An Event-B Specification of

Projections

	Test	using	projections	to	get	the	left	and	right	parts	of	pairs.
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1	MACH	CHINE Project												
	1.1	left mapping right	2											
	1.2	$\operatorname{addPair}(l\ r)$	2											
	1.3	$\operatorname{extractParts}(x)$	2											

```
1
MACHINE Project
                                                           8a 2i
                                                                                                              1.1
VARIABLES
 mapping
 left
 right
INVARIANTS
           mapping \subseteq \underline{1}..\underline{10} \times \mathrm{BOOL}
 inv1:
           left \in dom(mapping)
 inv2:
 inv3:
           right \in ran(mapping)
EVENT INITIALISATION
THEN
 init1:
            mapping := \{1 \mapsto \text{FALSE}\}
 init2:
            left := 1
            right := FALSE
 init3:
END
                                                                                                              1.2
EVENT addPair
ANY
 l
 r
WHERE
 grd1:
          l \in \text{dom}(mapping)
 grd2:
           r \in \operatorname{ran}(mapping)
THEN
           mapping := mapping \cup \{l \mapsto r\}
 act1:
END
                                                                                                              1.3
EVENT extractParts
Take a pair and split it into its left part and right part using the prj function generators.
ANY
 \boldsymbol{x}
WHERE
 grd1:
           x \in mapping
THEN
 act1:
          left := (mapping \lhd prj_1)(x)
 Mapping is only used to deduce the types for prj1!
 act2: right := ((\mathbb{N} \times BOOL) \triangleleft prj_2)(x)
 Here the types are explicit, but same function.
```

END

 $addPair,\,2$

extractParts, 2

INITIALISATION, 2

left, 2

mapping, 2

Project, 2

right, 2