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20181CSE0621
Sai Ram
6-CSE-10

Part-C.

Q.2] A]. Support is the measure of how frequent an itemset is in the list of all transaction. Confidence describes the likeliness of occurence of consequent on the cart given the cart already has antecedants.

- Support & confidence together specify the occurence of an element given that its neighbors has occured. They give the probability of item occurence & hence can be used for the relationship finding between two items.
- For Example :-

In an electronics store, there was a rule mined as
Buys(X, "Computer") -> Buys(X, "Software")
[support = 1%, confidence = 50%]

- A confidence of 50% means that if a customer buys a computer there is a 50% chance they would buy software as well.
- A 1% support means that 1% of all transactions under analysis show that computer and software are purchased together.

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6]

ID	Items
100	Bread cheese Eggs Juice Limca.
200	Bread cheese Juice Limca
300	Bread Milk Yoghurt
400	Bread Juice Milk
500	Cheese Juice Milk.

Support = 50% ; Confidence = 75% ; Min sup = 3.

i]

Item	Frequency	Support
Bread	4	4/5 x 100 = 80%
Cheese	3	3/5 x 100 = 60%
Eggs	1	1/5 x 100 = 20% *
Juice	4	4/5 x 100 = 80%
Limca	2	2/5 x 100 = 40% *
Milk	3	3/5 x 100 = 60%
Yoghurt	1	1/5 x 100 = 20% *

Discarding Yoghurt, Milk & Limca as Support < 50%

2] Candidate set:

Items	Frequency	Support
Bread, Cheese	2	2/5 x 100 = 40%
Bread, Juice	3	3/5 x 100 = 60%
Bread, Milk	2	2/5 x 100 = 40% *
Cheese, Juice	3	3/5 x 100 = 60%
Cheese, Milk	1	1/5 x 100 = 20% *
Juice, Milk	2	2/5 x 100 = 40% *

Discarding Bread, ~~Milk~~, cheese, juice freq. = 2 < min sup

So Bread, juice & } with support count = 3
Cheese, juice }

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Confidence $(A \rightarrow B) = \frac{Sup(A \cup B)}{Sup(A)}$

(1) Bread -> juice => $\frac{60}{80} \times 100 = 75\%$

(2) Juice -> Bread => $\frac{60}{80} \times 100 = 75\%$

(3) Cheese -> Juice => $\frac{80}{80} \times 100 = 100\%$

(4) Juice -> cheese => $\frac{60}{80} \times 100 = 75\%$

Association rules are :-

Bread -> Juice = 75%
Juice -> Bread = 75%
Cheese -> Juice = 100%
Juice -> cheese = 75%