
AIRPORT SHARED RESOURCE

CADT ControlTower

OPERATIONS

ACTION BeforeLanding: $\mathbb{N}[o]$

ACTION AfterLanding: $\mathbb{N}[i]$

ACTION BeforeTakeOff: $\mathbb{N}[o]$

ACTION AfterTakeOff: $\mathbb{N}[i]$

PROTOCOLS: *Landing* : *BeforeLanding*; *AfterLanding*

TakeOff : *BeforeTakeOff*; *AfterTakeOff*

CONCURRENCY: (*Landing* | *TakeOff*)*

SEMANTICS

DOMAIN:

STATE: self = *Sequence*(boolean)

INVARIANT:

INITIAL: $\text{Length}(\text{ControlTower}) > 0 \wedge \forall i \in 0..\text{Length}(\text{ControlTower}) \bullet \text{!ControlTower}[i]$

PRE: true

CPRE: $\exists i \in \mathbb{N} \bullet \text{!self}[i]$

BeforeLanding(ra)

POST: $\text{self}[ra] \wedge (\forall i \in 0..\text{Length}(\text{ControlTower}) \bullet \text{self}[i] = \text{self}^{\text{in}}[i] \vee i == ra)$

PRE: $\text{!self}[ra]$

CPRE: true

AfterLanding(ra)

POST: $\text{!self}[ra] \wedge (\forall i \in 0..\text{Length}(\text{ControlTower}) \bullet \text{self}[i] = \text{self}^{\text{in}}[i] \vee i == ra)$

PRE: true

CPRE: $\exists i \in \mathbb{N} \bullet \text{!self}[i]$

BeforeTakeOff(ra)

POST: $\text{self}[ra] \wedge (\forall i \in 0..\text{Length}(\text{ControlTower}) \bullet \text{self}[i] = \text{self}^{\text{in}}[i] \vee i == ra)$

PRE: $\text{!self}[ra]$

CPRE: true

AfterTakeOff(ra)

POST: $\text{!self}[ra] \wedge (\forall i \in 0..\text{Length}(\text{ControlTower}) \bullet \text{self}[i] = \text{self}^{\text{in}}[i] \vee i == ra)$