

Table 1: Relational Algebra

Symbol (Name)	Example of Use
σ (Selection)	$\sigma_{rank \geq 8}(movies)$ Return rows of the input relation that satisfy the predicate.
Π (Projection)	$\Pi_{name, year} (movies)$ Output specified attributes from all rows of the input relation. Remove duplicate tuples from the output.
\bowtie (Natural join)	$movies \bowtie movie_genres$ Output pairs of rows from the two input relations that have the same value on all attributes that have the same name.
$\bowtie_{condition}$ (Theta join)	$movies_directors \bowtie_{(movies_directors.movie_id=movies.id)} movies$ Output pairs of rows from the cross product of the two input relations that have the same value on all attributes that satisfy the condition.
\times (Cartesian product)	$movies \times directors$ Output all pairs of rows from the two input relations.
\cup (Union)	$\Pi_{last_name}(actors) \cup \Pi_{last_name}(directors)$ Output the union of tuples from the two input relations.