Class (buys)

$$Info(D) = -\sum_{i=1}^{m} p_i \log_2(p_i)$$

$$= I(9,5)$$

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

$$= -\frac{9}{14}\log_2\frac{9}{14} - \frac{5}{14}\log_2\frac{5}{14}$$

$$= -\frac{9}{14}(-0.637) - \frac{5}{14}(-1.485)$$

$$= 0.940 \ \#$$

Feature

$$Info_{age}(D) = \sum_{j=1}^{v} \left|\frac{D_j}{D}\right| \times Info(D_j)$$

$$= \frac{5}{14}I(2,3) + \frac{4}{14}I(4,0) + \frac{5}{14}I(3,2)$$

$$= \frac{5}{14}\left[-\frac{2}{5}\log_2\left(\frac{2}{5}\right) - \frac{3}{5}\log_2\left(\frac{3}{5}\right)\right] + \frac{4}{14}\left[-\frac{4}{4}\log_2\left(\frac{4}{4}\right) - \frac{0}{4}\log_2\left(\frac{0}{4}\right)\right] + \frac{5}{14}\left[-\frac{3}{5}\log_2\left(\frac{3}{5}\right) - \frac{2}{5}\log_2\left(\frac{2}{5}\right)\right]$$

(0 → หาค่าไม่ได้)

$$= \frac{5}{14}(0.529 + 0.442) + \frac{4}{14}(0 + \text{หาค่าไม่ได้}) + \frac{5}{14}(0.442 + 0.529)$$

$$= \frac{5}{14}(0.971) + \frac{5}{14}(0.971)$$

$$= 0.347 + 0.347$$

$$= 0.694 \ \#$$

$$Info_{income}(D) = \sum_{j=1}^{v} \left|\frac{D_j}{D}\right| \times Info(D_j)$$

$$= \frac{4}{14}I(2,2) + \frac{6}{14}I(4,2) + \frac{4}{14}I(3,1)$$

$$= \frac{4}{14}\left[-\frac{2}{4}\log_2\left(\frac{2}{4}\right) - \frac{2}{4}\log_2\left(\frac{2}{4}\right)\right] + \frac{6}{14}\left[-\frac{4}{6}\log_2\left(\frac{4}{6}\right) - \frac{2}{6}\log_2\left(\frac{2}{6}\right)\right] + \frac{4}{14}\left[-\frac{3}{4}\log_2\left(\frac{3}{4}\right) - \frac{1}{4}\log_2\left(\frac{1}{4}\right)\right]$$

$$= \frac{4}{14}(0.5 + 0.5) + \frac{6}{14}(0.390 + 0.528) + \frac{4}{14}(0.311 + 0.5)$$

$$= \frac{4}{14} + \frac{6}{7}(0.918) + \frac{4}{14}(0.811)$$

$$= 0.286 + 0.394 + 0.232$$

$$= 0.912 \ \#$$