Exercise 2 － Decision Tree Classifier

-- Requirement

Implement the Binary Decision Tree Classifier with the Car Evaluation Data Set.

Download URL: https://archive.ics.uci.edu/ml/datasets/Car+Evaluation

Fill in the function of the attachment "DecisionTree.py"

--Coding(85%)

- implement _entropy (5%)
- implement _feature_split(10%)
- implement _build_tree (10%)
- implement fit (5%)
- implement predict (5%)
- implement _find_leaves (5%)
- implement _error_before_cut (5%)
- Implement _compute_alpha (10%)
- Implement _find_min_alpha (20%)
- Implement _prune(10%)

-- Report(15%)

1. Design _feature_split, _build_tree, _find_min_alpha, _prune, and then explain the goal of each function.
2. Decision tree before post-pruning accuracy
3. Decision tree after post-pruning accuracy
4. The effect of different parameters (Ex: `prune tree times、max_depth)`
5. A brief discussion of the results(Ex: After pruning the tree, will the testing accuracy be better, if yes, why would it be better? if not, why would it be worse?)

- Please upload the zip file, zip file should include

  - code_<your_id>.zip

    - your zip file should include

      - code_<your_id>.py

      - car.data

      - code_<your_id>.pdf (your report)

- Ex: if your student id is 109522026, then you should upload

  code_109522026.zip file (which must include code_109522026.py, car.data, code_109522026.pdf)