**Experiment-11:** Apply EM algorithm to cluster a Heart Disease Data Set. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.

#KMeans

import numpy as np

import pandas as pd

import statsmodels.api as sm

import matplotlib.pyplot as plt

import seaborn as sns

sns.set()

from sklearn.cluster import KMeans

data = pd.read\_csv('/content/sample\_data/heart.csv')

x = data.iloc[:,3:5] # 1t for rows and second for columns

kmeans = KMeans(3)

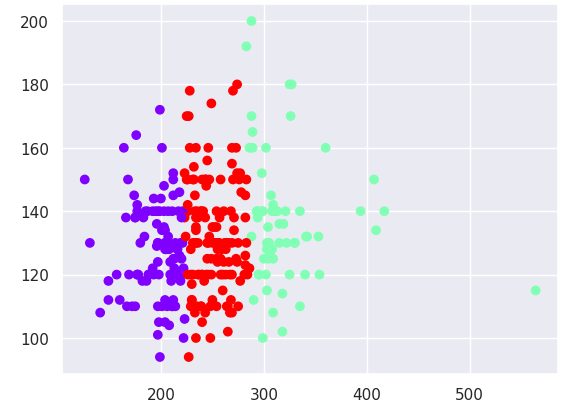
kmeans.fit(x)

identified\_clusters = kmeans.fit\_predict(x)

data\_with\_clusters = data.copy()

data\_with\_clusters['Clusters'] = identified\_clusters

plt.scatter(data\_with\_clusters['chol'],data\_with\_clusters['trestbps'],c=data\_with\_clusters['Clusters'],cmap='rainbow')



#KMeans

import numpy as np

import pandas as pd

import statsmodels.api as sm

import matplotlib.pyplot as plt

from sklearn.cluster import KMeans

from sklearn import cluster

from sklearn import datasets

df = datasets.load\_iris()

x = df.data

y=df.target

print(x)

print(y)

kmeans = KMeans(n\_clusters=3)

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

print(y\_kmeans)

print(y\_kmeans.cluster\_centers\_)

Output:

[[5.1 3.5 1.4 0.2]

[4.9 3. 1.4 0.2]

[4.7 3.2 1.3 0.2]

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