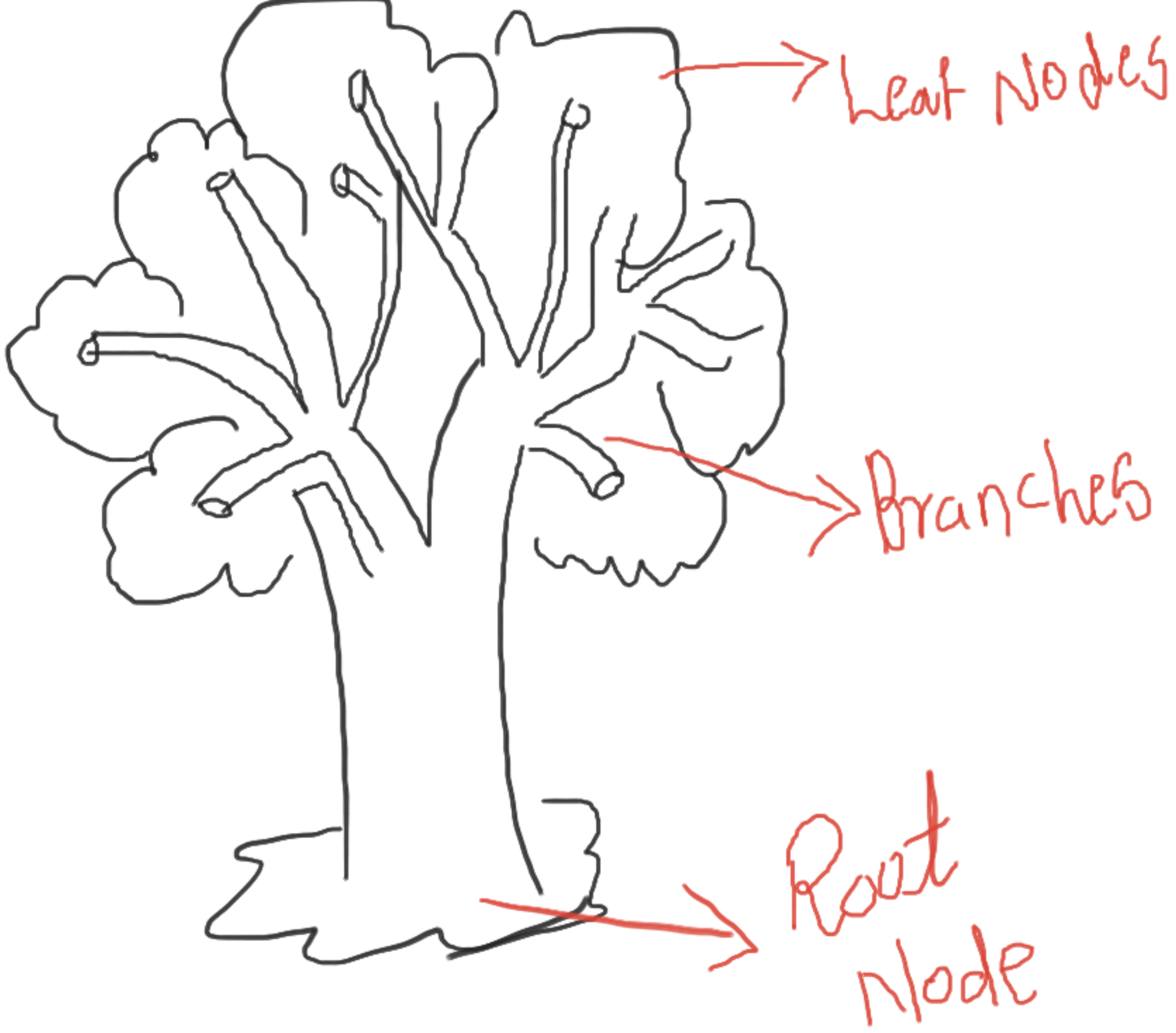
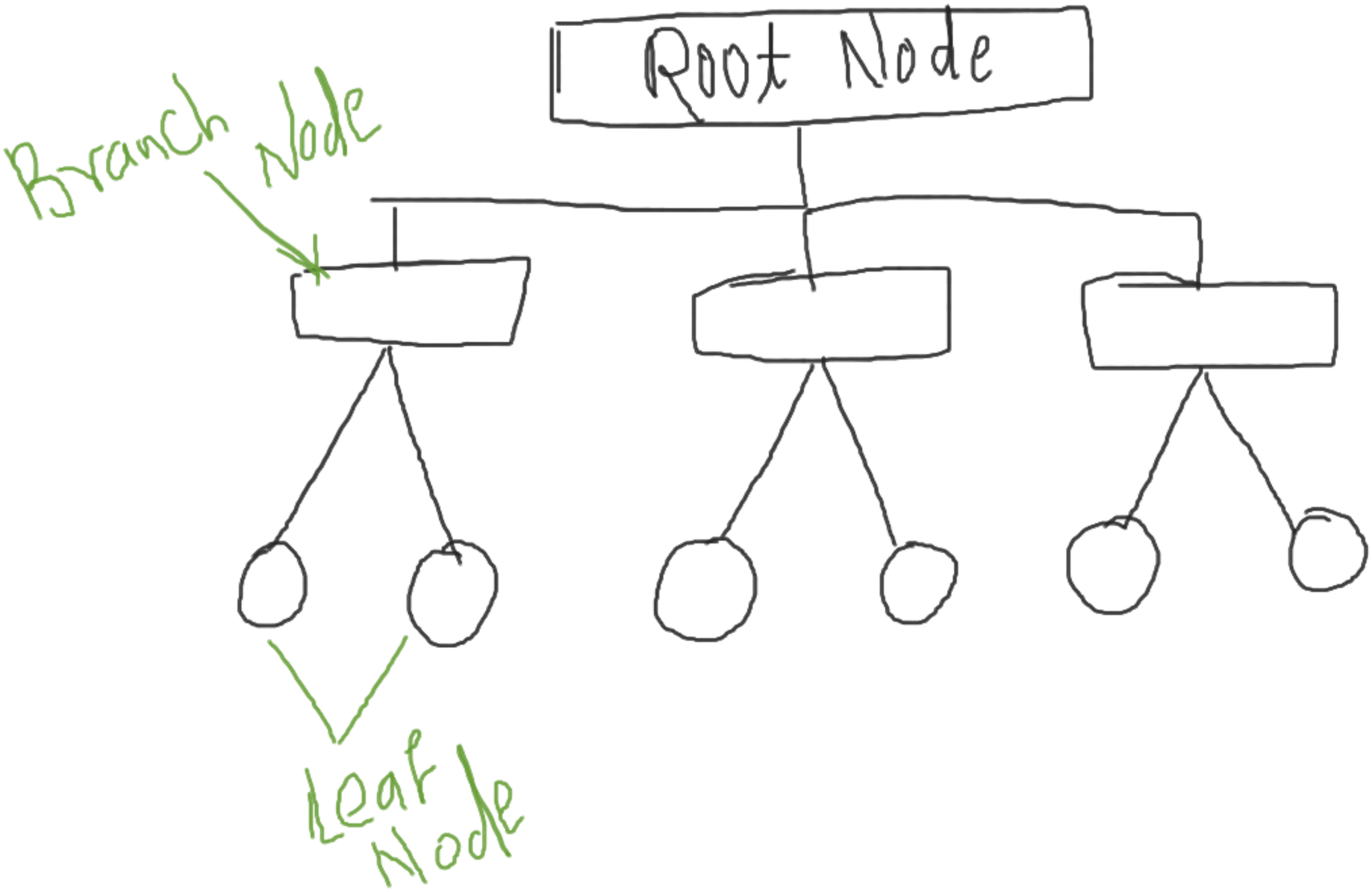
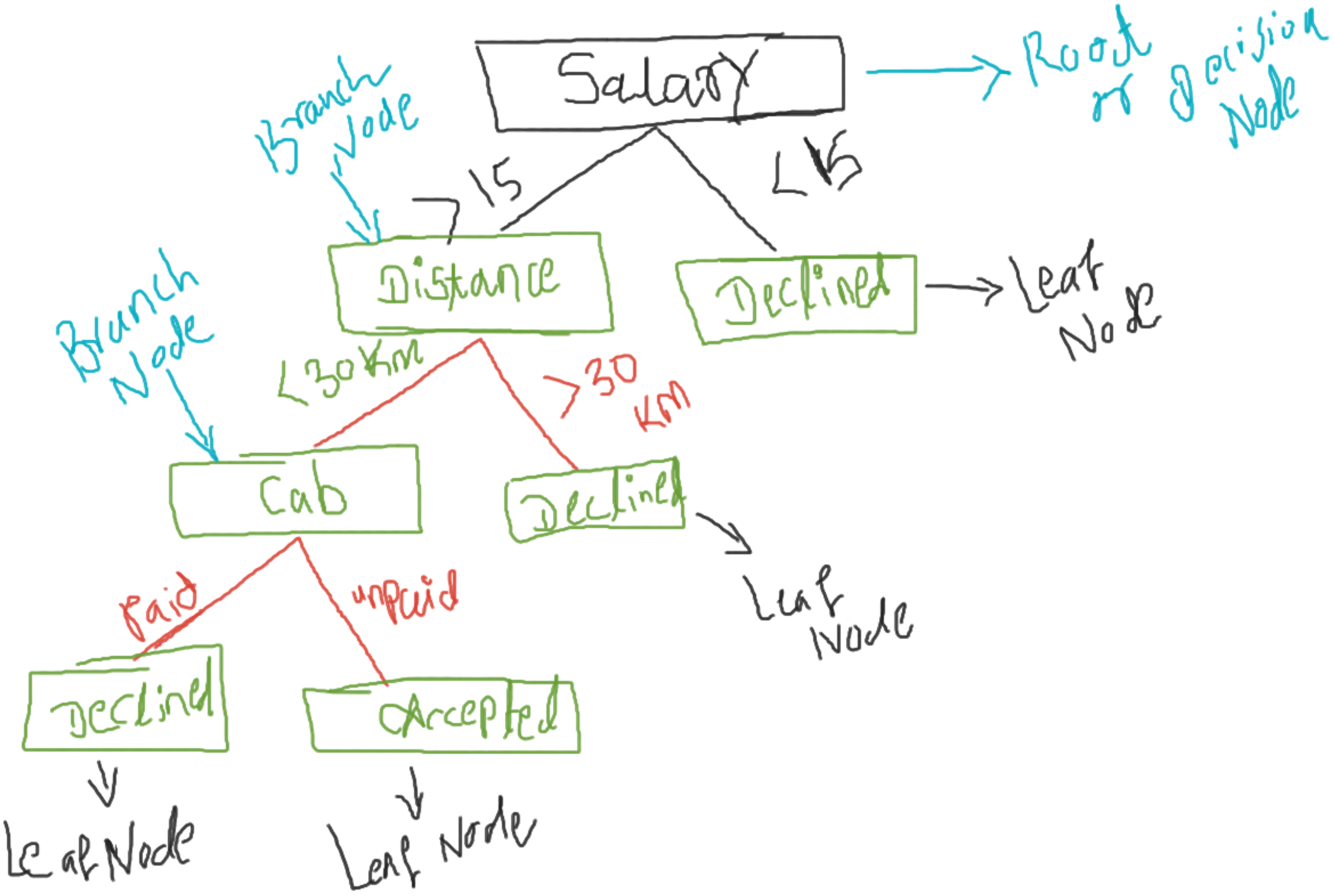

Leaf Nodes
Branches
Root Node


Root Node
Branch Node
Leaf Node


Salary
Root or Decision Node
Branch Node
>15
<15
Distance
Declined
Leaf Node
Branch Node
<30 Km
>30 Km
Cab
Declined
Leaf Node
Paid
unpaid
Declined
Accepted
Leaf Node
Leaf Node

1) Entropy [H(S)] or [E(S)]

$$= -\sum p_i \log p_i$$

$$\text{Entropy} = -\left[P(y) \cdot \log_2 P(y) + P(n) \cdot \log_2 P(n)\right]$$

] 9Y & 5N :

$$-[P(Y) \cdot \log_2 P(Y) + P(N) \cdot \log_2 P(N)]$$

$$= -\left[\frac{9}{14} \cdot \log_2\left(\frac{9}{14}\right) + \left(\frac{5}{14}\right) \cdot \log_2\left(\frac{5}{14}\right)\right]$$

$$H(S) = 0.94$$

11] 5Y & 5N

$$= -\left[\frac{5}{10} \cdot \log_2(5/10) + 5/10 \cdot \log_2(5/10)\right]$$

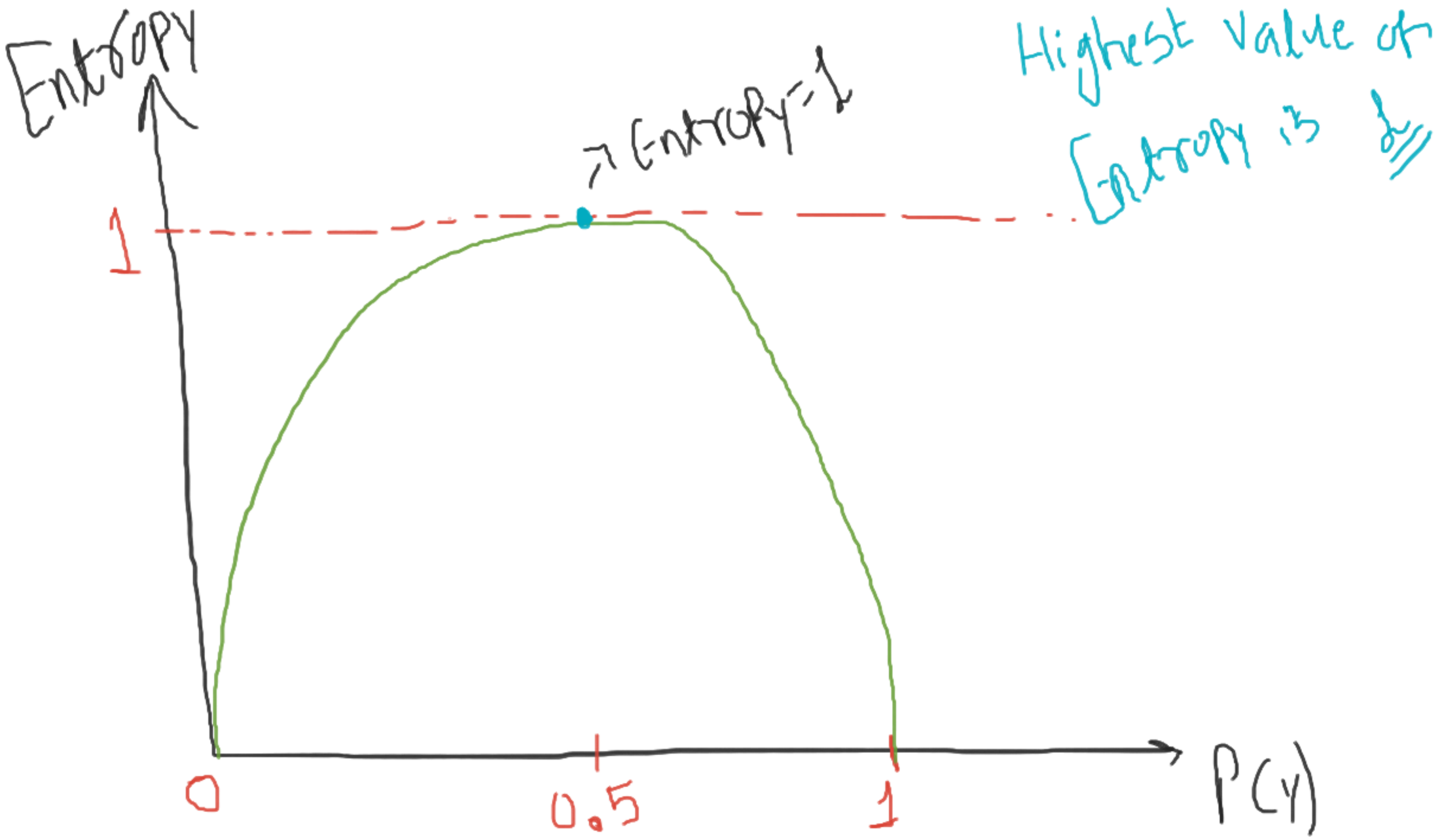
$H(S) = 1$

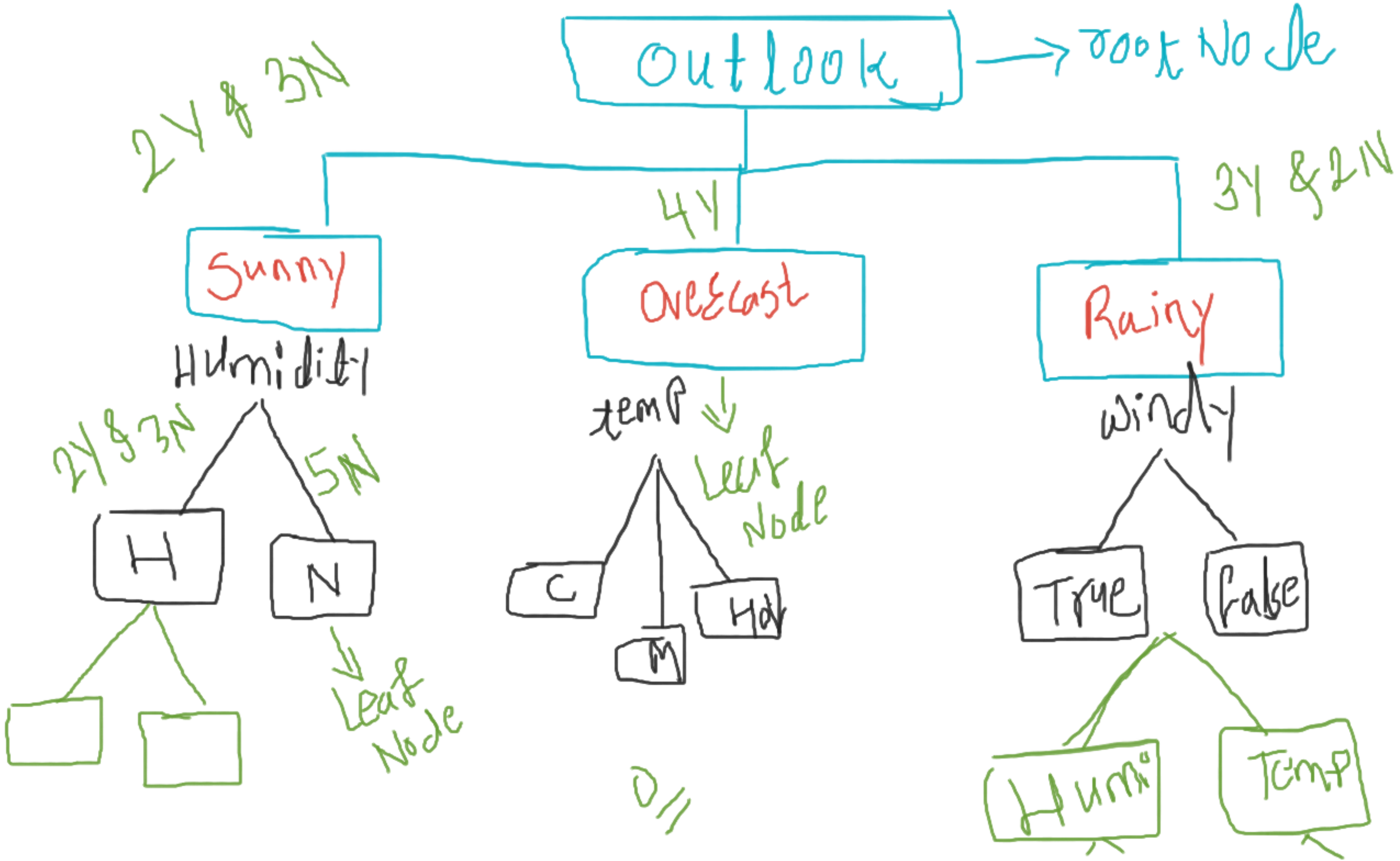
iii] 14 y & 0N

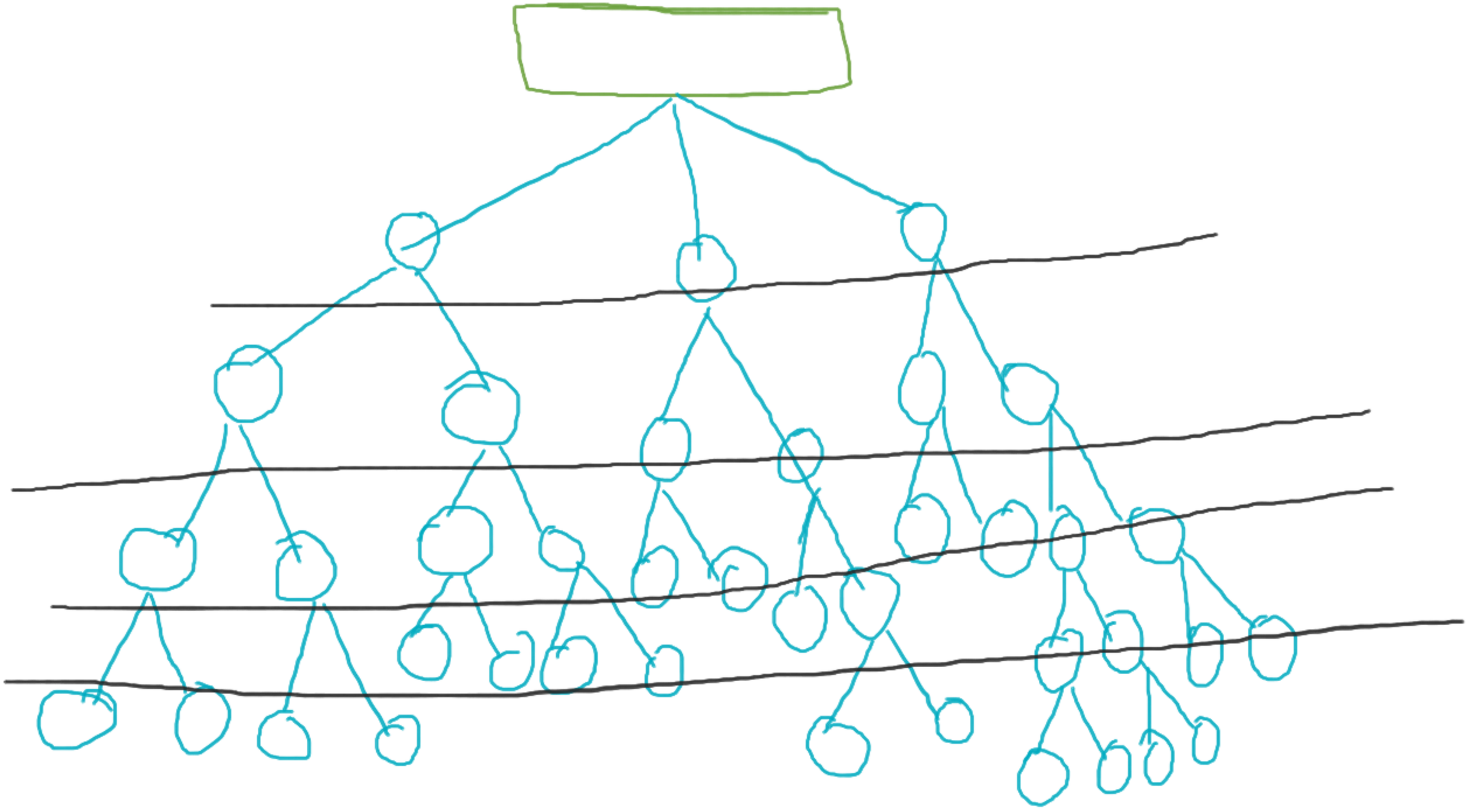
$$= -\left[\frac{14}{14} \cdot \log_2\left(\frac{14}{14}\right) + 0\right]$$

$$H(S) = -\left[1 \cdot \log(1)\right]$$

$$= 0$$


Entropy
Entropy = 1
Highest value of Entropy is 1
1
0
0.5
1
P(Y)


Outlook
→ root Node
2Y & 3N
4Y
3Y & 2N
Sunny
Overcast
Rainy
Humidity
temp
windy
2Y & 3N
5N
H
N
C
M
H
True
False
Leaf Node
Leaf Node
Humi
Temp
D11



$$GIL = 1 - \left[P(Y)^2 + P(N)^2\right]$$

Gini Index