EX.NO: 7
DATE:

NEURAL NETWORKS - CLASSIFICATION

AIM:-

To implementing artificial neural network for an application using python.

Source code:-

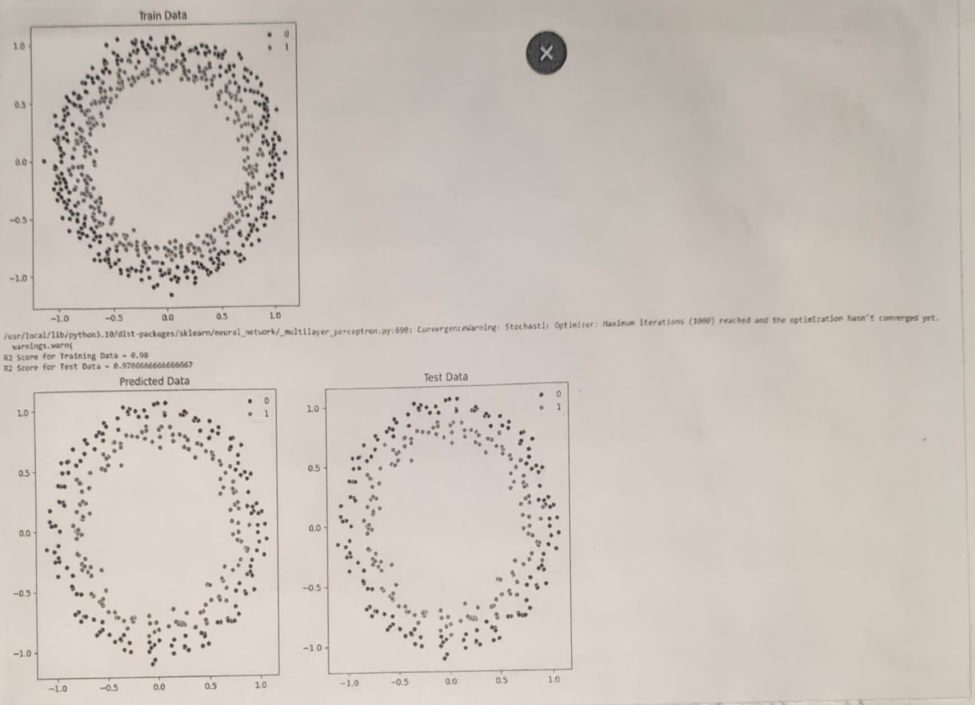
```
from sklearn.model_selection import train_test
from sklearn.datasets import make_circles
from sklearn.neural_network import MLP classifier
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
X_train, y_train = make_circles (n_samples = 700,
                    noise = 0.05, random_state = 42)
X_test, y_test = make_circles (n_samples = 300,
                    noise = 0.05, random_state = 42)

plt.figure (figsize = (6,6))
sns.scatterplot (x = X_train [:, 0], y = X_train [:, 1],
                    hue = y_train, palette = "viridis")
plt.title ("Train Data")
plt.show()
clf = MLP classification (max_iter = 1000, random = 42)
clf.fit (X_train, y_train)
print (f"R2 score for data = {clf.score(X_train,
                                    y_train):}")
print (f"R2 score for Test data = {clf.score (X_test,
                                    y_test):}")

y_pred = clf.predict (X_test)
fig, ax = plt.subplots (1, 2, figsize = (12,6))
```

```
sns.scatterplot(x=X_test[:,0], y=X_test[:,1],
                hue=y_pred, palette="viridis", ax=ax[0])
ax[0].set_title("Predicted Data")
sns.scatterplot(x=X_test[:,0], y=X_test[:,1]
                hue=y_pred, palette="viridis", ax=ax[1])
ax[1].set_title("Test Data")
plt.show()
```

Output:-



Result:-

Thus Artificial neural network for an Application using python is executed successfully.