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# **Product Requirements Document**

## **Use Cases Specification**

**Four Aces**

SWEN90007 SM2 2020 Project

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## 1. Introduction

This document specifies the architecture of the travel reservation system, describing its main standards, modules, components, frameworks and integrations.

### 1.1 Proposal

This project simulates a Travel Reservation System, a commercial platform for customers to search for and book flights across Australia or internationally. Customers can easily find information about their bookings from the system. The system also allows airlines to manage their flights, ticket options and reservations from their customers. All users and activities are managed by an administrator to ensure the system is working correctly.

The purpose of this document is to provide an overview of the system. High level design and architecture is captured in the use cases (Section 3), domain model description and diagram (Section 4). This serves as a common ground of communication among the development team members, as well as among the team, SWEN90007 teaching team and clients.

### 1.2 Target Users

This document is mainly intended for SWEN90007 students and teaching team.

### 1.3 Conventions, terms and abbreviations

This section explains the concept of some important terms that will be used throughout this document. These terms are detailed alphabetically in the following table.

Term	Description
Airplane	The class encapsulating details of the airplane used in the flight
Flight	The trip on the airplane
Passenger	Customers book tickets for passengers who will take flights.
Ticket	A ticket contains a passenger's information and seat number.
TRS	Travel Reservation System

## 2. Actors

Actor	Description
Administrator	A private company which is responsible for managing the system
Airline	A company which is able to manage its flights and customers
Customer	A person who is able to search for and book flights

### 3. Use Cases

#### 3.1 User Authentication

##### [UC001] User Logs in

##### Primary Actors

Customer, Airline, Administration

##### Pre-conditions

The user has registered in the system.

##### Main Events Flow

1. The user navigates to travel reservation system login page
2. The user enters username and password
3. The system validates username and password [AF01] [AF02]

##### Alternative Flows

##### [AF01] Mandatory field not filled

1. The user does not fill in username or password
2. The system displays a error message informing the user

##### [AF02] Incorrect username or password

1. The user enters incorrect username or password
2. The system displays a error message informing the user and will not authenticate the user

##### Exception Flow

##### [EF01] Unknown Exception

1. The system logs the runtime exception that has happened during the application execution however not recognized

##### [EF02] Known Exception

1. The system logs the exception that has happened during the application execution.

##### Post-conditions

The user is authenticated and is able to access their accounts

##### Additional Information

##### Login Fields

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
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Email	Login email	String	✓	✓	✓		User's login email
Password	Login password	String	✓		✓		User's login password
Type	User type	String	✓		✓		Either customer or airline

### 3.2 Customer User Cases

#### [UC002] Customer Registers

##### Primary Actors

Customer

##### Pre-conditions

None

##### Main Events Flow

1. The customer navigates to system registration page
2. The customer enters all required information, including username, email address and password
3. The system validates information entered by the user [AF01] [AF02] [AF03]
4. The system saves the user in the database

##### Alternative Flows

###### [AF01] Mandatory field not filled

1. The user does not fill in at least one mandatory field
2. The system displays a error message informing the user

###### [AF02] Incorrect information type

1. The user enters information that does not match the input type
2. The system displays a error message informing the user

###### [AF02] User already exists

1. The user enters a email address that already exists in the system
2. The system displays a error message informing the user

##### Exception Flow

###### [EF01] Unknown Exception

1. The system logs the unknown runtime exception which happens while the application is executing

**[EF02] Known Exception**

1. The system logs the known runtime exception which happens while the application is executing.

**Post-conditions**

The user is authenticated and is able to access their accounts

**Additional Information****Registration Fields**

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Username	User's username	String	✓	✓	✓		User's username
Email	User's email	String	✓	✓	✓		User's email
First name	User's first name	String			✓		User's first name
Last name	User's last name	String			✓		User's last name
Password	Password set by the user	String	✓		✓		User's password
Type	User's type	String	✓		✓		One of customer, airline or admin

**[UC003] Customer Searches for flights****Primary Actors**

Customer

**Pre-conditions**

The customer logs in to the system

**Main Events Flow**

1. The customer navigates to search flight page
2. The customer selects the source and the destination
3. The customer selects the dates they wish to travel
4. The system displayed a list of all flights that match customer's inputs [AF01] [AF02]

### **Alternative Flows**

#### **[AF01] Mandatory field not filled**

1. The user does not fill in at least one mandatory field
2. The system displays a error message informing the user

#### **[AF02] No available flight found**

1. The system displays a message informing the user there is no flight found

### **Exception Flow**

#### **[EF01] Unknown Exception**

1. The system logs the unknown runtime exception which happens while the application is executing

#### **[EF02] Known Exception**

1. The system logs the known runtime exception which happens while the application is executing.

### **Post-conditions**

The user views all available flights. If there is no flight found, the system displays a message.

### **Additional Information**

#### **Search Fields**

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Source	Place where the customer travels from	String	✓		✓		Source airport
Destination	Place where the customer travels to	String	✓		✓		Destination airport
Date	Departure date	String	✓		✓		Date should be this format "yyyy/mm/dd"



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## **[UC004] Customer Views Flight Details**

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### **Primary Actor**

Customer

### **Pre-conditions**

1. The customer has logged in to the system.
2. There are flights already displayed on the screen.

### **Main Events Flow**

1. The customer selects a flight
2. The system displays the details of the selected flight
3. The customer views the flight details

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## **[UC005] Customer Books Flights**

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### **Primary Actor**

Customer

### **Pre-conditions**

1. The customer has logged in to the system.
2. The customer has searched for the flight that they want
3. There are flights already displayed on the screen.

### **Main Events Flow**

1. The customer selects a first flight
2. The customer either selects a return flight or chooses to move on with one way only.
3. The system displays the booking page allowing the customer to enter information of a passenger
4. The customer selects a seat for the flight and the optional one more seat for the return flight for the passenger
5. The customer repeats steps 2 and 3 until there is no more passenger they want to add
6. The customer select "Submit booking"
7. The system submits the booking to the database

### **Alternative Flows**

#### **[AF01] Seats have been booked**

1. The chosen seats have been booked by the time the customer submits the booking
2. The system displays a message informing the customer
3. The customer is redirected to enter the booking information again

#### **[AF02] No available seats**

1. There is no more available seats for the flight

2. The system displays a message informing the customer
3. The customer is redirected to search for another flight

### **[AF03] Mandatory field not filled**

4. The user does not fill in at least one mandatory field
5. The system displays a error message informing the user

### **Booking Fields**

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Passenger names	Name of passengers	String	✓				
Passenger ID type	Identification document type of passenger	String	✓				
Passenger ID number	Identification document number of passenger	String	✓				
Seat number	The seat number that the customer chooses	String	✓				

## **[UC006] Customer Views Prior and Upcoming Flight Details**

### **Primary Actor**

Customer

### **Pre-conditions**

1. The customer has logged in to the system

### **Main Events Flow**

1. The customer navigates to the view flights page
2. The system displays all prior and upcoming flights for the customer
3. The customer selects a flight
4. The customer views the flight details

### **Alternative Flows**

#### **[AF01] No flight has been booked**

1. The customer has not booked any flight
2. The system displays a message to inform the customer that there is no flights

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## **[UC007] Airline Registration**

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### **Primary Actors**

Airline

### **Secondary Actors**

Admin

### **Pre-conditions**

None

### **Main Events Flow**

1. The airline navigates to system registration page
2. The airline enters all required information, including email address, first name, last name and password
3. The system validates information entered by the airline
4. The information is sent to the admin to verify
5. The admin approves the registration
6. The system saves the airline in the database

### **Alternative Flows**

#### **[AF01] Mandatory field not filled**

3. The user does not fill in at least one mandatory field
4. The system displays a error message informing the user

#### **[AF02] Incorrect information type**

3. The user enters information that does not match the input type
4. The system displays a error message informing the user

#### **[AF03] User already exists**

3. The user enters a email address that already exists in the system
4. The system displays a error message informing the user

#### **[AF04] Admin does not verify**

1. The admin does not agree to verify the airline
5. The airline is informed of a failed registration

### **Registration Fields**

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Username	User's email address	String	✓	✓			
Airline name	User's first name	String	✓	✓			
Password	Password set by the user	String	✓				

### [UC008] Airlines Create Flight

#### Primary Actors

Airline

#### Secondary Actors

none

#### Pre-conditions

Airline can register and log in system

#### Main Events Flow

1. The Airline navigates to the Flight information page.
2. The Airline clicks the create button.
3. The Airline selects the departure and destination airport.
4. The Airline sets the number of stopovers, flight code, type of airplane, the seats class and price for each ticket class.
5. After setting, the airline clicks the "submit" button and finishes creating.

#### Alternative Flows

##### [AF01] Mandatory field not filled

5. The Airline doesn't fill the departure and destination airport
6. The system displays a error message informing the user

##### [AF02] Incorrect information type

5. The user enters information that does not match the stopovers, airplane ,seats and price type
6. The system displays a error message informing the user

##### [AF03] Admin does not verify

1. The admin does not agree to create the airline

2. The airline is informed of a failed registration

### Create Fields

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Departure airport	The flight start airport	String	✓				
Destination Airport	The flight destination airport	String	✓				
Stopovers	The stopovers during the whole flight	String	✓				
airplane type	The airplane types	String	✓				
seats	The airplanes seats class	String	✓				
price	The seat price	Float	✓				

### [UC009] Airlines Edit Flight

#### Primary Actors

Airline

#### Secondary Actors

none

#### Pre-conditions

Airline can register and log in system

Airline can create flights

#### Main Events Flow

6. The Airline navigates to the Flight information page.
7. The Airline choose one flight and navigate this flight page information
8. The Airline can edit the number of stopovers, flight code, type of airplane, the seats class and price for each ticket class.
9. After setting, the airline clicks the “done” button and finishes editing.

#### Alternative Flows

**[AF01] Mandatory field not filled**

7. The Airline doesn't fill the departure and destination airport
8. The system displays a error message informing the user

**[AF02] Incorrect information type**

7. The user enters information that does not match the stopovers, airplane ,seats and price type
8. The system displays a error message informing the user

**[AF03] Admin does not verify**

1. The admin does not agree to edit the airline
2. The airline is informed of a failed registration

**Edit Fields**

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Departure airport	The flight start airport	String	✓				
Destination Airport	The flight destination airport	String	✓				
Stopovers	The stopovers during the whole flight	String	✓				
airplane type	The airplane types	String	✓				
seats	The airplanes seats class	String	✓				
price	The seat price	Float	✓				

**[UC010] Airlines Delete Flight****Primary Actors**

Airline

**Secondary Actors**

none

### **Pre-conditions**

Airline can register and log in system

Airline can edit flights

### **Main Events Flow**

10. The Airline navigates to the Flight information page.
11. The Airline chooses one flight and clicks “delete”.
12. When prompted with a confirmation prompt, the Airline confirms delete, then the flight is deleted.

### **Exception Flow**

#### **[EF01] Unknown Exception**

1. The system logs the unknown runtime exception which happens while the application is executing

#### **[EF02] Known Exception**

1. The system logs the known runtime exception which happens while the application is executing. Go to [UC014]

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## **[UC011] Airlines view customer and passengers details**

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### **Primary Actors**

Airline

### **Secondary Actors**

none

### **Pre-conditions**

Airline can register and log in the TRS system

### **Main Events Flow**

13. The Airline navigates to the customers information page.
14. The airline logs onto the TRS and navigates to the page that displays all customers who have booked a seat as passengers or booked for other passengers’ information on tickets on one of its flights.
15. To view the information about a specific customer or passenger, the airline selects a customer from the page and navigates to the tickets page viewing the passengers.

### **Alternative Flows**

#### **[AF01] Admin does not verify**

1. The admin does not agree Airline see the customers information
2. The airline is informed of a failed navigate in that page with a pop window saying “You don’t have right see this page”

## **Exception Flow**

### **[EF01] Unknown Exception**

1. The system logs the unknown runtime exception which happens while the application is executing

### **[EF02] Login Exception**

1. The system logs the Login exception which happens while the application is executing. Go to [UC001].

### **[EF03] Known Exception**

1. The system logs the known runtime exception which happens while the application is executing. Go to [UC012].

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## **[UC012] Views Users Details**

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### **Pre-conditions**

Administrator logs in to the TRS.

### **Main Events Flow**

1. Administrator navigates to the management console
2. Administrator navigates to the page that displays all the users registered on TRS
3. Administrator can select the user he wanted to check in this page - [AF01][AF02]
4. Administrator is redirected to the Customer details page that displays all the user information of the selected user

### **Alternative Flows**

#### **[AF01] Select Customer type**

1. Given in the Main Flow step 2, Administrator is able to select the Customer type to view only the customer in the page. Go Main Flow step 3.

#### **[AF02] Select Airline type**

1. Given in the Main Flow step 2, Administrator is able to select the Airline type to view only the airline in the page. Go [UC013].

## **Exception Flow**

### **[EF01] Unknown Exception**

2. The system logs the unknown runtime exception which happens while the application is executing

### **[EF02] Login Exception**

2. The system logs the Login exception which happens while the application is executing. Go to [UC001].



### **[EF03] Known Exception**

2. The system logs the known runtime exception which happens while the application is executing. Go to [UC012].

### **Post-conditions**

No post conditions as there is no change made to the system

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## **[UC013] Administrator Views Airline Details**

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### **Pre-conditions**

1. The administrator logs in to the system.
2. The administrator is in the page where the list of all users are displayed
3. This use case is related to the UC012.

### **Main Events Flow**

1. The administrator selects the Airline to view only airline in the user list
2. The administrator selects one of the airline he wants to view
3. The administrator is redirected to the airline details page.

### **Exception Flow**

#### **[EF01] Unknown Exception**

2. The system logs the unknown runtime exception which happens while the application is executing

#### **[EF02] Known Exception**

1. The system logs the known runtime exception which happens while the application is executing. Go to [UC012]

### **Post-conditions**

No post conditions as there is no change made to the system

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## **[UC014]Administrator Creates Airports**

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### **Pre-conditions**

1. The administrator logs in to the system.
2. This use case is related to the use case [UC007].

### **Main Events Flow**

2. The administrator navigates to the Airport Creation Page.
3. The administrator enters all the information required for creating an airport, including name and airport code.

4. The administrator submits the information. - [AF01]
5. The administrator previews the information for confirmation.
6. The administrator confirms that the information is correct by clicking confirm. - [AF02]
7. The administrator is redirected to the airport list page where the administrator can see the newly created airport has been added to the list.

### **Alternative Flows**

#### **[AF01] Mandatory field not filled**

1. The administrator does not fill in at least one mandatory field
2. The system displays a error message informing the administrator

#### **[AF02] Repeat Airport code**

1. The administrator uses an existing code for the new airport
2. The system displays an error message informing the administrator that an airport has been created with this code.
3. the administrator is redirected to the main step 2 to refill the form.

### **Exception Flow**

#### **[EF01] Unknown Exception**

3. The system logs the unknown runtime exception which happens while the application is executing

#### **[EF02] Known Exception**

8. The system logs the known runtime exception which happens while the application is executing. Go to [UC014]

### **Post-conditions**

The Airport information is added to the Database.

### **Create Airport Field**

Field	Description	Type (Length)	Mandatory	Unique	Editable	Filtered	Details
Reference Code	The reference code of the airport	String	✓	✓		✓	The reference code will be used for creating the flight
Address	The address of the airport	String	✓				

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## **[UC015] Administrator Approves Airline Registration Request**

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### **Pre-conditions**

1. The airline has submitted the required documents for airline registration.
2. The administrator logs in to the system.
3. This use case is related to the UC007.

### **Main Events Flow**

1. The administrator navigates to the Airline Request page.
2. The administrator sees a list of requests.
3. The administrator selects the request he wanted to approve
4. The administrator is redirected to the request page where all the request information is displayed.
5. The administrator reads all the information.
6. The administrator verifies all the information in the request by clicking on Approve. -[AF01]
7. The administrator is redirected to the Airline Request Page.

### **Alternative Flows**

#### **[AF01] Reject the request**

1. The administrator does not approve the request by clicking on Reject.
2. The administrator enters the reason for rejecting the request, such as insufficient documents.
3. The administrator submitted the feedback to the request.
4. Go to [UC007].

### **Exception Flow**

#### **[EF01] Unknown Exception**

4. The system logs the unknown runtime exception which happens while the application is executing

#### **[EF02] Known Exception**

8. The system logs the known runtime exception which happens while the application is executing. Go to [UC015]

### **Post-conditions**

New Airline account has been created in the system and can be viewed, except when taking [AF001].