

Data Science

CS301

Let's Have A Group Project!

Activity 08

Week 11

Fall 2024

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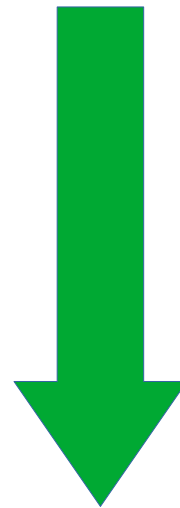
Overview

Building Decision Trees

- Break into groups of two or three people to complete the project
- Build a decision tree to make some involved decision from everyday life
- Three decision nodes to split data

Where to eat?
Can I afford it?

Should my team play
against that other team?
How does my team
compare to their team?



Should I call my friend
who keeps me on the
phone for hours? I have
work tomorrow...

What major should I choose?
Are these instructors cool?

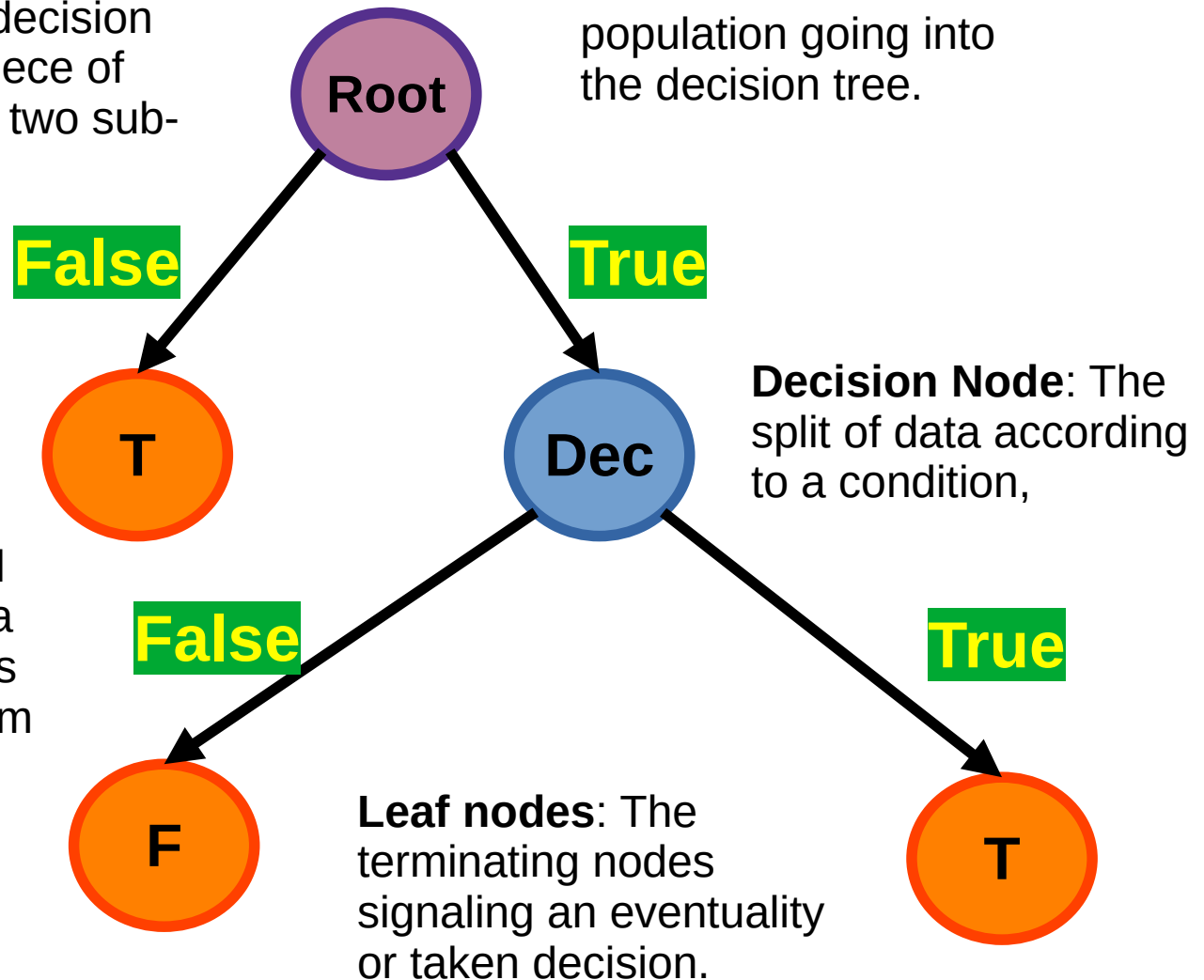


Decision Tree

Your tree must have all these parts

Node Splitting: After a decision of True or False, the a piece of data must go into one of two sub-nodes,

Root Node: The entire population going into the decision tree.





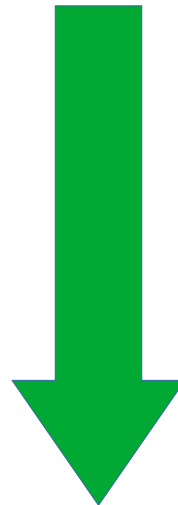
Group Work

Create

- Must have the following in your work
 - A general question that will make categories of outcomes
 - Data: Create at least five (5) rows
 - Three (3) decision nodes to split the data
 - An example output of the categories made after splitting
 - Try different orders of the decision nodes to check where the categories are the most *pure* (same outcomes at each leaf). Which decision node seems better at splitting data?

Should I invite
grandmother to the
rock concert tonight?

Who should I invite to the
party? Bob bugs Barbara.




Should I run for public
office? Do I have the
right experience?

Which classes should I take as
electives? Will I enjoy the subjects?



Lightning Talk: Preparation

- Work together to draw the tree for your slides
- Add and label the decision nodes
- Perform the analysis of data splitting by the tree
- Compare orders of decision nodes in the tree
- Describe which question(s) seem(s) to be best at determining potential decisions. Note: not all decision nodes have same value in the tree for splitting data. Which question is best? Does your group accept the results?



Should I eat before the event?
Five bowls of spaghetti
followed by tap-dancing
seems like a good idea, right?

Should I take the internship in
another state? What about my
options in this state?



Presentations on Friday

Lightning Talks of five minutes

- Come prepared on Friday to discuss the following using about five slides for a five minute lightning talk.
- *Discuss*
- *The research question to address by the decision tree*
 - *Data, Decision nodes*
 - *The output from data splitting*
 - *Comparison of different orders of the decision nodes to check for purity in categories.*
 - *General performance of the tree to make decisions*
- **No submission, your presentation is the activity.**



So, did your team play the other team, in the end?