Assignment 3:

The aim of this assignment is to learn how to implement and test the K-Means clustering from scratch.

1. Implement the K-Means algorithm from scratch (no direct library calls like sklearn.KMeans for the core algorithm). Your implementation should include:
   - Random initialization of centroids.
   - Assignment of data points to the nearest centroid.
   - Update of centroid positions.
   - A stopping criterion (e.g., minimal centroid movement or maximum iterations).
2. Use your K-Means implementation on Iris dataset.
3. Test at least three different values of k (2 3 4, 5). For each number of k, visualize the clusters obtained.
4. Discuss how the choice of k influences the results.