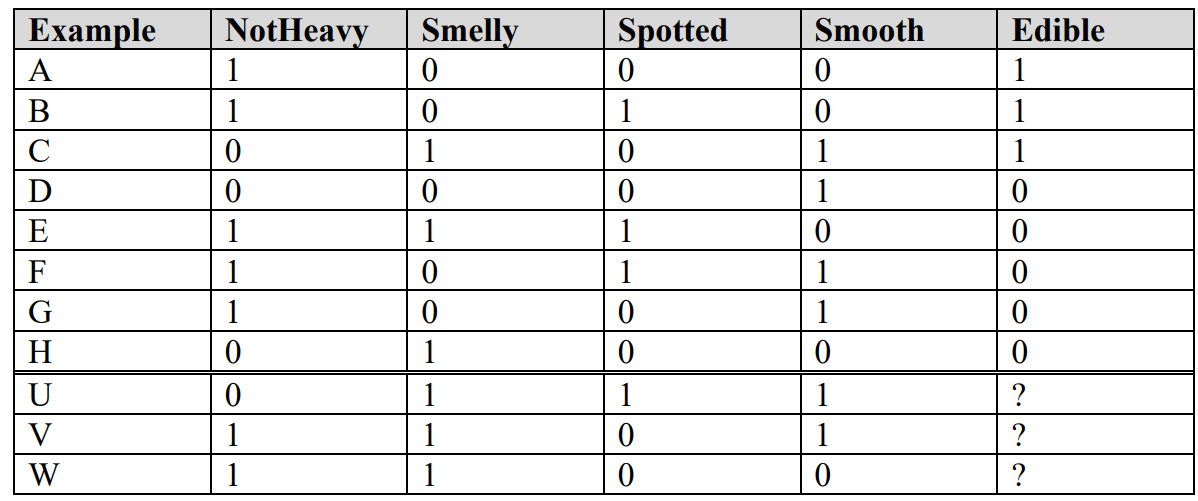
**Introduction to Artificial Intelligence**

Lab 2 – Logic

1. **Problem 1:**

In this lab, I am required to evaluate disadvantages of resolution method for propositional logic, propose my own solution for specific problem.

You are stranded on a deserted island. Mushrooms of various types grow widely all over the island, but no other food is anywhere to be found. Some of the mushrooms have been determined as poisonous and others as not (determined by your former companions’ trial and error). You are the only one remaining on the island. You have the following data to consider:



You know whether or not mushrooms A through H are poisonous, but you do not know about U through W.

1. Build a ID3 decision tree to classify mushrooms as poisonous or not.

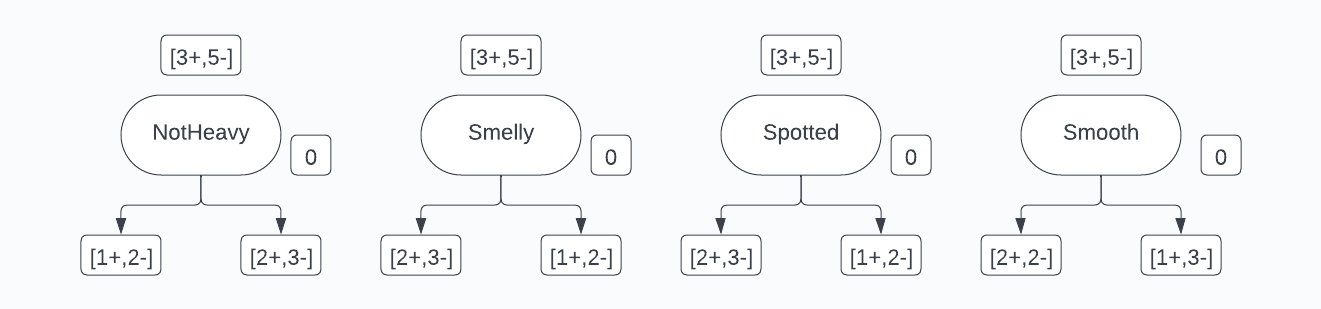
HEdible

H0/Smooth

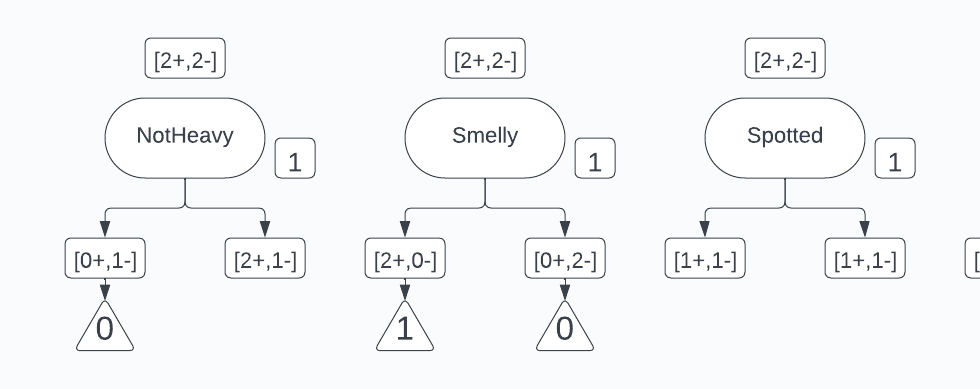
IG0/Smooth = HEdible - H0/Smooth = - = 0.048

H0/NotHeavy

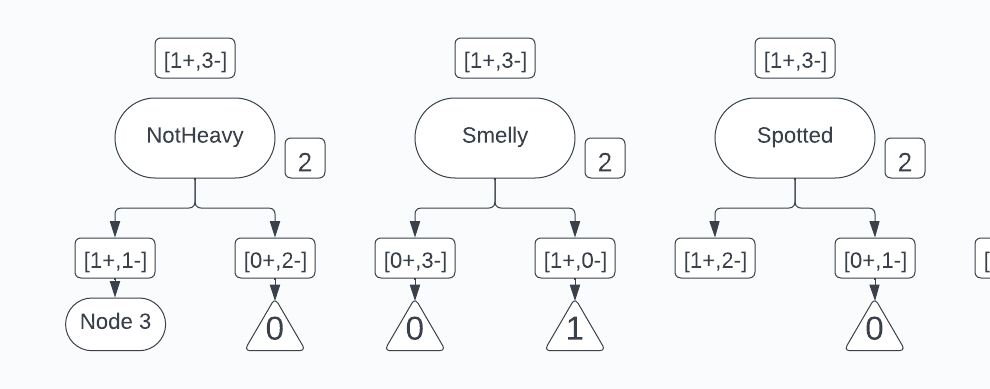
Choose Smooth as root node:



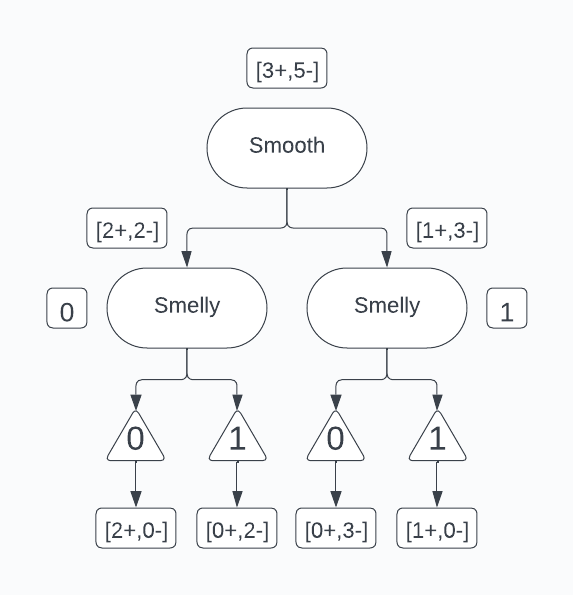
If node 1: Smooth = 0



If node 2: Smooth = 1



The resulting ID3 tree:



1. Classify mushrooms U, V and W using the decision tree as poisonous or not poisonous.

U: Smooth = 0, Smelly =1 => Edible = 1

V: Smooth = 1, Smelly =1 => Edible = 1

W: Smooth = 0, Smelly =1 => Edible = 1

U and V both classify as not poisonous

W classifies as poisonous

1. If the mushrooms A through H that you know are not poisonous suddenly became scarce, should you consider trying U, V and W? Which one(s) and why? Or if none of them, then why not?

The small number of examples and that all of U, V and W can be seen as “risky” due to the small training set.