[Formal query Languages]

Procedural → Relational Algebra

Relational Calculus → *Declarative*

Relational Calculus →
- ORC (Domain Relation Calculus)
- TRC (Tuple relation Calculus)
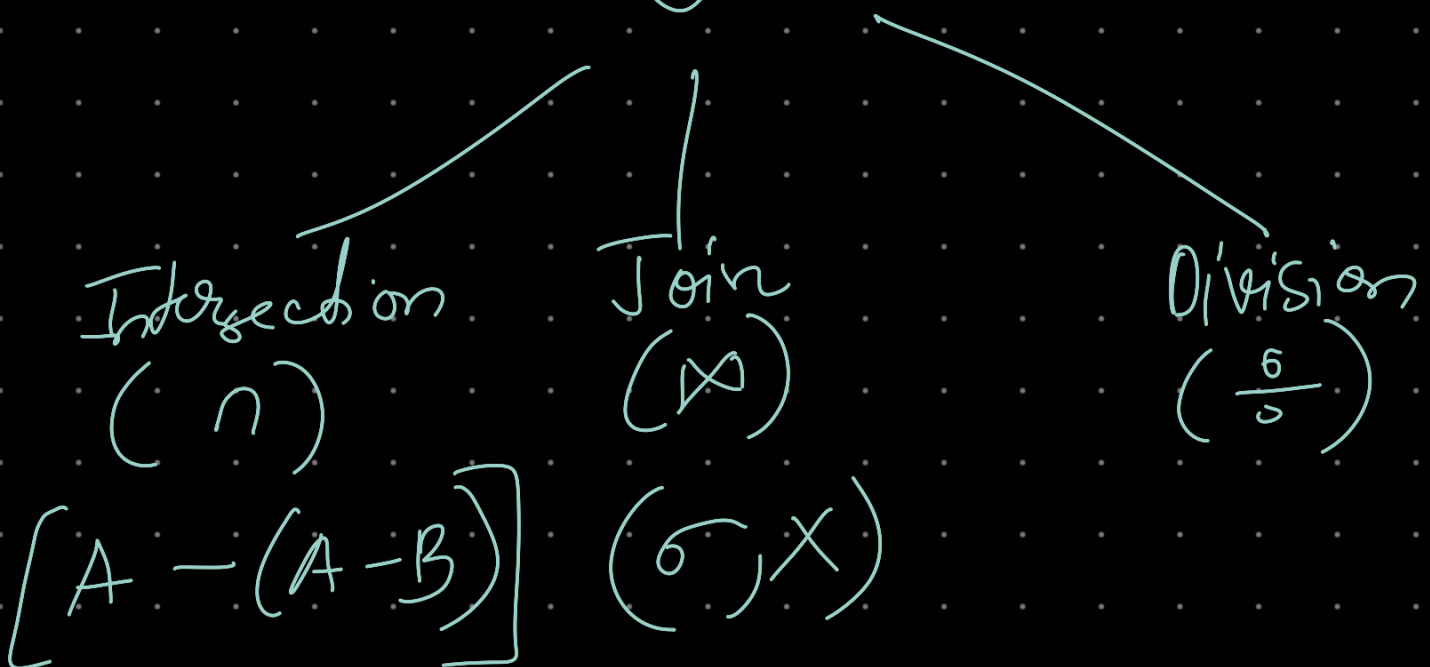
Relational Algebra

Fundamental operations. — Rename (ρ)

- Select (σ)
- Project (π)
- Union (∪)
- Set difference (−)
- Cartesian product (×)

① σ → Select rows/tuples

② π → Select columns/Attributes

③ $\cup$ → Union of two tables

④ — → Difference of two tables

⑤ $\times$ → Cross product of tables

⑥ ρ → Rename attribute/column

$\Downarrow$

Intersection $(\cap)$ Join $(\bowtie)$ Division $(\frac{\div}{})$

$[A - (A - B)]$ $(\sigma, \times)$

⁂ SELECT = Project (π)
(in SQL)   (in Relational Algebra)

Tuple Relational Calculus (TRC)

↳ works on rows/tuples

→ { (t) / condition (t) }

↳ tuple/rows

↳ All columns/attributes are fetched for every row/tuple

Domain Relational Calculus (DRC)

↳ works on Column Domain

$t.(A) = 10$ } → fetch tuples
↳ column   having $A = 10$