Manish Jaiswal

SQL Interview Question

MASTERING

UNION vs. UNION ALL in SQL

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Short Answer

What's the difference between UNION and UNION ALL?

- **UNION** combines results from two queries and removes duplicates.
- **UNION ALL** combines results and keeps all duplicates.

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Long Answer – Detailed Explanation

When to use?

- **UNION:** Use when you need distinct, non-repeating results across combined datasets.
- **UNION ALL:** Use when performance matters and duplicates are acceptable.

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Why use these?

- **UNION** performs an extra step of duplicate removal, making it useful for unique data but slightly slower.
- **UNION ALL** skips the duplicate removal, enhancing performance for larger data sets.

Where are they used?

- **UNION** is used in scenarios like merging user lists from different departments while removing repeated entries.
- **UNION ALL** can be applied when summarizing multiple data sources for analytics, where duplicates are meaningful or don't impact results.

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Example Illustration

Imagine a company database with two tables:

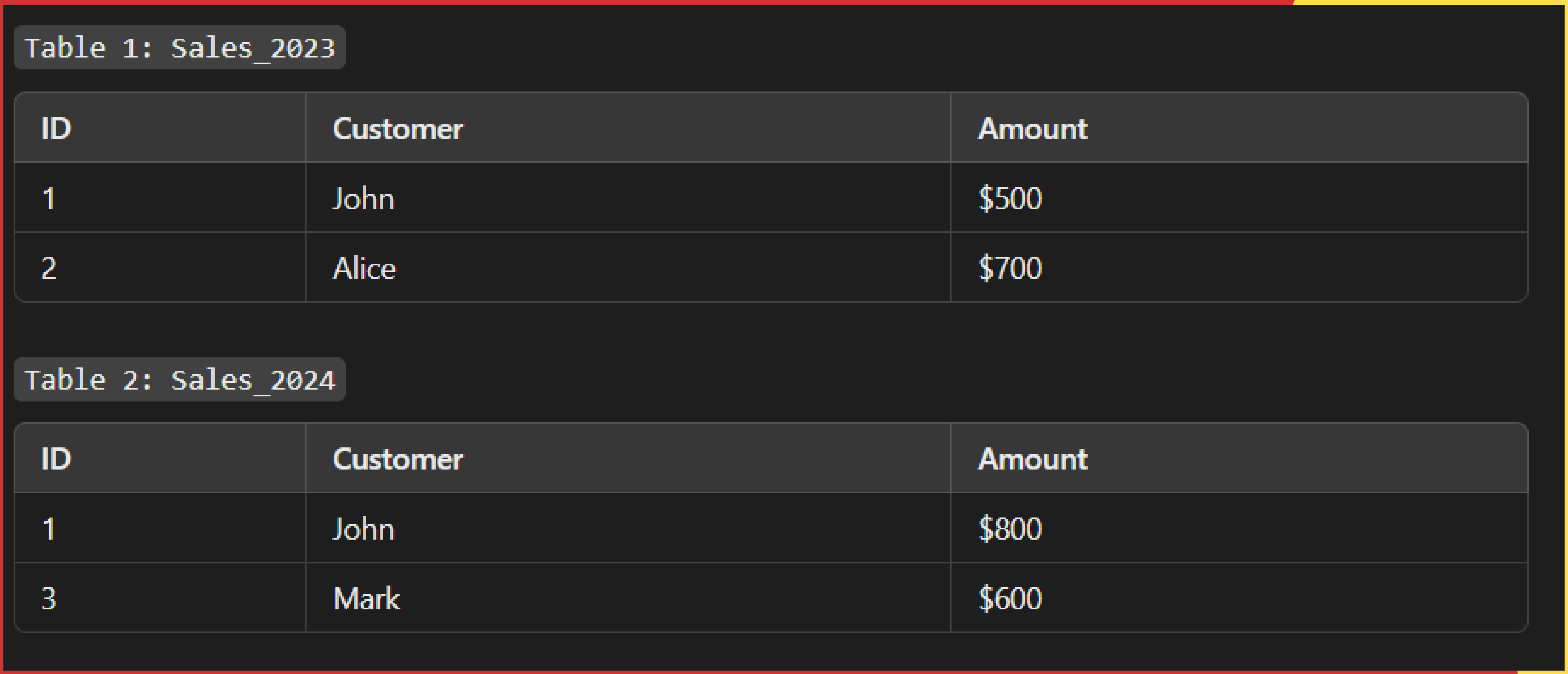

Table 1: Sales_2023

ID	Customer	Amount
1	John	$500
2	Alice	$700

Table 2: Sales_2024

ID	Customer	Amount
1	John	$800
3	Mark	$600

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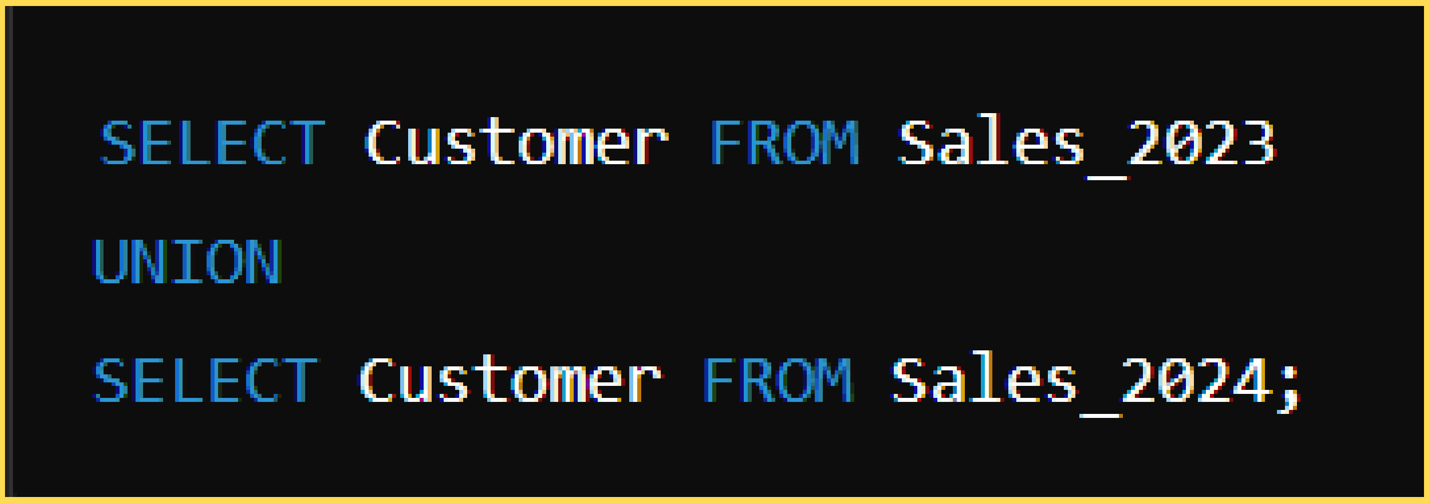
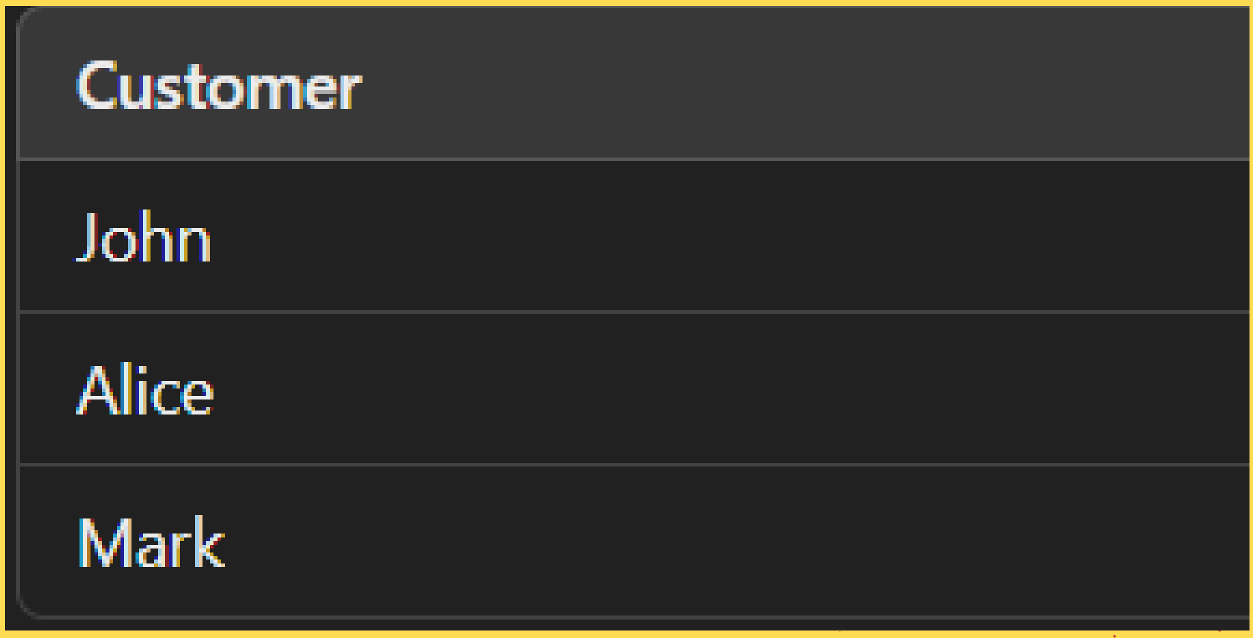
Query using UNION:



```
SELECT Customer FROM Sales_2023
UNION
SELECT Customer FROM Sales_2024;
```



Customer
John
Alice
Mark

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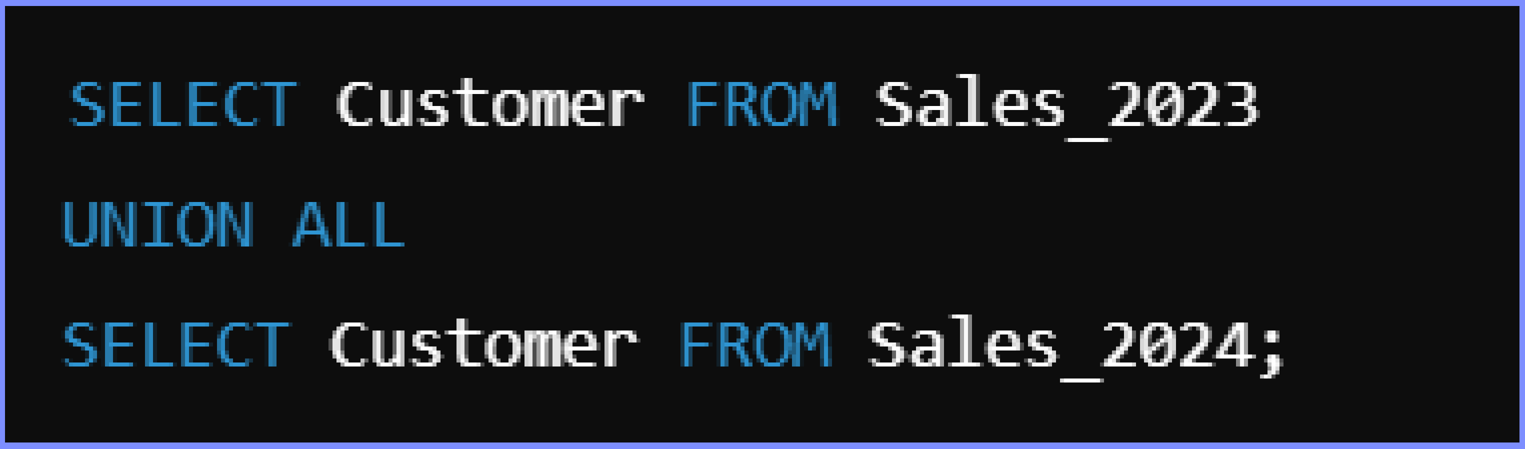
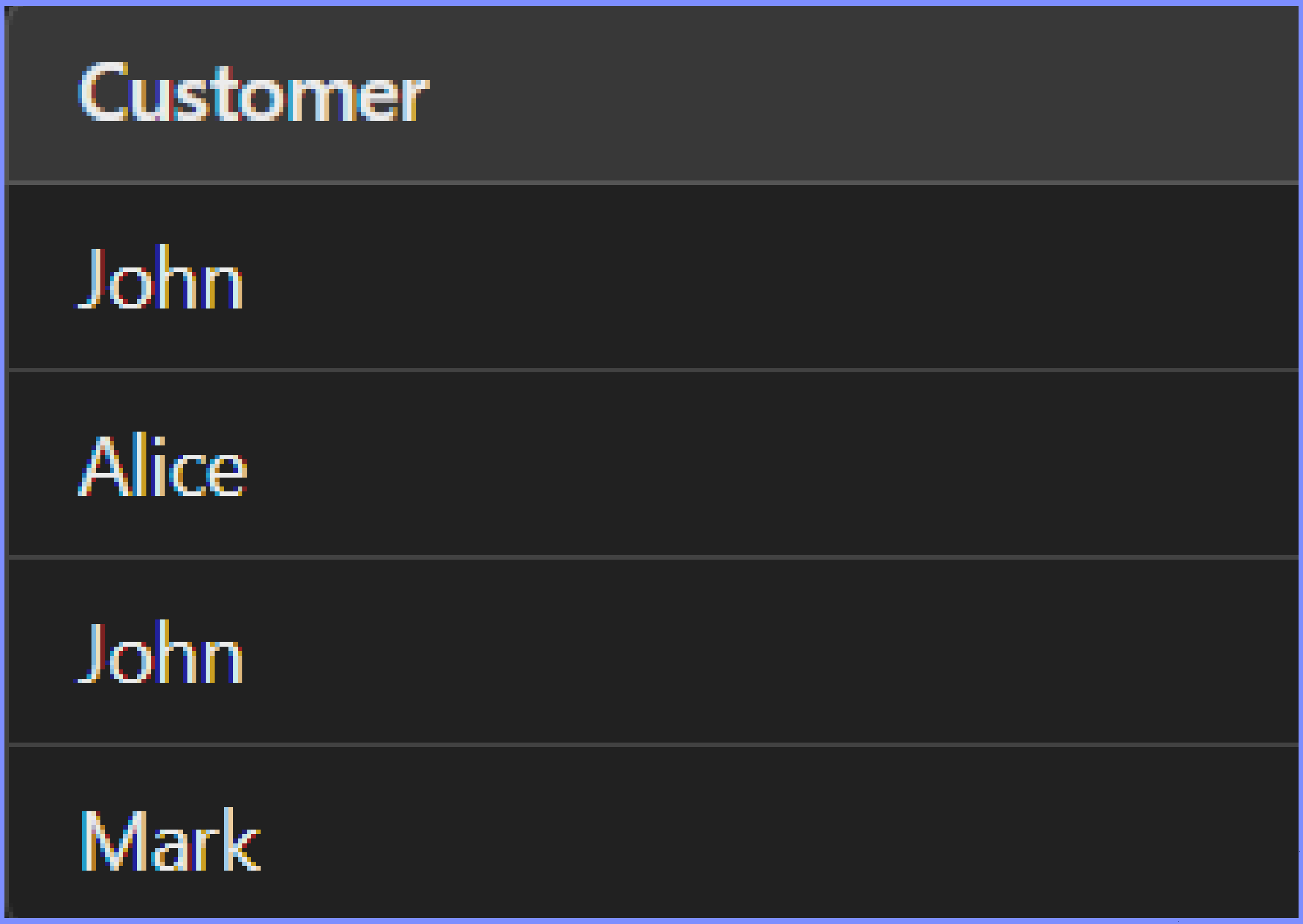
Query using UNION ALL:



```
SELECT Customer FROM Sales_2023
UNION ALL
SELECT Customer FROM Sales_2024;
```



Customer
John
Alice
John
Mark

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Performance Consideration

- **UNION** scans results to remove duplicates, which may be slower for large datasets.
- **UNION ALL** runs faster as it avoids the duplicate check.

Tip: Use UNION ALL when you are confident duplicates aren't a problem, and performance is crucial.

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Comparison Chart:

Feature	UNION	UNION ALL
Duplicates	Removed	Retained
Performance	Slower	Faster
Use Case	Unique data required	Full dataset needed

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