Exercise 10: Hierarchical clustering of the grain data

Step 1: Load the dataset *(done for you)*.

```
In [4]:   import pandas as pd

          seeds_df = pd.read_csv('seeds-less-rows.csv')

          # remove the grain species from the DataFrame, save for later
          varieties = list(seeds_df.pop('grain_variety'))

          # extract the measurements as a NumPy array
          samples = seeds_df.values
```

Step 2: Import:

- `linkage` and `dendrogram` from `scipy.cluster.hierarchy`.
- `matplotlib.pyplot` as `plt`.

```
In [5]:   import matplotlib.pyplot as plt
          from scipy.cluster.hierarchy import linkage, dendrogram
```

Step 3: Perform hierarchical clustering on `samples` using the `linkage()` function with the `method='complete'` keyword argument. Assign the result to `mergings`.

```
In [31]:   mergings=linkage(samples,method='complete')
```

Step 4: Plot a dendrogram using the `dendrogram()` function on `mergings`, specifying the keyword arguments `labels=varieties`, `leaf_rotation=90`, and `leaf_font_size=6`. Remember to call `plt.show()` afterwards, to display your plot.

```
dendrogram(mergings,labels=varieties,leaf_rotation=90,leaf_font_size=6)
plt.show()
```