

# CS 634 Data Mining

## Midterm Project

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Implementation of the Apriori Algorithm.

The programming language used for the following project is Python.

Databases:

1. The main\_db.csv contains all the 30 items usually seen in Amazon, K-mart, or any other supermarkets.

PRODUCTS					
TELEVISION	HEADPHONES	CALCULATOR	PRINTER	MONITOR	HOME THEATER
CELL PHONES	EARPHONES	WATCH	PEN DRIVE	HOME SYSTEM	PROJECTOR
TOOTHPASTE	EARPODS	FRIDGE	HDD	CAMERA	DISHWASHER
TOOTH BRUSH	TRIMMER	WASHING MACHINE	SDD	WIRELESS CHARGER	LAMP
ADAPTER	CHARGING WIRE	VACUUM CLEANER	LAPTOP	BLUETOOTH SPEAKER	BULB

2. Database 1: 1.csv contains 20 transactions of the items in main\_db.csv.

HEADPHONES	CALCULATOR	PRINTER	MONITOR	HOME THEATER	
EARPODS	FRIDGE	HDD			
TELEVISION	HEADPHONES	CALCULATOR	WATCH		
ADAPTER	CHARGING WIRE	VACUUM CLEANER	LAPTOP	BLUETOOTH SPEAKER	BULB
TELEVISION	CELL PHONES	TOOTHPASTE			
TRIMMER	FRIDGE	HDD	MONITOR	PROJECTOR	CAMERA
VACUUM CLEANER	SDD	LAMP	PRINTER		
LAMP	EARPHONES	PEN DRIVE	PEN DRIVE		
HOME THEATER	CALCULATOR	TELEVISION	HDD		
PROJECTOR	WATCH	CELL PHONES	SDD		
DISHWASHER	FRIDGE	TOOTHPASTE	LAPTOP		
LAMP	WASHING MACHINE	TOOTH BRUSH			
BULB	VACUUM CLEANER	ADAPTER			
TRIMMER	SDD	MONITOR	CHARGING WIRE		
TOOTHPASTE	EARPODS	FRIDGE	HDD	CAMERA	DISHWASHER
PEN DRIVE	FRIDGE	PRINTER	HOME SYSTEM	PROJECTOR	
VACUUM CLEANER	BLUETOOTH SPEAKER	CAMERA	WIRELESS CHARGER		
ADAPTER	WATCH	LAPTOP			
EARPODS	EARPHONES	TRIMMER			
WATCH	LAMP				

3. Database 2: 2.csv contains 20 transactions of the items in main\_db.csv.

TELEVISION	CELL PHONES	TOOTHPASTE			
TOOTH BRUSH	ADAPTER	HEADPHONES	EARPHONES		
EARPODS	TRIMMER	CHARGING WIRE	CALCULATOR	WATCH	
FRIDGE	WASHING MACHINE	VACUUM CLEANER			
PRINTER	PENDRIVE	HDD	SDD	LAPTOP	
MONITOR	HOME SYSTEM	CAMERA	WIRELESS CHARGER	BLUETOOTH SPEAKER	HOME THEATER
PROJECTOR	DISHWASHER	LAMP	BULB		
CALCULATOR	CELL PHONES	MONITOR	EARPHONES	WATCH	
WATCH	TOOTHPASTE	HOME SYSTEM			
FRIDGE	TOOTH BRUSH	CAMERA			
WASHING MACHINE	ADAPTER	WIRELESS CHARGER			
VACUUM CLEANER	SDD	BLUETOOTH SPEAKER			
EARPHONES	WATCH				
TRIMMER	WASHING MACHINE	SDD	WIRELESS CHARGER	LAMP	
HEADPHONES	PRINTER	MONITOR	HOME THEATER		
EARPHONES	PENDRIVE	HOME SYSTEM	PROJECTOR		
EARPODS	HDD	WIRELESS CHARGER	LAMP		
TRIMMER	SDD	BLUETOOTH SPEAKER	BULB		
CHARGING WIRE	LAPTOP				
FRIDGE	CELL PHONES	HDD	SDD		

4. Database 3: 3.csv contains 20 transactions of the items in main\_db.csv.

DISHWASHER	HOME THEATER	TOOTH BRUSH	PROJECTOR	HEADPHONES	SDD	BULB						
PENDRIVE	HOME SYSTEM	PRINTER	FRIDGE	WIRELESS CHARGER	TELEVISION	WATCH	LAMP	TOOTHPASTE	VACUUM CLEANER	EARPHONES	LAPTOP	HDD
CAMERA	ADAPTER	MONITOR	TRIMMER	CHARGING WIRE	WASHING MACHINE	CALCULATOR	CELL PHONES	EARPODS	BLUETOOTH SPEAKER			
SDD	EARPHONES	EARPODS	TOOTH BRUSH									
VACUUM CLEANER	WIRELESS CHARGER	PROJECTOR	WASHING MACHINE	WATCH								
DISHWASHER	CALCULATOR	HOME THEATER	LAPTOP	MONITOR	TRIMMER	PENDRIVE	CELL PHONES					
BLUETOOTH SPEAKER	TELEVISION	PRINTER	HOME SYSTEM	CAMERA	HDD	FRIDGE	CHARGING WIRE	BULB	HEADPHONES	LAMP		
HOME THEATER	LAPTOP	MONITOR	TRIMMER	PENDRIVE	CELL PHONES	TOOTHPASTE						
LAMP	TOOTHPASTE	WATCH	SDD									
HEADPHONES	CHARGING WIRE	CELL PHONES	HOME THEATER	VACUUM CLEANER	BLUETOOTH SPEAKER	PRINTER	PROJECTOR					
TELEVISION	TOOTH BRUSH	ADAPTER	PENDRIVE									
CAMERA	HOME SYSTEM	CALCULATOR	WIRELESS CHARGER	EARPODS	BULB	WASHING MACHINE	HDD	DISHWASHER	FRIDGE	TRIMMER		
MONITOR	LAPTOP	EARPHONES										
CHARGING WIRE	HEADPHONES	TOOTH BRUSH	HDD	WATCH	BLUETOOTH SPEAKER	PENDRIVE						
VACUUM CLEANER	WIRELESS CHARGER	PROJECTOR	WASHING MACHINE	WATCH								
DISHWASHER	CALCULATOR	HOME THEATER	LAPTOP	MONITOR	TRIMMER	PENDRIVE	CELL PHONES					
BLUETOOTH SPEAKER	TELEVISION	PRINTER	HOME SYSTEM	CAMERA	HDD	FRIDGE	CHARGING WIRE	BULB	HEADPHONES	LAMP		
HOME THEATER	LAPTOP	MONITOR	TRIMMER	PENDRIVE	CELL PHONES	TOOTHPASTE						
DISHWASHER	BULB	WIRELESS CHARGER	HOME THEATER	CALCULATOR								
FRIDGE	CAMERA	CELL PHONES										

5. Database 4: 4.csv contains 20 transactions of the items in main\_db.csv.

BULB	WATCH	CALCULATOR	CAMERA	HOME THEATER	PRINTER	HDD					
EARPODS	CHARGING WIRE	PENDRIVE	DISHWASHER								
BLUETOOTH SPEAKER	LAPTOP	TELEVISION	WIRELESS CHARGER	EARPHONES	MONITOR	TOOTH BRUSH					
ADAPTER	TRIMMER	HOME SYSTEM	LAMP	SDD							
LAMP	SDD	TOOTHPASTE	VACUUM CLEANER	FRIDGE	PROJECTOR	CELL PHONES	WASHING MACHINE	HEADPHONES			
MONITOR	PENDRIVE	VACUUM CLEANER	WASHING MACHINE	FRIDGE	HOME SYSTEM	HOME THEATER	ADAPTER	HDD			
MONITOR	PENDRIVE	VACUUM CLEANER	WASHING MACHINE	FRIDGE							
PENDRIVE	VACUUM CLEANER	WASHING MACHINE	FRIDGE								
HOME THEATER	ADAPTER	HDD									
HOME SYSTEM	LAMP	SDD									
HOME THEATER	PRINTER	HDD									
CELL PHONES	WASHING MACHINE	HEADPHONES									
CHARGING WIRE	PENDRIVE	DISHWASHER									
WASHING MACHINE	FRIDGE	HOME SYSTEM	HOME THEATER	ADAPTER							
WASHING MACHINE	FRIDGE	HOME SYSTEM	HOME THEATER								
TOOTHPASTE	CELL PHONES	SDD	BLUETOOTH SPEAKER	PROJECTOR	TRIMMER	WATCH	TOOTH BRUSH	BULB	TELEVISION	LAPTOP	PRINTER
EARPHONES	CAMERA	DISHWASHER	CALCULATOR	CHARGING WIRE	WIRELESS CHARGER	HEADPHONES					
EARPHONES	DISHWASHER	CALCULATOR	CHARGING WIRE	WIRELESS CHARGER	HEADPHONES						
CALCULATOR	CHARGING WIRE	WIRELESS CHARGER	HEADPHONES								
CHARGING WIRE	WIRELESS CHARGER	HEADPHONES									

## 6. Database 5: 5.csv contains 20 transactions of the items in main\_db.csv.

EARPHONES	WATCH	EARPODS	HOME SYSTEM	HOME THEATER	CHARGING WIRE	DISHWASHER	
CHARGING WIRE	DISHWASHER						
WATCH	EARPODS	HOME SYSTEM	HOME THEATER	CHARGING WIRE	DISHWASHER		
HOME SYSTEM	HOME THEATER	CHARGING WIRE	DISHWASHER				
CELL PHONES	SDD	LAPTOP	HDD				
WIRELESS CHARGER	HEADPHONES	TELEVISION	TRIMMER	TOOTH BRUSH	MONITOR		
HEADPHONES	TELEVISION	TRIMMER	TOOTH BRUSH	MONITOR			
TELEVISION	TRIMMER	TOOTH BRUSH	MONITOR				
TRIMMER	TOOTH BRUSH	MONITOR					
FRIDGE	CAMERA	BULB	TOOTHPASTE	WASHING MACHINE	PENDRIVE		
BULB	TOOTHPASTE	WASHING MACHINE	PENDRIVE				
TOOTHPASTE	WASHING MACHINE	PENDRIVE					
FRIDGE	CAMERA	BULB					
VACUUM CLEANER	BLUETOOTH SPEAKER	PROJECTOR	LAMP	CALCULATOR	ADAPTER	PRINTER	
BLUETOOTH SPEAKER	PROJECTOR	LAMP	CALCULATOR	ADAPTER	PRINTER		
PROJECTOR	LAMP	CALCULATOR	ADAPTER	PRINTER			
CALCULATOR	ADAPTER	PRINTER					
LAMP	CALCULATOR	ADAPTER	PRINTER				
PROJECTOR	ADAPTER	EARPODS	CELL PHONES	WIRELESS CHARGER	WASHING MACHINE	CAMERA	MONITOR
WIRELESS CHARGER	WASHING MACHINE	CAMERA	MONITOR				

The databases directory is the same folder as apriori.py which contains code for the Apriori algorithm.

### Program Execution:

1. The user is prompted to enter the path of the transactional database on which the algorithm is to be applied on.
2. Once the user enters the path of the file, the program will then ask the user to add the minimum support and minimum confidence.
3. After getting all the values from the user i.e., Transaction file path, minimum support & minimum confidence it will start processing the code to get the output.
4. Once the code is executed it will give the associations rules, support, and confidence of all the transactions above the minimum support and minimum confidence provided by the user.

5. It will also give the time taken by the program to execute itself at the end of the output.  
Please find the screenshots of execution below (Tested the code on 2 cases below)

**CASE 1:** I tested 1.csv, 2.csv, 3.csv, 4.csv and 5.csv with minimum support of 0.1 and minimum confidence of 0.1 for both the parts of the files.

## Transaction 1:

### Transactional Inputs:

```
Anaconda Prompt (Anaconda)
(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases/1.csv)databases/1.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.1
-----TRANSACTIONAL INPUTS-----
['HEADPHONES', 'CALCULATOR', 'PRINTER', 'MONITOR', 'HOME THEATER', '']
['EARPODS', 'FRIDGE', 'HDD', '', '', '']
['TELEVISION', 'HEADPHONES', 'CALCULATOR', 'WATCH', '', '']
['ADAPTER', 'CHARGING WIRE', 'VACUUM CLEANER', 'LAPTOP', 'BLUETOOTH SPEAKER', 'BULB']
['TELEVISION', 'CELL PHONES', 'TOOTHPASTE', '', '', '']
['TRIMMER', 'FRIDGE', 'HDD', 'MONITOR', 'PROJECTOR', 'CAMERA']
['VACUUM CLEANER', 'SDD', 'LAMP', 'PRINTER', '', '']
['LAMP', 'EARPHONES', 'PENDRIVE', 'PENDRIVE', '', '']
['HOME THEATER', 'CALCULATOR', 'TELEVISION', 'HDD', '', '']
['PROJECTOR', 'WATCH', 'CELL PHONES', 'SDD', '', '']
['DISHWASHER', 'FRIDGE', 'TOOTHPASTE', 'LAPTOP', '', '']
['LAMP', 'WASHING MACHINE', 'TOOTH BRUSH', '', '', '']
['BULB', 'VACUUM CLEANER', 'ADAPTER', '', '', '']
['TRIMMER', 'SDD', 'MONITOR', 'CHARGING WIRE', '', '']
['TOOTHPASTE', 'EARPODS', 'FRIDGE', 'HDD', 'CAMERA', 'DISHWASHER']
['PENDRIVE', 'FRIDGE', 'PRINTER', 'HOME SYSTEM', 'PROJECTOR', '']
['VACUUM CLEANER', 'BLUETOOTH SPEAKER', 'CAMERA', 'WIRELESS CHARGER', '', '']
['ADAPTER', 'WATCH', 'LAPTOP', '', '', '']
['EARPODS', 'EARPHONES', 'TRIMMER', '', '', '']
['WATCH', 'LAMP', '', '', '', '']
```

### Association Rules:

```
Anaconda Prompt (Anaconda)
LAPTOP --> ADAPTER | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
MONITOR --> | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
MONITOR --> TRIMMER | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
PENDRIVE --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
PRINTER --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
PROJECTOR --> | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
PROJECTOR --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
SDD --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
TELEVISION --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
TELEVISION --> ,CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TELEVISION --> CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TOOTHPASTE --> | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TOOTHPASTE --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TOOTHPASTE --> DISHWASHER,FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TOOTHPASTE --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TRIMMER --> | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
TRIMMER --> MONITOR | SUPPORT: 0.1 | CONFIDENCE: 0.666666666666667
VACUUM CLEANER --> | SUPPORT: 0.15 | CONFIDENCE: 0.7499999999999999
VACUUM CLEANER --> ADAPTER | SUPPORT: 0.1 | CONFIDENCE: 0.5
VACUUM CLEANER --> ADAPTER,BULB | SUPPORT: 0.1 | CONFIDENCE: 0.5
VACUUM CLEANER --> BLUETOOTH SPEAKER | SUPPORT: 0.1 | CONFIDENCE: 0.5
VACUUM CLEANER --> BULB | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> | SUPPORT: 0.2 | CONFIDENCE: 1.0
-----
TIME TAKEN:0.007999181747436523s
(base) D:\College Data\Data mining\Midterm_Project>
```

## Transaction 2:

### Transactional Inputs:

```
Anaconda Prompt (Anaconda)
(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases/1.csv)databases/2.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.1
-----TRANSACTIONAL INPUTS-----
['TELEVISION', 'CELL PHONES', 'TOOTHPASTE', '', '', '']
['TOOTH BRUSH', 'ADAPTER', 'HEADPHONES', 'EARPHONES', '', '']
['EARPODS', 'TRIMMER', 'CHARGING WIRE', 'CALCULATOR', 'WATCH', '']
['FRIDGE', 'WASHING MACHINE', 'VACUUM CLEANER', '', '', '']
['PRINTER', 'PENDRIVE', 'HDD', 'SDD', 'LAPTOP', '']
['MONITOR', 'HOME SYSTEM', 'CAMERA', 'WIRELESS CHARGER', 'BLUETOOTH SPEAKER', 'HOME THEATER']
['PROJECTOR', 'DISHWASHER', 'LAMP', 'BULB', '', '']
['CALCULATOR', 'CELL PHONES', 'MONITOR', 'EARPHONES', 'WATCH', '']
['WATCH', 'TOOTHPASTE', 'HOME SYSTEM', '', '', '']
['FRIDGE', 'TOOTH BRUSH', 'CAMERA', '', '', '']
['WASHING MACHINE', 'ADAPTER', 'WIRELESS CHARGER', '', '', '']
['VACUUM CLEANER', 'SDD', 'BLUETOOTH SPEAKER', '', '', '']
['EARPHONES', 'WATCH', '', '', '', '']
['TRIMMER', 'WASHING MACHINE', 'SDD', 'WIRELESS CHARGER', 'LAMP', '']
['HEADPHONES', 'PRINTER', 'MONITOR', 'HOME THEATER', '', '']
['EARPHONES', 'PENDRIVE', 'HOME SYSTEM', 'PROJECTOR', '', '']
['EARPODS', 'HDD', 'WIRELESS CHARGER', 'LAMP', '', '']
['TRIMMER', 'SDD', 'BLUETOOTH SPEAKER', 'BULB', '', '']
['CHARGING WIRE', 'LAPTOP', '', '', '', '']
['FRIDGE', 'CELL PHONES', 'HDD', 'SDD', '', '']

---RULES---SUPPORT---CONFIDENCE:---
--> ADAPTER | SUPPORT: 0.1 | CONFIDENCE: 0.10526315789473685
--> BLUETOOTH SPEAKER | SUPPORT: 0.1 | CONFIDENCE: 0.10526315789473685
--> BLUETOOTH SPEAKER,SDD | SUPPORT: 0.1 | CONFIDENCE: 0.10526315789473685
```

### Association Rules:

```
Anaconda Prompt (Anaconda)
SDD --> HDD | SUPPORT: 0.1 | CONFIDENCE: 0.4
SDD --> TRIMMER | SUPPORT: 0.1 | CONFIDENCE: 0.4
SDD,TRIMMER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
TOOTH BRUSH --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
TOOTHPASTE --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
TRIMMER --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
TRIMMER --> ,SDD | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TRIMMER --> SDD | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
VACUUM CLEANER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
WASHING MACHINE --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
WASHING MACHINE --> ,WIRELESS CHARGER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE --> WIRELESS CHARGER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> | SUPPORT: 0.2 | CONFIDENCE: 1.0
WATCH --> ,CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> ,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> | SUPPORT: 0.15 | CONFIDENCE: 0.7499999999999999
WIRELESS CHARGER --> ,LAMP | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> ,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> LAMP | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.5

-----
TIME TAKEN:0.008000373840332031s

(base) D:\College Data\Data mining\Midterm_Project>
```



### Transaction 3:

#### Transactional Inputs:

```
Anaconda Prompt (Anaconda) - python apriori.py

(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases\1.csv)databases\3.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.1
-----TRANSACTIONAL INPUTS-----
['DISHWASHER', 'HOME THEATER', 'TOOTH BRUSH', 'PROJECTOR', 'HEADPHONES', 'SDD', 'BULB']
['PENDRIVE', 'HOME SYSTEM', 'PRINTER', 'FRIDGE', 'WIRELESS CHARGER', 'TELEVISION', 'WATCH', 'LAMP', 'TOOTHPASTE', 'VACUUM CLEANER', 'EARPHONES', 'LAPTOP', 'HDD']
['CAMERA', 'ADAPTER', 'MONITOR', 'TRIMMER', 'CHARGING WIRE', 'WASHING MACHINE', 'CALCULATOR', 'CELL PHONES', 'EARPODS', 'BLUETOOTH SPEAKER']
['SDD', 'EARPHONES', 'EARPODS', 'TOOTH BRUSH']
['VACUUM CLEANER', 'WIRELESS CHARGER', 'PROJECTOR', 'WASHING MACHINE', 'WATCH']
['DISHWASHER', 'CALCULATOR', 'HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES']
['BLUETOOTH SPEAKER', 'TELEVISION', 'PRINTER', 'HOME SYSTEM', 'CAMERA', 'HDD', 'FRIDGE', 'CHARGING WIRE', 'BULB', 'HEADPHONES', 'LAMP']
['HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES', 'TOOTHPASTE']
['LAMP', 'TOOTHPASTE', 'WATCH', 'SDD']
['HEADPHONES', 'CHARGING WIRE', 'CELL PHONES', 'HOME THEATER', 'VACUUM CLEANER', 'BLUETOOTH SPEAKER', 'PRINTER', 'PROJECTOR']
['TELEVISION', 'TOOTH BRUSH', 'ADAPTER', 'PENDRIVE']
['CAMERA', 'HOME SYSTEM', 'CALCULATOR', 'WIRELESS CHARGER', 'EARPODS', 'BULB', 'WASHING MACHINE', 'HDD', 'DISHWASHER', 'FRIDGE', 'TRIMMER']
['MONITOR', 'LAPTOP', 'EARPHONES']
['CHARGING WIRE', 'HEADPHONES', 'TOOTH BRUSH', 'HDD', 'WATCH', 'BLUETOOTH SPEAKER', 'PENDRIVE']
['VACUUM CLEANER', 'WIRELESS CHARGER', 'PROJECTOR', 'WASHING MACHINE', 'WATCH']
['DISHWASHER', 'CALCULATOR', 'HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES']
['BLUETOOTH SPEAKER', 'TELEVISION', 'PRINTER', 'HOME SYSTEM', 'CAMERA', 'HDD', 'FRIDGE', 'CHARGING WIRE', 'BULB', 'HEADPHONES', 'LAMP']
['HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES', 'TOOTHPASTE']
```

#### Association Rules:

```
Anaconda Prompt (Anaconda)

WIRELESS CHARGER --> CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> FRIDGE,HDD | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> FRIDGE,HDD,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> FRIDGE,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> HDD | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> HDD,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER,WASHING MACHINE,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,WASHING MACHINE,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> PROJECTOR,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> VACUUM CLEANER | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> VACUUM CLEANER,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> VACUUM CLEANER,WASHING MACHINE,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> VACUUM CLEANER,WATCH | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> WASHING MACHINE,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> WATCH | SUPPORT: 0.15 | CONFIDENCE: 0.6

-----
TIME TAKEN:7.680569171905518s
(base) D:\College Data\Data mining\Midterm_Project>
```

## Transaction 4:

### Transactional Inputs:

```
Anaconda Prompt (Anaconda)
(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases/1.csv)databases/4.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.1
-----TRANSACTIONAL INPUTS-----
['BULB', 'WATCH', 'CALCULATOR', 'CAMERA', 'HOME THEATER', 'PRINTER', 'HDD']
['EARPODS', 'CHARGING WIRE', 'PENDRIVE', 'DISHWASHER']
['BLUETOOTH SPEAKER', 'LAPTOP', 'TELEVISION', 'WIRELESS CHARGER', 'EARPHONES', 'MONITOR', 'TOOTH BRUSH']
['ADAPTER', 'TRIMMER', 'HOME SYSTEM', 'LAMP', 'SDD']
['LAMP', 'SDD', 'TOOTH PASTE', 'VACUUM CLEANER', 'FRIDGE', 'PROJECTOR', 'CELL PHONES', 'WASHING MACHINE', 'HEADPHONES']
['MONITOR', 'PENDRIVE', 'VACUUM CLEANER', 'WASHING MACHINE', 'FRIDGE', 'HOME SYSTEM', 'HOME THEATER', 'ADAPTER', 'HDD']
['MONITOR', 'PENDRIVE', 'VACUUM CLEANER', 'WASHING MACHINE', 'FRIDGE']
['PENDRIVE', 'VACUUM CLEANER', 'WASHING MACHINE', 'FRIDGE']
['HOME THEATER', 'ADAPTER', 'HDD']
['HOME SYSTEM', 'LAMP', 'SDD']
['HOME THEATER', 'PRINTER', 'HDD']
['CELL PHONES', 'WASHING MACHINE', 'HEADPHONES']
['CHARGING WIRE', 'PENDRIVE', 'DISHWASHER']
['WASHING MACHINE', 'FRIDGE', 'HOME SYSTEM', 'HOME THEATER', 'ADAPTER']
['WASHING MACHINE', 'FRIDGE', 'HOME SYSTEM', 'HOME THEATER']
['TOOTH PASTE', 'CELL PHONES', 'SDD', 'BLUETOOTH SPEAKER', 'PROJECTOR', 'TRIMMER', 'WATCH', 'TOOTH BRUSH', 'BULB', 'TELEVISION', 'LAPTOP', 'PRINTER']
['EARPHONES', 'CAMERA', 'DISHWASHER', 'CALCULATOR', 'CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']
['EARPHONES', 'DISHWASHER', 'CALCULATOR', 'CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']
['CALCULATOR', 'CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']
['CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']

---RULES---SUPPORT---CONFIDENCE:---
ADAPTER --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.5
ADAPTER --> FRIDGE,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 0.5
```

### Association Rules:

```
Anaconda Prompt (Anaconda)
WIRELESS CHARGER --> CALCULATOR,CHARGING WIRE,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,CHARGING WIRE,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,CHARGING WIRE,HEADPHONES | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> CALCULATOR,DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,HEADPHONES | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> CHARGING WIRE | SUPPORT: 0.2 | CONFIDENCE: 0.8
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,HEADPHONES | SUPPORT: 0.2 | CONFIDENCE: 0.8
WIRELESS CHARGER --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> EARPHONES | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> HEADPHONES | SUPPORT: 0.2 | CONFIDENCE: 0.8

-----
TIME TAKEN:0.020000457763671875s
(base) D:\College Data\Data mining\Midterm_Project>
```



## Transaction 5:

### Transactional Inputs:

```
Anaconda Prompt (Anaconda)

(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases\1.csv)databases\5.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.1
-----TRANSACTIONAL INPUTS-----
['EARPHONES', 'WATCH', 'EARPODS', 'HOME SYSTEM', 'HOME THEATER', 'CHARGING WIRE', 'DISHWASHER']
['CHARGING WIRE', 'DISHWASHER']
['WATCH', 'EARPODS', 'HOME SYSTEM', 'HOME THEATER', 'CHARGING WIRE', 'DISHWASHER']
['HOME SYSTEM', 'HOME THEATER', 'CHARGING WIRE', 'DISHWASHER']
['CELL PHONES', 'SDD', 'LAPTOP', 'HDD']
['WIRELESS CHARGER', 'HEADPHONES', 'TELEVISION', 'TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['HEADPHONES', 'TELEVISION', 'TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['TELEVISION', 'TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['FRIDGE', 'CAMERA', 'BULB', 'TOOTHPASTE', 'WASHING MACHINE', 'PENDRIVE']
['BULB', 'TOOTHPASTE', 'WASHING MACHINE', 'PENDRIVE']
['TOOTHPASTE', 'WASHING MACHINE', 'PENDRIVE']
['FRIDGE', 'CAMERA', 'BULB']
['VACUUM CLEANER', 'BLUETOOTH SPEAKER', 'PROJECTOR', 'LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['BLUETOOTH SPEAKER', 'PROJECTOR', 'LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['PROJECTOR', 'LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['CALCULATOR', 'ADAPTER', 'PRINTER']
['LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['PROJECTOR', 'ADAPTER', 'EARPODS', 'CELL PHONES', 'WIRELESS CHARGER', 'WASHING MACHINE', 'CAMERA', 'MONITOR']
['WIRELESS CHARGER', 'WASHING MACHINE', 'CAMERA', 'MONITOR']

---RULES---SUPPORT---CONFIDENCE:---
ADAPTER --> BLUETOOTH SPEAKER | SUPPORT: 0.1 | CONFIDENCE: 0.3333333333333337
ADAPTER --> BLUETOOTH SPEAKER,CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.3333333333333337
```

### Association Rules:

```
Anaconda Prompt (Anaconda)

WATCH --> CHARGING WIRE,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> CHARGING WIRE,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> CHARGING WIRE,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WIRELESS CHARGER --> CAMERA | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> CAMERA,MONITOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> CAMERA,MONITOR,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> CAMERA,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> MONITOR | SUPPORT: 0.15 | CONFIDENCE: 1.0
WIRELESS CHARGER --> MONITOR,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667

-----
TIME TAKEN:0.01999831199645996s

(base) D:\College Data\Data mining\Midterm_Project>
```

**CASE 2:** I tested 1.csv, 2.csv, 3.csv, 4.csv and 5.csv with minimum support of 0.1 and minimum confidence of 0.5 for both the parts of the files.

### Transaction 1:

Transactional Inputs:

```
Anaconda Prompt (Anaconda)
(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases\1.csv)databases\1.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.5
-----TRANSACTIONAL INPUTS-----
['HEADPHONES', 'CALCULATOR', 'PRINTER', 'MONITOR', 'HOME THEATER', '']
['EARPODS', 'FRIDGE', 'HDD', ' ', ' ', ' ']
['TELEVISION', 'HEADPHONES', 'CALCULATOR', 'WATCH', ' ', ' ']
['ADAPTER', 'CHARGING WIRE', 'VACUUM CLEANER', 'LAPTOP', 'BLUETOOTH SPEAKER', 'BULB']
['TELEVISION', 'CELL PHONES', 'TOOTHPASTE', ' ', ' ', ' ']
['TRIMMER', 'FRIDGE', 'HDD', 'MONITOR', 'PROJECTOR', 'CAMERA']
['VACUUM CLEANER', 'SDD', 'LAMP', 'PRINTER', ' ', ' ']
['LAMP', 'EARPHONES', 'PENDRIVE', 'PENDRIVE', ' ', ' ']
['HOME THEATER', 'CALCULATOR', 'TELEVISION', 'HDD', ' ', ' ']
['PROJECTOR', 'WATCH', 'CELL PHONES', 'SDD', ' ', ' ']
['DISHWASHER', 'FRIDGE', 'TOOTHPASTE', 'LAPTOP', ' ', ' ']
['LAMP', 'WASHING MACHINE', 'TOOTH BRUSH', ' ', ' ', ' ']
['BULB', 'VACUUM CLEANER', 'ADAPTER', ' ', ' ', ' ']
['TRIMMER', 'SDD', 'MONITOR', 'CHARGING WIRE', ' ', ' ']
['TOOTHPASTE', 'EARPODS', 'FRIDGE', 'HDD', 'CAMERA', 'DISHWASHER']
['PENDRIVE', 'FRIDGE', 'PRINTER', 'HOME SYSTEM', 'PROJECTOR', ' ']
['VACUUM CLEANER', 'BLUETOOTH SPEAKER', 'CAMERA', 'WIRELESS CHARGER', ' ', ' ']
['ADAPTER', 'WATCH', 'LAPTOP', ' ', ' ', ' ']
['EARPODS', 'EARPHONES', 'TRIMMER', ' ', ' ', ' ']
['WATCH', 'LAMP', ' ', ' ', ' ', ' ']

---RULES---SUPPORT---CONFIDENCE:---
,CALCULATOR --> HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
,CALCULATOR --> HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
,CALCULATOR --> TELEVISION | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
```

Association Rules:

```
Anaconda Prompt (Anaconda)
LAMP --> | SUPPORT: 0.2 | CONFIDENCE: 1.0
LAPTOP --> | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
LAPTOP --> ADAPTER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
MONITOR --> | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
MONITOR --> TRIMMER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
PENDRIVE --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
PRINTER --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
PROJECTOR --> | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
PROJECTOR --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
SDD --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
TELEVISION --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
TELEVISION --> ,CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TELEVISION --> CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TOOTHPASTE --> | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TOOTHPASTE --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TOOTHPASTE --> DISHWASHER,FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TOOTHPASTE --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TRIMMER --> | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TRIMMER --> MONITOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
VACUUM CLEANER --> | SUPPORT: 0.15 | CONFIDENCE: 0.7499999999999999
VACUUM CLEANER --> ADAPTER | SUPPORT: 0.1 | CONFIDENCE: 0.5
VACUUM CLEANER --> ADAPTER,BULB | SUPPORT: 0.1 | CONFIDENCE: 0.5
VACUUM CLEANER --> BLUETOOTH SPEAKER | SUPPORT: 0.1 | CONFIDENCE: 0.5
VACUUM CLEANER --> BULB | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> | SUPPORT: 0.2 | CONFIDENCE: 1.0

-----
TIME TAKEN:0.00801110267391602s

(base) D:\College Data\Data mining\Midterm_Project>
```



## Transaction 2:

### Transactional Inputs:

```
(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases/1.csv)databases/2.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.5
-----TRANSACTIONAL INPUTS-----
['TELEVISION', 'CELL PHONES', 'TOOTHPASTE', '', '', '']
['TOOTH BRUSH', 'ADAPTER', 'HEADPHONES', 'EARPHONES', '', '']
['EARPODS', 'TRIMMER', 'CHARGING WIRE', 'CALCULATOR', 'WATCH', '']
['FRIDGE', 'WASHING MACHINE', 'VACUUM CLEANER', '', '', '']
['PRINTER', 'PENDRIVE', 'HDD', 'SDD', 'LAPTOP', '']
['MONITOR', 'HOME SYSTEM', 'CAMERA', 'WIRELESS CHARGER', 'BLUETOOTH SPEAKER', 'HOME THEATER']
['PROJECTOR', 'DISHWASHER', 'LAMP', 'BULB', '', '']
['CALCULATOR', 'CELL PHONES', 'MONITOR', 'EARPHONES', 'WATCH', '']
['WATCH', 'TOOTHPASTE', 'HOME SYSTEM', '', '', '']
['FRIDGE', 'TOOTH BRUSH', 'CAMERA', '', '', '']
['WASHING MACHINE', 'ADAPTER', 'WIRELESS CHARGER', '', '', '']
['VACUUM CLEANER', 'SDD', 'BLUETOOTH SPEAKER', '', '', '']
['EARPHONES', 'WATCH', '', '', '', '']
['TRIMMER', 'WASHING MACHINE', 'SDD', 'WIRELESS CHARGER', 'LAMP', '']
['HEADPHONES', 'PRINTER', 'MONITOR', 'HOME THEATER', '', '']
['EARPHONES', 'PENDRIVE', 'HOME SYSTEM', 'PROJECTOR', '', '']
['EARPODS', 'HDD', 'WIRELESS CHARGER', 'LAMP', '', '']
['TRIMMER', 'SDD', 'BLUETOOTH SPEAKER', 'BULB', '', '']
['CHARGING WIRE', 'LAPTOP', '', '', '', '']
['FRIDGE', 'CELL PHONES', 'HDD', 'SDD', '', '']

---RULES---SUPPORT---CONFIDENCE:---
,BLUETOOTH SPEAKER --> SDD | SUPPORT: 0.1 | CONFIDENCE: 1.0
```

### Association Rules:

```
Anaconda Prompt (Anaconda)
PENDRIVE --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
PRINTER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
PROJECTOR --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
SDD --> | SUPPORT: 0.25 | CONFIDENCE: 1.0
SDD,TRIMMER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
TOOTH BRUSH --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
TOOTHPASTE --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
TRIMMER --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
TRIMMER --> ,SDD | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
TRIMMER --> SDD | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
VACUUM CLEANER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
WASHING MACHINE --> | SUPPORT: 0.15 | CONFIDENCE: 1.0
WASHING MACHINE --> ,WIRELESS CHARGER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE --> WIRELESS CHARGER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> | SUPPORT: 0.2 | CONFIDENCE: 1.0
WATCH --> ,CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> ,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> CALCULATOR | SUPPORT: 0.1 | CONFIDENCE: 0.5
WATCH --> EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> | SUPPORT: 0.15 | CONFIDENCE: 0.7499999999999999
WIRELESS CHARGER --> ,LAMP | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> ,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> LAMP | SUPPORT: 0.1 | CONFIDENCE: 0.5
WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.5

-----
TIME TAKEN:0.00800373840332031s

(base) D:\College Data\Data mining\Midterm_Project>
```

### Transaction 3:

#### Transactional Inputs:

```
Anaconda Prompt (Anaconda) - python apriori.py
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.5
-----TRANSACTIONAL INPUTS-----
['DISHWASHER', 'HOME THEATER', 'TOOTH BRUSH', 'PROJECTOR', 'HEADPHONES', 'SDD', 'BULB']
['PENDRIVE', 'HOME SYSTEM', 'PRINTER', 'FRIDGE', 'WIRELESS CHARGER', 'TELEVISION', 'WATCH', 'LAMP', 'TOOTHPASTE', 'VACUUM CLEANER', 'EARPHONES', 'LAPTOP', 'HDD']
['CAMERA', 'ADAPTER', 'MONITOR', 'TRIMMER', 'CHARGING WIRE', 'WASHING MACHINE', 'CALCULATOR', 'CELL PHONES', 'EARPODS', 'BLUETOOTH SPEAKER']
['SDD', 'EARPHONES', 'EARPODS', 'TOOTH BRUSH']
['VACUUM CLEANER', 'WIRELESS CHARGER', 'PROJECTOR', 'WASHING MACHINE', 'WATCH']
['DISHWASHER', 'CALCULATOR', 'HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES']
['BLUETOOTH SPEAKER', 'TELEVISION', 'PRINTER', 'HOME SYSTEM', 'CAMERA', 'HDD', 'FRIDGE', 'CHARGING WIRE', 'BULB', 'HEADPHONES', 'LAMP']
['HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES', 'TOOTHPASTE']
['LAMP', 'TOOTHPASTE', 'WATCH', 'SDD']
['HEADPHONES', 'CHARGING WIRE', 'CELL PHONES', 'HOME THEATER', 'VACUUM CLEANER', 'BLUETOOTH SPEAKER', 'PRINTER', 'PROJECTOR']
['TELEVISION', 'TOOTH BRUSH', 'ADAPTER', 'PENDRIVE']
['CAMERA', 'HOME SYSTEM', 'CALCULATOR', 'WIRELESS CHARGER', 'EARPODS', 'BULB', 'WASHING MACHINE', 'HDD', 'DISHWASHER', 'FRIDGE', 'TRIMMER']
['MONITOR', 'LAPTOP', 'EARPHONES']
['CHARGING WIRE', 'HEADPHONES', 'TOOTH BRUSH', 'HDD', 'WATCH', 'BLUETOOTH SPEAKER', 'PENDRIVE']
['VACUUM CLEANER', 'WIRELESS CHARGER', 'PROJECTOR', 'WASHING MACHINE', 'WATCH']
['DISHWASHER', 'CALCULATOR', 'HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES']
['BLUETOOTH SPEAKER', 'TELEVISION', 'PRINTER', 'HOME SYSTEM', 'CAMERA', 'HDD', 'FRIDGE', 'CHARGING WIRE', 'BULB', 'HEADPHONES', 'LAMP']
['HOME THEATER', 'LAPTOP', 'MONITOR', 'TRIMMER', 'PENDRIVE', 'CELL PHONES', 'TOOTHPASTE']
['DISHWASHER', 'BULB', 'WIRELESS CHARGER', 'HOME THEATER', 'CALCULATOR']
['FRIDGE', 'CAMERA', 'CELL PHONES']
```

#### Association Rules:

```
Anaconda Prompt (Anaconda)
WASHING MACHINE,WATCH --> WIRELESS CHARGER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WASHING MACHINE,WATCH,WIRELESS CHARGER --> PROJECTOR | SUPPORT: 0.1 | CONFIDENCE: 1.0
WASHING MACHINE,WATCH,WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WASHING MACHINE,WATCH,WIRELESS CHARGER --> VACUUM CLEANER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WASHING MACHINE,WIRELESS CHARGER --> PROJECTOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> PROJECTOR,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> VACUUM CLEANER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> VACUUM CLEANER,WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WASHING MACHINE,WIRELESS CHARGER --> WATCH | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WATCH --> VACUUM CLEANER | SUPPORT: 0.15 | CONFIDENCE: 0.6
WATCH --> VACUUM CLEANER,WIRELESS CHARGER | SUPPORT: 0.15 | CONFIDENCE: 0.6
WATCH --> WIRELESS CHARGER | SUPPORT: 0.15 | CONFIDENCE: 0.6
WATCH,WIRELESS CHARGER --> PROJECTOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WATCH,WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WATCH,WIRELESS CHARGER --> PROJECTOR,VACUUM CLEANER,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WATCH,WIRELESS CHARGER --> PROJECTOR,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WATCH,WIRELESS CHARGER --> VACUUM CLEANER | SUPPORT: 0.15 | CONFIDENCE: 1.0
WATCH,WIRELESS CHARGER --> VACUUM CLEANER,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WATCH,WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> VACUUM CLEANER | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> VACUUM CLEANER,WATCH | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> WATCH | SUPPORT: 0.15 | CONFIDENCE: 0.6

-----
TIME TAKEN:7.538606643676758s
(base) D:\College Data\Data mining\Midterm_Project>
```



## Transaction 4:

### Transactional Inputs:

```
Anaconda Prompt (Anaconda)

(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases\1.csv)databases\4.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.4
-----TRANSACTIONAL INPUTS-----
['BULB', 'WATCH', 'CALCULATOR', 'CAMERA', 'HOME THEATER', 'PRINTER', 'HDD']
['EARPODS', 'CHARGING WIRE', 'PENDRIVE', 'DISHWASHER']
['BLUETOOTH SPEAKER', 'LAPTOP', 'TELEVISION', 'WIRELESS CHARGER', 'EARPHONES', 'MONITOR', 'TOOTH BRUSH']
['ADAPTER', 'TRIMMER', 'HOME SYSTEM', 'LAMP', 'SDD']
['LAMP', 'SDD', 'TOOTHPASTE', 'VACUUM CLEANER', 'FRIDGE', 'PROJECTOR', 'CELL PHONES', 'WASHING MACHINE', 'HEADPHONES']
['MONITOR', 'PENDRIVE', 'VACUUM CLEANER', 'WASHING MACHINE', 'FRIDGE', 'HOME SYSTEM', 'HOME THEATER', 'ADAPTER', 'HDD']
['MONITOR', 'PENDRIVE', 'VACUUM CLEANER', 'WASHING MACHINE', 'FRIDGE']
['PENDRIVE', 'VACUUM CLEANER', 'WASHING MACHINE', 'FRIDGE']
['HOME THEATER', 'ADAPTER', 'HDD']
['HOME SYSTEM', 'LAMP', 'SDD']
['HOME THEATER', 'PRINTER', 'HDD']
['CELL PHONES', 'WASHING MACHINE', 'HEADPHONES']
['CHARGING WIRE', 'PENDRIVE', 'DISHWASHER']
['WASHING MACHINE', 'FRIDGE', 'HOME SYSTEM', 'HOME THEATER', 'ADAPTER']
['WASHING MACHINE', 'FRIDGE', 'HOME SYSTEM', 'HOME THEATER']
['TOOTHPASTE', 'CELL PHONES', 'SDD', 'BLUETOOTH SPEAKER', 'PROJECTOR', 'TRIMMER', 'WATCH', 'TOOTH BRUSH', 'BULB', 'TELEVISION', 'LAPTOP', 'PRINTER']
['EARPHONES', 'CAMERA', 'DISHWASHER', 'CALCULATOR', 'CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']
['EARPHONES', 'DISHWASHER', 'CALCULATOR', 'CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']
['CALCULATOR', 'CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']
['CHARGING WIRE', 'WIRELESS CHARGER', 'HEADPHONES']

---RULES---SUPPORT---CONFIDENCE:---
ADAPTER --> FRIDGE | SUPPORT: 0.1 | CONFIDENCE: 0.5
```

### Association Rules:

```
Anaconda Prompt (Anaconda)

WIRELESS CHARGER --> CALCULATOR,CHARGING WIRE,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,CHARGING WIRE,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,CHARGING WIRE,HEADPHONES | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> CALCULATOR,DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,DISHWASHER,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CALCULATOR,HEADPHONES | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> CHARGING WIRE | SUPPORT: 0.2 | CONFIDENCE: 0.8
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,DISHWASHER,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> CHARGING WIRE,HEADPHONES | SUPPORT: 0.2 | CONFIDENCE: 0.8
WIRELESS CHARGER --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER,EARPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER,EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> DISHWASHER,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> EARPHONES | SUPPORT: 0.15 | CONFIDENCE: 0.6
WIRELESS CHARGER --> EARPHONES,HEADPHONES | SUPPORT: 0.1 | CONFIDENCE: 0.4
WIRELESS CHARGER --> HEADPHONES | SUPPORT: 0.2 | CONFIDENCE: 0.8

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TIME TAKEN:0.015012025833129883s

(base) D:\College Data\Data mining\Midterm_Project>
```

## Transaction 5:

### Transactional Inputs:

```
Anaconda Prompt (Anaconda)
(base) D:\College Data\Data mining\Midterm_Project>python apriori.py
File Path (eg: Databases\1.csv)databases\5.csv
MINIMUM SUPPORT:0.1
MINIMUM CONFIDENCE:0.5
-----TRANSACTIONAL INPUTS-----
['EARPHONES', 'WATCH', 'EARPODS', 'HOME SYSTEM', 'HOME THEATER', 'CHARGING WIRE', 'DISHWASHER']
['CHARGING WIRE', 'DISHWASHER']
['WATCH', 'EARPODS', 'HOME SYSTEM', 'HOME THEATER', 'CHARGING WIRE', 'DISHWASHER']
['HOME SYSTEM', 'HOME THEATER', 'CHARGING WIRE', 'DISHWASHER']
['CELL PHONES', 'SDD', 'LAPTOP', 'HDD']
['WIRELESS CHARGER', 'HEADPHONES', 'TELEVISION', 'TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['HEADPHONES', 'TELEVISION', 'TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['TELEVISION', 'TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['TRIMMER', 'TOOTH BRUSH', 'MONITOR']
['FRIDGE', 'CAMERA', 'BULB', 'TOOTHPASTE', 'WASHING MACHINE', 'PENDRIVE']
['BULB', 'TOOTHPASTE', 'WASHING MACHINE', 'PENDRIVE']
['TOOTHPASTE', 'WASHING MACHINE', 'PENDRIVE']
['FRIDGE', 'CAMERA', 'BULB']
['VACUUM CLEANER', 'BLUETOOTH SPEAKER', 'PROJECTOR', 'LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['BLUETOOTH SPEAKER', 'PROJECTOR', 'LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['PROJECTOR', 'LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['CALCULATOR', 'ADAPTER', 'PRINTER']
['LAMP', 'CALCULATOR', 'ADAPTER', 'PRINTER']
['PROJECTOR', 'ADAPTER', 'EARPODS', 'CELL PHONES', 'WIRELESS CHARGER', 'WASHING MACHINE', 'CAMERA', 'MONITOR']
['WIRELESS CHARGER', 'WASHING MACHINE', 'CAMERA', 'MONITOR']

---RULES---SUPPORT---CONFIDENCE:---
ADAPTER --> CALCULATOR | SUPPORT: 0.25 | CONFIDENCE: 0.8333333333333334
ADAPTER --> CALCULATOR,LAMP | SUPPORT: 0.2 | CONFIDENCE: 0.6666666666666667
ADAPTER --> CALCULATOR,LAMP,PRINTER | SUPPORT: 0.2 | CONFIDENCE: 0.6666666666666667
```

### Association Rules:

```
Anaconda Prompt (Anaconda)
WATCH --> CHARGING WIRE,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> CHARGING WIRE,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> CHARGING WIRE,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,EARPODS,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> DISHWASHER,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS,HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS,HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> EARPODS,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> HOME SYSTEM | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> HOME SYSTEM,HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WATCH --> HOME THEATER | SUPPORT: 0.1 | CONFIDENCE: 1.0
WIRELESS CHARGER --> CAMERA | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> CAMERA,MONITOR | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> CAMERA,MONITOR,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> CAMERA,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> MONITOR | SUPPORT: 0.15 | CONFIDENCE: 1.0
WIRELESS CHARGER --> MONITOR,WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667
WIRELESS CHARGER --> WASHING MACHINE | SUPPORT: 0.1 | CONFIDENCE: 0.6666666666666667

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TIME TAKEN:0.0210113525390625s

(base) D:\College Data\Data mining\Midterm_Project>
```

## Conclusion:

As displayed above, all the Apriori algorithm was tested in multiple conditions on all the 5 databases. The association rules and the time required to complete the task can be seen fluctuating.

Algorithm	Transaction Databases	Minimum Support = 0.1 & Minimum Confidence = 0.1	Minimum Support = 0.1 & Minimum Confidence = 0.5	Minimum Support = 0.1 & Minimum Confidence = 0.8
APRIORI ALGORITHM	1.csv	0.0030	0.0018	0.0039
	2.csv	0.0039	0.0039	0.0038
	3.csv	7.7024	5.4695	6.3425
	4.csv	0.0196	0.0437	0.0162
	5.csv	0.0439	0.0356	0.0204

Summary Table