Machine Learning

Assignment 12.3

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a) All frequent item sets with minimal support of 25%

Transactions	Goods
t1	{diapers, beer, chips}
t2	{chips, TV guide}
t3	{TV guide, beer, chips}
t4	{beer, diapers, tooth paste}
t5	{tooth paste, chips}
t6	{TV guide, chips, beer}
t7	{beer, diapers}
t8	{TV guide, chips}

$\text{minsup} \geq \frac{25}{100} * 8 = 2$

Goods	**Support**
{Beer}	5/8
{Chips}	6/8
{Diapers}	3/8
{Tooth paste}	2/8
{TV guide}	4/8

Table 1: Frequent 1-itemset

Goods	**Support**
{Beer, Chips}	3/8
{Diapers, Beer}	3/8
{Chips, TV guide}	4/8
{Beer, TV guide}	2/8

Table 2: Frequent 2-itemset

Goods	**Support**
{Beer, Chips, TV guide}	2/8

Table 3: Frequent 3-itemset

b) All association rules with minimal confidence of 66%

$$confidence(\{Diapers\} \rightarrow \{Beer\}) = \frac{support(\{Diapers, Beer\})}{support(\{Diapers\})} = \frac{\frac{3}{8}}{\frac{3}{8}} = 100\%$$

Rule	Confidence
$\{Diapers\} \rightarrow \{Beer\}$	100%
$\{Chips\} \rightarrow \{TV guide\}$	66.67%
$\{TV guide\} \rightarrow \{Chips\}$	100%

Table 4: Frequent 2-itemset rules

Rule	Confidence
$\{Beer, Chips\} \rightarrow \{TV guide\}$	66.67%
$\{Beer, TV guide\} \rightarrow \{Chips\}$	100%

Table 5: Frequent 3-itemset rules