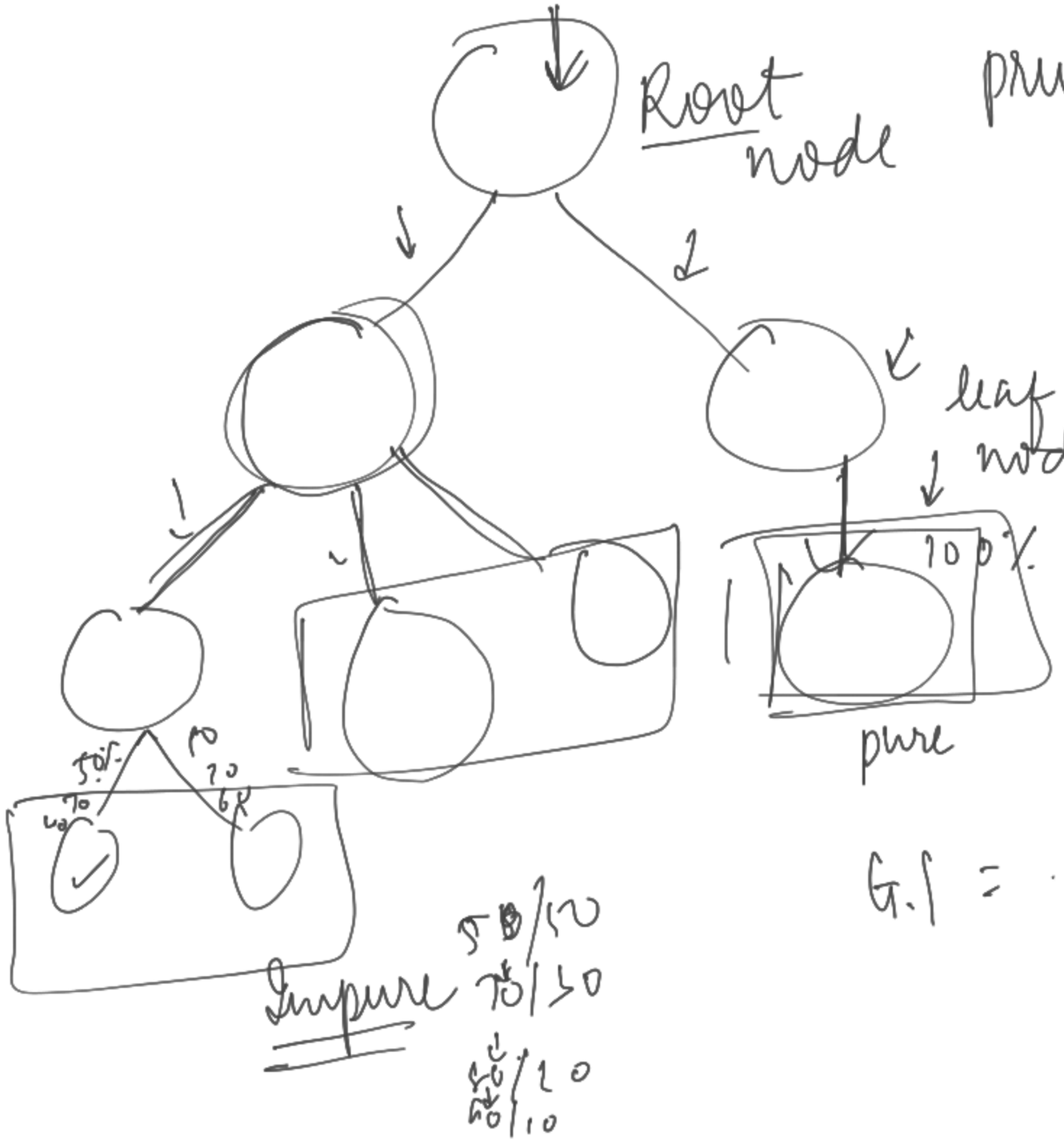

pruning

Entropy (0 - 1)

Gini Index (0. - 0.5)

$H(S) = -p_+ \log_2(p_+) - p_- \log_2(p_-)$

$G.I = 1 - \sum_{i=1}^{2} (p)^2$

$$I.G = H(S) - \sum_{v \in Val} \frac{|S_v|}{|S|} H(S)$$

24 3N

$$H(Sunny) = -\frac{2}{5}\log_2\left(\frac{2}{5}\right) - \frac{3}{5}\log_2\left(\frac{3}{5}\right.$$

$$= 0.83$$

$H(Rain) = 0.83$

$H(Outlook) = 0.77$

$$-\frac{9}{14}\log_2\left(\frac{9}{14}\right) - \frac{5}{14}\log_2\left(\frac{5}{14}\right.$$

$$\frac{}{14} e(sun)$$

Outlook	Temp	Humidity	Wind	Play
Sunny	Hot	High	False	~~No~~
Sunny	Hot	High	True	~~No~~
Overcast	Hot	High	Weak	Yes
Rain	Mild	High	Weak	Yes
Rain	Cool	Normal	False	Yes
Rain	Cool	Normal	True	No
Overcast	Cool	Normal	True	Yes
Sunny	Mild	High	False	~~No~~
Sunny	Cool	Normal	False	~~Yes~~
Rain	Mild	Normal	False	Yes
Sunny	Mild	Normal	True	~~Yes~~
Overcast	Mild	High	True	Yes
Overcast	Hot	Normal	False	Yes
Rain	Mild	High	True	No

Outlook 9Y 5N : 14

S : 2Y/3N

Sunny 0.83 | Overcast 0 | Rain 0.8

3Y/2N : 5

$E(\text{Outlook}) = 0.77$

$E(\text{Outlook} = \text{sunny}) = 0.83$

$E(\text{Outlook} = \text{overcast}) = 0$

$E(\text{Outlook} = \text{rain}) = 0.80$

$$I.G(S, f_1) = 0.77 - \left[\frac{5}{14} \times 0.83 + \frac{4}{14} \times 0 + \frac{5}{14} \times 0.80\right]$$

$$E(\text{Temp}) = -\frac{9}{14}\log_2\left(\frac{9}{14}\right) - \frac{5}{14}\log_2\left(\frac{5}{14}\right)$$

$$= 0.94$$

$$E(\text{hot}) = 1$$

$$E(\text{mild}) = -\frac{4}{6}\log_2\left(\frac{4}{6}\right) - \frac{2}{6}\log_2\left(\frac{2}{6}\right)$$

$$= 0.91$$

$$E(\text{cool}) = -\frac{3}{4}\log_2\left(\frac{3}{4}\right) - \frac{1}{4}\log_2\left(\frac{1}{4}\right)$$

$$= 0.81$$

GT

0.029

0.24 0.15

Outlook	Temp	Humidity	Wind	Play
Sunny	Hot	High	False	No
Sunny	Hot	High	True	No
Overcast	Hot	High	Weak	Yes
Rain	Mild	High	Weak	Yes
Rain	Cool+	Normal	False	Yes
Rain	Cool−	Normal	True	No
Overcast	Cool+	Normal	True	Yes
Sunny	Mild	High	False	No
Sunny	Cool+	Normal	False	~~Yes~~
Rain	Mild	Normal	False	Yes
Sunny	Mild	Normal	True	Yes
Overcast	Mild	High	True	Yes
Overcast	Hot	Normal	False	Yes
Rain	Mild	High	True	No