

# Ex-No: 6 Implementing artificial Neural Networks - Classification using Python.

Aim:- To implementing artificial neural network for an application.

Source Code:

```
from sklearn.model_selection import train_test
from sklearn.datasets import make_circle
from sklearn.neural_network import MLPClassifier
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

X_train, Y_train = make_circle(n_samples=700,
                                noise=0.05, random_state=42)
X_test, Y_test = make_circle(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 = MLPClassifier(max_iter=1000, random_state=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)}")

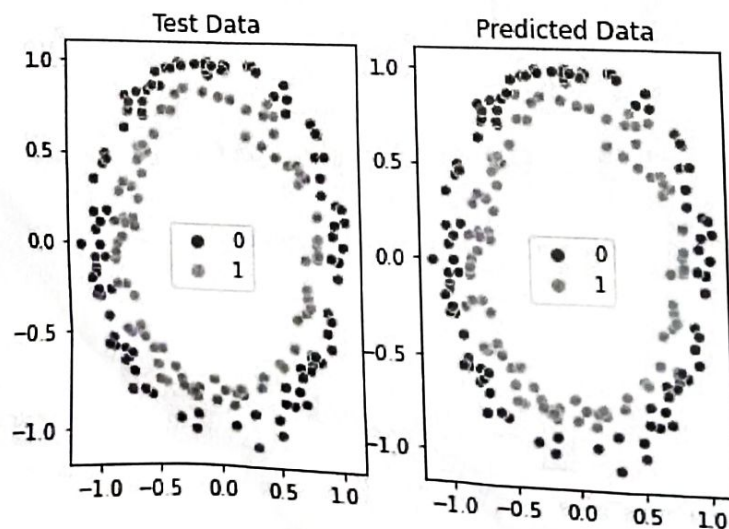
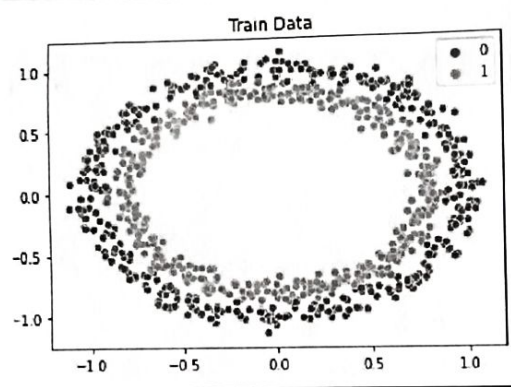
Y_pred = clf.predict(X_test)
fig, ax = plt.subplots(1, 2, figsize=(12,6))
```

```

sns.scatterplot(x=x_test[:,0], y=x_test[:,1],
                hue=y_pred, palette='viridis')
ax[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:-

The program was successfully executed and the output is verified.