7.K-Nearest Neighbors (KNN): Classify the Iris dataset into different flower species.

# Import necessary libraries

from sklearn.datasets import load\_iris

from sklearn.model\_selection import train\_test\_split

from sklearn.preprocessing import StandardScaler

from sklearn.neighbors import KNeighborsClassifier

from sklearn.metrics import classification\_report, accuracy\_score

# Load the Iris dataset

iris = load\_iris()

X = iris.data # Features

y = iris.target # Labels

# Split dataset into training and testing sets (80% train, 20% test)

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Standardize the features (important for KNN)

scaler = StandardScaler()

X\_train = scaler.fit\_transform(X\_train)

X\_test = scaler.transform(X\_test)

# Create the KNN classifier (you can change n\_neighbors as needed)

knn = KNeighborsClassifier(n\_neighbors=3)

# Train the model

knn.fit(X\_train, y\_train)

# Make predictions

y\_pred = knn.predict(X\_test)

# Evaluate the model

print("Accuracy:", accuracy\_score(y\_test, y\_pred))

print("\nClassification Report:")

print(classification\_report(y\_test, y\_pred, target\_names=iris.target\_names))