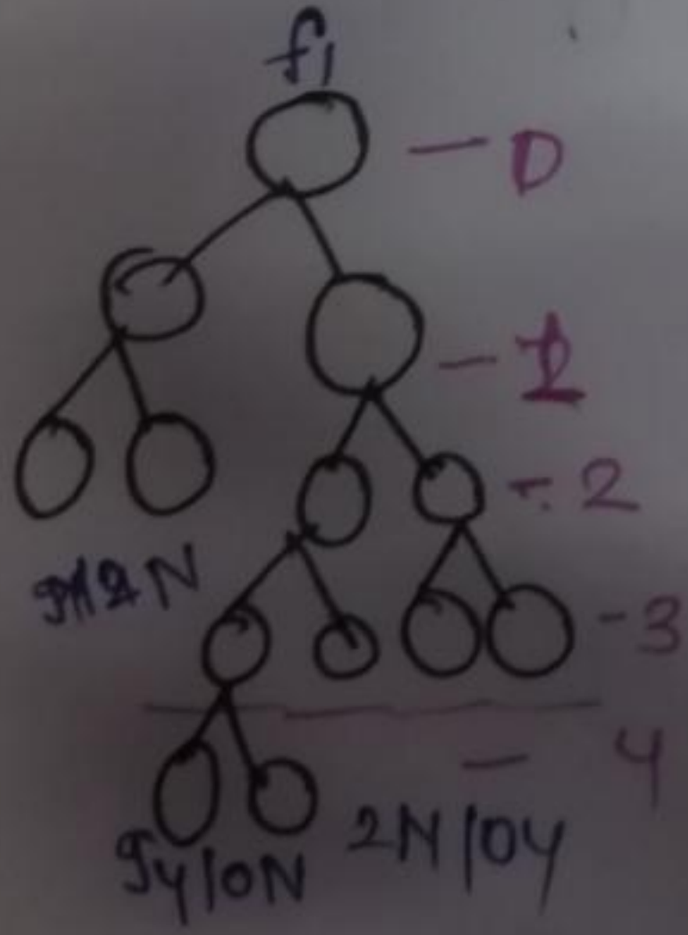
Pre Pruning and Post pruning.

Pre-Pruning - is applied while building the decision tree.



The algo. stop's splitting a node. early if the split is not statistically significant or doesn't improve accuracy much

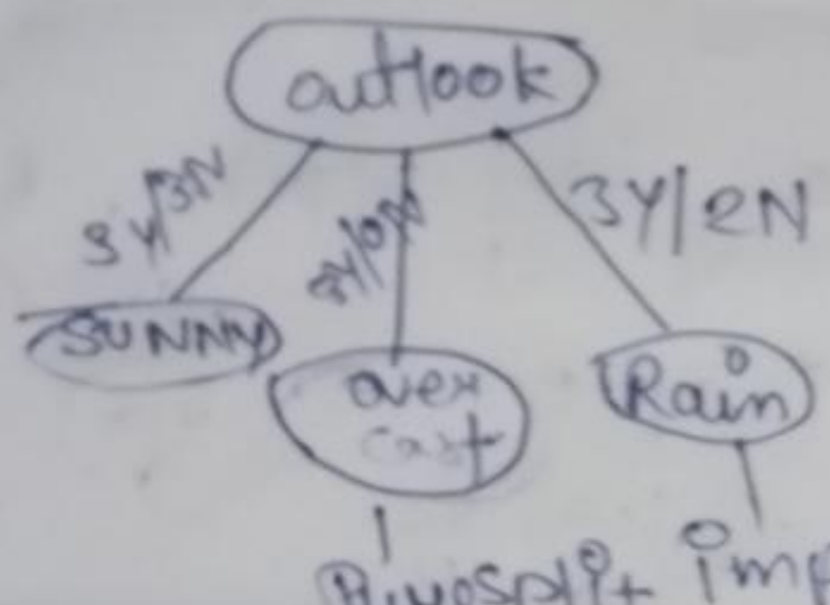
Prevent the tree from becoming too deep.

Max depth

↓

Hyperparameter tuning

Post Pruning - The tree is grown fully first (may overfit) Then pruning is applied afterwards by removing branches that add little predictive power.

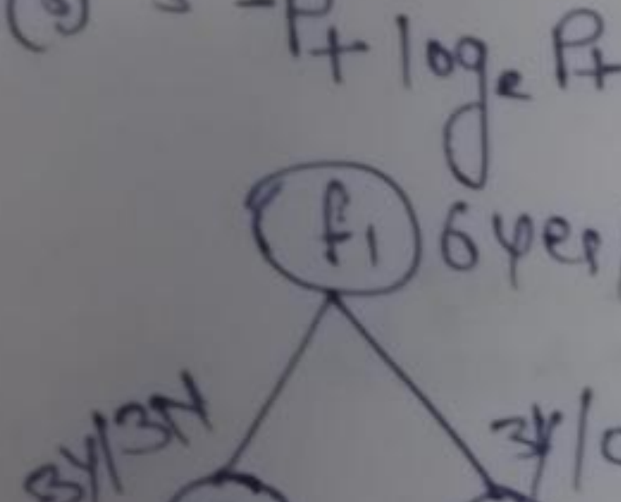


① Purity → Pure split ??
↳ Entropy
↳ Gini Impurity

② Information Gain —
How the feature are selec

Entropy

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



$H(S) = \frac{-3}{3} \log_2 \frac{3}{3} - \frac{0}{3} \log_2 \frac{0}{3}$

$-1 \log_2 1 = 0 \Rightarrow$ Pure split

$H(S) = -\frac{3}{6} \log_2 (3/6) - \frac{3}{6} \log_2 \frac{3}{6}$

$1 \Rightarrow$ Impure split

Gini Impurity

$GI = 1 - \sum_{i=1}^{n} (p)^2$

$= 1 - ((P_+)^2 + (P_-)$

$1 - ((\frac{1}{2})^2 + (\frac{1}{2})$

$1 - \frac{1}{2} = 0.5$

3Yes/0N

$1 - (1)^2 + 0)$

$= 0$