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### Introduction



- A large number of people use to visit shopping malls and shopping centers[1].
- Massive amounts of data continuously being collected and stored as transactions
- Those collected data can be useful
   from the business prospective such as

### Objective



 To find frequently purchased item sets from large transactional database[1].



### Definition



- The process of discovering frequent item sets in large transactional database is called market basket analysis[1].
- Frequent item set mining leads to the discovery of associations and correlations among items[1].

# The Apriori Algorithm[1] (For finding frequent item sets)



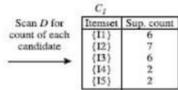
Step:1 This step simply scans all of the transactions in order to count the number of occurrences of each item, named it as C1.

Step:2 Apply minimum support count, and items set that satisfies the condition named as L1. (min support count =2)

Table:1

Transactional data for an AllElectronics branch.

TID	List of item_IDs
T100	11, 12, 15
T200	12, 14
T300	12, 13
T400	11, 12, 14
T500	11, 13
T600	12, 13
T700	11, 13
T800	11, 12, 13, 15
T900	11, 12, 13



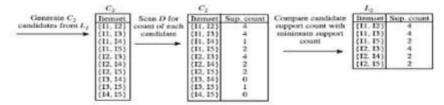
Compare candidate support count with minimum support count

$L_{j}$	- 3
Itemset	Sup. count
(II)	6
(12)	7
(13)	6
(I4)	2
<b>{15}</b>	2



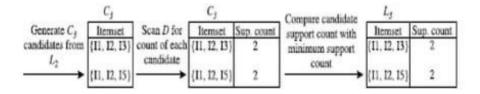
Step:3 To discover the set of frequent 2-itemsets, L2, the algorithm uses the join L1XL1 to generate a candidate set of 2-itemsets, and count the occurrences of each set.

Step:4 Apply min support count on C2, result will be 2-frequent item set L2.





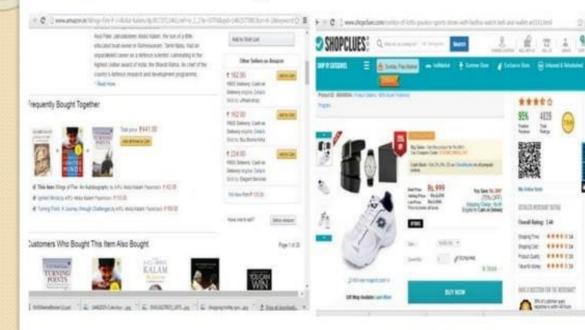
Step:5 To generate 2-frequent item set, generate 3-item using L2XL2 and apply min support count which will be 3-frequent item set.



Step:6 Continue until you get empty sets.

# Application

Cross Selling of the Items[3][4]



## Application



2. Proper Placement of Items[5].



- Fraud detection.
- 4. Customer Behavior.
- 5. Affinity promotion[6].

## Summary



- Market basket analysis.
- Discovering Frequent item sets.
- Application of frequent item sets.



- [1] Jiwawi Han and Micheline Kamber, Concepts and Techniques of Data Mining, 2nd ed., Jim Gray, Ed.: Morgon Kaufmann, Elsevier, 2012
- [2] http://www.alamy.com/stock-photo/shopping-trolley.html
- [3]http://www.amazon.in/
- [4] http://search.shopclues.com/
- [5] http://www.salemmarafi.com/code/market-basket-analysis-with-r/
  [6]http://people.revoledu.com/kardi/tutorial/MarketBasket/Applications.htm
  [7] http://youtube.com.

