**CHANDIGARH UNIVERSITY**

**UNIVERSITY INSTITUTE OF ENGINEERING**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**



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| **Submitted By: Kanishk Soni Submitted To: Er. Sudhanshu Sharma** | |
| **Subject Name** | **Machine Learning Lab** |
| **Subject Code** | **20CSP-317** |
| **Branch** | **BE-CSE** |
| **Semester** | **5th** |

**EXPERIMENT-8**

**Student’s Name: Kanishk Soni UID: 20BCS9398**

**Section/Group: 707\_WM\_B Subject Code: 20CSP-317**

**Subject Name: ML Lab Date of performance:9/11/2022**

**Branch: BE CSE Semester:5th**

**Aim:** Implement K-Means.

**Objective:** To do kmeans on data set.

**Software/Hardware Requirements:** Windows 7 & above version.

**Tools to be used:**

1. Anaconda Jupyter Notebook,
2. matplotlib, sklearn.

**Introduction to Decision Tree:**

K-Means Clustering is an unsupervised learning algorithm that is used to solve the clustering problems in machine learning or data science. In this topic, we will learn what is K-means clustering algorithm, how the algorithm works, along with the Python implementation of k-means clustering.

**Code:**

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import matplotlib.pyplot as plt

x = [4, 5, 10, 4, 3, 11, 14 , 6, 10, 12]

y = [21, 19, 24, 17, 16, 25, 24, 22, 21, 21]

plt.scatter(x, y)

plt.show()

from sklearn.cluster import KMeans

data = list(zip(x, y))

inertias = []

for i in range(1,11):

kmeans = KMeans(n\_clusters=i)

kmeans.fit(data)

inertias.append(kmeans.inertia\_)

plt.plot(range(1,11), inertias, marker='o')

plt.title('Elbow method')

plt.xlabel('Number of clusters')

plt.ylabel('Inertia')

plt.show()

kmeans = KMeans(n\_clusters=3)

kmeans.fit(data)

plt.scatter(x, y, c=kmeans.labels\_)

plt.show()

kmeans = KMeans(n\_clusters=4)

kmeans.fit(data)

plt.scatter(x, y, c=kmeans.labels\_)

plt.show()

**Output:**



