An Event-B Specification of

Projections

Test using projections to get the left and right parts of pairs.

MACHINE Project 8 a 2 i 1

VARIABLES 1.1

mapping
left
right

INVARIANTS

inv1: $mapping \subseteq 1..10 \times \text{BOOL}$
inv2: $left \in \text{dom}(mapping)$
inv3: $right \in \text{ran}(mapping)$

EVENT INITIALISATION
THEN

init1: $mapping := \{1 \mapsto \text{FALSE}\}$
init2: $left := 1$
init3: $right := \text{FALSE}$

END

EVENT addPair 1.2
ANY

l
r

WHERE

grd1: $l \in \text{dom}(mapping)$
grd2: $r \in \text{ran}(mapping)$

THEN

act1: $mapping := mapping \cup \{l \mapsto r\}$

END

EVENT extractParts 1.3
Take a pair and split it into its left part and right part using the prj function generators.

ANY

x

WHERE

grd1: $x \in mapping$

THEN

act1: $left := (mapping \lhd \text{prj}_1)(x)$
Mapping is only used to deduce the types for prj1!

act2: $right := ((\mathbb{N} \times \text{BOOL}) \lhd \text{prj}_2)(x)$
Here the types are explicit, but same function.

END