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Union

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Definition

The union of two relation instances R_1 and R_2 over the same set of attributes U – denoted by $R_1 \cup R_2$ – is another relation instance over U containing precisely the set of tuples t such that $t \in R_1$ or $t \in R_2$.

Key Points

The union is one of the primitive operators of the relational algebra. It is a natural extension of the set union to relations; the additional restriction is that it can be applied only to relations over the same set of attributes. However the union of two arbitrary relations having the same arity can be obtained by first renaming the attributes of one of the two relations.

As an example, consider a relation *Students* over attributes (*number*, *name*), containing tuples $\{(1001, \textit{Black}), (1002, \textit{White})\}$, and a relation *Employees* over attributes (*number*, *name*), containing tuples $\{(1001, \textit{Black}), (1003, \textit{Brown})\}$. Then the union $\textit{Students} \cup \textit{Employees}$ is a relation over attributes (*number*, *name*) with tuples $\{(1001, \textit{Black}), (1002, \textit{White}), (1003, \textit{Brown})\}$.

In the absence of attribute names, the union is defined on two relations with the same arity. The output is a relation with the same arity as the input, containing the union of the sets of tuples in the two input relations.

The union operator is commutative and associative. The number of tuples in the output relation is bounded by the sum of the number of tuples in the input relations.

Cross-References

- [Relation](#)
- [Relational Algebra](#)
- [Renaming](#)