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Association Rule Mining

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Quiz: Association Rule Mining Quiz
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Association Rule Mining Quiz

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1. What is the main difficulty in generating exhaustive Association Rules from a large dataset?

1 / 1 point

- ☐ The lack of computational power to process large datasets.
- ☒ The exponentially increasing number of possible itemsets and rules to explore.
- ☐ The complexity of defining appropriate support and confidence thresholds for mining.
- ☐ The challenge of finding interesting and meaningful associations in the dataset.

Correct
Correct! The number of possible itemsets and rules grows exponentially with the number of items in the dataset, making it computationally infeasible to explore them all.

2. What is a solution to the difficulty of generating exhaustive Association Rules from a large dataset?

1 / 1 point

- ☒ Employing efficient mining algorithms that utilize various optimization techniques.
- ☐ Using specialized hardware to process the computations faster.
- ☐ Limiting the dataset size to reduce the number of possible itemsets.
- ☐ Manually selecting a few key itemsets and exploring their rules in detail.

Correct
Correct! Efficient mining algorithms, such as Apriori and FP-growth, use optimization techniques to handle the large number of itemsets and rules.

3. What are closed itemsets in association rule mining?

1 / 1 point

- ☐ Itemsets that do not contain any frequent items.
- ☐ Itemsets that only contain one item and have a very high support value.
- ☒ Itemsets that cannot be extended by adding more items without decreasing their support.
- ☐ Itemsets that contain all items present in the dataset.

Correct
Correct! Closed itemsets are maximal frequent itemsets that cannot be extended without a decrease in support.

4. What is a benefit of mining closed itemsets in association rule mining?

1 / 1 point

- ☐ Closed itemsets provide better support and confidence values for association rules.
- ☐ Closed itemsets guarantee the discovery of all possible association rules in the dataset.
- ☐ Closed itemsets have a higher interestingness value compared to other itemsets.
- ☒ Mining closed itemsets can significantly reduce the number of itemsets to explore, speeding up the mining process.

Correct
Correct! Closed itemsets are maximal frequent itemsets, and mining them reduces the number of itemsets to explore.

5. What is a drawback of mining closed itemsets?

1 / 1 point

- ☐ Closed itemsets can be computationally expensive to mine from large datasets.
- ☐ Closed itemsets tend to produce a high number of redundant rules.
- ☒ Mining closed itemsets may miss some interesting associations that are present in the dataset.
- ☐ Closed itemsets are only useful when the support and confidence thresholds are set very high.

Correct
Correct! Mining closed itemsets focuses on maximal frequent itemsets, potentially missing some non-maximal but interesting associations.

6. What are maximal itemsets in association rule mining?

1 / 1 point

- ☐ Itemsets that have the highest support value in the dataset.
- ☐ Itemsets that are frequent and cannot be extended by adding more items without decreasing their support.
- ☐ Itemsets that are not frequent and do not meet the support threshold.
- ☒ Itemsets that cannot be extended by adding more items without exceeding the support threshold (min support).

Correct
Correct! Maximal itemsets cannot be extended without exceeding the support threshold.

7. What is a benefit of mining maximal itemsets in association rule mining?

1 / 1 point

- ☐ Maximal itemsets have a higher confidence value than other itemsets.
- ☐ Mining maximal itemsets helps to identify the most frequent items in the dataset.
- ☒ Maximal itemsets provide a concise representation of frequent itemsets, reducing the number of rules to explore.
- ☐ Maximal itemsets guarantee the discovery of all possible association rules in the dataset.

Correct
Correct! Maximal itemsets are a concise representation of frequent itemsets, simplifying the mining process.

8. What is a drawback of mining maximal itemsets?

1 / 1 point

- ☐ Maximal itemsets do not provide any useful association rules.
- ☒ Mining maximal itemsets may miss some interesting associations that are present in the dataset.
- ☐ Maximal itemsets can only be mined from small datasets due to computational limitations.
- ☐ Maximal itemsets tend to produce a high number of redundant rules.

Correct
Correct! Mining maximal itemsets focuses on a subset of frequent itemsets, potentially missing some non-maximal but interesting associations.

9. How do closed and maximal itemsets help in association rule mining?

1 / 1 point

- ☒ They reduce the number of itemsets to explore, making the mining process more efficient.
- ☐ They allow for the mining of non-frequent itemsets, which are often more interesting than frequent ones.
- ☐ They eliminate the need to set support and confidence thresholds for rule mining.
- ☐ They guarantee the discovery of all possible association rules in the dataset.

Correct
Correct! Closed and maximal itemsets provide concise representations of frequent itemsets, reducing the exploration space.

