**MLA0201-Fundamentals of Machine Learning**

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Experiment 16:

Compare different types Classification Algorithms and evaluate their performance.

**Code:**

import matplotlib.pyplot as plt

from sklearn.datasets import load\_iris

from sklearn.model\_selection import train\_test\_split

from sklearn.preprocessing import StandardScaler

from sklearn.metrics import accuracy\_score

from sklearn.neighbors import KNeighborsClassifier

from sklearn.naive\_bayes import GaussianNB

from sklearn.tree import DecisionTreeClassifier

from sklearn.linear\_model import LogisticRegression

iris = load\_iris()

X = iris.data

y = iris.target

X\_train, X\_test, y\_train, y\_test = train\_test\_split(

X, y, test\_size=0.3, random\_state=1

)

scaler = StandardScaler()

X\_train\_scaled = scaler.fit\_transform(X\_train)

X\_test\_scaled = scaler.transform(X\_test)

models = {

"KNN": KNeighborsClassifier(n\_neighbors=5),

"Naive Bayes": GaussianNB(),

"Decision Tree": DecisionTreeClassifier(criterion="entropy"),

"Logistic Regression": LogisticRegression(max\_iter=200)

}

accuracies = {}

for name, model in models.items():

if name == "KNN" or name == "Logistic Regression":

model.fit(X\_train\_scaled, y\_train)

preds = model.predict(X\_test\_scaled)

else:

model.fit(X\_train, y\_train)

preds = model.predict(X\_test)

acc = accuracy\_score(y\_test, preds)

accuracies[name] = acc

print(f"{name} Accuracy: {acc}")

plt.figure()

plt.bar(accuracies.keys(), accuracies.values())

plt.ylim(0, 1)

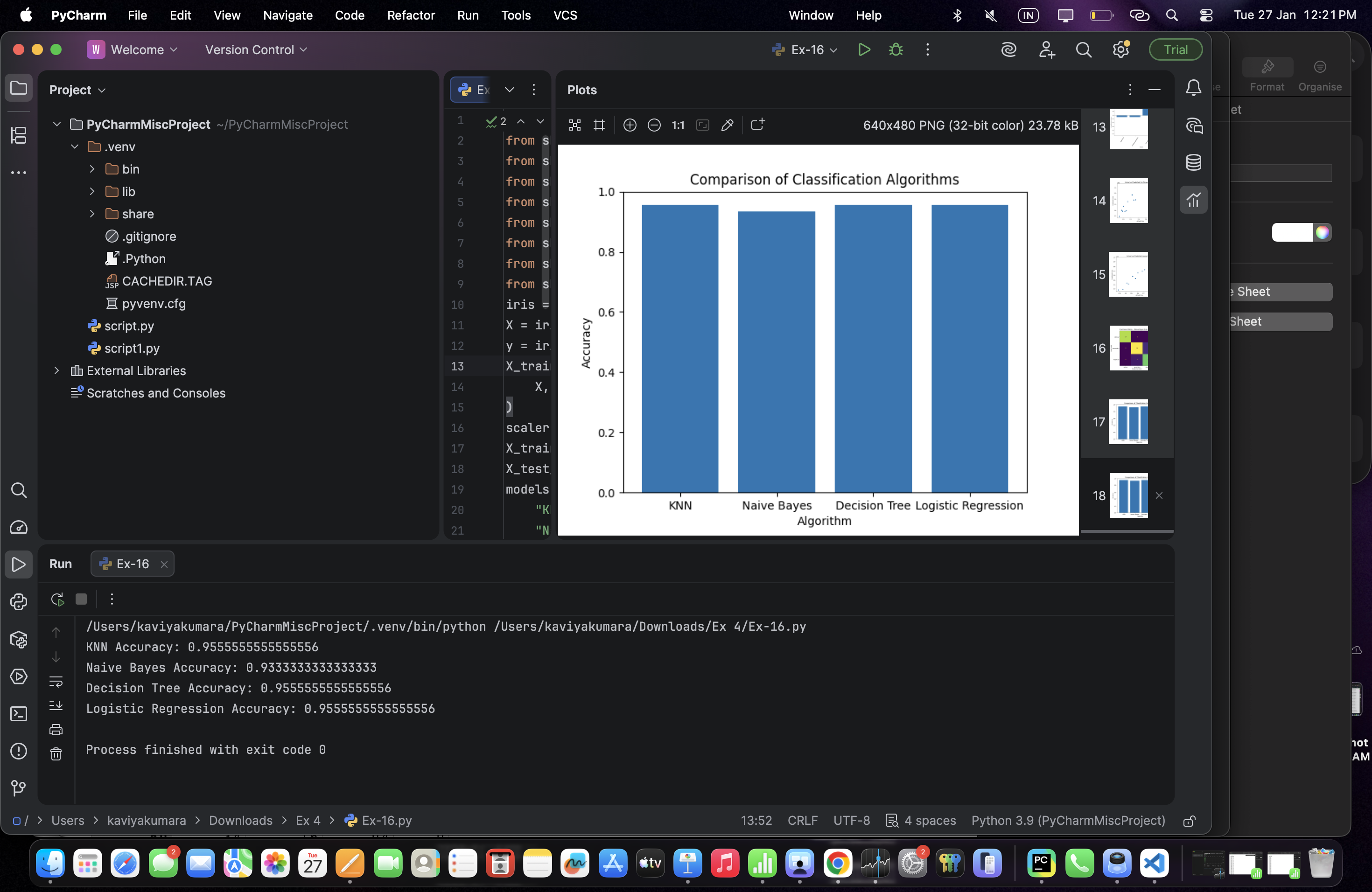
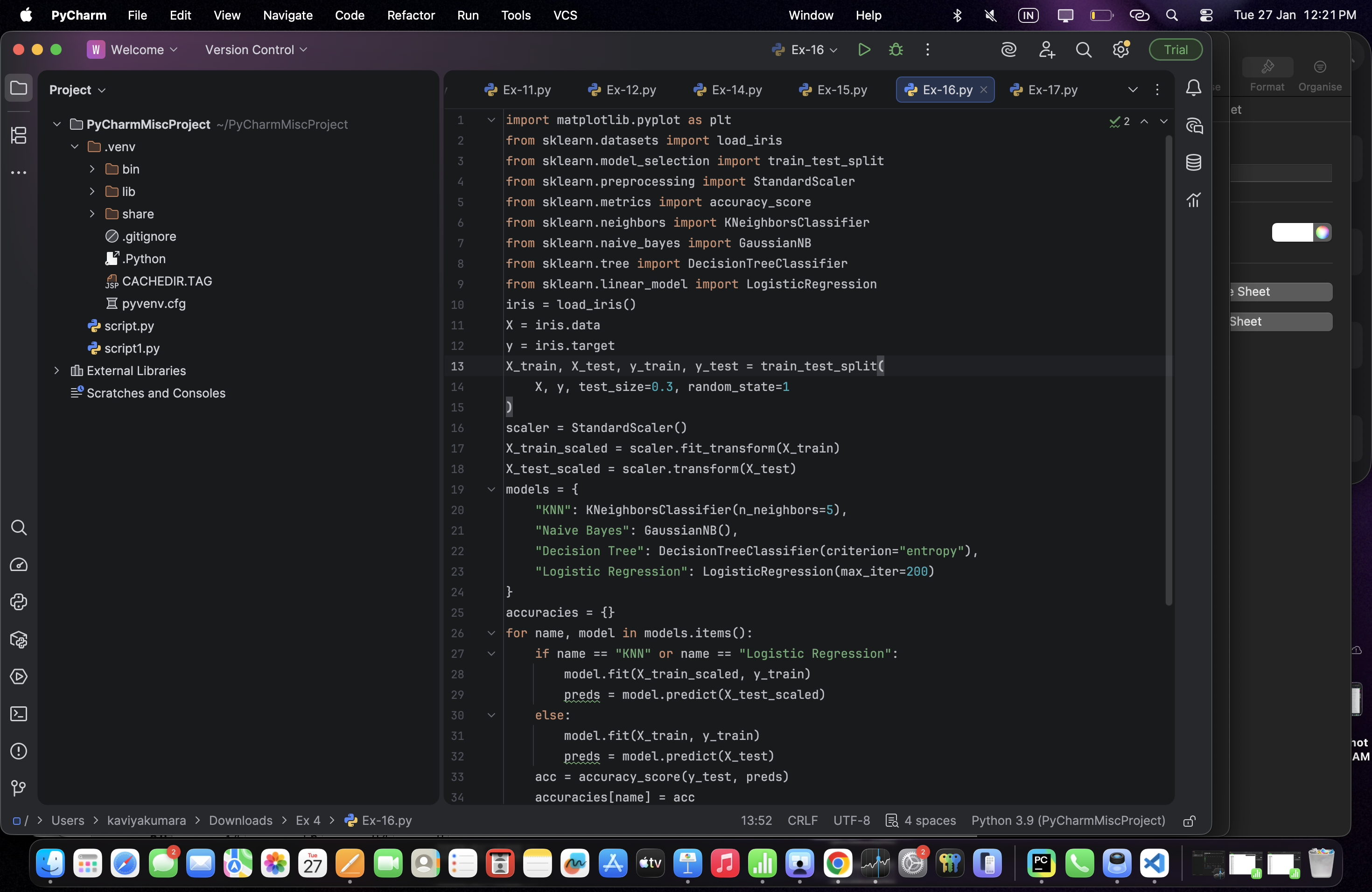
plt.xlabel("Algorithm")

plt.ylabel("Accuracy")

plt.title("Comparison of Classification Algorithms")

plt.show()

**Output:**

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