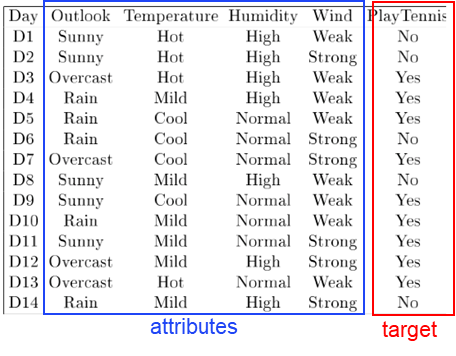
**Homework assignment in Week 7**

Q1: For a classification problem with 4 classes (A, B, C,D), calculate the Entropy of a set which has 4 instances of A class, 2 instances of B class, 4 instances of C class, and 3 instances of D class.

The calculation process must be included in the answer.

Q2: Imagine you play tennis, and you invite your friend. Your friend sometimes comes to join but sometimes not. For your friend, it depends on a number of factors, for example, weather, temperature, humidity, and wind. Please use the right dataset to build a decision tree which can predict whether or not your friend will join you to play tennis.

You must list the calculation process (to build the decision tree) and plot the decision tree.



**Outlook:**

Sunny

Overcast

Rain =

**Temperature:**

Cool

Hot

Mild

**Humidity:**

Normal

High

**Wind:**

Weak

Strong

IG of outlook, humidity and wind are positive, IG of temperature is negative.

Outlook, humidity and wind will be used in the decision tree.

Decision tree

Timeline

Description automatically generated

A picture containing timeline

Description automatically generated