

## Phase 10 a : Relation Operators

**Example 1 : Relation Type**

$$R \leftrightarrow S$$

**Example 2 : Maplet Constructor**

$$\begin{aligned}x &\mapsto y \\1 &\mapsto 2\end{aligned}$$

**Example 3 : Domain Restriction**

$$S \lhd R$$

**Example 4 : Range Restriction**

$$R \rhd T$$

**Example 5 : Relational Composition**

$$\begin{aligned}R ; S \\R \circ S\end{aligned}$$

**Example 6 : Relation Functions**

$$\begin{aligned}\text{dom } R \\ \text{ran } R\end{aligned}$$

**Example 7 : Complex Expressions**

$$\begin{aligned}\text{dom}(S \lhd R) \\ \text{ran}(R \rhd T) \\ A \lhd R ; R \rhd B\end{aligned}$$

**Example 8 : Chained Relations**

$$\begin{aligned}R ; S ; T \\ A \lhd R \rhd B\end{aligned}$$

**Example 9 : Relations with Set Operations**

$$\begin{aligned}(x \mapsto y) \in R \\ \text{dom } R \subseteq S \\ \text{ran } R \cup \text{ran } S\end{aligned}$$