1. **(10 points) In class, an example was shown for how to use the decision tree, using only 3 columns for prediction. Update it to use all of the categorical columns.**

**Discuss what you did and record how well the algorithm performs in your write-up (be specific - what was the actual accuracy, not a vague opinion of how well you thought it did or "about" what the accuracy was).**

1. **(15 points) Enhance the decision tree code so that the best attribute is selected based on the attribute with the highest information gain (rather than randomly as it is in the starter code). Discuss what you did and record the performance in your write-up.**
2. **(10 points) Do at least one of the following. Discuss what you did and record the performance in your write-up.**

**If you do more than one, I will consider awarding a small number of extra credit points, but make sure to point out that you're doing extra in your write-up.**

1. **Bin up the numerical columns and use them for training and prediction.**
2. **Change the choose\_attribute() function so that it can deal with numerical columns in the middle of training - split at a good place that gives high information gain (if you do it this way, and you do it well, it could be worth some extra credit by itself)**
3. **Implement some kind of early stopping that improves performance.**
4. **Implement some kind of pruning that improves performance (if you do it this way, and you do it well, it could be worth some extra credit by itself).**

Original algorithm with attributes (