<u>Lab Report K-means</u>

1. Use sepal_length and sepal_width as features from the iris_dataset and apply K-mean clustering.

Attach the code and graph.

<u>Code:</u>

```python
import matplotlib.pyplot as plt

from sklearn.datasets import load_iris

from sklearn.cluster import KMeans


# Load the Iris dataset

iris = load_iris()

data = iris.data[:, :2]  # Using only sepal_length and sepal_width as features


# Applying K-means clustering with 3 clusters (as there are 3 types of iris in the dataset)

kmeans = KMeans(n_clusters=3)

kmeans.fit(data)

labels = kmeans.labels_


# Scatter plot to visualize the clusters

plt.figure(figsize=(8, 6))


# Plotting points with color-coded clusters

plt.scatter(data[:, 0], data[:, 1], c=labels, cmap='viridis', edgecolor='k')

plt.title('K-means Clustering on Iris Dataset')

plt.xlabel('Sepal Length')

plt.ylabel('Sepal Width')
```

Plotting the centroids of the clusters

centers = kmeans.cluster_centers_

plt.scatter(centers[:, 0], centers[:, 1], c='red', s=200, alpha=0.75, label='Centroids')

plt.legend()

plt.show()

Graph: