

# Retail

August 11, 2023

## 1 Step 1: Import the “uncertain\_Temporal\_Retail.csv” dataset, UPFPGrowth, and UPFPGrowth++ code

```
[1]: import UPFPGrowth as upfp
import UPFPGrowthPlus as upfpp
import pandas as pd
inputFile = 'uncertain_Temporal_Retail.csv'
result = pd.DataFrame(columns=['algorithm', 'minSup', 'maxPer', 'patterns', '
↳runtime', 'memory'])
```

## 2 Step 2: Finding the periodic-frequent patterns using UPFP-Growth++ by varying minSup and with fixed maxPer

```
[2]: algorithm = 'UPFPGrowth++'
minSup = [20, 30, 40, 50, 60]
maxPer = 5000
for i in minSup:
    obj = upfpp.UPFPGrowthPlus(iFile=inputFile, minSup=i, maxPer=maxPer,
↳sep='\t')
    obj.startMine()
    result.loc[result.shape[0]] = [algorithm, i, maxPer, len(obj.
↳getPatterns()), obj.getRuntime(), obj.getMemoryUSS()]
    obj.printResults()
```

Periodic Frequent patterns were generated successfully using UPFPgrowth++  
algorithm

Total number of Uncertain Periodic-Frequent Patterns: 3268

Total number of generated false patterns: 817

Total Memory in USS: 499974144

Total Memory in RSS 558436352

Total ExecutionTime in ms: 191.34285831451416

Periodic Frequent patterns were generated successfully using UPFPgrowth++  
algorithm

Total number of Uncertain Periodic-Frequent Patterns: 2608

Total number of generated false patterns: 973

Total Memory in USS: 505851904

```

Total Memory in RSS 564305920
Total ExecutionTime in ms: 161.68646216392517
Periodic Frequent patterns were generated successfully using UPFPgrowth++
algorithm
Total number of Uncertain Periodic-Frequent Patterns: 2130
Total number of generated false patterns: 836
Total Memory in USS: 503951360
Total Memory in RSS 563044352
Total ExecutionTime in ms: 126.100252866745
Periodic Frequent patterns were generated successfully using UPFPgrowth++
algorithm
Total number of Uncertain Periodic-Frequent Patterns: 1764
Total number of generated false patterns: 670
Total Memory in USS: 498278400
Total Memory in RSS 557375488
Total ExecutionTime in ms: 99.82950639724731
Periodic Frequent patterns were generated successfully using UPFPgrowth++
algorithm
Total number of Uncertain Periodic-Frequent Patterns: 1514
Total number of generated false patterns: 524
Total Memory in USS: 491077632
Total Memory in RSS 550178816
Total ExecutionTime in ms: 80.70500445365906

```

### 3 Step 3: Print the results of UPFPGrowth++

```
[3]: print(result)
```

	algorithm	minSup	maxPer	patterns	runtime	memory
0	UPFPGrowth++	20	5000	3268	191.342858	499974144
1	UPFPGrowth++	30	5000	2608	161.686462	505851904
2	UPFPGrowth++	40	5000	2130	126.100253	503951360
3	UPFPGrowth++	50	5000	1764	99.829506	498278400
4	UPFPGrowth++	60	5000	1514	80.705004	491077632

### 4 Step 4: Executing UPFPGrowth

```

[4]: algorithm = 'UPFPGrowth'
minSup = [20, 30, 40, 50, 60]
maxPer = 5000
for i in minSup:
    obj = upfp.UPFPGrowth(iFile=inputFile, minSup=i, maxPer=maxPer, sep='\t')
    obj.startMine()
    result.loc[result.shape[0]] = [algorithm, i, maxPer, len(obj.
    ↪getPatterns()), obj.getRuntime(), obj.getMemoryUSS()]
    obj.printResults()

```

Periodic frequent patterns were generated successfully using UPFP algorithm  
Total number of Uncertain Periodic-Frequent Patterns: 3457  
Total number of False Patterns: 969  
Total Memory in USS: 499109888  
Total Memory in RSS 558403584  
Total ExecutionTime in ms: 210.5174286365509  
Periodic frequent patterns were generated successfully using UPFP algorithm  
Total number of Uncertain Periodic-Frequent Patterns: 2754  
Total number of False Patterns: 1463  
Total Memory in USS: 498462720  
Total Memory in RSS 557756416  
Total ExecutionTime in ms: 200.81594967842102  
Periodic frequent patterns were generated successfully using UPFP algorithm  
Total number of Uncertain Periodic-Frequent Patterns: 2210  
Total number of False Patterns: 1463  
Total Memory in USS: 495898624  
Total Memory in RSS 555188224  
Total ExecutionTime in ms: 169.79082322120667  
Periodic frequent patterns were generated successfully using UPFP algorithm  
Total number of Uncertain Periodic-Frequent Patterns: 1786  
Total number of False Patterns: 1272  
Total Memory in USS: 490520576  
Total Memory in RSS 549810176  
Total ExecutionTime in ms: 138.31761693954468  
Periodic frequent patterns were generated successfully using UPFP algorithm  
Total number of Uncertain Periodic-Frequent Patterns: 1527  
Total number of False Patterns: 985  
Total Memory in USS: 483684352  
Total Memory in RSS 542973952  
Total ExecutionTime in ms: 110.54516434669495

## 5 Step 5: Print all the results

```
[5]: print(result)
```

	algorithm	minSup	maxPer	patterns	runtime	memory
0	UPFPGrowth++	20	5000	3268	191.342858	499974144
1	UPFPGrowth++	30	5000	2608	161.686462	505851904
2	UPFPGrowth++	40	5000	2130	126.100253	503951360
3	UPFPGrowth++	50	5000	1764	99.829506	498278400
4	UPFPGrowth++	60	5000	1514	80.705004	491077632
5	UPFPGrowth	20	5000	3457	210.517429	499109888
6	UPFPGrowth	30	5000	2754	200.815950	498462720
7	UPFPGrowth	40	5000	2210	169.790823	495898624
8	UPFPGrowth	50	5000	1786	138.317617	490520576
9	UPFPGrowth	60	5000	1527	110.545164	483684352