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**Cloud Computing for Data Analysis**

**Group Activity 03 – FP-Tree**

**Chapter 6 Exercise 8**

Build and mine FP-Tree using the data below (Min Support 3)

Table 6.24. Example of market basket transactions.

|  |  |
| --- | --- |
| Transaction ID | Items Bought |
| 1 | {a, b, d, e} |
| 2 | {b, c, d} |
| 3 | {a, b, d, e} |
| 4 | {a, c, d, e} |
| 5 | {b, c, d, e} |
| 6 | {b, d, e} |
| 7 | {c, d} |
| 8 | {a, b, c} |
| 9 | {a, d, e} |
| 10 | {b, d} |

Ans.

Step 1: Calculate minimum Support

Minimum support given is 3.

Step 2: Find frequency of occurrence of itemset and prioritize the itemset

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Frequency | Priority | Frequent item list |
| a | 5 | 4 | a:5 |
| b | 7 | 2 | b:7 |
| c | 5 | 5 | c:5 |
| d | 9 | 1 | d:9 |
| e | 6 | 3 | e:6 |

Step 3: Oder the items according to its priority

|  |  |  |
| --- | --- | --- |
| Transaction ID | Items Bought | Ordered items |
| 1 | {a, b, d, e} | {d, b, e, a} |
| 2 | {b, c, d} | {d, b, c} |
| 3 | {a, b, d, e} | {d, b, e, a} |
| 4 | {a, c, d, e} | {d, e, a, c} |
| 5 | {b, c, d, e} | {d, b, e, c} |
| 6 | {b, d, e} | {d, b, e} |
| 7 | {c, d} | {d, c} |
| 8 | {a, b, c} | {b, a, c} |
| 9 | {a, d, e} | {d, e, a} |
| 10 | {b, d} | {d, b} |

Step 4: Draw the FP-tree using the Ordered item list prepared

c:1

a:1

c:1

e:4

a:2

c:1

b:6

c:1

b:1

d:9

NULL

e:2

c:1

a:2

Step 5 : Mining frequent pattern from FP tree

|  |  |  |
| --- | --- | --- |
| Item | Conditional Pattern Base | Conditional FP tree |
| c | (d, b: 1) | (d, e, a: 1) | (d, b, e: 1) | (d: 1) | (b, a: 1) | Empty |
| a | (d, b, e: 2) | (d, e: 2) | (b: 1) | Empty |
| e | (d, b: 4) | (d: 2) | (d: 6) | e |
| b | (d: 6) | (d: 6) | b |
| d | Empty | Empty |