$$G_i = 1 - \sum_{k=i}^{J} P_{ik}^2$$

Decision Tree GINI

Witdth	height	type
1	4	A
2	3	A
3	1	A
7	6	C
6	8	C
9	9	C
11	12	D
12	15	D
15	13	D

The algorithm will calculate the GINI Score for every possible Column and condition ex. (width < 3), and choose the one with the lowest GINI score

ROOT
WIDTH ≤ 3

Y   N

3A   3C, 3D

$$1 - \left(\left(\frac{3}{3}\right)^{2}_{A} + \left(\frac{0}{3}\right)^{2}_{C} + \left(\frac{0}{3}\right)^{2}_{D} \right)$$

$$\boxed{1 - 1 = 0}$$

$$1 - \left(\left(\frac{3}{6}\right)^{2}_{C} + \left(\frac{3}{6}\right)^{2}_{D} + \left(\frac{0}{6}\right)^{2}_{A} \right)$$

$$\boxed{1 - (0.5) = 0.5}$$
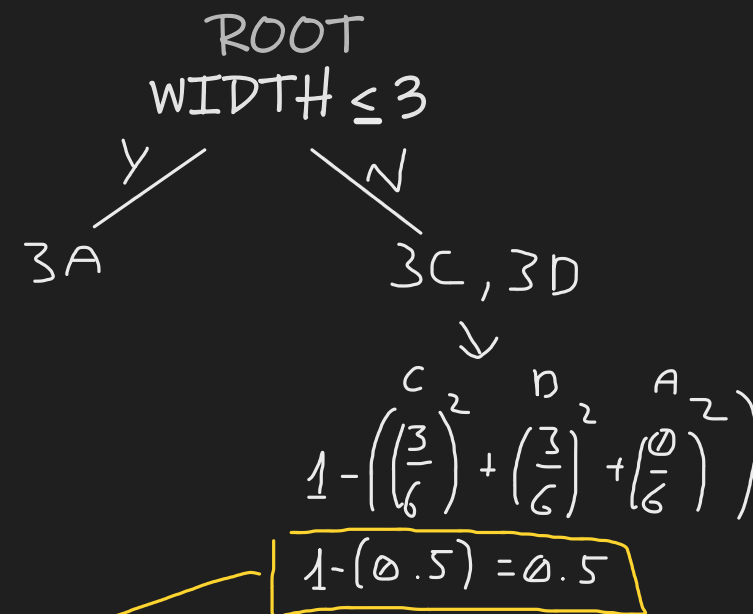
$$\frac{3}{9} \times 0 + \frac{6}{9} \times 0.5 = \boxed{0.333} \Rightarrow \text{GINI Score}$$

left   right