IF3111 – Kalkulus Relasional Domain

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Domain Relational Calculus

- A nonprocedural query language equivalent in power to the tuple relational calculus
- Each query is an expression of the form:

$$\{ < x_1, x_2, ..., x_n > \mid P(x_1, x_2, ..., x_n) \}$$

- $x_1, x_2, ..., x_n$ represent domain variables
- P represents a formula similar to that of the predicate calculus

Example Queries

- Find the *loan-number, branch-name,* and *amount* for loans of over $1200

  ■ Find the names of all customers who have a loan of over $1200

  ■ Find the names of all customers who have a loan from the Perryridge branch and the loan amount:

Example Queries

- Find the names of all customers having a loan, an account, or both at the Perryridge branch:

■ Find the names of all customers who have an account at all branches located in Brooklyn:

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Safety of Expressions

$$\{ < x_1, x_2, ..., x_n > \mid P(x_1, x_2, ..., x_n) \}$$

is safe if all of the following hold:

1. All values that appear in tuples of the expression are values from $dom(P)$ (that is, the values appear either in P or in a tuple of a relation mentioned in P).

2. For every "there exists" subformula of the form $\exists\, x\, (P_1(x))$, the subformula is true if an only if $P_1(x)$ is true for all values x from $dom(P_1)$.

3. For every "for all" subformula of the form $\forall_x\, (P_1\,(x))$, the subformula is true if and only if $P_1(x)$ is true for all values x from $dom\,(P_1)$.