

Name: Alapan Chaudhuri

Entropy calculation

With the first level as smell $\begin{cases} \text{Woody (5)} \\ \text{Fruity (5)} \end{cases}$

$$\text{entropy} = -\left(\frac{1}{2} \log_2\left(\frac{1}{2}\right) + \frac{1}{2} \log_2\left(\frac{1}{2}\right)\right) = 1$$

With the first level as portion $\begin{cases} \text{Small (5)} \\ \text{Large (5)} \end{cases}$

$$\text{entropy} = -\left(\frac{1}{2} \log_2\left(\frac{1}{2}\right) + \frac{1}{2} \log_2\left(\frac{1}{2}\right)\right) = 1$$

With first level as taste, we have $\begin{cases} \text{Sweet (3)} \\ \text{Salty (4)} \\ \text{Sour (3)} \end{cases}$

$$\begin{aligned} \text{entropy} &= -\left(\frac{3}{10} \log_2\left(\frac{3}{10}\right) + \frac{4}{10} \log_2\left(\frac{4}{10}\right) + \frac{3}{10} \log_2\left(\frac{3}{10}\right)\right) \\ &= 1.57095 \end{aligned}$$

Required Table is provided below

Review	Smell	Taste	Portion
Negative	Woody	Sweet	Small
Negative	Fruity	Salty	Large
Negative	Fruity	Salty	Large
Positive	Fruity	Sour	Small
Negative	Woody	Sour	Small
Positive	Woody	Sweet	Large
Positive	Woody	Sour	Large
Positive	Fruity	Salty	Small
Positive	Fruity	Salty	Small
Negative	Woody	Sweet	Large

Example

