

## 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

$$S \triangleleft R$$

### Example 4 : Range Restriction

$$R \triangleright T$$

### Example 5 : Relational Composition

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

### Example 6 : Relation Functions

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

### Example 7 : Complex Expressions

$$\begin{aligned} \text{dom}(S \triangleleft R) \\ \text{ran}(R \triangleright T) \\ (A \triangleleft R) \circ (R \triangleright B) \end{aligned}$$

### Example 8 : Chained Relations

$$\begin{aligned} R \circ S \circ T \\ A \triangleleft R \triangleright B \end{aligned}$$

### Example 9 : Relations with Set Operations

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