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#NRCM

#CSE-DS

#PROJECT TITLE Analysis and Prediction of "Mall_Customers.csv" of phonix small to find out how many customers are visited to a particular shop. On the basis of this prediction of annual income vs spending scores.

#PROBLEM STATMENT The american finance market as per the GDP of 2011,'phoniex_tryllums' as in the first range in the out of file.The owner wants to be exact which particular shop or a products. Search in different type of clusters in entire mall

As a data science engineer predict the futuristic financial market per up[coming GDP ray.Based on number of clusters

The client want atleast top 5 clusters-SHOP

#DISCLAIMER

In this particular datset we assume annual income as centroid and spending score from the range "1 to 100" called as "DATA NODES OF THE CLUSTERS"

```
#import the numpy, matlot, pandas libery's
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

#Read the dataset take variable name called "dataset" only.
dataset=pd.read_csv("Mall_Customers.csv")
dataset
# without printing this data add in separet variable as input variable
Caqpital X only. loc index by select the all row ,
#and give the required colum index like[3,4].for this particular
dataset.
x=dataset.iloc[:,[3,4]].values

## <THE ELBOW METHOD>
#from sklearn used "sklearn.cluster" attribute and import KMeans
from sklearn.cluster import KMeans
#Take a distance from from centroid to cluster point with
WrapsColumnExpression.
wcss = []
# Assume you have 10 cluster and iterate the for up to range 10 with
iterater kmeans++.
for i in range(1,11):
  kmeans = KMeans(n_clusters = i,init = "k-means++",random_state= 42)
  kmeans.fit(x)
```

```
  wcss.append(kmeans.inertia_)
plt.plot(range(1,11),wcss)

plt.title("The Elbow Method")
plt.xlabel("No of customers")
plt.ylabel("wcss")
plt.show()
# Fit the model if value comes too samlla in range.
#For clustering in wcss ,inertia is adding / appending is required.
(kmeans.inertia_)#defalut usecase.
#Plot the poarticular graph along with the wcss and your range which
you taken as input variable.
#Add title "The Elbow Method".
#Lable x variable as "No of Customers".
#Lable y variable as "WCSS".
#Plot the graph using plt.show().
```

```
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_kmeans.py:870: FutureWarning: The default value of `n_init` will
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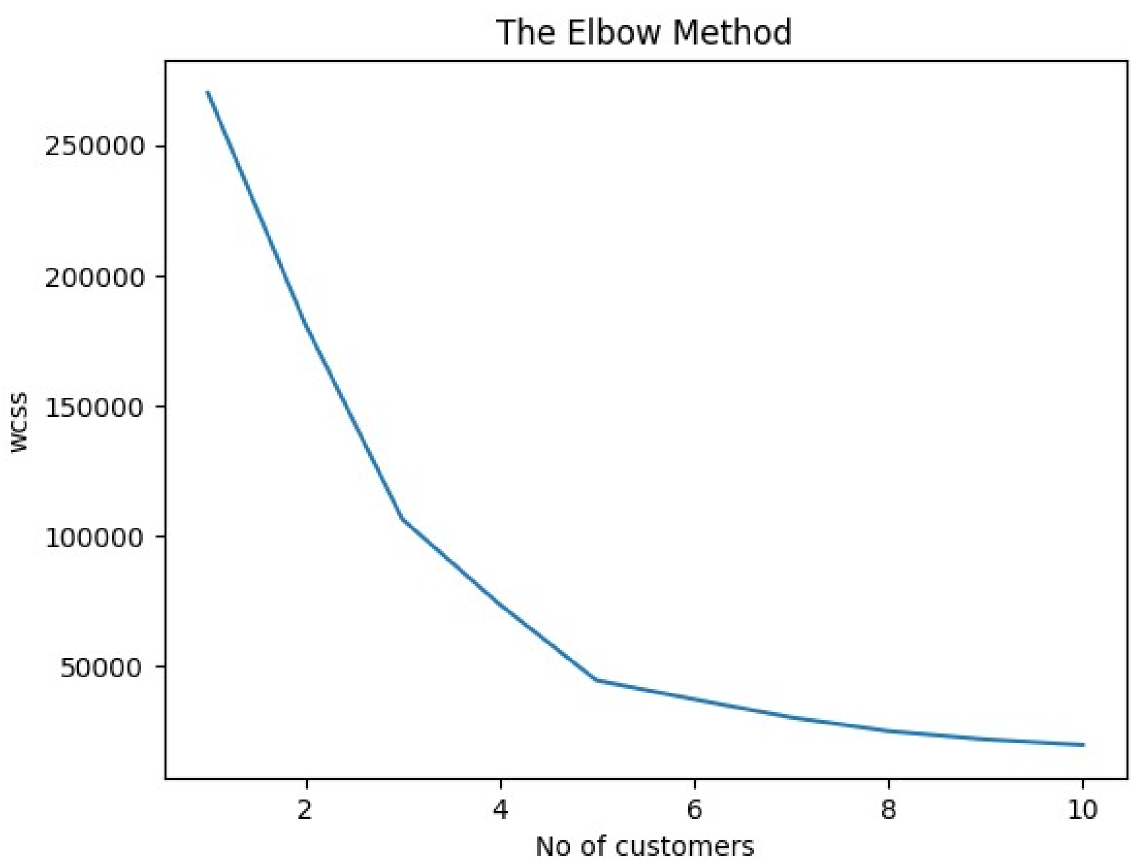


```
for i in range(1,11):
  kmeans=KMeans(n_clusters = 3,init="k-means++",random_state=84)
  y_kmeans=kmeans.fit_predict(x)
```

```
# Take any no of cluster and run you take 5.
plt.scatter(x[y_kmeans == 0, 0], x[y_kmeans == 0, 1], s = 100, c =
'red', label = 'Cluster 1')
plt.scatter(x[y_kmeans == 1, 0], x[y_kmeans == 1, 1], s = 100, c =
'blue', label = 'Cluster 2')
plt.scatter(x[y_kmeans == 2, 0], x[y_kmeans == 2, 1], s = 100, c =
'green', label = 'Cluster 3')
plt.scatter(x[y_kmeans == 3, 0], x[y_kmeans == 3, 1], s = 100, c =
'cyan', label = 'Cluster 4')
plt.scatter(x[y_kmeans == 4, 0], x[y_kmeans == 4, 1], s = 100, c =
'magenta', label = 'Cluster 5')

#Write Code for rest.SS

plt.scatter(kmeans.cluster_centers_[:, 0], kmeans.cluster_centers_[:,
1], s = 300, c = 'yellow', label = 'Centroids')
plt.title('Clusters of customers')
plt.xlabel('Annual Income (k$)')
plt.ylabel('Spending Score (1-100)')
plt.legend()
plt.show()
```

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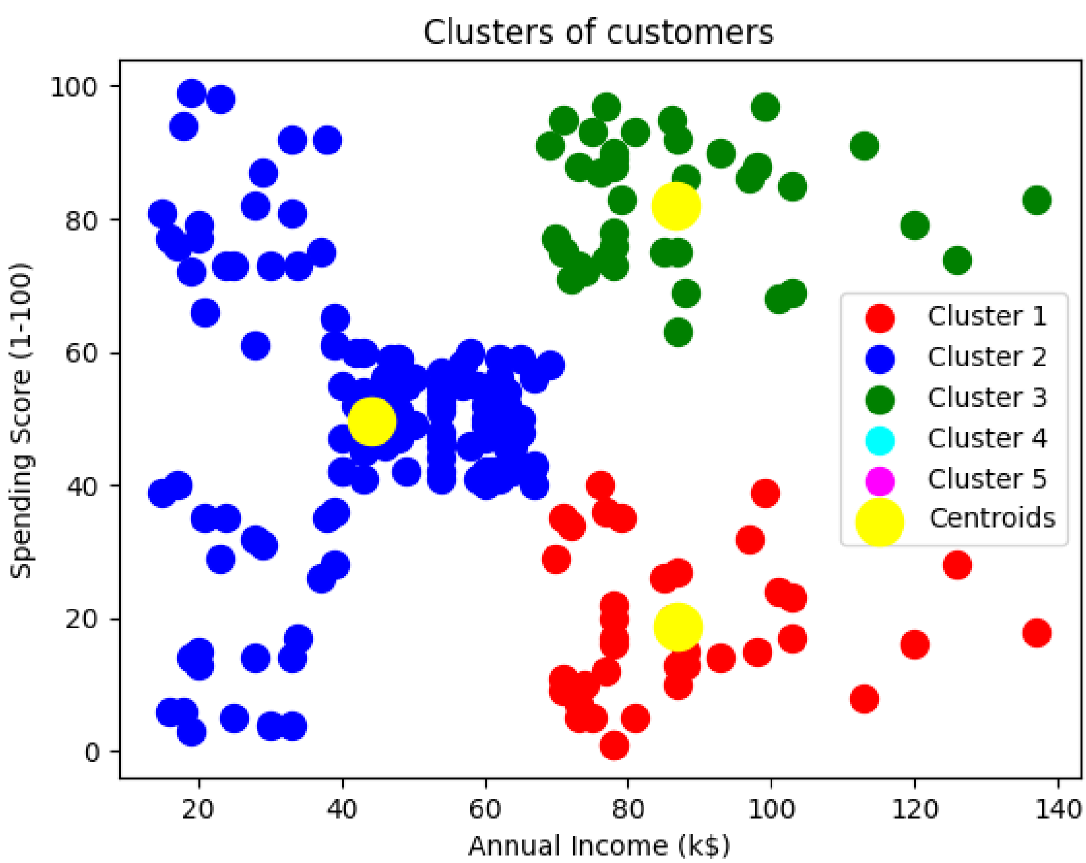

#REFERENCES: The model building algorithm devlop for all kinds of clusteration values.The "yellow spot represent CENTROID".

#CONCLUSION According to the model basics predictoin using machine learning "KM" "k is clustering".

We found that "cluster 1" which consists red is highest cluster,Which attach more than 50 datanodes.