NAME

Radiator- an ADT representing a radiator

SETS

Q	the set of Radiators, {(S , V , B , I)}
S	the set of Switch Settings, { on , off }
V	the set of Valve Settings, ($\forall$v.v $\in$ N)
B	the set of Bleed Settings, { true, false }
N	the set of Natural Numbers ($\forall$n.n $\in$ Z $\wedge$ n $\geq$ 0)
I	the set of Radiator Identifiers (($\forall$i.i $\in$ Z $\wedge$ i $\geq$ 0)
H	the set of Heating Systems { See Heating System ADT }

SYNTAX

Create:	$\perp$	→	Q
Destroy:	Q	→	$\perp$
Init:	Q	→	Q
GetSwitch:	Q	→	S
SetSwitch:	Q X S	→	Q
GetValve:	Q	→	V
SetValve:	Q X N	→	Q
GetBleed:	Q	→	B
SetBleed:	Q X B	→	Q
GetID:	Q	→	I

SEMANTICS

$\forall$w.w $\in$ S, $\forall$x.x $\in$ B, $\forall$y.y $\in$ N, $\forall$z.z $\in$ I

Pre-create( ) :: true
Post-create(;r) :: r =(on , 0 , false , HeatingSystemSize+1)

Pre-Destroy(q) :: true
Post-Destroy((_ , _ , _ , _); r) :: r = $\perp$

Pre-Init(q) :: true
Post-Init ((_ , _ , _ , i) ; r) :: r = (on , 1 , false, i)

Pre-GetSwitch (q) :: true
Post-GetSwitch((s , _ , _ , _) ; r) :: r = s

Pre-SetSwitch (q , s) :: true
Post-SetSwitch ((_ , v , b, i) , w ; r) :: r = (w , v , b , i)

Pre-GetBleed(q) :: true
Post-GetBleed((_ , _ , b , _) ; r) :: r = b

Pre-SetBleed(q , b) :: true
Post-SetBleed ((s , v , _ , i) , x ; r) :: r = (s , v , x , i)

Pre-GetValve(q) :: true
Post-GetValve ((_ , v , _ , _) ; r) :: r = v

Pre-SetValve(q , n) :: n < 6
Post-SetValve((s , _ , b , i), y ;r):: r = (s , y , b , i)

Pre-GetID(q) :: true
Post-GetID ((_ , _ , _ , i) ; r) :: r = i

AUTHOR

Kevin Jacques, kjacques@lincoln.ac.uk, Mar 2017