

**EX.NO :10**

**DATE :**

**IMPLEMENTING ARTIFICIAL NEURAL NETWORKS FOR AN APPLICATION USING PYTHON - CLASSIFICATION**

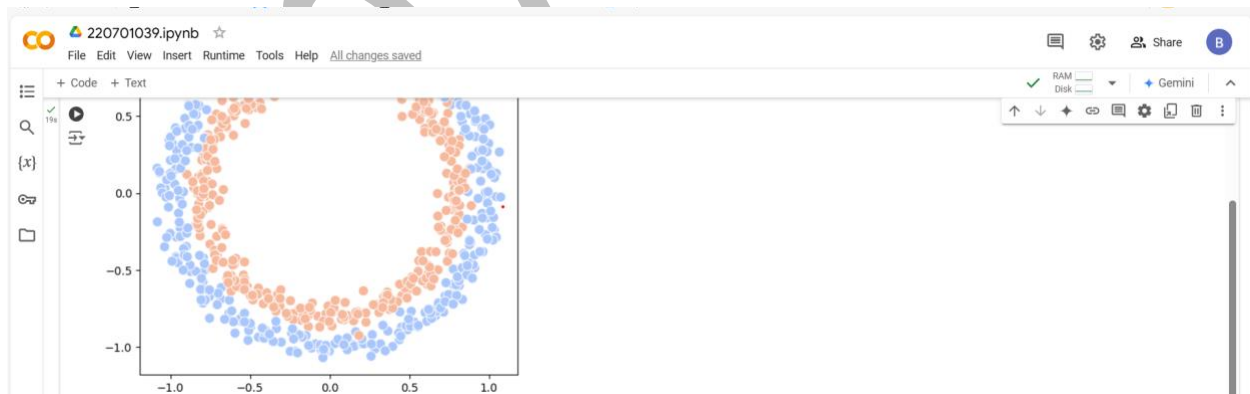
**AIM :**

To implementing artificial neural networks for an application in classification using python.

**Source Code :**

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

```
X, y = make_circles(n_samples=1000, noise=0.05)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
ns.scatterplot(X_train[:,0], X_train[:,1], hue=y_train)
plt.title("Train Data")
plt.show()
```



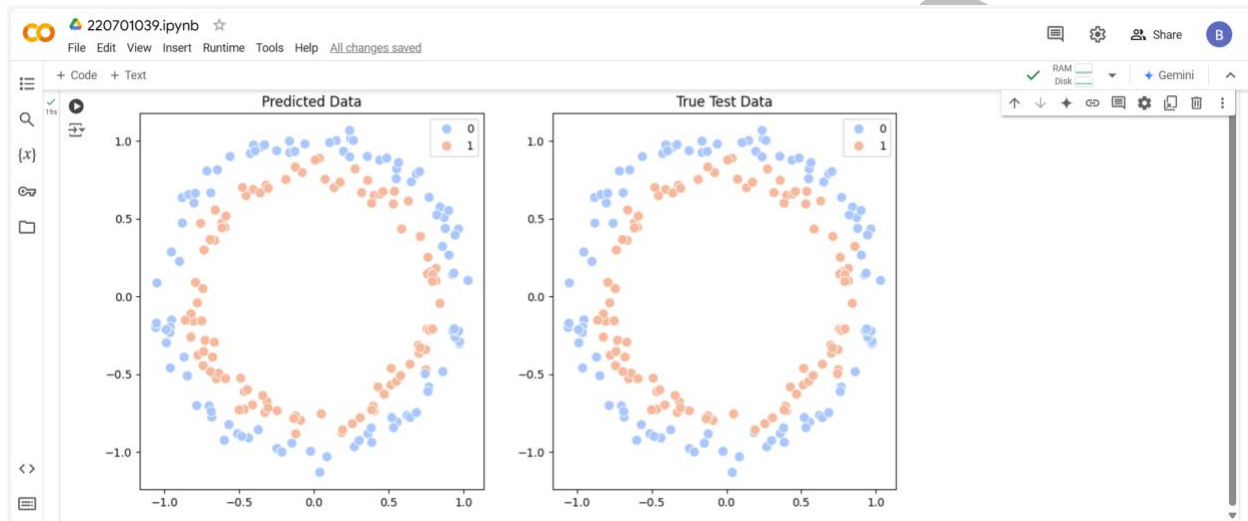
```
clf = MLPClassifier(max_iter=1000)
clf.fit(X_train, y_train)
print(f"R2 Score for Training Data = {clf.score(X_train, y_train)}")

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)
sns.scatterplot(X_test[:,0], X_test[:,1], hue=y_pred, ax=ax[0])
ax[1].title.set_text("Predicted Data")
sns.scatterplot(X_test[:,0], X_test[:,1], hue=y_test, ax=ax[1])
ax[0].title.set_text("Test Data")
plt.show()
```

## **OUTPUT :**



## **RESULT :**