## Lab 3

# **Structure-based (White-box) Testing Techniques**

- 1. Implement the functionality of the booking process of train tickets in the Railway ticketing portal which includes the following modules:
  - to search train using the following capabilities: destination and time;
  - to calculate the ticket price according to one-way or round trip;
  - to calculate the ticket price according to dynamic pricing rules; to book tickets.

The user could book the train tickets using some GUI.

Github repo: https://github.com/Aleksey12SV/RailwayTicketingPortal/tree/master

- 2. Write input test data for a set of test cases to achieve:
  - Statement coverage (SC)
  - Decision coverage (DC)
  - Condition coverage (CC)

Test Data for Statement Coverage and Decision Coverage:

#### **Searching Train:**

#### Test for a matching train:

Start City: "CityA", Destination: "CityB", Time: "09:00", Date: "18/12/2023"

### Test for no matching train:

Start City: "CityA", Destination: "NonExistentCity", Time: "12:00", Date: "18/12/2023"

#### **Calculating Ticket Price:**

## Test for a one-way ticket:

Number of passengers: 1, Round Trip: false, Family Card: false, With Child: false, Senior

Discount: false

#### Test for a round-trip ticket:

Number of passengers: 1, Round Trip: true, Family Card: false, With Child: false, Senior Discount: false

## Test for a senior passenger:

Number of passengers: 1, Round Trip: false, Family Card: false, With Child: false, Senior Discount: true

#### Test for a passenger with a family card:

Number of passengers: 1, Round Trip: false, Family Card: true, With Child: false, Senior Discount: true

## **Dynamic Pricing Rules:**

#### Test for rush hour pricing:

Time: 08:00, Round Trip: false, Family Card: false

#### Test for non-rush hour pricing:

Time: 14:00, Round Trip: true, Family Card: false

#### **Booking Tickets:**

#### Test for successful booking:

Train with 2 or more available seats, Number of Passengers: 2, Round Trip: false, Family Card: true

#### Test for unsuccessful booking:

Train with no available seats, Number of Passengers: 1, Round Trip: true, Family Card: false

Draw the Control flow graphs for the functions.

Aleksey Svistunov, 201220030 LAB 3 Control Flow Graphs 1. search train using the following capabilities: destination I time (8 start city & date) lstart city = Varnal SC destination : Sofia D time = 09:30 T date = 18/12/23 Date (Set=" NSC= mull) &l (D== " AR D== null) 88 error -> return empty (T== null &l!is Formatted (T) fal Date I mult dollis Formatted (Date) return tickets for the current date Schenul 18 return tickets for the surrent date Date!= null return tickets for the specific date & time T!= mull return tickets for the current date

-x. calculate the ticket price. Basefrice (is Rush Hour) RH is senior S hasfamily Card FC withchild we FCBLWC BasePrice \* 0.5 S basefrice # 0.66 basefrice \* 0.9 FC F CasePrice \*0.95 RH totalPrice base Price totalfrice \*2 isRoundTrip exit total Price

3. Book Tickets

