

AIM OF THE EXPERIMENT: WRITE A PROGRAM IN PYTHON TO IMPLEMENT K-MEANS CLUSTERING ALGORITHM.**THEORY:**

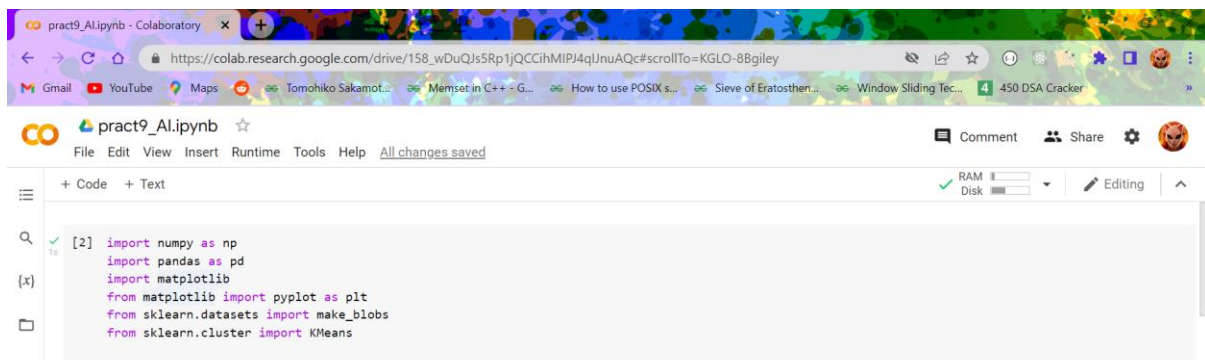
K-means clustering is a very famous and powerful unsupervised machine learning algorithm. It is used to solve many complex unsupervised machine learning problems.

A K-means clustering algorithm tries to group similar items in the form of clusters. The number of groups is represented by K.

How Does the K-means clustering algorithm work?

K-means clustering tries to group similar kinds of items in form of clusters. It finds the similarity between the items and groups them into the clusters. K-means clustering algorithm works in three steps. Let's see what are these three steps.

1. Select the k values.
2. Initialize the centroids.
3. Select the group and find the average.

SOURCE CODE & OUTPUT:The image is a screenshot of a Google Colaboratory notebook interface. At the top, the browser address bar shows the URL: https://colab.research.google.com/drive/158_wDuQJs5Rp1JjQCCihMIPJ4qJUnuAQc#scrollTo=KGLO-8Bgiley. Below the browser, the Colaboratory header shows the notebook name 'pract9_AI.ipynb' and various icons for file management and sharing. The main area of the notebook displays a code cell with the following Python code:

```
[2] import numpy as np
import pandas as pd
import matplotlib
from matplotlib import pyplot as plt
from sklearn.datasets import make_blobs
from sklearn.cluster import KMeans
```

The code cell is marked with a green checkmark and the number '11' in the left margin, indicating it has been executed successfully. The interface also shows a sidebar on the left with icons for file explorer, search, and other notebook functions.

Fig 9.1 Code for installing packages

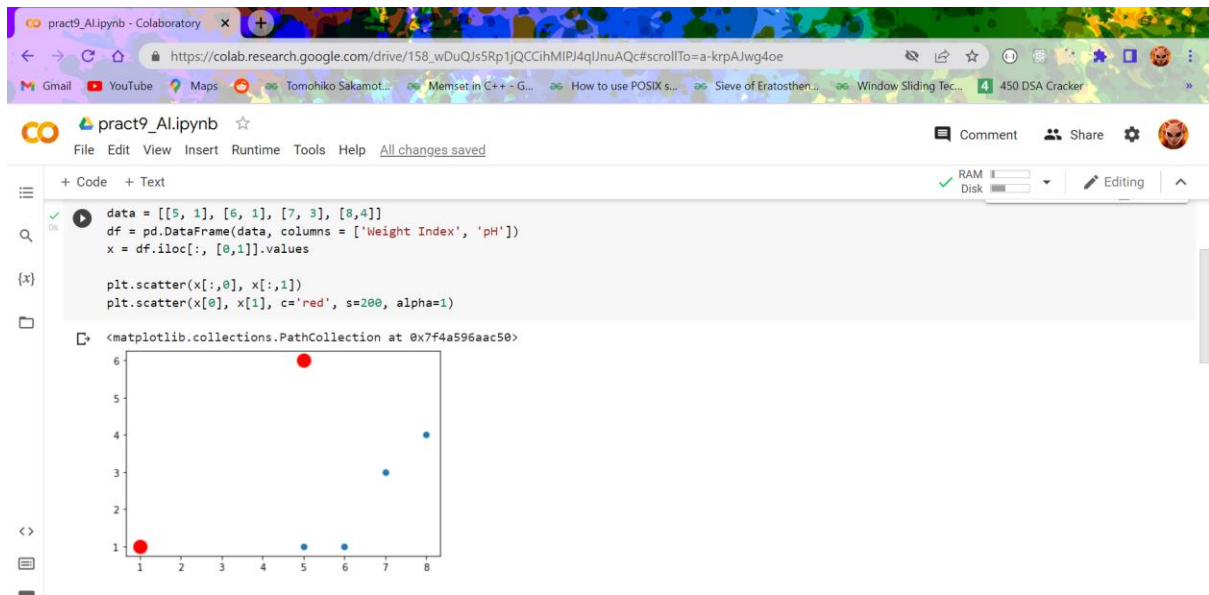


Fig 9.2 Plotting Graph

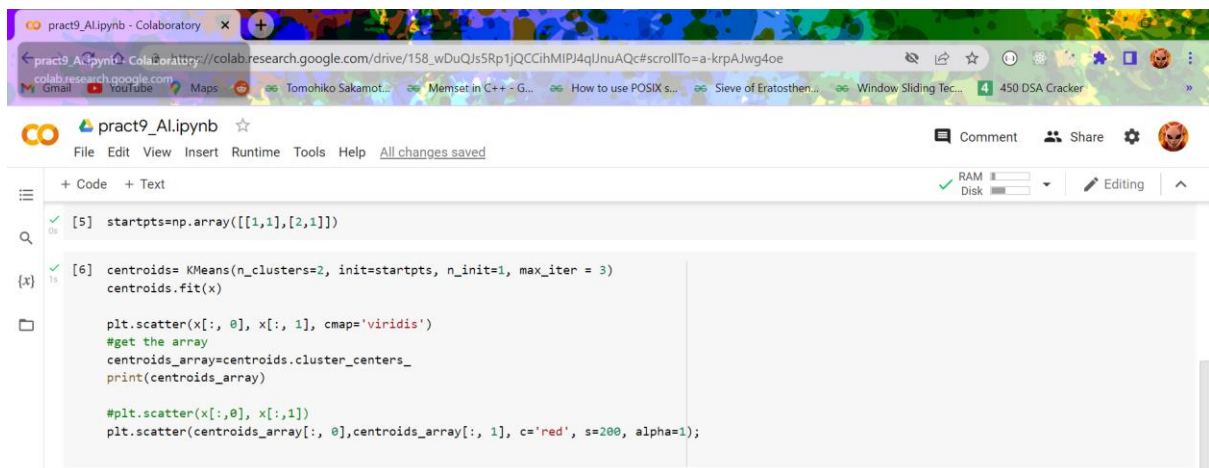


Fig 9.3 Forming clusters and fitting accordingly

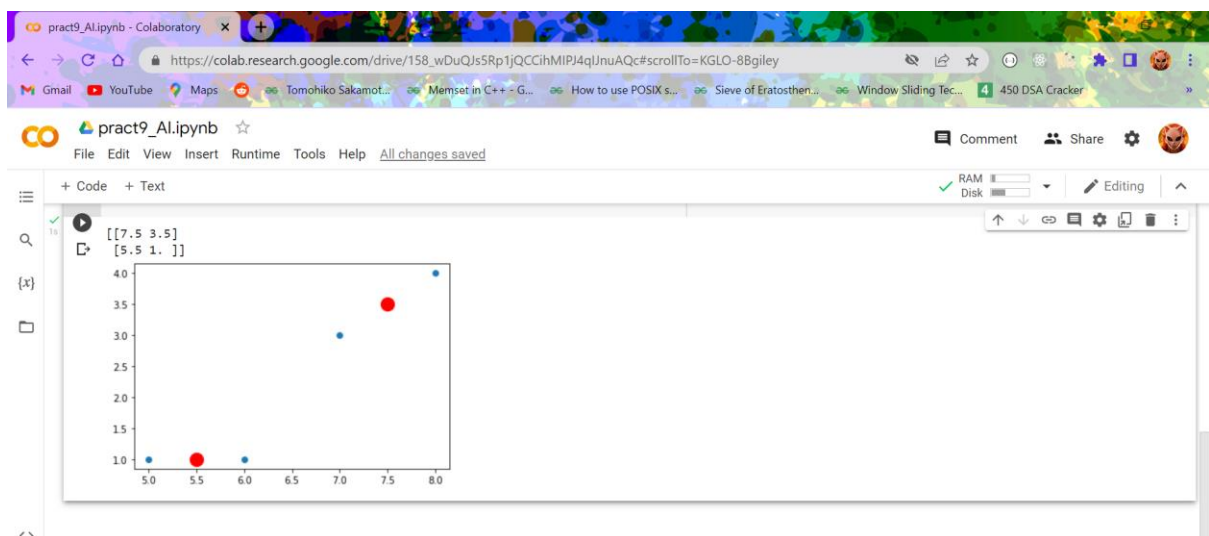


Fig 9.4 Final output