Lab 6 : interpretability with LIME and SHAP

Exercise 1
For this exercise, we illustrate LIME on the wine quality dataset that can be downloaded at `https://www.kaggle.com/uciml/red-wine-quality-cortez-et-al-2009`. We first need to import the following libraries :

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn import preprocessing
from sklearn.ensemble import RandomForestRegressor
import lime
import lime.lime_tabular
```

1. Importation and preprocessing
   (a) Load the data
   (b) The target variable is 'quality'. Separate label from features
2. Learning
   (a) Split the data into train and test data
   (b) Build the model with the random forest regression algorithm
3. Interpretation with LIME
   (a) Use the function `LimeTabularExplainer` to define the LIME explainer
   (b) Interpret now the first record using the explainer using the function `explain_instance`
   (c) Display the coefficients as a list
4. Interpretation with SHAP
   (a) Use the function `TreeExplainer` to define the SHAP explainer on the train
   (b) Display the shap values using `shap_values`. Use `summary_plot` to visualize