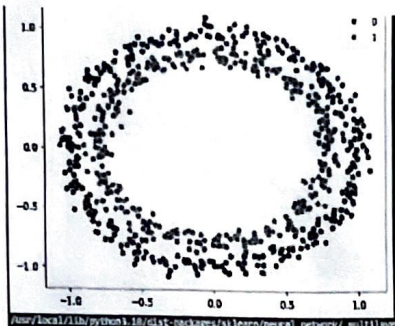
Ex: NO: 10	Implementing Artificial Neural
Date :	Networks for an Application using python - classification

Program code :

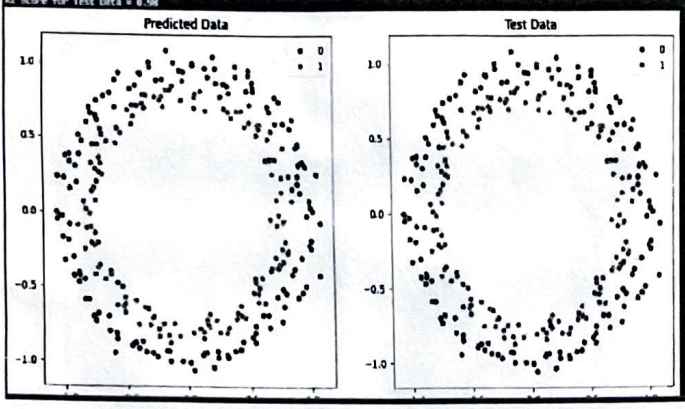
```
from sklearn.datasets import make_circles
from sklearn.neural_network import
MLPClassifier
import numpy as np.
import matplotlib.pyplot as plt
% matplotlib inline
X_train, y_train = make_circles (n_samples =
700, noise = 0.05)
X_test, y_test = make_circles (n_samples =
300, noise = 0.05)
sns.scatterplot (x = X_train [:, 0], y = X_train
[:, -1], hue = y_train)
plt.title ("Train Data")
plt.show ()
```

```
clf = MLPClassifier(max_iter=1000)
clf.fit(X_train, y_train)
print(f"R2 Score for Testing 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=(14,6))
sns.scatterplot(x=X_test[:,0], y=X_test[:,1], hue=y_pred, ax=ax[0])
ax[0].set_title('Predicted Data')
plt.show()
```

output:



```
/usr/local/lib/python3.10/dist-packages/sklearn/neural_network/_multilayer_perceptron.py:650: ConvergenceWarning: Stochastic Optimizer: Maximum iterations (1000) reached and the optimization hasn't converged yet.
  warnings.warn(
R2 Score for Training Data = 0.99
R2 Score for Test Data = 0.98
```



Result:

Thus the program is successfully executed & the output is verified.