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.

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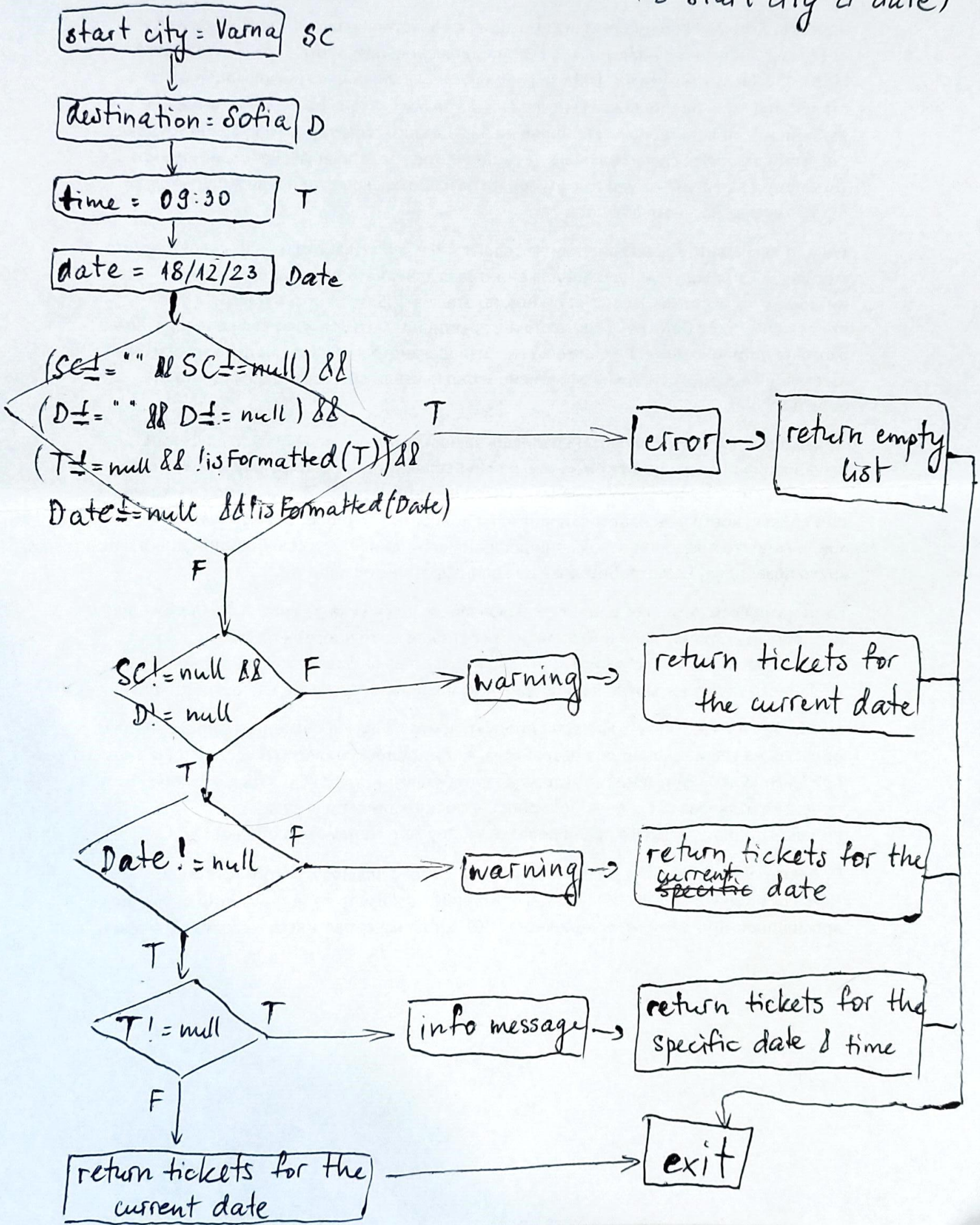
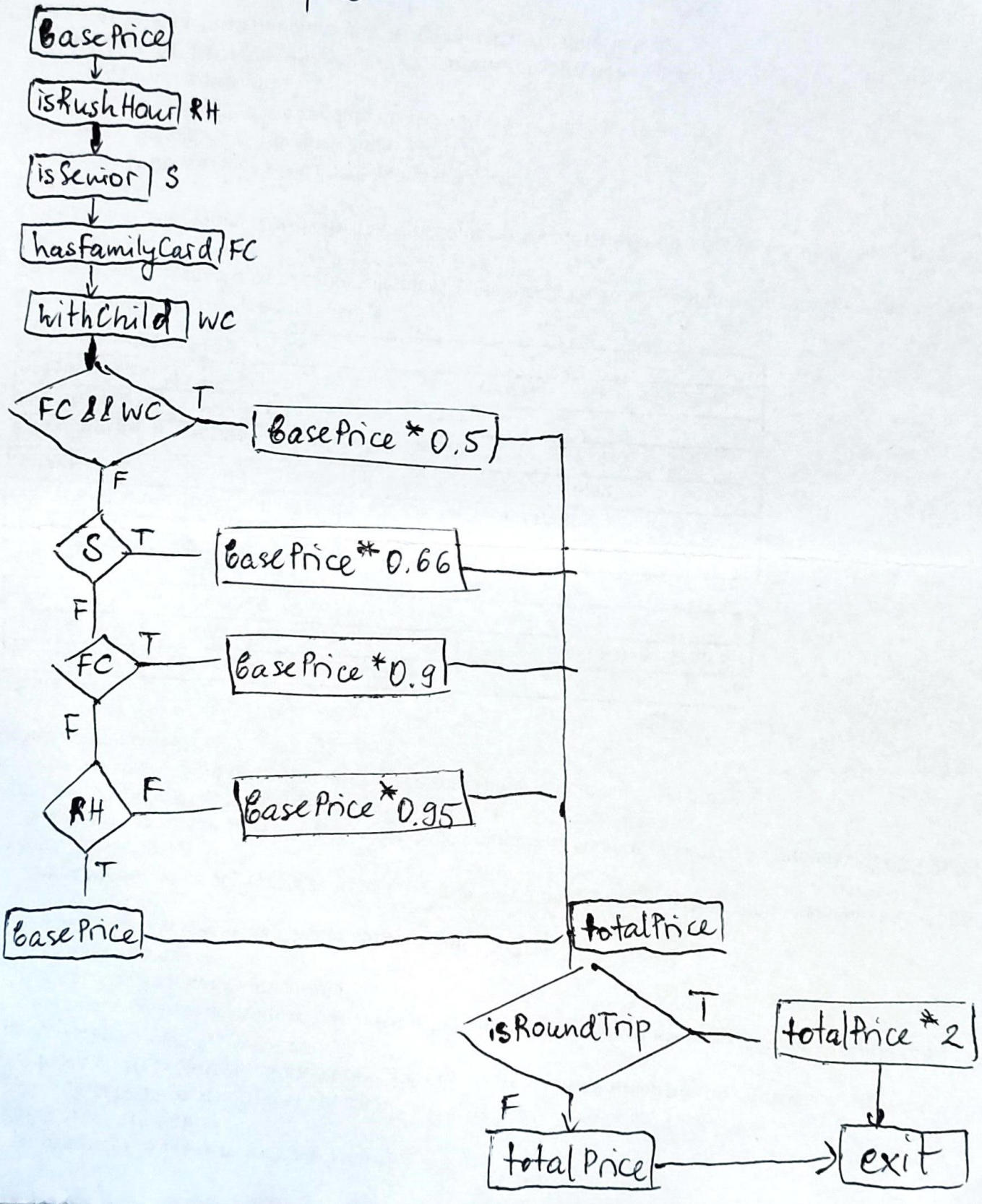
Control Flow Graphs

1. search train using the following capabilities: destination & time (& start city & date)



2. calculate the ticket price.



3. Book Tickets