EXPERIMENT 2 :

Aim :

Verifying the performance of a multi class confusion matrix by using choosen database with python code.

Program :

from sklearn.datasets import load\_breast\_cancer

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

from sklearn.tree import DecisionTreeClassifier

from sklearn.metrics import confusion\_matrix, accuracy\_score,precision\_score,recall\_score, f1\_score

import matplotlib.pyplot as plt

import seaborn as sns

X,y=load\_breast\_cancer(return\_X\_y=True)

x\_train,x\_test,y\_train,y\_test=train\_test\_split(X,y,test\_size=0.25, random\_state=23)

tree=DecisionTreeClassifier()

tree.fit(x\_train,y\_train)

y\_pred=tree.predict(x\_test)

cm=confusion\_matrix(y\_test,y\_pred)

accuracy=accuracy\_score(y\_test,y\_pred)

print('Accuracy : ',accuracy)

precision=precision\_score(y\_test,y\_pred)

print("Precision : ",precision)

recall=recall\_score(y\_test,y\_pred)

print("Recall : ",recall)

F1\_score=f1\_score(y\_test,y\_pred)

print("F1-score",F1\_score)

sns.heatmap(cm,annot=True,cmap='pink',xticklabels=['malignant','benign'],yticklabels=['malignant','benign'])

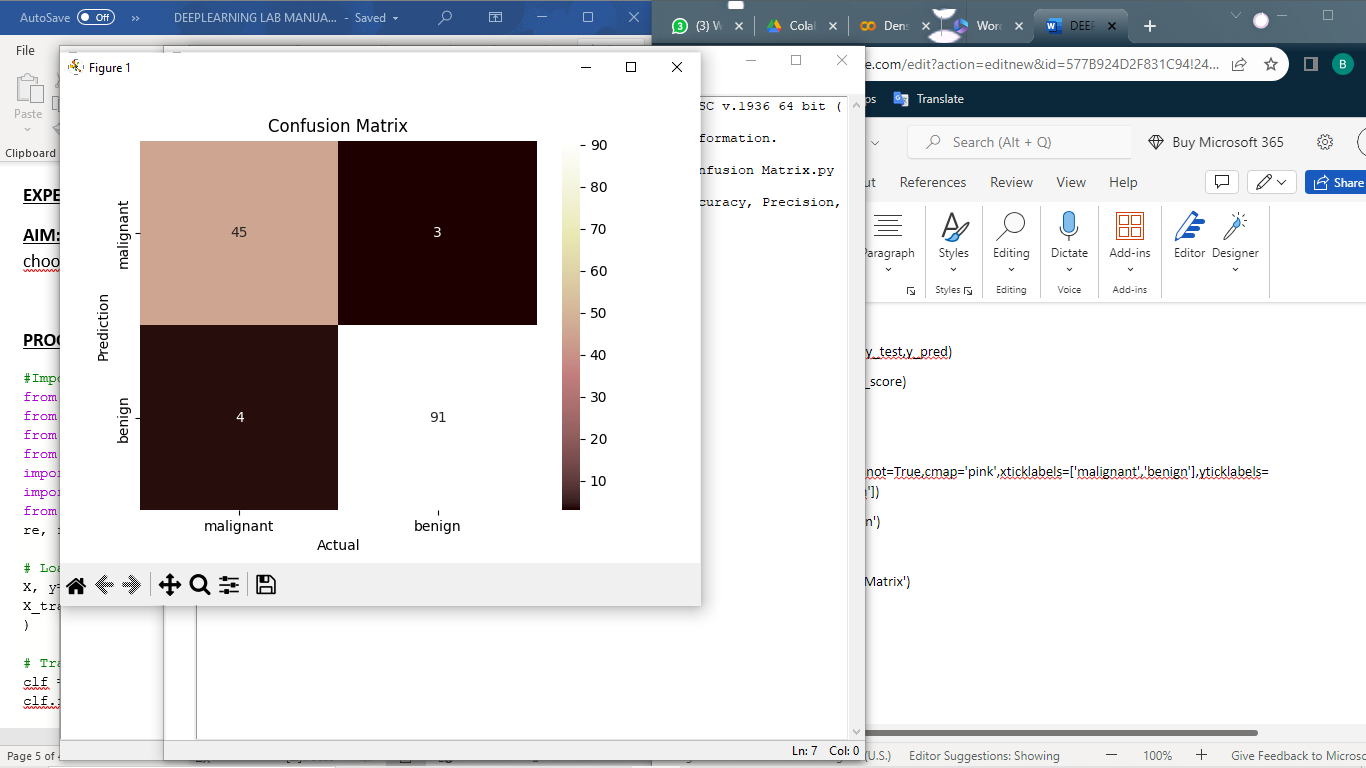
plt.ylabel('Prediction')

plt.xlabel("Actual")

plt.title('Confusion Matrix')

plt.show()

Output :



Accuracy : 0.951048951048951

Precision : 0.9680851063829787

Recall : 0.9578947368421052

F1-score 0.962962962962963