

Co 3 Assignment. Machine Learning

1) Question:-

TID	items
T ₁	l ₁ , l ₂ , l ₅
T ₂	l ₂ , l ₄
T ₃	l ₂ , l ₃
T ₄	l ₁ , l ₂ , l ₄
T ₅	l ₂ , l ₃
T ₆	l ₃ , l ₃
T ₇	l ₁ , l ₃
T ₈	l ₁ , l ₂ , l ₃ , l ₅
T ₉	l ₁ , l ₂ , l ₃ .

Answer:-

⇒ Filtering a table or support count of each item called C_i.

itemset	sup count
l ₁	6
l ₂	7.
l ₃	6
l ₄	2
l ₅	2.

Step-2 Combination of 2)

Itemset	Sup-count
l_1, l_2	4
l_1, l_3	4
l_1, l_4	1
l_1, l_5	2
l_2, l_3	4
l_2, l_4	2
l_2, l_5	2
l_3, l_4	0
l_3, l_5	1
l_4, l_5	0

Here. min-sup-count = 2 and eliminate others.

Step-4:

Itemset	Sup-Count
l_1, l_2	4
l_1, l_3	4
l_1, l_5	2
l_2, l_3	4
l_2, l_4	2
l_2, l_5	2

Step 5 (combination of 2)

Dataset	Sup. count
l_1, l_2, l_3	2
l_1, l_2, l_3	2

confidence = 60%

$$\text{conf}(A \Rightarrow B) = \frac{\text{s. count}(A \cup B)}{\text{s. count}(A)}$$

$$[l_1 \wedge l_2] \Rightarrow [l_3]$$

$$\text{conf} = \frac{\text{sup}(l_1 \wedge l_2 \wedge l_3)}{\text{sup}(l_1 \wedge l_2)} = \frac{2}{4} \times 100 = 50\%$$

$$[l_1 \wedge l_3] \Rightarrow [l_2]$$

$$\text{conf} = \frac{\text{sup}(l_1 \wedge l_2 \wedge l_3)}{\text{sup}(l_1 \wedge l_3)} = \frac{2}{4} \times 100 = 50\%$$

$$[l_2 \wedge l_3] \Rightarrow [l_1]$$

$$\text{conf} = \frac{\text{sup}(l_1 \wedge l_2 \wedge l_3)}{\text{sup}(l_2 \wedge l_3)} = \frac{2}{4} \times 100 = 50\%$$

$$[l_1] \Rightarrow [l_2 \wedge l_3]$$

$$\text{conf} = \frac{\text{sup}(l_1 \wedge l_2 \wedge l_3)}{\text{sup}(l_1)} = \frac{2}{6} \times 100 = 33.3\%$$

$$[l_2] \Rightarrow [l_1 \wedge l_3]$$

$$\text{conf} = \frac{\text{sup}(l_1 \wedge l_2 \wedge l_3)}{\text{sup}(l_2)} = \frac{2}{7} \times 100 = 28.5\%$$

$$[l_3] \Rightarrow [l_1 \wedge l_2]$$

$$\text{conf} = \frac{\text{sup}(l_1 \wedge l_2 \wedge l_3)}{\text{sup}(l_3)} = \frac{2}{6} \times 100 = 33.3\%$$

Here, min conf is 50%, so "1st ruler" are strong.