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## Roll No   : 23  
## PRN       : 12310917  
## Subject   : Deep Learning (Lab)  
## Div       : CSE(AI)-A  
Batch: 1  
## Teacher/Guide : Mrs. Dnyanya Shinde
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# Assignment - 3

## Problem Statement

Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Python ML library classes can be used for this problem.

```
from sklearn.datasets import load_iris  
from sklearn.model_selection import train_test_split  
from sklearn.neighbors import KNeighborsClassifier  
from sklearn.metrics import accuracy_score
```

## 1. load dataset

```
iris = load_iris()  
X = iris.data  
y = iris.target  
target_names = iris.target_names
```

## ▼ 2. Split into training and testing sets

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
```

## ▼ 3. Initialize and train the k-NN classifier

```
knn = KNeighborsClassifier(n_neighbors=3)  
knn.fit(X_train, y_train)
```

Double-click (or enter) to edit

## ▼ 4. Make predictions

```
y_pred = knn.predict(X_test)
```

## ▼ 5. Compare results and print outcomes

```
print(f"{'Actual':<15} | {'Predicted':<15} | {'Status'}")  
print("-" * 45)  
  
correct = 0  
wrong = 0  
for actual, predicted in zip(y_test, y_pred):  
    status = "✓ Correct" if actual == predicted else "✗ WRONG"  
    if actual == predicted:  
        correct += 1  
    else:  
        wrong += 1  
  
    print(f"{target_names[actual]:<15} | {target_names[predicted]:<15} |  
# Final Summary  
print("-" * 45)  
print(f"Total Correct: {correct}")  
print(f"Total Wrong: {wrong}")  
print(f"Accuracy: {accuracy_score(y_test, y_pred) * 100:.2f}%")
```

