**Tên: Cao Trần Hoàng Vũ MSSV: 2274802011015**

**LAP 4 – BTVN**

A close up of a piece of paper

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import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

from sklearn.cluster import KMeans

from sklearn.preprocessing import StandardScaler

data = pd.read\_csv("C:/Users/Admin/OneDrive/Số hóa và quản trị thông tin số/framingham.csv")

data = data.dropna()

features = ["age", "totChol", "sysBP", "diaBP", "BMI", "glucose"]

X = data[features]

scaler = StandardScaler()

X\_scaled = scaler.fit\_transform(X)

kmeans = KMeans(n\_clusters=3, random\_state=42)

data['Cluster'] = kmeans.fit\_predict(X\_scaled)

plt.scatter(X\_scaled[:, 0], X\_scaled[:, 1], c=data['Cluster'], cmap='viridis', alpha=0.5)

plt.xlabel("Tuổi")

plt.ylabel("Tổng Cholesterol")

plt.title("Phân cụm K-Means trên tập dữ liệu Framingham")

plt.colorbar(label="Cluster")

plt.show()

print(data['Cluster'].value\_counts())

**Kết quả:**

A close up of a computer screen

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A chart of different colored dots

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