INB370 / INN370 Software Development

Assignment 2, Part2: GUI Development

Example Test Scripts

Background

These scripts are provided to assist you in ensuring that your GUI works well and that it matches the specification. They are also designed to help you create your own tests and to see the link between the User Stories – as a Test Template – and actual test cases. The essential point is the addition of data, but some of these scripts will also cover more than one User Story in their scope, and so that is something to look out for.

We are here looking at the User Stories from the perspective of two user roles, the Train Driver and the Conductor, and recall that we need consider only the case of the departing train. As noted in the spec, the operation of the GUI is constrained by the following:

- All rolling stock (including locomotives) have a fixed, positive gross weight;
- Locomotives also have a certain 'pulling power' or capacity which determines how many carriages they can pull;
- Passenger cars have a fixed seating capacity; and
- Freight cars are designed for different kinds of goods.

And we have the following User Stories:

The Train Driver:

1. As a Train Driver I want to add/remove a carriage to/from the end of the train so that I can configure the train to deal with the passenger and freight loads required.
2. As a Train Driver I want the system to prevent shunts which would lead to an invalid configuration in order to ensure the safety of the train.
3. As a Train Driver I want the system to notify me of the reason a shunt has been rejected so that I can correct the error.
4. As a Train Driver I want to be able to view the configuration of the train so that I can tell when it is ready for departure.
5. As a Train Driver I want to be constantly apprised of whether or not the train is overloaded (i.e., too heavy for the locomotive to move) so that I can ensure its safety and readiness for departure.
6. As a Train Driver I want the system to prevent shunts of any kind when there are passengers on board in order to ensure their safety.

The Conductor:

7. As a Conductor I want to be able to view the remaining seating capacity of the train so that I can manage boarding.
8. As a Conductor I want to know whether or not the train is full so that I can avoid overcrowding.
9. As a Conductor I want to be able to specify the number of passengers trying to board the train, and be advised of the number of excess passengers unable to board so that I can direct them to another train.
10. As a Conductor I want to know the occupancy of each carriage so that I can better manage boarding and passenger comfort.

Test Scripts

In what follows I have listed 5 example test scripts. I would expect that you have done more informally in any case, but we will expect you to be able to demo these and we will throw in some others. In general we are interested in testing of situations that involve some correct input, or at least fail later rather than just dumb input value errors. So some of these scripts are reasonably involved. There is also a standard turn of phrase when specifying these scripts "PAG", which is short for Perform a Gesture. This is a widget neutral way of saying – do something with the GUI to make it happen. The covered stories are listed in the brackets after the script title]

Script 1: Build a Train [TD1, TD4, TD5, C7, C8, C10]

1. PAG to add a Locomotive of class 4D of weight 180 tonnes
2. *The System display shows the locomotive in the train configuration, indicates that the train is not overloaded, and shows a capacity of zero passengers and that the train is full.*
3. PAG to add a passenger carriage of weight 80 tonnes and capacity 50
4. *The System display shows the locomotive and a single passenger carriage in the train configuration, indicates that the train is not overloaded, shows a remaining capacity of 50 passengers, occupancy of 0/50 in carriage 1, and indicates that the train is not full.*
5. PAG to add a passenger carriage of weight 80 tonnes and capacity 50
6. *The System display shows the locomotive and two passenger carriages in the train configuration, indicates that the train is not overloaded, shows a remaining capacity of 100 passengers, occupancy of 0/50 in carriage 1 and 2, and indicates that the train is not full.*
7. PAG to add a passenger carriage of weight 80 tonnes and capacity 50
8. *The System display shows the locomotive and three passenger carriages in the train configuration, indicates that the train is overloaded and cannot move, shows a remaining capacity of 150 passengers, occupancy of 0/50 in carriage 1,2 and 3, and indicates that the train is not full.*
9. PAG to remove the last passenger carriage of weight 80 tonnes and capacity 50
10. *The System display shows the locomotive and two passenger carriages in the train configuration, indicates that the train is not overloaded, shows a remaining capacity of 100 passengers, occupancy of 0/50 in carriage 1 and 2, and indicates that the train is not full.*

Script 2: Locomotive Types [TD1, TD4, TD5]

Test A: Diesel – reset to empty train after each test

1. PAG to add a Locomotive of class 4D of weight 200 tonnes
2. *The System display shows the locomotive in the train configuration and indicates that the train is not overloaded, that the capacity is zero and that the train is full.*
3. PAG to remove the locomotive from the train.
4. *The System display shows an empty train configuration, that the capacity is zero and that the train is full.*

Test B, C – repeat for Electric and Steam Locomotives with sensible power class and weight choices

Script 3: Build a Train and Board Passengers

Test A – building and boarding **[TD1, TD4, TD5, C7, C8, C9, C10]**

1. Follow Script 1 to step 6.
2. PAG to attempt to board 70 passengers
3. *The System display shows an unchanged train configuration, indicates that the train is not overloaded, shows a revised capacity of 30 passengers, indicates that the train is not full and shows occupancy in the two carriages consistent with 70 passengers having boarded e.g. 50/50 + 20/50 or 35/50 + 35/50 etc.*
4. PAG to attempt to board 40 passengers.
5. *The System display shows an unchanged train configuration, indicates that the train is not overloaded, shows a revised capacity of 0 passengers, indicates that the train is full, shows occupancy in the two carriages of 50/50 + 50/50, and provides information to the conductor that 10 passengers were unable to board.*

Script 4: Freight Types [TD1, TD4, TD5]

1. Follow Script 2; Test A, Steps 1 and 2 to set up a locomotive
2. PAG to add a Freight Carriage of type 'G' of weight 60 tonnes
3. *The System display shows the locomotive and freight carriage in the train configuration and indicates that the train is not overloaded, that the passenger capacity is zero and that the train is full.*
4. PAG to add a Freight Carriage of type 'R' of weight 70 tonnes
5. *The System display shows the locomotive, and 2 freight carriages L-G-R in the train configuration and indicates that the train is not overloaded, that the passenger capacity is zero and that the train is full.*
6. PAG to add a Freight Carriage of type 'D' of weight 50 tonnes
7. *The System display shows the locomotive, and 3 freight carriages L-G-R-D in the train configuration and indicates that the train is not overloaded, that the passenger capacity is zero and that the train is full.*

.

Script 5: Shunt Failure [TD1, TD2, TD3, TD4, TD5, TD6]

1. Follow Script 4 to step 3 to set up a locomotive and freight carriage
2. PAG to add a Passenger Carriage of capacity 75 and weight 100 tonnes.
3. *The System indicates that the shunt is invalid, and provides the reason to the driver – that the passenger carriage cannot follow a freight carriage. The display remains unchanged, showing the locomotive and freight carriage in the train configuration and indicating that the train is not overloaded, that the passenger capacity is zero and that the train is full.*