import pandas as pd

from scipy.cluster.hierarchy import linkage, dendrogram, fcluster

import matplotlib.pyplot as plt

df = pd.read\_csv('C:/Users/Aastha Kanaujia/Downloads/AIML\_Datasets/seeds-less-rows.csv')

df.head()

# Load the dataset and preprocess

v = df.pop('grain\_variety').tolist()

points = df.values

# Perform hierarchical clustering

mergings = linkage(points, method='complete')

dendrogram(mergings)

plt.show()

# Extract cluster labels and analyze

labels = fcluster(mergings, 6, criterion='distance')

df = pd.DataFrame({'labels': labels, 'varieties': v}) #DataFrame capital

ct = pd.crosstab(df['labels'], df['varieties']) #crosstab small

print(ct)