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🏠 **Home**   /notebooks/C2_W4_Lab_01_Decision_Trees.ipynb   **COPY**   **Go**

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Ungraded Lab: Decision Trees

In this notebook you will visualize how a decision tree is splitted using information gain.

We will revisit the dataset used in the video lectures. The dataset is:

	Ear Shape	Face Shape	Whiskers	Cat
	Pointy	Round	Present	1
	Floppy	Not Round	Present	1
	Floppy	Round	Absent	0
	Pointy	Not Round	Present	0
	Pointy	Round	Present	1
	Pointy	Round	Absent	1
	Floppy	Not Round	Absent	0
	Pointy	Round	Absent	1
	Floppy	Round	Absent	0
	Floppy	Round	Absent	0

For simplicity, we will consider:

- Ear Shape: Pointy = 1, Floppy = 0
- Face Shape: Round = 1, Not Round = 0
- Whiskers: Present = 1, Absent = 0

Therefore, we have two sets:

- `X_train` : for each example, contains 3 features:

        - Ear Shape (1 if pointy, 0 otherwise)
        - Face Shape (1 if round, 0 otherwise)
        - Whiskers (1 if present, 0 otherwise)

- `y_train` : whether the animal is a cat

        - 1 if the animal is a cat
        - 0 otherwise

```
In [ ]:  import pandas as pd
         import numpy as np
         import matplotlib.pyplot as plt
         from utils import *
```

```
In [ ]:  X_train = np.array([[1, 1, 1],
         [0, 0, 1],
          [0, 1, 0],
          [1, 0, 1],
          [1, 1, 1],
          [1, 1, 0],
          [0, 0, 0],
          [1, 1, 0],
          [0, 1, 0],
          [0, 1, 0]])
```