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from sklearn.datasets import load_iris, load_breast_cancer
from sklearn.linear_model import LogisticRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score, precision_score, recall_score, f1_score
import pandas as pd

dataset = load_iris()
data = pd.DataFrame(dataset.data, columns=dataset.feature_names)
data['target'] = dataset.target

print("\nAvailable features:")
print(data.columns.tolist()[:-1])
print("Target variable name: 'target'")
print(f"Target classes: {dataset.target_names.tolist()}\n")

features_input = input("Enter comma-separated feature names to use (e.g., sepal length (cm),petal length (cm)): ")
features = [f.strip() for f in features_input.split(',')]

for f in features:
    if f not in data.columns:
        print(f"Error: Feature '{f}' is not valid.")
        exit()

X = data[features]
y = data['target']

if len(y.unique()) > 2:
    print("Note: Converting to binary classification (class 0 vs others)")
    y = (y == 0).astype(int)

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    print("Note: Converting to binary classification (class 0 vs others)")
    y = (y == 0).astype(int)

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=42)

model = LogisticRegression()
model.fit(X_train, y_train)

y_pred = model.predict(X_test)

acc = accuracy_score(y_test, y_pred)
prec = precision_score(y_test, y_pred, zero_division=0)
rec = recall_score(y_test, y_pred)
f1 = f1_score(y_test, y_pred)

print("\n📊 Evaluation Metrics:")
print(f"Accuracy: {acc:.4f}")
print(f"Precision: {prec:.4f}")
print(f"Recall: {rec:.4f}")
print(f"F1 Score: {f1:.4f}")

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OUTPUT

Available features:

['sepal length (cm)', 'sepal width (cm)', 'petal length (cm)', 'petal width (cm)']

Target variable name: 'target'

Target classes: ['setosa', 'versicolor', 'virginica']

Enter comma-separated feature names to use (e.g., sepal length (cm), petal length (cm)): petal length (cm), petal width (cm)

Note: Converting to binary classification (class 0 vs others)

Evaluation Metrics:

Accuracy: 1.0000

Precision: 1.0000

Recall: 1.0000

F1 Score: 1.0000

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