An Event-B Specification of
Projections

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

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