Siddhant Saha

1. S_{min} = 33.34 % C = 60 %

σ(VeggieDogs) = 4 σ(Buns) = 2 σ(Ketchup) = 2
σ(Coke) = 3 σ(Chips) = 4

s(VD) = 66.6% s(Buns) = 33.33%
s(Ketchup) = 33.33% s(Coke) = 50%
s(Chips) = 66.66%

Hence we select VeggieDogs, Coke & Chips

σ(VeggieDogs, Chips) = 2
s(VeggieDogs, Chips) = 33.33 % X
σ(VeggieDogs, Coke) = 2
s(VeggieDogs, Coke) = 33.33 % X
σ(Coke, Chips) = 3
s(Coke, Chips) = 50 % ✓
σ(VeggieDogs, Chips, Coke) = 2 Hence, support = 33% X
Frequent itemsets = {VeggieDogs}, {Coke}, {Chips}, {Coke, Chips}

Rule 1 :- {Chips} → {Coke}
C(Chips → Coke) = 3/3 = 100 % ✓
s(Chips → Coke) = 3/6 = 50% ✓

Rule 2 :- {Coke} → {Chips}
s(Coke → Chips) = 3/6 = 50% C(Coke → Chips) = 3/4 = 75%

Hence both rules Coke → Chips & Chips → Coke are strong association rules.

2. Sorting the transactions based on frequency count we get :-

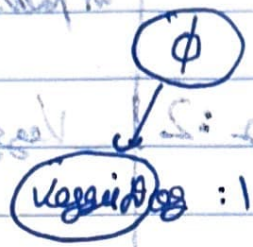
TID	Items
T1	VeggieDogs, Buns, Ketchup
T2	VeggieDogs, Buns
T3	VeggieDogs, Chips, Coke
T4	Chips, Coke
T5	Chips, Ketchup
T6	VeggieDogs, Chips, Coke

But we can remove items ≤ 3. Hence we remove buns & ketchup.
For VeggieDogs → Chips, for now we treat it as VeggieDogs > Chips

TID	Items
T1	VeggieDogs
T2	VeggieDogs
T3	VeggieDogs, Chips, Coke
T4	Chips, Coke
T5	Chips
T6	VeggieDogs, Chips, Coke

Building the tree :-

After T1 :-



After T2 :

VeggieDogs : 2

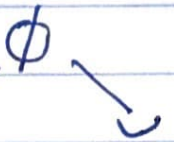
After T3 :

VeggieDogs : 3

Chips : 1

Coke : 1

After T4 :-

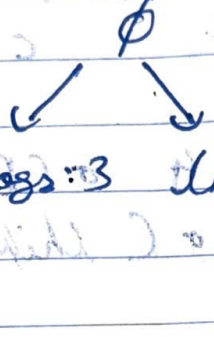


VeggieDogs : 3 Chips : 1

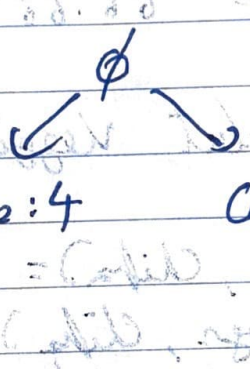
Chips : 1 Coke : 1

Coke : 1

After T5 :-



After T6 :-



Ending With	Paths	Count of each item in path	freq. itemset
Coke	VD → Chips Coke → Chips VD : 1 Chips Chips : 1	VeggieDogs : 1 Chips : 2	{VeggieDogs, Coke}: 2 ✗ {Chips, Coke}: 3 ✓ {VD, Chips, Coke}: 2 ✗ {Coke}: 3 ✓

Ending	Paths	Cnt of items in paths	freq. itemset
Chips	VeggieDogs :2	VeggieDogs:2	{VeggieDogs, Chips} = 2 X {Chips}:4 ✓
V.P	-		{VeggieDogs} = 4 ✓

Itemsets :- {VeggieDogs}, {Chips}, {Coke}, {Coke, Chips}