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from sklearn.datasets import load_iris
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

# 1. Load the iris dataset
iris = load_iris()
X = iris.data
y = iris.target

# 2. Split the dataset
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# 3. Create and train the model
model = RandomForestClassifier(random_state=42)
model.fit(X_train, y_train)

# 4. Evaluate accuracy
y_pred = model.predict(X_test)
accuracy = accuracy_score(y_test, y_pred)
print("✅ Random Forest Accuracy on Iris Dataset:", round(accuracy * 100, 2), "%")

# 5. Make a prediction using user input
print("\n🔍 Let's make a prediction!")
sepal_length = float(input("Sepal length (cm): "))
sepal_width = float(input("Sepal width (cm): "))
petal_length = float(input("Petal length (cm): "))
petal_width = float(input("Petal width (cm): "))

new_data = [[sepal_length, sepal_width, petal_length, petal_width]]
prediction = model.predict(new_data)
print("🌼 Predicted Flower Type:", iris.target_names[prediction[0]])
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✅ Random Forest Accuracy on Iris Dataset: 100.0 %

🔍 Let's make a prediction!
Sepal length (cm): 6.5
Sepal width (cm): 3.0
Petal length (cm): 5.2
Petal width (cm): 2.0
🌼 Predicted Flower Type: virginica
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Sepal length (cm): 6.5
Sepal width (cm): 3.0
Petal length (cm): 5.2
Petal width (cm): 2.0
→ 🌼 Predicted Flower Type: virginica

Sepal length (cm): 6.0
Sepal width (cm): 2.2
Petal length (cm): 4.0
Petal width (cm): 1.0
→ 🌼 Predicted Flower Type: versicolor