**Logistic Regression**

import numpy as nm

import matplotlib.pyplot as mtp

import pandas as pd

#importing datasets

data\_set= pd.read\_csv('user\_data.csv')

#Extracting Independent and dependent Variable

x= data\_set.iloc[:, [2,3]].values

y= data\_set.iloc[:, 4].values

# Splitting the dataset into training 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= 0.25, random\_state=0)

#feature Scaling

from sklearn.preprocessing import StandardScaler

st\_x= StandardScaler()

x\_train= st\_x.fit\_transform(x\_train)

x\_test= st\_x.transform(x\_test)

#Fitting Logistic Regression to the training set

from sklearn.linear\_model import LogisticRegression

classifier= LogisticRegression(random\_state=0)

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

#Predicting the test set result

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

#Creating the Confusion matrix

from sklearn.metrics import confusion\_matrix

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

#Visualizing the training set result

from matplotlib.colors import ListedColormap

x\_set, y\_set = x\_train, y\_train

x1, x2 = nm.meshgrid(nm.arange(start = x\_set[:, 0].min() - 1, stop = x\_set[:, 0].max() + 1, step =0.01),

nm.arange(start = x\_set[:, 1].min() - 1, stop = x\_set[:, 1].max() + 1, step = 0.01))

#we have used the nm.meshgrid command to create a rectangular grid, which has a range of -1(minimum) to 1 (maximum). The pixel points we have taken are of 0.01 resolution

mtp.contourf(x1, x2, classifier.predict(nm.array([x1.ravel(), x2.ravel()]).T).reshape(x1.shape),

alpha = 0.75, cmap = ListedColormap(('purple','green' )))

mtp.xlim(x1.min(), x1.max())

mtp.ylim(x2.min(), x2.max())

for i, j in enumerate(nm.unique(y\_set)):

mtp.scatter(x\_set[y\_set == j, 0], x\_set[y\_set == j, 1],

c = ListedColormap(('purple', 'green'))(i), label = j)

mtp.title('Logistic Regression (Training set)')

mtp.xlabel('Age')

mtp.ylabel('Estimated Salary')

mtp.legend()

mtp.show()

#Visulaizing the test set result

from matplotlib.colors import ListedColormap

x\_set, y\_set = x\_test, y\_test

x1, x2 = nm.meshgrid(nm.arange(start = x\_set[:, 0].min() - 1, stop = x\_set[:, 0].max() + 1, step =0.01),

nm.arange(start = x\_set[:, 1].min() - 1, stop = x\_set[:, 1].max() + 1, step = 0.01))

mtp.contourf(x1, x2, classifier.predict(nm.array([x1.ravel(), x2.ravel()]).T).reshape(x1.shape),

alpha = 0.75, cmap = ListedColormap(('purple','green' )))

mtp.xlim(x1.min(), x1.max())

mtp.ylim(x2.min(), x2.max())

for i, j in enumerate(nm.unique(y\_set)):

mtp.scatter(x\_set[y\_set == j, 0], x\_set[y\_set == j, 1],

c = ListedColormap(('purple', 'green'))(i), label = j)

mtp.title('Logistic Regression (Test set)')

mtp.xlabel('Age')

mtp.ylabel('Estimated Salary')

mtp.legend()

mtp.show()