	25.80	173.77	60.0	2	100	400	149.18
2	CLOCK TOWER-DEHRADUN	3	2012	29.64	27.50	211.35	60.0	2	100	400	174.23

```
from sklearn.preprocessing import OneHotEncoder
enc = OneHotEncoder()
# transforming the column after fitting
enc = enc.fit_transform(X[['location']]).toarray()
# converting arrays to a dataframe
encoded_colm = pd.DataFrame(enc)
# concating dataframes
X = pd.concat([X, encoded_colm], axis = 1)
# removing the encoded column.
X = X.drop(['location'], axis = 1)
```

[27] Python

```
X.head(5)
```

[28] Python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```
X.head(5)
```

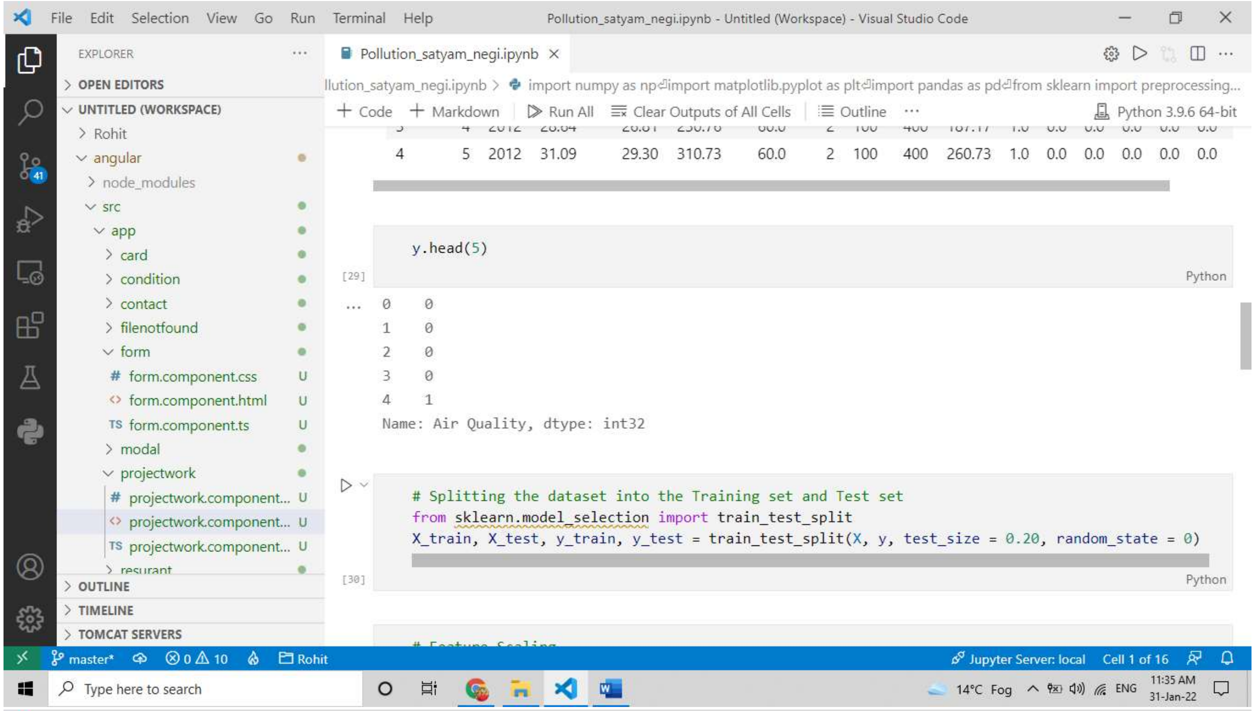
[28] Python

	month	year	SO2 µg/l	NO2µg/l	PM10 µg/l	PM2.5 µ g/l	CO µg/l	O3 µ g/l 8 HR	NH3 µ g/l	AQI	0	1	2	3	4	5
0	1	2012	27.33	30.33	193.28	60.0	2	100	400	162.19	1.0	0.0	0.0	0.0	0.0	0.0
1	2	2012	25.68	25.80	173.77	60.0	2	100	400	149.18	1.0	0.0	0.0	0.0	0.0	0.0
2	3	2012	29.64	27.50	211.35	60.0	2	100	400	174.23	1.0	0.0	0.0	0.0	0.0	0.0
3	4	2012	28.64	26.81	230.76	60.0	2	100	400	187.17	1.0	0.0	0.0	0.0	0.0	0.0
4	5	2012	31.09	29.30	310.73	60.0	2	100	400	260.73	1.0	0.0	0.0	0.0	0.0	0.0

```
y.head(5)
```

[29] Python

```
0    0
```



```
4    5  2012  31.09    29.30  310.73    60.0    2  100    400  260.73  1.0  0.0  0.0  0.0  0.0  0.0
```

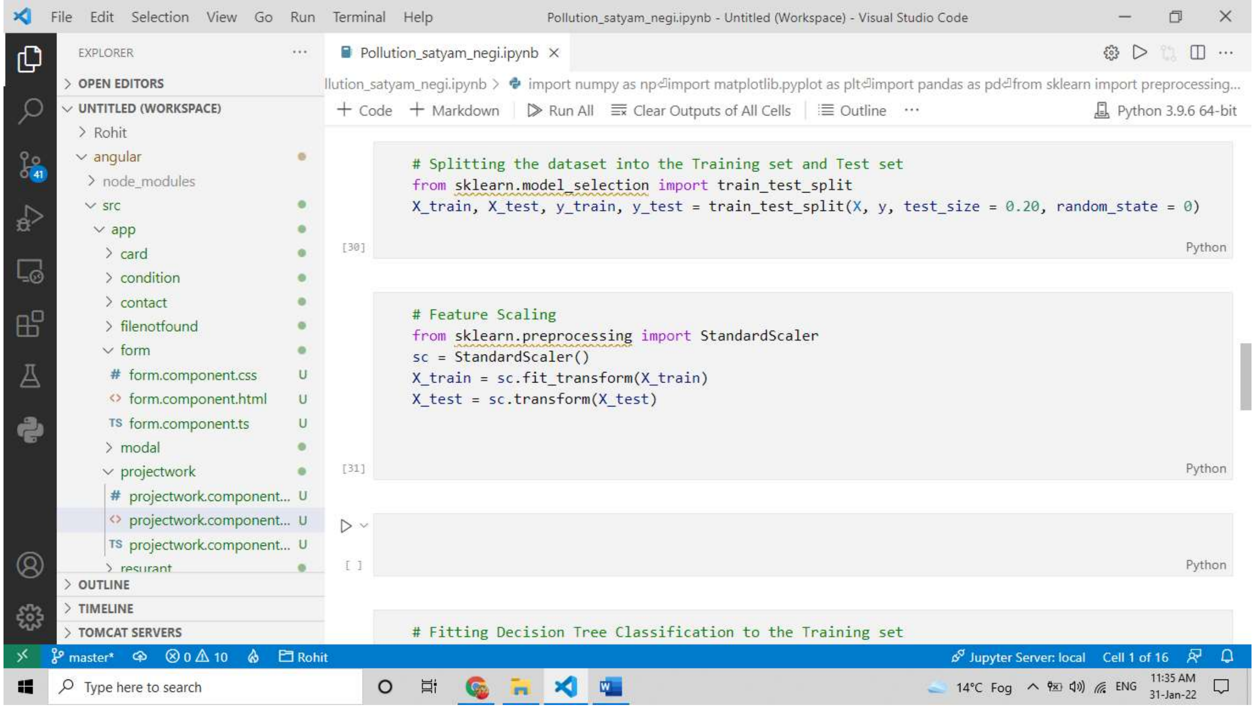
```
y.head(5)
```

[29]

```
0    0
1    0
2    0
3    0
4    1
Name: Air Quality, dtype: int32
```

```
# Splitting the dataset into the Training set and Test set
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.20, random_state = 0)
```

[30]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```
# Splitting the dataset into the Training set and Test set
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.20, random_state = 0)
```

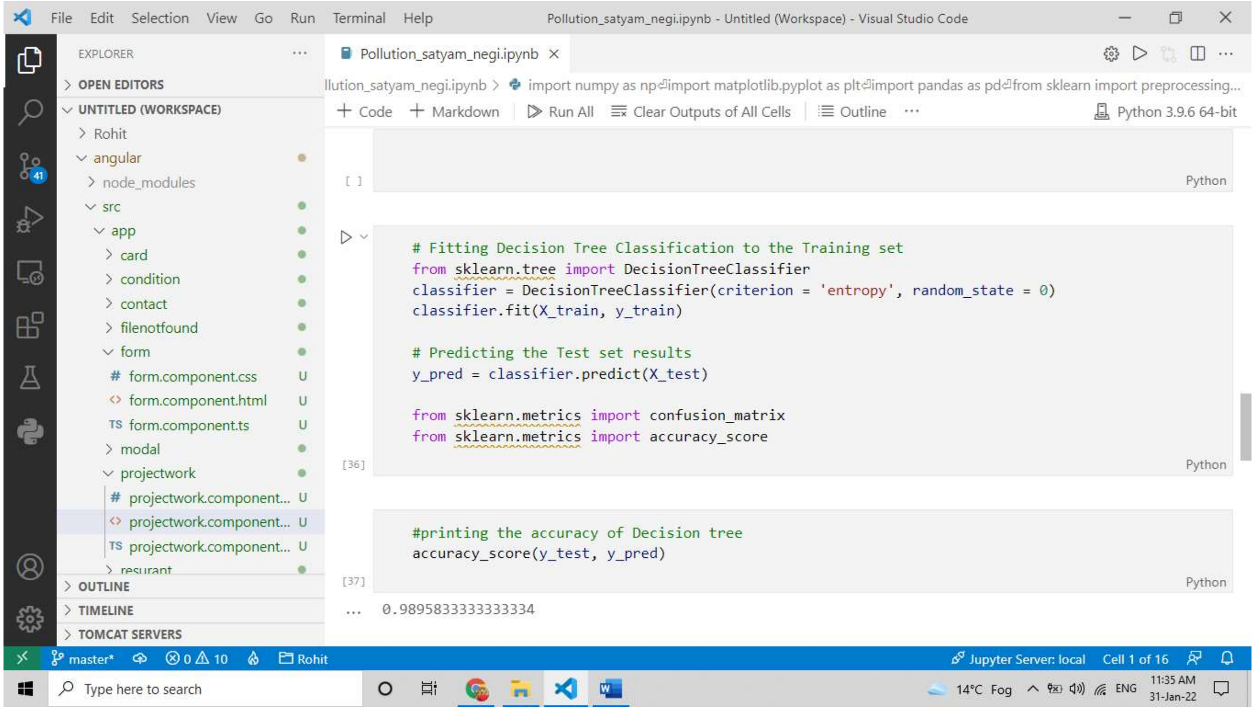
[30]

```
# Feature Scaling
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

[31]

[ ]

```
# Fitting Decision Tree Classification to the Training set
```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```
[ ]
```

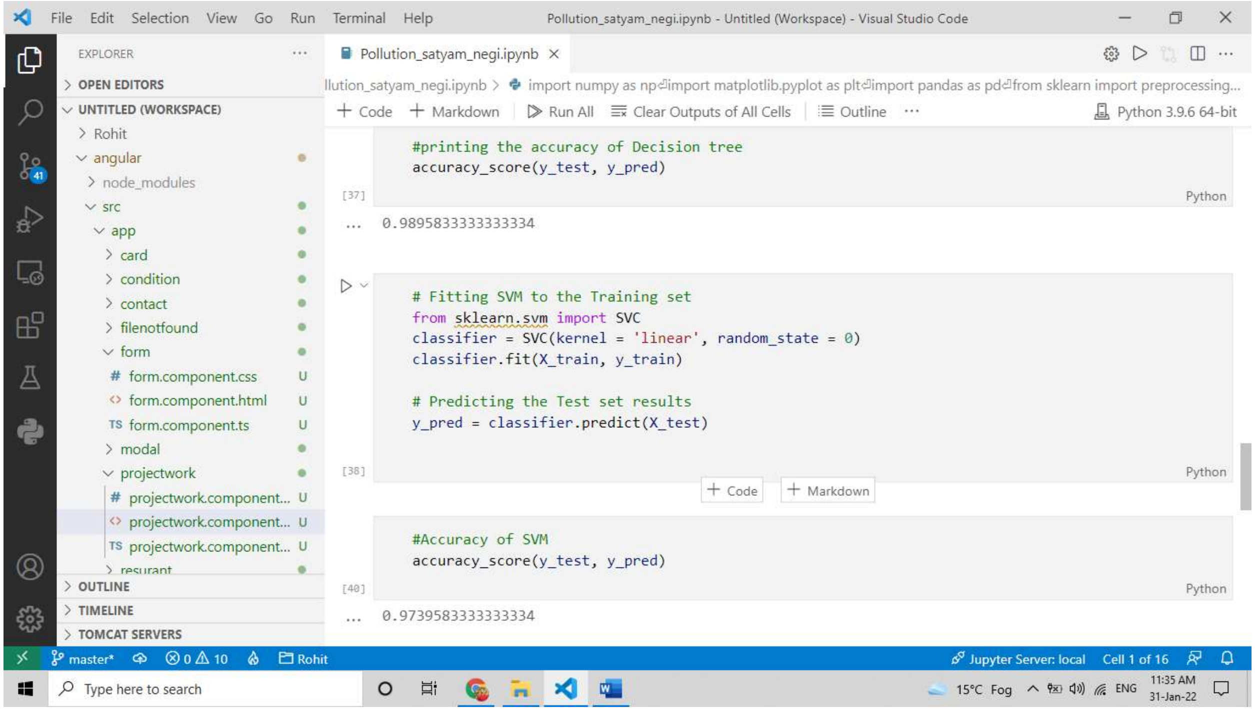
```
# Fitting Decision Tree Classification to the Training set
from sklearn.tree import DecisionTreeClassifier
classifier = DecisionTreeClassifier(criterion = 'entropy', random_state = 0)
classifier.fit(X_train, y_train)

# Predicting the Test set results
y_pred = classifier.predict(X_test)

from sklearn.metrics import confusion_matrix
from sklearn.metrics import accuracy_score
```

[36] Python

```
#printing the accuracy of Decision tree
accuracy_score(y_test, y_pred)
```

[37] Python

```
0.9895833333333334
```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```
#printing the accuracy of Decision tree
accuracy_score(y_test, y_pred)
```

[37] Python

```
0.9895833333333334
```

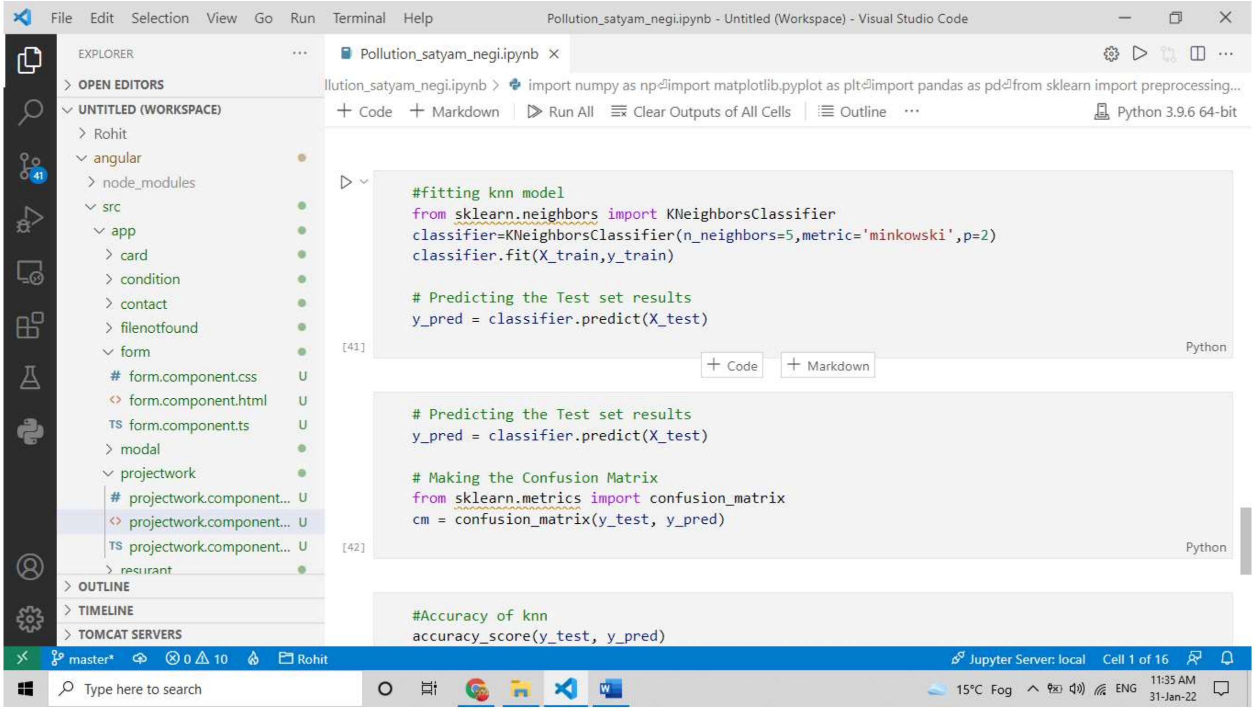
```
# Fitting SVM to the Training set
from sklearn.svm import SVC
classifier = SVC(kernel = 'linear', random_state = 0)
classifier.fit(X_train, y_train)

# Predicting the Test set results
y_pred = classifier.predict(X_test)
```

[38] Python

```
#Accuracy of SVM
accuracy_score(y_test, y_pred)
```

[40] Python

```
0.9739583333333334
```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[42]
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```
#fitting knn model
from sklearn.neighbors import KNeighborsClassifier
classifier=KNeighborsClassifier(n_neighbors=5,metric='minkowski',p=2)
classifier.fit(X_train,y_train)

# Predicting the Test set results
y_pred = classifier.predict(X_test)
```

```
# Predicting the Test set results
y_pred = classifier.predict(X_test)

# Making the Confusion Matrix
from sklearn.metrics import confusion_matrix
cm = confusion_matrix(y_test, y_pred)
```

```
#Accuracy of knn
accuracy_score(y_test, y_pred)
```

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