



✓ Congratulations! You passed!

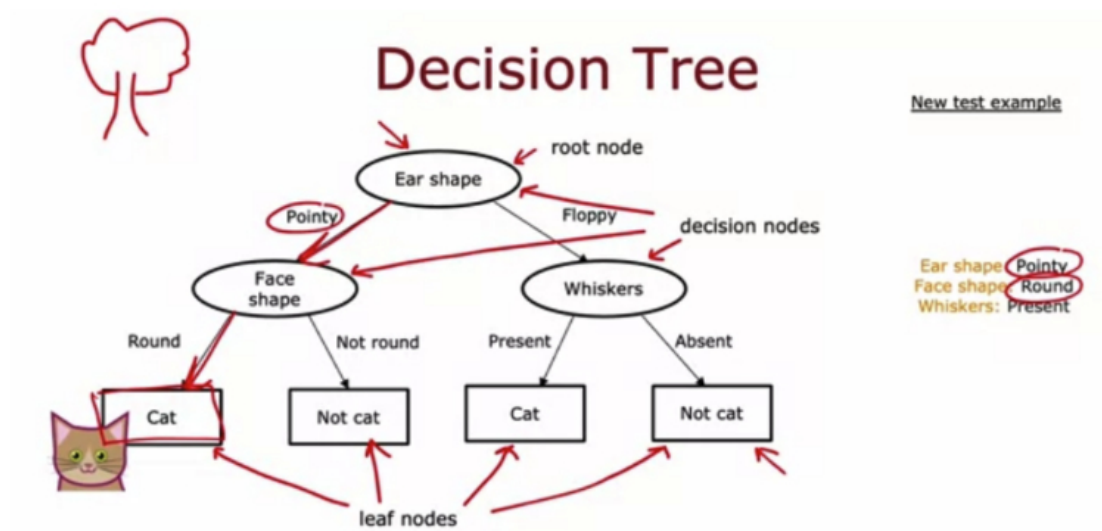
Grade received 100% To pass 80% or higher

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## Decision trees

Latest Submission Grade 100%

1.



1 / 1 point

Based on the decision tree shown in the lecture, if an animal has floppy ears, a round face shape and has whiskers, does the model predict that it's a cat or not a cat?

- ☒ cat
- ☐ Not a cat

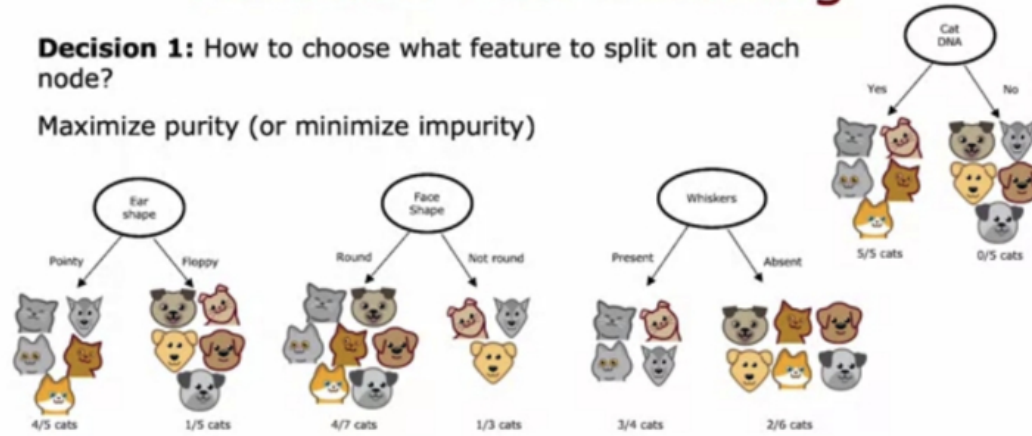
✓ Correct

Correct. If you follow the floppy ears to the right, and then from the whiskers decision node, go left because whiskers are present, you reach a leaf node for "cat", so the model would predict that this is a cat.

## Decision Tree Learning

**Decision 1:** How to choose what feature to split on at each node?

Maximize purity (or minimize impurity)



Take a decision tree learning to classify between spam and non-spam email. There are 20 training examples at the root node, comprising 10 spam and 10 non-spam emails. If the algorithm can choose from among four features, resulting in four corresponding splits, which would it choose (i.e., which has highest purity)?

- ☐ Left split: 5 of 10 emails are spam. Right split: 5 of 10 emails are spam.
- ☒ Left split: 10 of 10 emails are spam. Right split: 0 of 10 emails are spam.
- ☐ Left split: 7 of 8 emails are spam. Right split: 3 of 12 emails are spam.
- ☐ Left split: 2 of 2 emails are spam. Right split: 8 of 18 emails are spam.

✓ **Correct**  
Yes!