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Difference

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Synonyms

[Set difference](#)

Definition

The difference of two relation instances R_1 and R_2 over the same set of attributes U , denoted by $R_1 - R_2$, is another relation instance over U containing precisely the set of tuples occurring in R_1 and not occurring in R_2 .

Key Points

The difference is one of the primitive operators of the relational algebra. It coincides with the notion of set difference, with the additional restriction that it can be applied only to relations over the

same set of attributes. However the difference of two arbitrary relations having the same arity can be obtained by first renaming attributes in 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 difference *Students* – *Employees* is a relation over attributes (*number*, *name*) containing the only tuple (1002, *White*).

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

The number of tuples in the output relation is bounded by the number of tuples in R_1 .

Cross-References

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