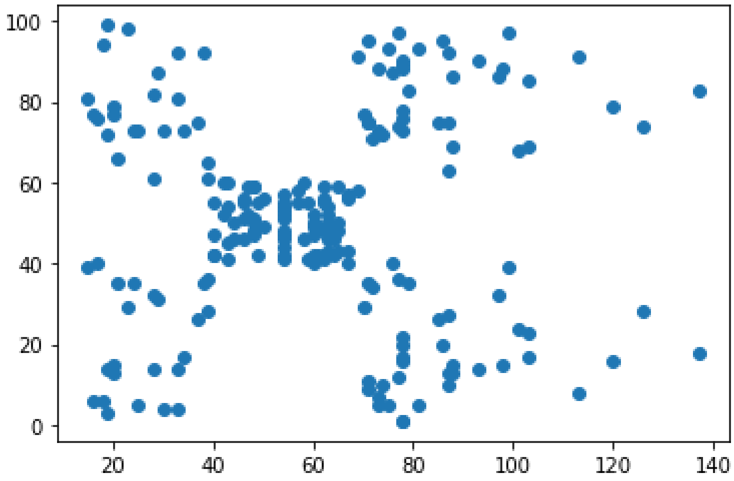
```
import·numpy·as·np
import·pandas·as·pd
from·matplotlib·import·pyplot·as·plt
from·sklearn.cluster·import·KMeans
data=pd.read_csv("/Mall_Customers·(1).csv")
x=data.iloc[:,3:].values
plt.scatter(x[:,0],x[:,1])
```

```
<matplotlib.collections.PathCollection at 0x7f1dabaa7670>
```



```
wcss=[]
for i in range(1,11):
    k=KMeans(n_clusters=i,init="k-means++",random_state=0)
    k.fit(x)
    wcss.append(k.inertia_)
```

```
/usr/local/lib/python3.9/dist-packages/sklearn/cluster/_kmeans.py:870: Future
  warnings.warn(
/usr/local/lib/python3.9/dist-packages/sklearn/cluster/_kmeans.py:870: Future
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  warnings.warn(
/usr/local/lib/python3.9/dist-packages/sklearn/cluster/_kmeans.py:870: Future
  warnings.warn(
plt.plot(range(1,11),wcss)
plt.scatter(range(1,11),wcss)
plt.title("Elbow graph")
plt.xlabel("no of clusters")
plt.ylabel("wcss")
```
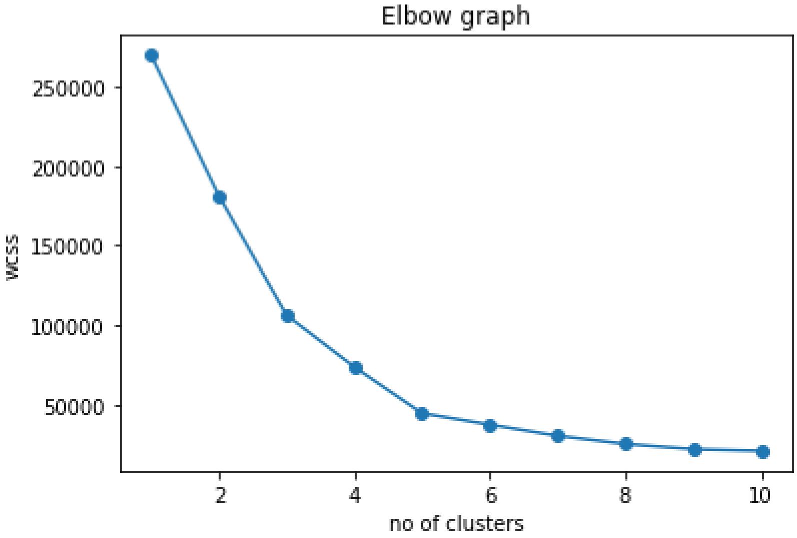

```
    Text(0, 0.5, 'wcss')
```

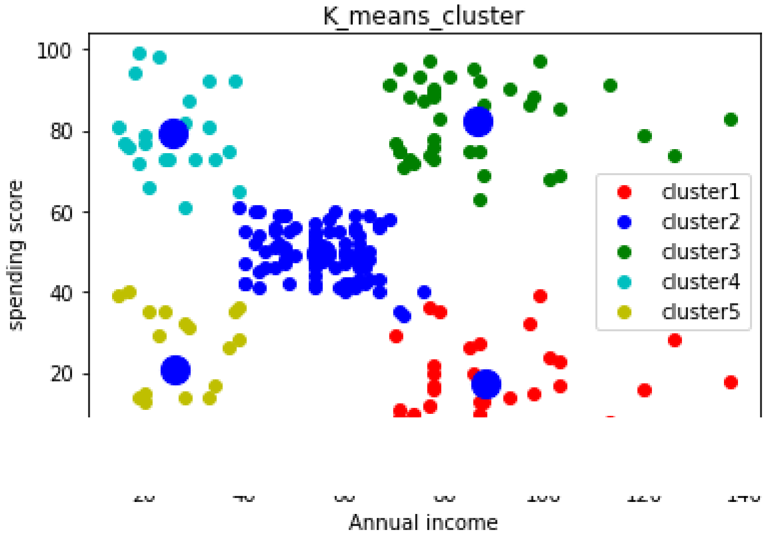


```
k=KMeans(n_clusters=5,init="k-means++",random_state=0)
y=k.fit_predict(x)
y
```

```
    /usr/local/lib/python3.9/dist-packages/sklearn/cluster/_kmeans.py:870: Future
      warnings.warn(
    array([4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3,
           4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 1,
           4, 3, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
           1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
           1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
           1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 0, 2, 1, 2, 0, 2, 0, 2,
           1, 2, 0, 2, 0, 2, 0, 2, 0, 2, 1, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2,
           0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2,
           0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2,
           0, 2], dtype=int32)
```

```
plt.scatter(x[y==0,0],x[y==0,1],c='r',label="cluster1")
plt.scatter(x[y==1,0],x[y==1,1],c='b',label="cluster2")
plt.scatter(x[y==2,0],x[y==2,1],c='g',label="cluster3")
plt.scatter(x[y==3,0],x[y==3,1],c='c',label="cluster4")
plt.scatter(x[y==4,0],x[y==4,1],c='y',label="cluster5")
plt.scatter(k.cluster_centers_[:,0],k.cluster_centers_[:,1],s=200,color="blue")
plt.legend()
plt.title("K_means_cluster")
plt.xlabel("Annual income")
plt.ylabel("spending score")
```

```
Text(0, 0.5, 'spending score')
```



Colab paid products - Cancel contracts here

✓ 0s completed at 16:44