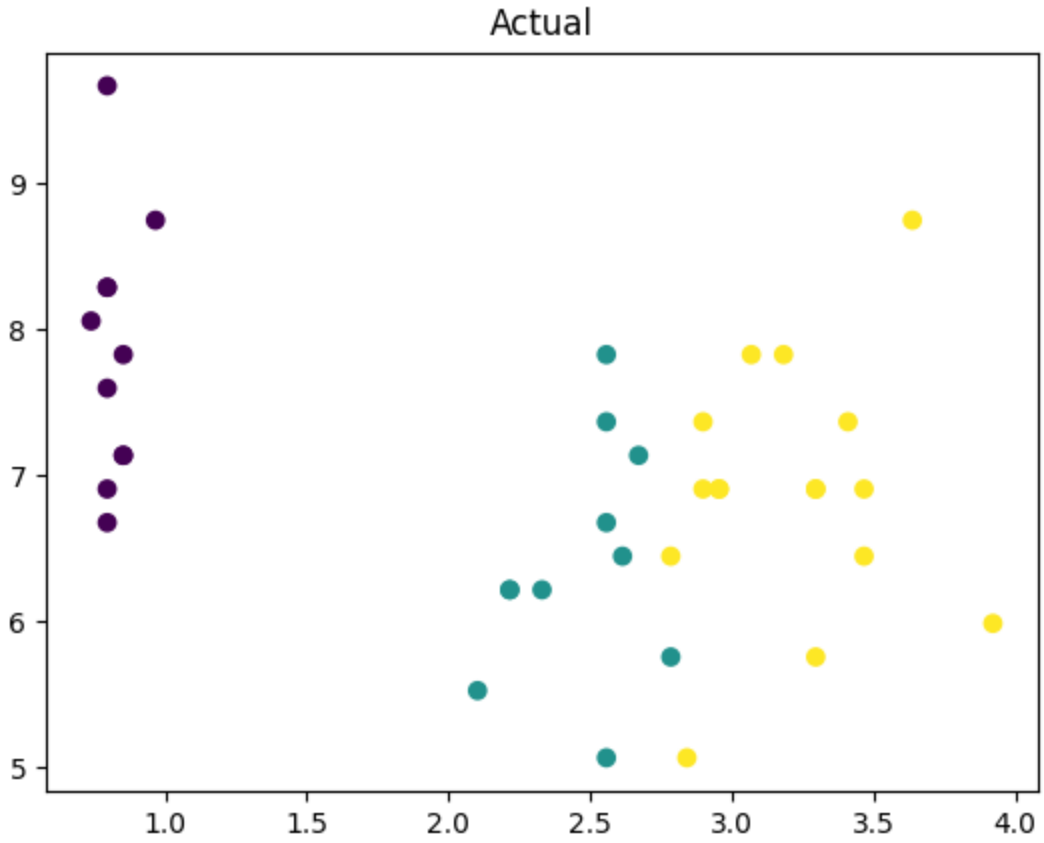
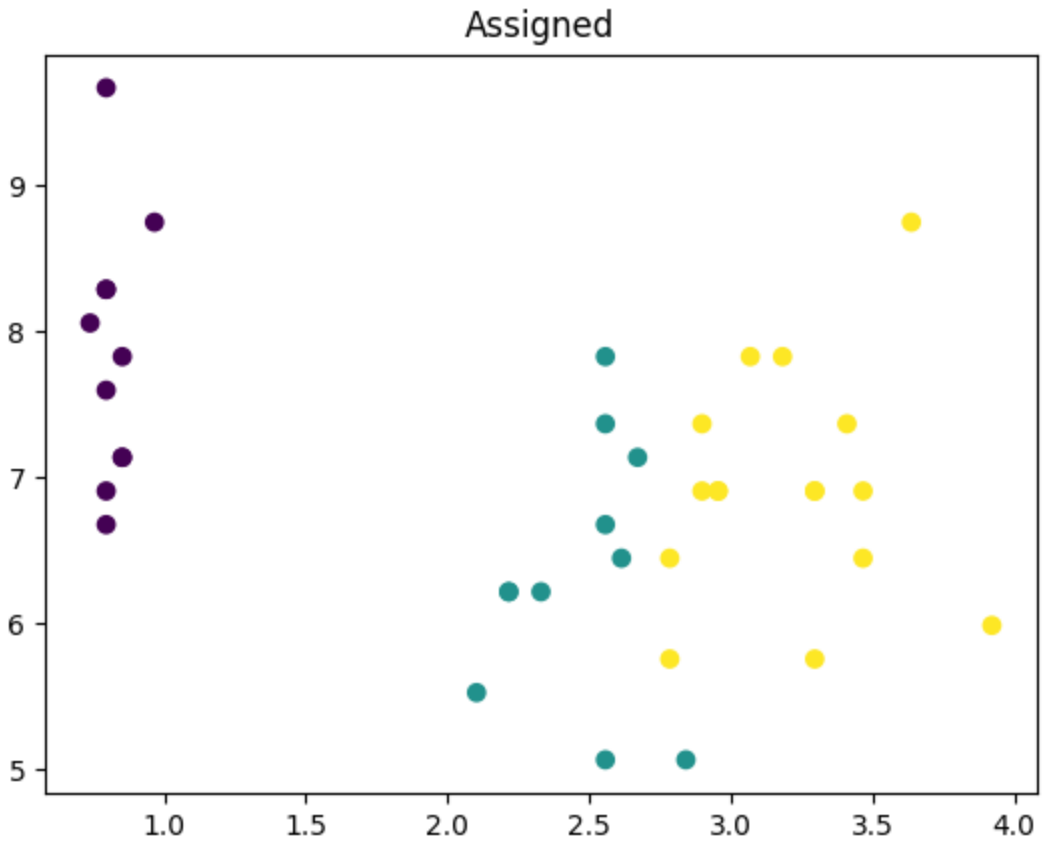
K nearest

Code:

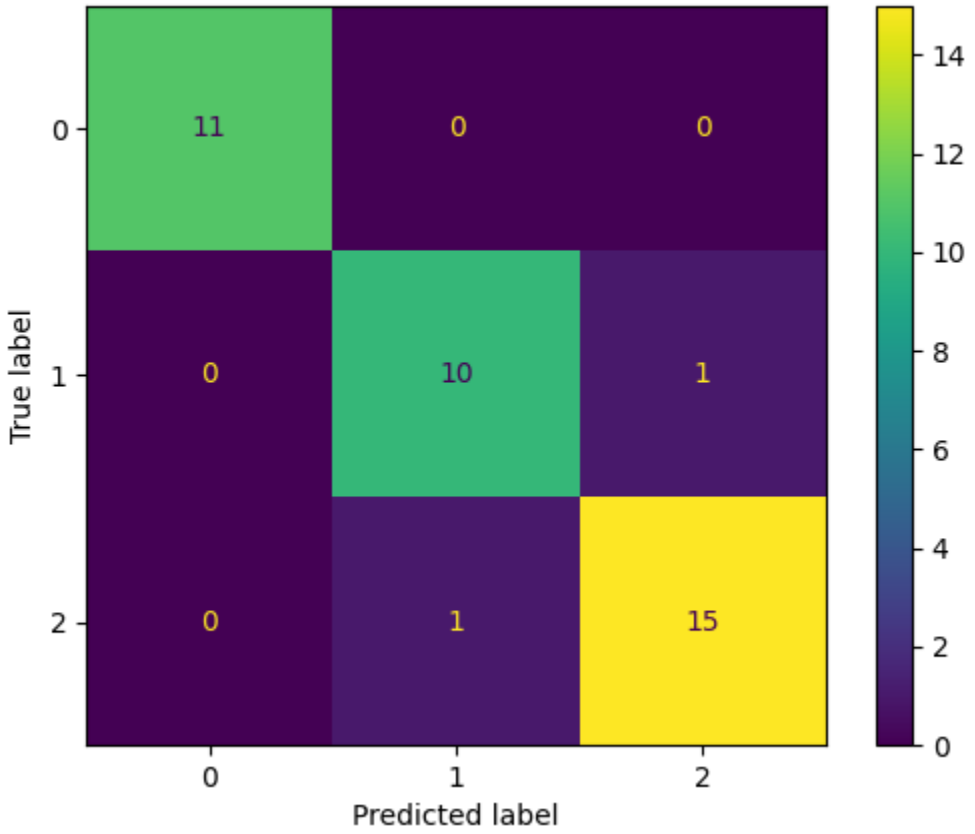
```
from matplotlib.pyplot import *
from sklearn.datasets import load_iris as load
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix,ConfusionMatrixDisplay
from statistics import mode
import numpy as np
dataset = load()
X = dataset.data
#Normalizing the data
X = X/np.sqrt(np.var(X,axis=0))
y = dataset.target
k = len(dataset.target_names)
l = X.shape[0]
X_train,X_test,y_train,y_test = train_test_split(X,y)
def nearest(point,data=X_train,labels=y_train,howmany=5):
    x = np.linalg.norm(data - point,axis=-1)
    idx = np.argsort(x)[:howmany:]
    labels,counts = np.unique(labels[idx],return_counts=True)
    label = np.argmax(counts)
    label = labels[label]
    return label
y_ass = []
for point in X_test:
    y_ass.append(nearest(point))
y_ass = np.array(y_ass)
scatter(X_test[:,2],X_test[:,1],c=y_test)
title("Actual")
figure()
scatter(X_test[:,2],X_test[:,1],c=y_ass)
title("Assigned")
print("Accuracy :",100*np.mean(y_test==y_ass,axis=0))
M = confusion_matrix(y_test,y_ass)
ConfusionMatrixDisplay(M).plot()
show()
```

Output:


Actual
9
8
7
6
5
1.0
1.5
2.0
2.5
3.0
3.5
4.0



Confusion Matrix :



Accuracy : 94.73684210526315