

OCls – Iteration 4

1. Expression for Create Reservation Method

Preconditions: The connection exists in the Rail Network

Traveller exists in the system (notEmpty returns true if there is an existing traveller with that data in the catalog of booking system)

Postconditions: The trip has been successfully created and added to the trips list and the traveller has been successfully linked to the trip

The reservation registry has been updated with all the new reservations

```
Context BookingSystem::book_trip(connection: Connection, traveller: Traveller)
```

Pre:

```
self.connections -> includes(connection)
```

```
self.travellers -> select (t: traveller | t.first_name =  
data["firstname"] and t.last_name = data["lastname"] and  
t.age = data["age"] and t.id= data["id"]) -> notEmpty()
```

Post:

```
self.trips -> exists (t: Trip | t.traveller = traveller  
and t.connection = connection)
```

```
self.reservations -> select(r: Reservation  
| r.trip.traveller = traveller and r.trip.connection =  
connection) -> notEmpty())
```

2. Expression for Reservation Class

Invariant: no attribute of a Reservation object can be null.

Invariant: for a given Trip, a Reservation can only be associated to a Traveller once (a Traveller can't hold more than one Reservation for one Trip).

```
context Reservation
```

```
inv NoNullAttributes:
```

```
self.traveller <> null and self.ticket <> null and  
self.trip <> null
```

```
inv UniqueReservationPerTravellerPerTrip:
```

```
self.trip.reservations → select (r:Reservation |  
r.traveller = self.traveller) → size() = 1
```