	DATE:
	the ten and strain Assignment Normaniwate - resulting restaur
	or intraver cooled antipota per cooling a crotholigas
*	Title: clustering techniques
	i - sup it the Maria chiacilitas
*	Problem Statement:
	consider a suitable dataset for dustering of data instances
	in different groups and apply different dustering techniques.
m.Co.	- The grouping is done to initialize the contraction of some
	ablaces valbangeren bar wast arrested
*	Objective: To,
	1> Learn vaxious clust exing techniques
	2° plot dusters using suitable took. I seems plant
11 1	ter mother of a militaries designed ablances a milation of
*	automes: students will be dable to the patted as which an
	y learn x-means and hierarchial clustering. Anymortan
<u> </u>	27 plot dusters ruing suitable took! Then attends port
	curiores see estate at thing of the for
X 11/0 <b>★</b>	15/W and H/W requirements some and to must advance of the
	Linux, 64-bit PC, intel i5 processor, 500 48 HDD 1
	Stanta diests and at similar office thing ranges (10)
.( * <b>*</b>	concepts related to theory in all say chiretons of strongers
	into multiple groups or clusters so that objects within clusters
	have high similarity but disposed to shirt in the
	have high similarity but dismissal to objects in other clusters
/	Tochalous - Partitioning method
	Techniques -> Partitioning method and and and harden
	Hierarchical and that the property has
,	Grid based clustering to and one organism
	Grid based clustoring more fruit will or moderal

Cluster analysis - Partitioning of set of objects into subset. Applications: Pattern recognization, biology, security, etc. Partitioning Methods are-1>K-means clustering is a method of classificing grouping items into K groups (where k is the number of pre-chosen groups).
The grouping is done by minimizing the distance-squared sum between items and corresponding centroids. Algorithms- waningtod agreement was is specify number of clustered Killian come waterin date to 2> Initialize centroids by first shuffling the dataset and then randomly selecting a data points for the centroid without replacement. principals in Interpressed two grows 3> Keep iterating until these is no change in centroid i.e. assignment of data points to cluster isn't changing. 4) compute the sum of the squared adistance between data point and all exentroids, reserving as tolais, and distant your 5) Assign each data point to the doset cluster so compute the centroids for the dustering by taking the average of all the data points that belong to each duster 27 Hierarchical Clustering-involves creating clusters that have predetermined ordering from top to bottom. For example, all files and folders on the hard disk are organised in a hierarchy.
There are two type of hierarchical clustering - Divisive and Agglomerative dust eving, michelle

a) Agglomerative clustering- It is a bottom up clustering method We assign each observation to its own clusters, then compute the similarity (eg: distance) between each clusters and join two most similar clusters. Finally, repeat step 2 and 3 until only a single duster is left.

Given: A set of objects {x,...., xn} A distance function dist (c1, c2)

for i=1 tounton  $G = \{x_i\}$ 

end for

end while

c = {c,,..., ci, .... cn}

while coins >1 do

-> ((min), (minz) = mindis (ci, ci); ci, cj E C

-> remove coming & coming from c

- add { (min, cmin2 } to c

→ L= L+1

\* Conclusion:

Thus, we have learned clustering and successfully implemented hierarchical and K-means dustering and displayed our observations using matplotlib using python