Phase 12 : Sequences , Bags , and Tuple Projection

Example 1 : Sequence Literals

(a)

Empty sequence

$\langle\rangle$

(b)

Single element

$\langle a \rangle$

(c)

Multiple elements

$\langle 1, 2, 3, 4, 5 \rangle$

(d)

Sequence of identifiers

$\langle x, y, z \rangle$

Example 2 : Sequence Operators

(a) $\langle 1, 2, 3 \rangle$

(b) $\langle 1, 2, 3 \rangle$

(c) $\langle 1, 2, 3 \rangle$

(d) $\langle 1, 2, 3 \rangle$

(e) $\langle 1, 2, 3 \rangle$

Example 3 : Sequence Concatenation

(a) $\langle 1, 2 \rangle \frown \langle 3, 4 \rangle$

(b) $s \frown t \frown u$

(c) $\langle a \rangle \frown \langle b, c \rangle \frown \langle d \rangle$

Example 4 : Tuple Projection

(a) $x.1$

(b) $x.2$

(c) $(a, b, c).1$

(d) $(a, b, c).2$

Example 5 : Bag Literals

(a) $[\![x]\!]$

(b) $[\![1, 2, 3]\!]$

(c) $[\![a, b, c]\!]$

(d)

Bags with duplicates

$[\![1, 2, 2, 3, 3, 3]\!]$

Example 6 : Sequences in Expressions

(a) $x \in \langle 1, 2, 3 \rangle$

(b) $s = a$

(c) $\langle 1, 2, 3 \rangle = \langle 2, 3 \rangle$

Example 7 : Complex Expressions

(a) $\forall\, i : \mathbb{N} \bullet i \in \langle 1, 2, 3 \rangle \Rightarrow i > 0$

(b) $\exists\, s : seq[\mathbb{N}] \bullet s = 1$

(c) $\{x : \mathbb{N} \mid x > 0 \bullet \langle x, x^2 \rangle\}$

Example 8 : Real Examples

(a)

From Solution 37

$\langle a \rangle$

(b)

Tuple projection from Solution 38

$trains(x).2$

(c)

Bags from Solution 39

$[\![d]\!]$