PATIENT ID	CHEST PAIN	MALE	SMOKES	EXERCISES	HEART ATTACK
1	yes	yes	no	yes	yes
2	yes	yes	yes	no	yes
3	no	no	yes	no	yes
4	no	yes	no	yes	no
5	yes	no	yes	yes	yes
6	no	yes	yes	yes	no
P(yes)	0.500	0.667	0.667	0.667	0.667
P(no)	0.500	0.333	0.333	0.333	0.333
P(yes & HA = yes)	1.000	0.500	0.750	0.500	
P(yes & HA = no)	0.000	0.500	0.250	0.500	
P(no & HA = yes)	0.333	1.000	0.500	1.000	
P(no & HA = no)	0.667	0.000	0.500	0.000	
Gini Index (yes) = $\sum_{k=1}^{K} \hat{p}_{mk} (1 - \hat{p}_{mk})$	0.000	0.500	0.375	0.500	
Gini Index (no) = $\sum_{k=1}^{K} \hat{p}_{mk} (1 - \hat{p}_{mk})$	0.444	0.000	0.500	0.000	
Weighted sum of the Gini Indices = $P(yes) \times GI(Yes) + P(no) \times GI(no)$	0.222	0.333	0.417	0.333	

Gini = 0.2222 (Weighted sum of Chest Pain)

$$#Y(No = 0, Yes = 1) = (2, 4)$$

 $X_{Chest\ Pain} = 0$ 

 $X_{Chest\ Pain} = 1$ 

Gini = 0.444 (For  $X_{Chest\ Pain} = 0$ )

Gini = 0.0 (For new split  $X_{Male}$ )

$$#Y(No = 0, Yes = 1) = (2, 1)$$

$$\hat{Y} = 0 (no)$$

Gini = 0.0 (for 
$$X_{Chest\ Pain} = 1$$
)

(No more split)

$$#Y(No = 0, Yes = 1) = (0, 3)$$

$$\hat{Y} = 1 (Yes)$$

Training Accuracy = 5/6 = 83.33%