Homework 2

Id	Refund	Marital Status	Taxable Income	Cheat
1	Yes	Single	Over 100K	Yes
2	No	Married	Under 100K	No
3	Yes	Single	Over 100K	Yes
4	Yes	Married	Over 100K	Yes
5	No	Single	Over 100K	No
6	Yes	Single	Under 100K	No
7	No	Married	Over 100K	No
8	No	Single	Over 100K	No
9	Yes	Single	Under 100K	No
10	Yes	Married	Over 100K	Yes

지니계수(Gini index)를 사용하여 최초 split이 되는 기준을 찾으세요.

(T) Refund

$$G_{\overline{1}} \overline{N_{i}}_{Refund = Ye5} = \frac{b}{10} \times \left[1 - \left(\frac{4}{b} \right)^{2} - \left(\frac{2}{b} \right)^{2} \right] + \frac{4}{10} \times \left(1 - \left(\frac{2}{b} - 0^{2} \right) \right) = \frac{4}{15}$$

$$G_{\overline{1}} \overline{N_{i}}_{Refund = N_{0}} = G_{\overline{1}} \overline{N_{i}}_{Refund = Ye5}$$

(IT) Marital Status

$$G_{\overline{l},\overline{l},\overline{l}, logical Sphele = Grayle} = \frac{6}{10} \times \left\{ \left(-\left(\frac{2}{6}\right)^2 - \left(\frac{4}{6}\right)^2 \right\} + \frac{4}{10} \times \left\{ \left(-\left(\frac{1}{2}\right)^2 - \left(\frac{1}{2}\right)^2 \right\} \right\}$$

$$= \frac{7}{15}$$

$$= G_{\overline{l},\overline{l},\overline{l}, logical Sphele = Married}$$

(TT) Taxable Income

Gini
$$_{\text{Toschle Income} = \text{Out} \text{ (IOK)}}$$
 = $\frac{\eta}{10} \times \left\{ \left[-\left(\frac{4}{\eta}\right)^2 - \left(\frac{3}{\eta}\right)^2 \right] + \frac{3}{10} \times \left(1 - \left(\frac{2}{\eta} - 0^2\right)\right) \right\}$
= $\frac{12}{35}$
= Gini $_{\text{Toschle Income} = \text{Under (IOK)}}$

· Refund 电针 가장 보은 Gint index 改造 가외으로 対定 split 기준으로 Refund 를 변택해야 한다.