Experiment No. 7
Implement frequent pattern mining algorithm(Apriori)
Date of Performance:
Date of Submission:

Aim: To implement Apriori algorithm

Objective: Develop a program to implement Apriori Algorithm on the given dataset

Theory:

Apriori is an algorithm for frequent item set mining and <u>association rule learning</u> over transactional <u>databases</u>. It proceeds by identifying the frequent individual items in the database and extending them to larger and larger item sets as long as those item sets appear sufficiently often in the database. The frequent item sets determined by Apriori can be used to determine <u>association rules</u> which highlight general trends in the <u>database</u>: this has applications in domains such as <u>market basket analysis</u>.

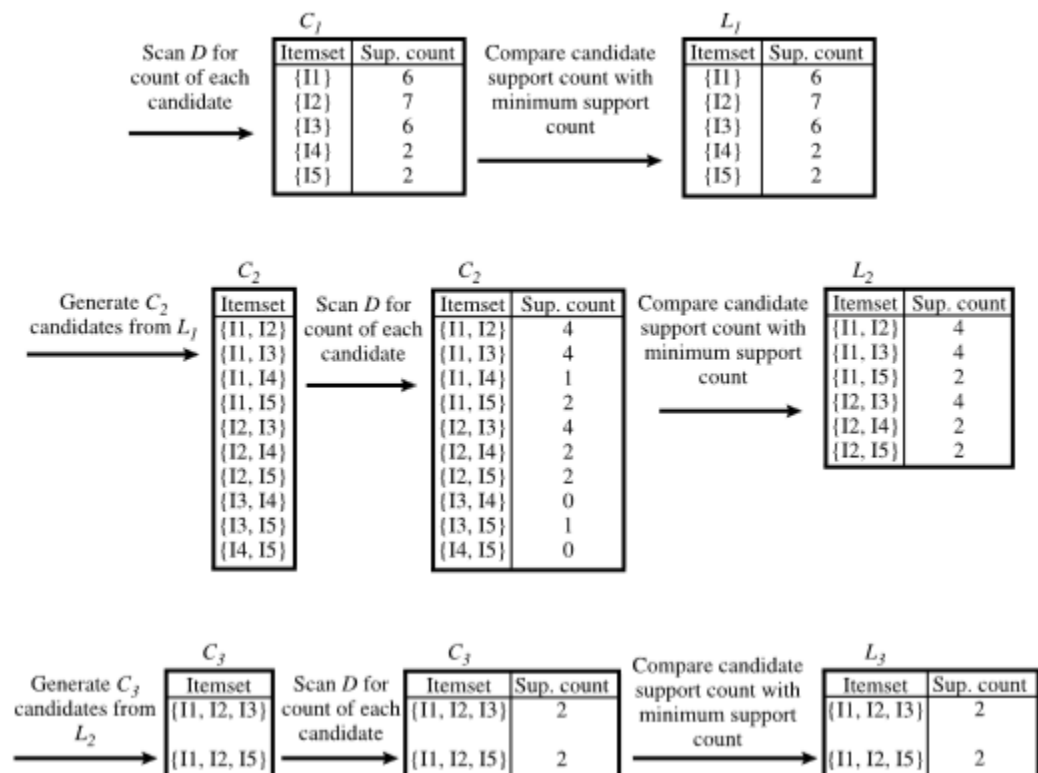**Procedure or algorithm description:**

Level-wise algorithm:

a. Let k = 1

b. Generate frequent itemsets of length 1

c. Repeat until no new frequent itemsets are identified

      1. Generate length (k+1) candidate itemsets from length k frequent itemsets

2. Prune candidate itemsets containing subsets of length k that are infrequent

3. Count the support of each candidate by scanning the DB

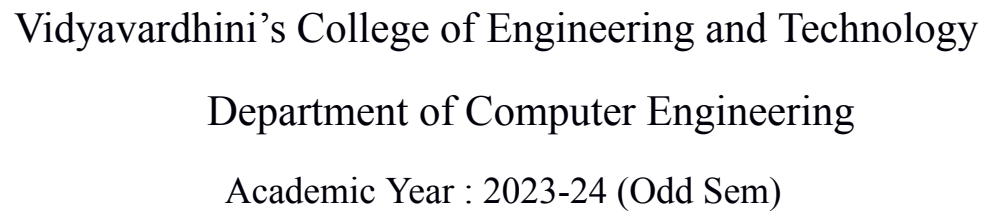4. Eliminate candidates that are infrequent, leaving only those that are frequent
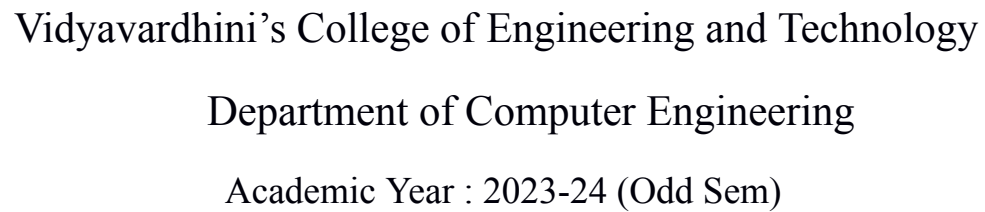
Apriori Algorithm:

Transactional data for an *AllElectronics* branch.

TID	List of item_IDs
T100	I1, I2, I5
T200	I2, I4
T300	I2, I3
T400	I1, I2, I4
T500	I1, I3
T600	I2, I3
T700	I1, I3
T800	I1, I2, I3, I5
T900	I1, I2, I3

C_1

Scan D for count of each candidate →

Itemset	Sup. count
{I1}	6
{I2}	7
{I3}	6
{I4}	2
{I5}	2

Compare candidate support count with minimum support count →

L_1

Itemset	Sup. count
{I1}	6
{I2}	7
{I3}	6
{I4}	2
{I5}	2

C_2

Generate C_2 candidates from L_1 →

Itemset
{I1, I2}
{I1, I3}
{I1, I4}
{I1, I5}
{I2, I3}
{I2, I4}
{I2, I5}
{I3, I4}
{I3, I5}
{I4, I5}

Scan D for count of each candidate →

C_2

Itemset	Sup. count
{I1, I2}	4
{I1, I3}	4
{I1, I4}	1
{I1, I5}	2
{I2, I3}	4
{I2, I4}	2
{I2, I5}	2
{I3, I4}	0
{I3, I5}	1
{I4, I5}	0

Compare candidate support count with minimum support count →

L_2

Itemset	Sup. count
{I1, I2}	4
{I1, I3}	4
{I1, I5}	2
{I2, I3}	4
{I2, I4}	2
{I2, I5}	2

C_3

Generate C_3 candidates from L_2 →

Itemset
{I1, I2, I3}
{I1, I2, I5}

Scan D for count of each candidate →

C_3

Itemset	Sup. count
{I1, I2, I3}	2
{I1, I2, I5}	2

Compare candidate support count with minimum support count →

L_3

Itemset	Sup. count
{I1, I2, I3}	2
{I1, I2, I5}	2

Code:

```
!pip install apyori
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Collecting apyori
  Downloading apyori-1.1.2.tar.gz (8.6 kB)
Building wheels for collected packages: apyori
  Building wheel for apyori (setup.py) ... done
  Created wheel for apyori: filename=apyori-1.1.2-py3-none-any.whl size=5974 sha256=26fef1b74c417da8dd89821753d936201770c0d78aaf1de8ffd07addc317a
  Stored in directory: /root/.cache/pip/wheels/cb/f6/e1/57973c631d27efd1a2f375bd6a83b2a616c4021f24aab84080
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  Stored in directory: /root/.cache/pip/wheels/cb/f6/e1/57973c631d27efd1a2f375bd6a83b2a616c4021f24aab84080
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```

```
from apyori import apriori
rules = apriori(transactions = transactions, min_support = 0.003, min_confidence = 0.2)
```

```
results = list(rules)
```

Output:

Conclusion: Thus, we successfully implemented Association Rule Mining algorithm (Apriori) .