

Tutorial 3

1. Explain why there are $2^{N-1}-1$ ways of creating a binary partition for a nominal attribute with N attribute values.
2. We consider the training examples shown in the following table for a binary classification problem.

Instance	a_1	a_2	a_3	Target Class
1	T	T	1	+
2	T	T	6	+
3	T	F	5	-
4	F	F	4	+
5	F	T	7	-
6	F	T	3	-
7	F	F	8	-
8	T	F	7	+
9	F	T	5	-

- a. What is the original entropy of this set of training instances?
 - b. What are the information gains when a_1 and a_2 are used for partitioning the training set respectively?
3. Apply the decision tree construction algorithm to verify the selection order of the attributes for the credit risk estimation problem in the lecture notes, and complete the construction of the decision tree.