Assignment-1 Part-2(Report)

Team Members: 1) Vyoma Trivedi vmt160030

2) Keerthimanu Gattu kxg162530

The implemented ID3 algorithm does binary classification of the data provided to it and predicts the output label of the target class in order to predict which class a given instance belongs to and thus calculating the accuracy with which it predicted the class

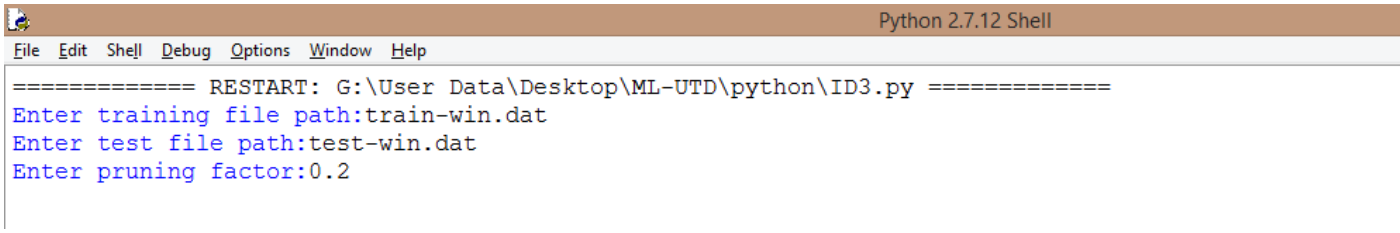
By implementing the ID3 algorithm we learnt the supervised machine learning method of **classification** and thus got clarity on how we train the machine with respect to the task (in this case classification given to it) and see the improved performance it gives by getting trained on more data.

We also learnt how to do level order traversal to find the next splitting attribute and how a same attribute cannot be repeated along the path

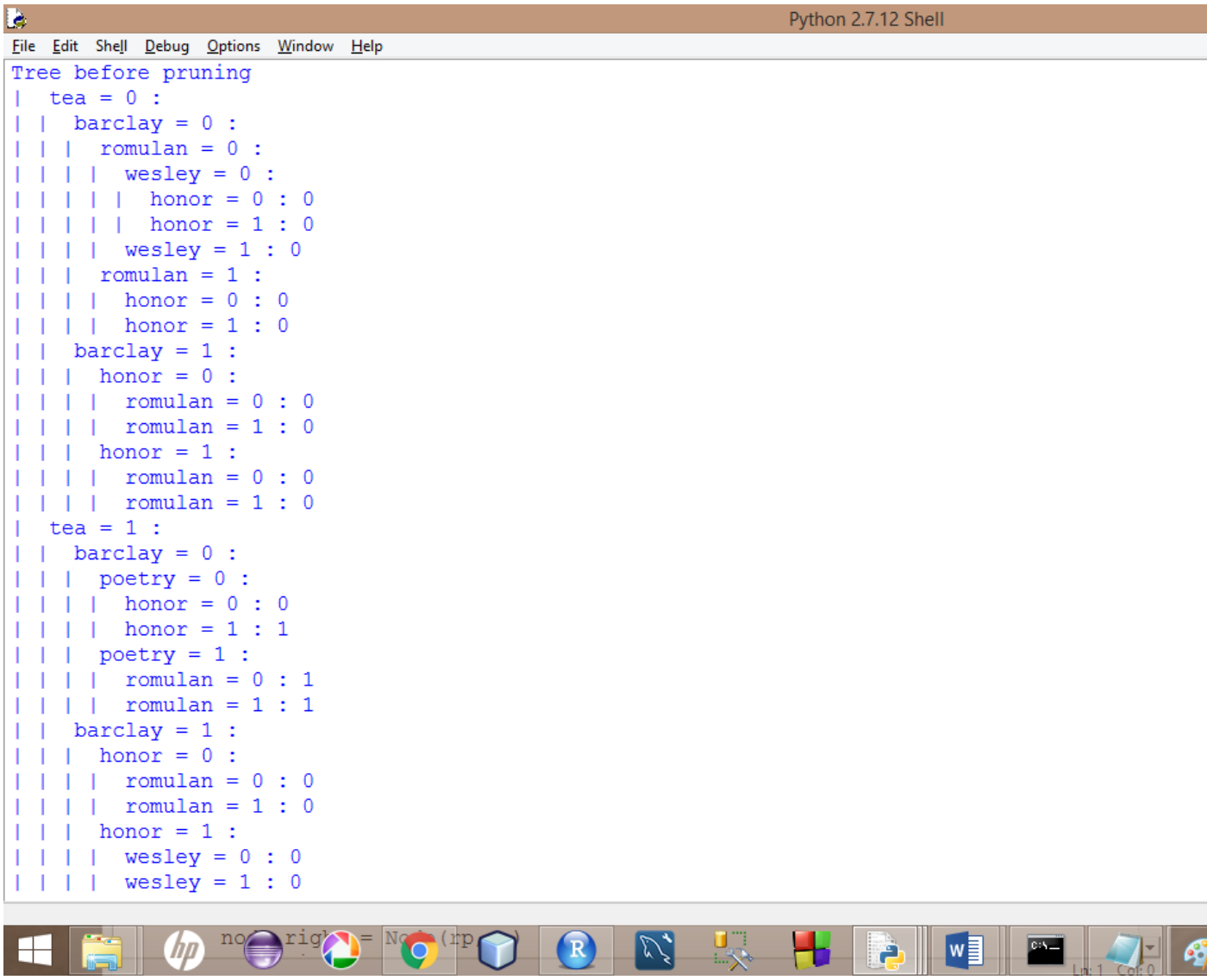
Thus, we got an exposure to how a machine learning algorithm works in practical.

Screenshots:

Taking inputs from the user



Printing the decision tree

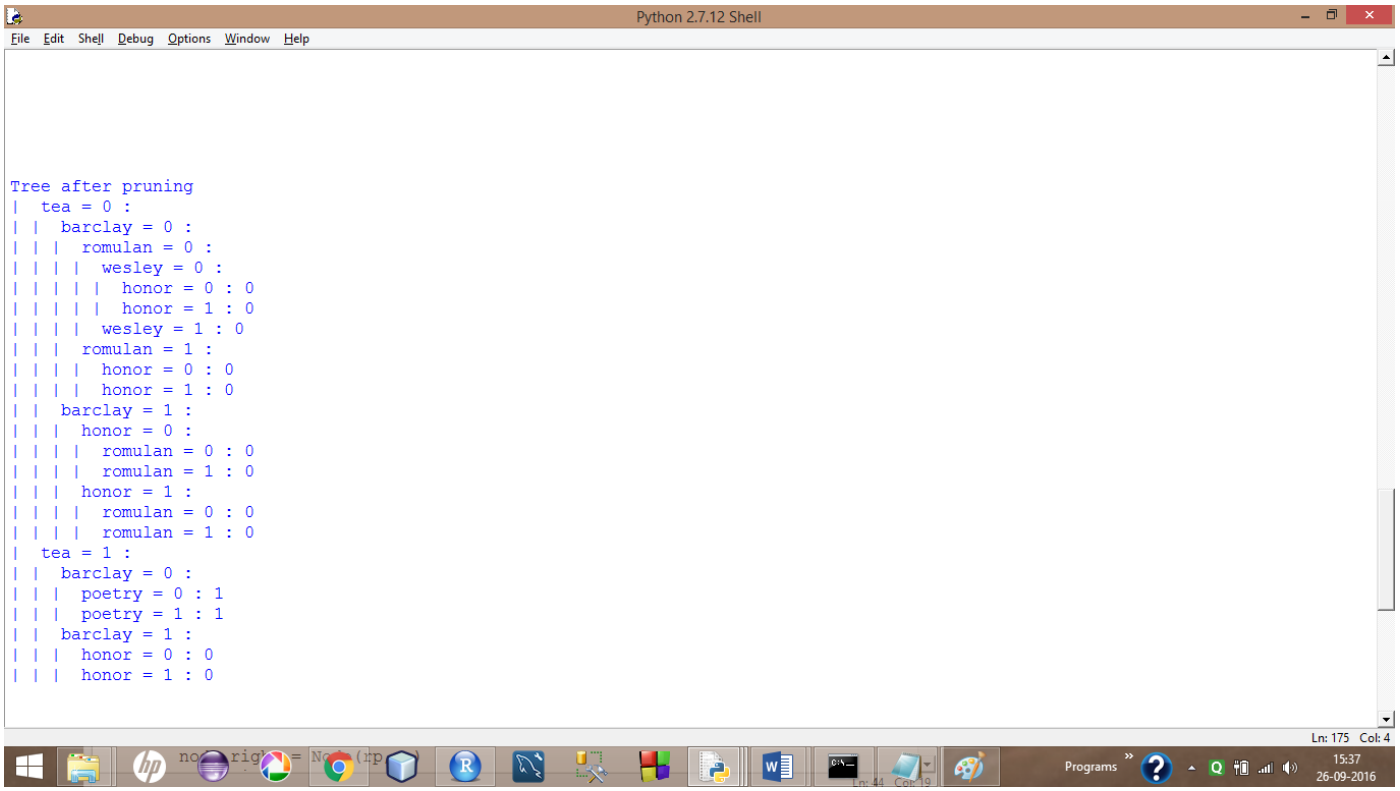


Pre-pruned accuracy

```
Pre-Pruned Accuracy
--------------------
('Number of training instances = ', 800)
('Number of training attributes(including label) = ', 7)
('Total number of nodes in the tree = ', 33)
('Number of leaf nodes in the tree = ', 22)
('Accuracy of the model on the training dataset = ', 81.25)


('Number of testing instances = ', 203)
('Number of testing attributes = ', 6)
('Accuracy of the model on the testing dataset = ', 76.84729064039408)
```

Pruned Tree



Post pruned accuracy