Integration Test Plan

**myTaxiService**

Petar Korda

Ranjithkumar Krishnan

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# 1 Introduction

## 1.1 Revision History

## 1.2 Purpose and Scope

## 1.3 List of Definitions and Abbreviations

## 1.4 List of Reference Documents

# 2 Integration Strategy

## 2.1 Entry Criteria

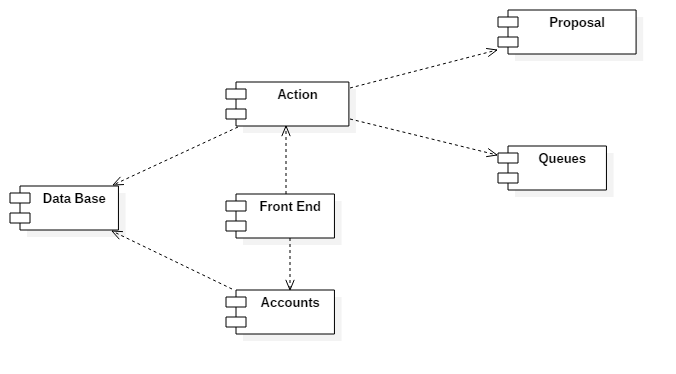
Components have to be unit tested before their integration tests. Also if certain drivers and stubs are required, they need to be developed before the integration tests.

## 2.2 Elements to be Integrated

The system is divided to 3 subsystems:

* Core System - business logic
* User Application - user management and front - end applications
* Driver Application - taxi application

The whole system is composed of high level components (section 2.2 in Design Document) shown below:



Each of these high level components is composed of other lover level components (sections 2.3 of the Design Document):

* Queues - Queue, ZoneManager, TaxiManager
* Proposal - ProposalManager, FareCalculator, WaitingCalculator, PaymentManager
* Actions - RequestManager, ReservationManager, NotificationManager
* Accounts - UserManager
* Front End - AndroidApp, iOSApp, WebSite

## 2.3 Integration Testing Strategy

In the diagram below the bottom - up order of integration of subsystems is shown. Core System is composed of the Queue and Zone management, Requests and Reservation for a ride, as well as Proposal generation. User Application is the front-end of the user app as well as Accounts management. Finally, Driver Application is the taxi application.



The order of integration sequence in regard to the high level view components is shown in the next diagram.



As it can be seen, here the bottom - up approach is being used. Whole system can be divided into two based on the type of action a user is performing: Request or Reservation. That's why it is convenient to perform the thread integration tests. First all of the components are integrated but only the parts required for Requests (requesting a ride) are developed and tested, and then after this is completed the Reservations (reserving a ride) functionality is added to the system.

With regard to the sequence of components that have to be developed, the diagram bellow is concerned about this. First the Requests parts are developed and integrated, and after that Reservations functionality is added and integrated.



## 2.4 Sequence of Component/Function Integration

### 2.4.1 Software Integration Sequence

**Core System:**

Components of core system and their integration order is:

* Queue (High level component) - consisted of (lower level components): Queue, ZoneManager



First the ZoneManager is developed and tested with external component MapsAPI, then Queue is developed and tested with ZoneManager.

* Proposal (High level component) - consisted of (lower level components): ProposalManager, FareCalculator, WaitingCalculator



These tests are done is separate integration threads for Requests and Reservations. First the ProposalManager is developed and tested with stubs of FareCalculator, WaitingCalculator and PaymentManager, which are then replaced with real components. So the top - down strategy is used in this case.

* Actions (High level component) - consisted of (lower level components): RequestManager, ReservationManager



These tests are performed after Queue and Proposal high level components have been tested. By the time when the reservations functionality is being added, also these tests are done for the ReservationManager.



**User Application:**

Components of user application and their integration order is:

* Accounts (High level component) - consisted of (lower level components): UserManager



UserManager is being tested with a Front-End driver. Bottom - up is used here.

* Front-End (High level component) - consisted of (lower level components): AndroidApp, iOSApp, WebSite



These tests are done is separate integration threads for Requests and Reservations.

**Driver Application:**

Components of driver application and their integration order is:

* TaxiManager



### 2.4.2 Subsystem Integration Sequence

If we refer again to the first diagram, the order of subsystem integration is shown.



# 3 Individual Steps and Test Description

INTEGRATION TEST CASE IT1

|  |  |
| --- | --- |
| Test case Id | IT1 |
| Test case components | Zone Manager 🡪 Maps |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check if the zone value is correct which is returned by maps |
| Environmental Needs | External API - Google maps |

INTEGRATION TEST CASE IT2

|  |  |
| --- | --- |
| Test case Id | IT2 |
| Test case components | Zone Manager 🡪Queue |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the zone manager calling the corresponding queue |
| Environmental Needs | IT1 Succeeded |

INTEGRATION TEST CASE IT3

|  |  |
| --- | --- |
| Test case Id | IT3 |
| Test case components | Proposal Manager 🡪 Fare calculator |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the fare value returned is appropriate |
| Environmental Needs | Fare calculator Stub |

INTEGRATION TEST CASE IT4

|  |  |
| --- | --- |
| Test case Id | IT4 |
| Test case components | Proposal Manager 🡪Waiting time calculator |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the returned output is appropriate |
| Environmental Needs | Waiting time calculator stub |

INTEGRATION TEST CASE IT5

|  |  |
| --- | --- |
| Test case Id | IT5 |
| Test case components | Fare calculator🡪Maps |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the value of the distance returned by Maps is appropriate |
| Environmental Needs | External API such as Google maps |

INTEGRATION TEST CASE IT6

|  |  |
| --- | --- |
| Test case Id | IT6 |
| Test case components | Waiting time calculator🡪Maps |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the value of the distance returned by Maps is appropriate |
| Environmental Needs | External API such as Google maps |

INTEGRATION TEST CASE IT7

|  |  |
| --- | --- |
| Test case Id | IT7 |
| Test case components | Proposal Manager 🡪 Payment Manager |
| Input specifications | Typical credit card details (some valid - it exists and is not expired, some of invalid cards) |
| Output Specifications | Check the payment is made successfully, or the system is informed otherwise |
| Environmental Needs | External Payment API |

INTEGRATION TEST CASE IT8

|  |  |
| --- | --- |
| Test case Id | IT8 |
| Test case components | Fare calculator🡪Maps |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the value of the distance returned by Maps is appropriate |
| Environmental Needs | External API such as Google maps |

INTEGRATION TEST CASE IT9

|  |  |
| --- | --- |
| Test case Id | IT9 |
| Test case components | Request manager🡪Queue(high level component) |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the corresponding queue is called and taxi is found. |
| Environmental Needs | IT1,IT2,IT3 succeeded |

INTEGRATION TEST CASE IT10

|  |  |
| --- | --- |
| Test case Id | IT10 |
| Test case components | Request Manager 🡪 Proposal |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone). |
| Output Specifications | Check the proposal generated consist of waiting time and fare is appropriate |
| Environmental Needs | IT4-IT8 succeeded |

INTEGRATION TEST CASE IT11

|  |  |
| --- | --- |
| Test case Id | IT11 |
| Test case components | Request Manager 🡪 Payment Manager |
| Input specifications | Typical credit card details (some valid - it exists and is not expired, some of invalid cards) |
| Output Specifications | Check the payment is made successful, also check refund amount in case of cancellation. |
| Environmental Needs | External payment API, IT4-IT8 succeeded |

INTEGRATION TEST CASE IT12

|  |  |
| --- | --- |
| Test case Id | IT12 |
| Test case components | Reservation manager🡪Queue(high level component) |
| Input specifications | Check the typical starting point and destination, (both may or may not be in the same zone), Date and Time. |
| Output Specifications | Check the corresponding queue is called and taxi is found. |
| Environmental Needs | IT1,IT2,IT3 succeeded |

INTEGRATION TEST CASE IT13

|  |  |
| --- | --- |
| Test case Id | IT13 |
| Test case components | Reservation Manager 🡪 Proposal |
| Input specifications | Check the typical starting point and destination (both may or may not be in the same zone), Date and Time. |
| Output Specifications | Check the proposal generated consist of waiting and fare is appropriate |
| Environmental Needs | IT4-IT8 succeeded |

INTEGRATION TEST CASE IT14

|  |  |
| --- | --- |
| Test case Id | IT14 |
| Test case components | Reservation Manager 🡪 Payment Manager |
| Input specifications | Typical credit card details (some valid - it exists and is not expired, some of invalid cards) |
| Output Specifications | Check the payment is made successful, also check refund amount in case of cancellation. |
| Environmental Needs | External payment API, IT4-IT8 succeeded |

INTEGRATION TEST CASE IT15

|  |  |
| --- | --- |
| Test case Id | IT15 |
| Test case components | Reservation Manager 🡪 Notification Manager |
| Input specifications | Various reservation (different times, same time etc.) |
| Output Specifications | Check the reminder/notification is generated and sent to the user |
| Environmental Needs | IT4-IT8 succeeded |

INTEGRATION TEST CASE IT16

|  |  |
| --- | --- |
| Test case Id | IT16 |
| Test case components | Front End 🡪 User Manager |
| Input specifications | Various types of users (registered users, not registered users) |
| Output Specifications | Check the user will be able to Register, login. |
| Environmental Needs | Front end driver. |

INTEGRATION TEST CASE IT17

|  |  |
| --- | --- |
| Test case Id | IT17 |
| Test case components | Android app 🡪 Action Manager |
| Input specifications | Typical requests (different starting points and destinations) and reservations (different times and dates also) |
| Output Specifications | Check the user will be able to Request and reserve a taxi. |
| Environmental Needs | IT9 - IT15 succeeded |

INTEGRATION TEST CASE IT18

|  |  |
| --- | --- |
| Test case Id | IT18 |
| Test case components | IOS app 🡪 Action Manager |
| Input specifications | Typical requests (different starting points and destinations) and reservations (different times and dates also) |
| Output Specifications | Check the user will be able to Request and reserve a taxi. |
| Environmental Needs | IT9 - IT15 succeeded |

INTEGRATION TEST CASE IT19

|  |  |
| --- | --- |
| Test case Id | IT19 |
| Test case components | Website 🡪 Action Manager |
| Input specifications | Typical requests (different starting points and destinations) and reservations (different times and dates also) |
| Output Specifications | Check the user will be able to Request and reserve a taxi. |
| Environmental Needs | IT9 - IT15 succeeded |

INTEGRATION TEST CASE IT20

|  |  |
| --- | --- |
| Test case Id | IT20 |
| Test case components | Request Manager🡪 Taxi Manager |
| Input specifications | Typical request different time and starting point |
| Output Specifications | Check that the taxi Manager dispatches the aforementioned taxi in the proposal, Informs taxi driver about the cancellation of the request. |
| Environmental Needs | IT9 - IT15 succeeded |

INTEGRATION TEST CASE IT21

|  |  |
| --- | --- |
| Test case Id | IT21 |
| Test case components | Reservation Manager🡪 Taxi Manager |
| Input specifications | Typical request different time, date and starting point. |
| Output Specifications | Check that the taxi Manager dispatches the taxi related to the Time mentioned in the reservation request, Informs taxi driver about the cancellation of the reservation. |
| Environmental Needs | IT9 - IT15 succeeded |

INTEGRATION TEST CASE IT22

|  |  |
| --- | --- |
| Test case Id | IT22 |
| Test case components | Taxi Manager🡪 Queue |
| Input specifications | Different taxi ids from various locations in zones |
| Output Specifications | Check whether the taxi is being put to the correct queue. |
| Environmental Needs | IT1, IT2, IT3 succeeded |

**INTEGRATION TEST PROCEDURE**

|  |  |
| --- | --- |
| Test procedure Identifier | ITP1 |
| Purpose | This procedure verifies whether system satisfies taxi request   * It checks whether the system finds appropriate zone manager for the specified starting point. * It checks whether the zone manager finds free the taxi in the queue for the request. * It checks whether the system generates appropriate taxi proposal for the received request. * It checks whether the system handles taxi payment using external payment API. |
| Procedure Sequence | IT1-IT9 |

|  |  |
| --- | --- |
| Test procedure Identifier | ITP2 |
| Purpose | This procedure verifies whether system satisfies taxi reservation   * It checks whether the system finds appropriate zone manager for the specified starting point. * It checks whether the zone manager finds free the taxi in the queue for the reservation. * It checks whether the system generates appropriate taxi proposal for the received reservation request. * It checks whether the system handles taxi payment using external payment API. * It also checks whether the system sends notification to the passenger accordingly. |
| Procedure Sequence | IT1-IT8,IT10 |

|  |  |
| --- | --- |
| Test procedure Identifier | ITP3 |
| Purpose | This procedure verifies whether front end satisfies the following   * It checks whether the user able to register a new account. * It checks whether the user able to login into his/her account with the credentials. * It checks whether the user able to request a taxi by specifying the required parameters. * It checks whether the user be able to reserve a taxi by specifying the required parameters. |
| Procedure Sequence | IT18-IT22 |

|  |  |
| --- | --- |
| Test procedure Identifier | ITP4 |
| Purpose | This procedure verifies whether driver app satisfies the following   * It checks whether the driver app able to forward the taxi request/reservation to the driver. * It checks whether the taxi manager is able to dispatch the appropriate taxi for the request/reservation. * It checks whether the app is able to inform the driver about the cancellation of request/reservation. |
| Procedure Sequence | IT18-IT22 |