

# ID3 - Implementation for given CarData

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## Overview

This submission includes a python 3.6 script for creation of a ID3-decision-tree, as well as the needed data, an output file created by the script in case of any incompatibility or other obstacles restricting the usage. Additional comments are available in the code.

## Code

Most things in need of explanation is commented in the code, but the base ideas are listed here anyways:

- *function id3* contains implementation of the ID3-algorithm
- *function printTree* contains output into the decision\_tree.xml file
- *class Node* used for storing information about single node with reference to following ones
- *function readData* parses the plain text data file
- *function informationGain* calculates the informationGain value for given attribute
- *function collectInformation* used for informationGain to calculate entropy
- *array attributes* user for initial reading, further operations will rely on attributes index in the array

## Result

The result is a large and probably overfitted decision tree build with the ID3-algorithm.

While many leaves of the tree only contain a single sample from the given data this is traceable to the algorithm itself and can be undone by simply unifying leaves which have the same parent node and point to the same class value.