An Event-B Specification of

Bridge

This project tests extending events.

1 MACHINE Bridge **2**
- 1.1 *count* . . . 2
- 1.2 enter(*nr*) . . . 2
- 1.3 leave(*nr*) . . . 2

2 REFINEMENT WithDrawBridge **3**
- 2.1 *draw_bridge_open* . . . 3
- 2.2 setBridge(*state*) . . . 3
- 2.3 enter `extends` enter . . . 3
- 2.4 leave `extends` leave . . . 3

MACHINE Bridge 1

VARIABLES 1.1

count Number of cars on bridge

INVARIANTS

inv1: $count \in \mathbb{N}$
inv2: $count \geq 0$
inv3: $count \leq 10$

EVENT INITIALISATION
THEN

init1: $count := 0$

END

EVENT enter 1.2
ANY

nr

WHERE

grd1: $nr \in \mathbb{N}$
grd2: $count + nr \leq 10$

THEN

act1: $count := count + nr$

END

EVENT leave 1.3
ANY

nr

WHERE

grd1: $nr \in \mathbb{N}$
grd2: $count - nr \geq 0$

THEN

act1: $count := count - nr$

END

REFINEMENT WithDrawBridge 2

REFINES Bridge

VARIABLES 2.1

draw_bridge_open If true, then the bridge is open and cars cannot enter the bridge.

INVARIANTS

inv1: *draw_bridge_open* ∈ BOOL

EVENT INITIALISATION
EXTENDS INITIALISATION
THEN

init1_1: *draw_bridge_open* := TRUE

END

EVENT setBridge 2.2
ANY

state

WHERE

grd1_1: *state* ∈ BOOL

THEN

act1_1: *draw_bridge_open* := *state*

END

EVENT enter 2.3
EXTENDS enter
WHERE

grd1_1: *draw_bridge_open* = FALSE

END

EVENT leave 2.4
EXTENDS leave
WHERE

grd1_1: *draw_bridge_open* = FALSE

END

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count, 2

draw_bridge_open, 3

enter, 2, 3

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leave, 2, 3

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