**Hirarcihicalm cluster**

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

dataset=pd.read\_csv('Mall\_Customers.csv')

x=dataset.iloc[:,[3,4]].values

print(x)

from sklearn.cluster import AgglomerativeClustering

hc= AgglomerativeClustering(n\_clusters=5, affinity='euclidean', linkage='ward')

y\_pred= hc.fit\_predict(x)

print(y\_pred)

plt.scatter(x[y\_pred==0,0],x[y\_pred==0,1],s=50,c='red',label='Cluster 1')

plt.scatter(x[y\_pred==1,0],x[y\_pred==1,1],s=50,c='blue',label='Cluster 2')

plt.scatter(x[y\_pred==2,0],x[y\_pred==2,1],s=50,c='green',label='Cluster 3')

plt.scatter(x[y\_pred==3,0],x[y\_pred==3,1],s=50,c='cyan',label='Cluster 4')

plt.scatter(x[y\_pred==4,0],x[y\_pred==4,1],s=50,c='magenta',label='Cluster 5')

plt.title('Cluster of customers')

plt.xlabel('Annual income(k$)')

plt.ylabel('Spending Score(1-100)')

plt.legend()

plt.show()

**k-mans cluster:**

import matplotlib.pyplot as plt

import pandas as pd

dataset=pd.read\_csv('Mall\_Customers.csv')

x=dataset.iloc[:,[3,4]].values

print(x)

from sklearn.cluster import KMeans

kmeans=KMeans(n\_clusters=5,init='k-means++',random\_state=42)

y\_kmeans=kmeans.fit\_predict(x)

print(y\_kmeans)

plt.scatter(x[y\_kmeans==0,0],x[y\_kmeans==0,1],s=50,c='red',label='Cluster 1')

plt.scatter(x[y\_kmeans==1,0],x[y\_kmeans==1,1],s=50,c='blue',label='Cluster 2')

plt.scatter(x[y\_kmeans==2,0],x[y\_kmeans==2,1],s=50,c='green',label='Cluster 3')

plt.scatter(x[y\_kmeans==3,0],x[y\_kmeans==3,1],s=50,c='cyan',label='Cluster 4')

plt.scatter(x[y\_kmeans==4,0],x[y\_kmeans==4,1],s=50,c='magenta',label='Cluster 5')

plt.scatter(kmeans.cluster\_centers\_[:,0],kmeans.cluster\_centers\_[:,1],s=200,c='yellow',label='Centroids')

plt.title('Cluster of customers')

plt.xlabel('Annual income(k$)')

plt.ylabel('Spending Score(1-100)')

plt.legend()

plt.show()