

1. Table is details of XYZ restaurant.

$$\text{min support} = 0.25$$

$$\text{min conf} = 0.75$$

Question

|   |                            |
|---|----------------------------|
| 1 | <del>1, 2, 3</del> 1, 2, 5 |
| 2 | 2, 4                       |
| 3 | 2, 3                       |
| 4 | 1, 2, 4                    |
| 5 | 1, 3                       |
| 6 | 2, 3                       |
| 7 | 1, 3                       |
| 8 | 1, 2, 3, 5                 |
| 9 | 1, 2, 3                    |

$$0.25 \times 9 = 2.25$$

$$\text{min - sup} = 3$$

1 - item f patterns

|     |   |   |   |   |   |
|-----|---|---|---|---|---|
| {1} | - | 6 | → | 1 | 6 |
| {2} | - | 7 |   | 2 | 7 |
| {3} | - | 6 |   | 3 | 6 |
| {4} | - | 2 |   |   |   |
| {5} | - | 2 |   |   |   |

2 - item f patterns

|        |   |   |   |                    |
|--------|---|---|---|--------------------|
| {1, 2} | - | 4 | → | (same as original) |
| {2, 3} | - | 4 |   |                    |
| {1, 3} | - | 4 |   |                    |

### 3-itemset f patterns

$$\{1, 2, 3\} - 2 \rightarrow \emptyset$$

### frequent itemsets

$$\{1\} - 6$$

$$\{2\} - 7$$

$$\{3\} - 6$$

$$\{1, 2\} - 4$$

$$\{2, 3\} - 4$$

$$\{1, 3\} - 4$$

### Association rules

$$\text{confidence} = 0.79 = 79\%$$

$$\{1, 3\} \rightarrow 2 = \frac{\{1, 2, 3\}}{\{1, 3\}} = \frac{2}{4} = 50\%$$

$$\{1, 5\} \rightarrow 3 = \frac{\{1, 3, 5\}}{\{1, 5\}} = \frac{1}{2} = 50\%$$

$$\{1, 2\} \rightarrow 5 = \frac{\{1, 2, 5\}}{\{1, 2\}} = \frac{2}{4} = 50\%$$

$$\{2, 5\} \rightarrow 1 = \frac{\{1, 2, 5\}}{\{2, 5\}} = \frac{2}{2} = 100\%$$

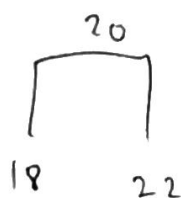
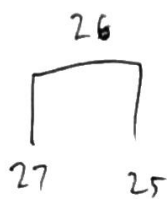
$$\{1, 5\} \rightarrow 2 = \frac{\{1, 4, 5\}}{\{1, 5\}} = \frac{2}{2} = 100\%$$

$$\therefore \boxed{\begin{array}{l} \{1, 5\} \rightarrow 2 \\ 2 \\ \{2, 5\} \rightarrow 1 \end{array}}$$

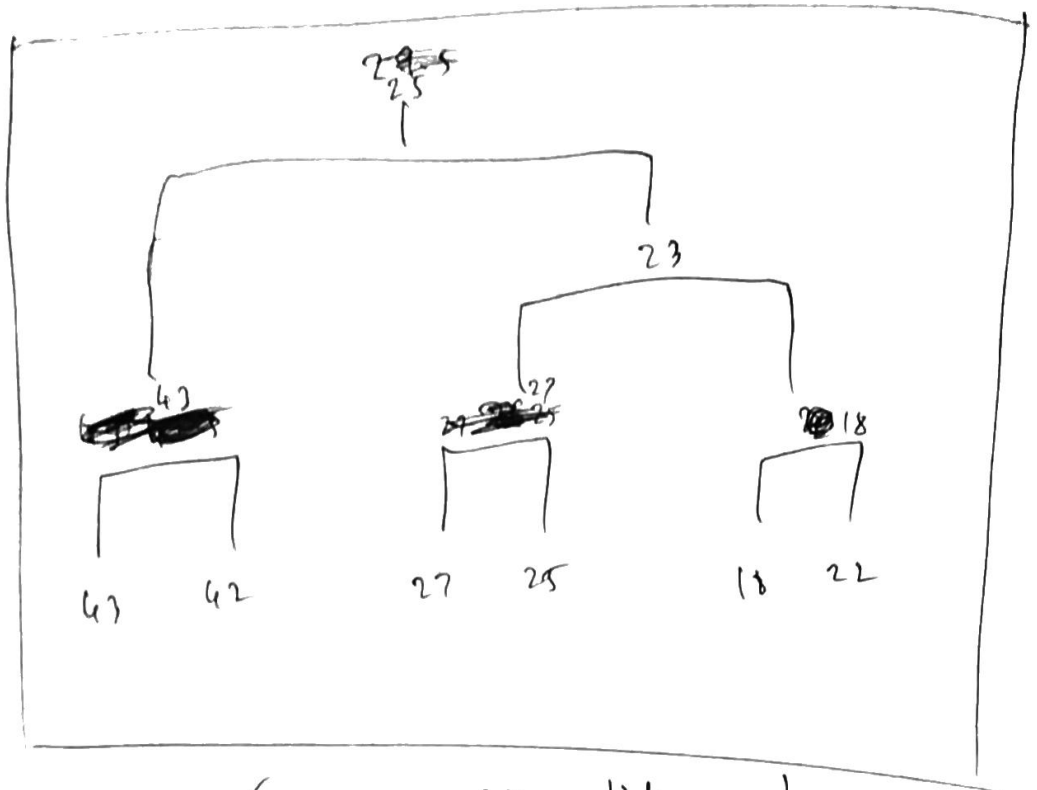
2. Candidates: 43, 27, 42, 25, 22, 18.

|    | 43 | 27 | 42 | 25 | 22 | 18 |
|----|----|----|----|----|----|----|
| 43 | 0  | 16 | 1  | 18 | 21 | 25 |
| 27 |    | 0  | 15 | 2  | 5  | 9  |
| 42 |    |    | 0  | 17 | 20 | 24 |
| 25 |    |    |    | 0  | 3  | 7  |
| 22 |    |    |    |    | 0  | 4  |
| 18 |    |    |    |    |    | 0  |

(Using max distanc)



|                  |                     |                    |      |
|------------------|---------------------|--------------------|------|
|                  | <del>47</del><br>47 | 26                 | 20   |
| <del>45</del> 43 | 0                   | <del>16.5</del> 17 | 22.5 |
| 26               |                     | 0                  | 6    |
| 20               |                     |                    | 0    |



(Using MAX distance)