

Station

station_id ? : \mathbb{N}
station_code? \mathbb{N}
station_name? string
number_of_trains? \mathbb{N}
station_info: station_id \rightarrow station_name

station_id = dom (station_info)
station_name = ran (station_info)

Passenger

login? String
password? String
passenger_info: login \rightarrow password

login = dom (passenger_info)
password = ran (passenger_info)

Queue[Passenger]

passengers : seq Passenger
count : \mathbb{N}

passengers = $\langle \rangle$
count = 0

Add Passenger

Δ Queue[passengers]
passenger? : Passenger

passengers' = passengers \oplus (passenger?)
count' = count + 1

Train

train_id ? : \mathbb{N}
train_mode \in (unavailable , available)
train_classes : \mathbb{N}
schedule : \mathbb{P} Train_schedule
train_admin \in \mathbb{P} Admin
train_info : train_id \rightarrow train_mode

train_id = dom (train_info)
train_mode = ran (train_info)

Ticket

Δ Train

ticket_id ? : \mathbb{N}

reserver ? : \mathbb{P} Passenger

reserved_train ? : \mathbb{P} Train

reserve_info : reserver \mapsto reserved_train

tickets : seq Ticket

tickets = $\langle \rangle$

Add Ticket

Δ Ticket

passenger ? : \mathbb{P} dom (reserve_info)

train ? : \mathbb{P} ran(reserve_info)

add_info : passenger \mapsto train

tickets' = tickets \cup add_info

Delete Ticket

Δ Ticket

passenger ? : \mathbb{P} dom (reserve_info)

train ? : \mathbb{P} ran(reserve_info)

delete_info : passenger \mapsto train

delete_info \in tickets

tickets' = tickets \setminus dom(delete_info)

Admin

admin_id $\in \mathbb{N}$

admin_pass \in string

admin_info : admin_id \mapsto admin_pass

admins : seq Admin

admin_id = dom(admin_info)

admin_pass = ran(admin_info)

admins' = admins \cup admin_info

Login Admin

Δ Admin

user_id ? : \mathbb{N}

user_pass ? : string

login_info : user_id \mapsto user_pass

dom(login_info) \in dom(admin_info)

ran(login_info) \in ran(admin_info)

login_info \in admins

