nrcm-kmeans-1

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#Project Title: #Analysis of prediction of "small_customers.csv"of american mall markets called as phonic small.To find out how many customers are visited to a paricular shop on basic of this prediction of annual income Versus spending scores.

#Disclaimers: In this particular dataset we assume annual income as centroid and spending score from the range 1-100 called as datanode of cluster

#Problem Statement: The American finance market as per the GDP of 2011"phonix_trillums"as in rangeout 5.The owner of the mall wants to be exact which particular shop or product search in different types of clusters in entire mall

As a data science engineer predict the futuristic financial for the upcoming gdp rate based on No.of clusters.the client wants atleast 5 top clusters(shop)

#Conclusion: According to the model basic predictuion using machine learning algorithm kmeans clustering we found the cluter 1 is in red colour is heighest cluster which attach more than 50 data nodes

#REFFERENCES:- The model building algorithm devdelop for all kinds of clusteration values.The yellow spot represents the "CENTROID" which is max of 3.

[19]:
```
#import the numpy, matlot, pandas libery's
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

[20]:
```
#Read the dataset take variable name called "dataset" only.
data=pd.read_csv("/content/Mall_Customers.csv")

# 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=data.iloc[:,[3,4]].values
```

[24]:
```
## <THE ELBOW METHOD>
#from sklearn used "sklearn.cluster" attribute and import KMeans
#Take a distance from from centroid to cluster point with WrapsColumnExpression.
# Assume you have 10 cluster and iterate the for up to range 10 with iterater␣
 ↪kmeans++.
```

```python
# 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().
from sklearn.cluster import KMeans
wcss=[]
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 clusters")
plt.ylabel("wcs")
plt.show()
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/cluster/_kmeans.py:870:
FutureWarning: The default value of `n_init` will change from 10 to 'auto' in
1.4. Set the value of `n_init` explicitly to suppress the warning
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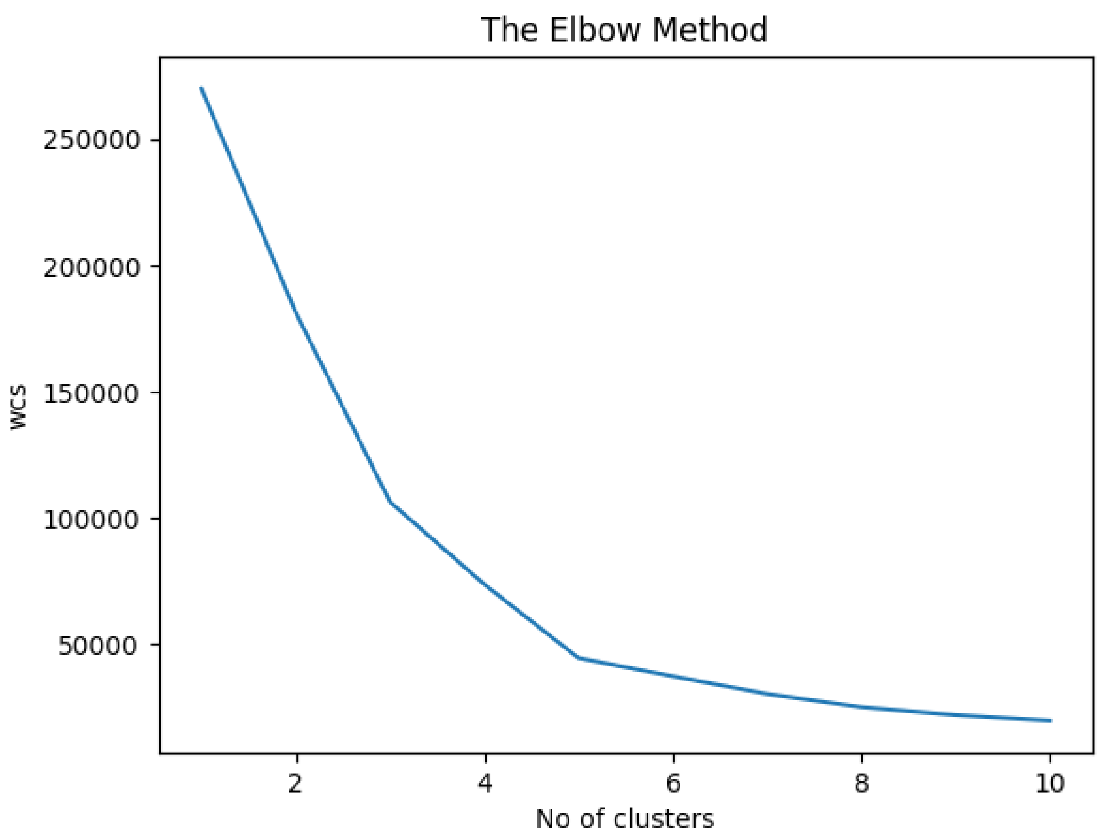
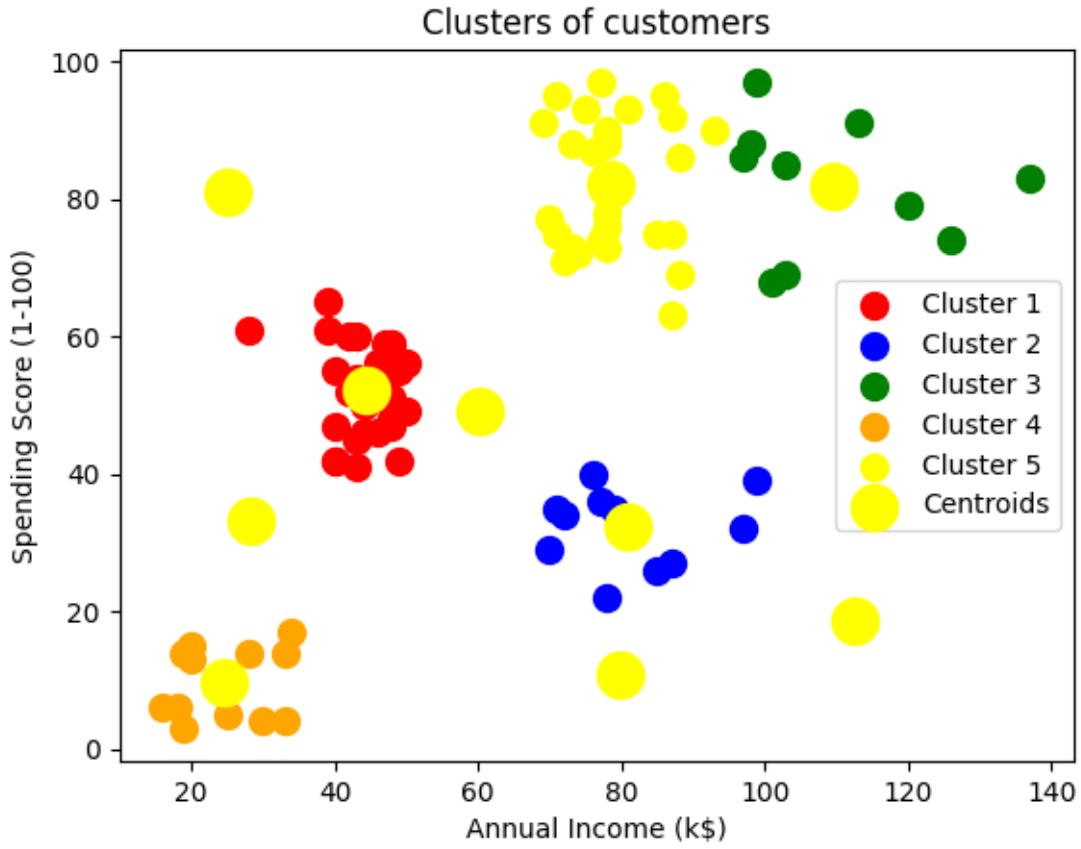


[26]:
```
# Take any no of cluster and run you take 5.
plt.scatter(X[y_kmeans == 0, 0], X[y_kmeans == 0, 1], s = 100, c = 'red', label␣
  ↪= 'Cluster 1')
```

```
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 = 'orange',␣
 ↪label = 'Cluster 4')
plt.scatter(X[y_kmeans == 4, 0], X[y_kmeans == 4, 1], s = 100, c = 'yellow',␣
 ↪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()
```



[ ]: