

The system shall allow the user to search for different flights

UC Name	<i>Filter Flights</i>
Summary	<i>The system must enable users to search for different flights efficiently. This feature allows users to specify their travel preferences and find relevant flight options based on criteria such as origin, destination, departure date, price, and class. By providing robust flight search functionality, the system enhances user experience and facilitates seamless flight booking.</i>
Dependency	<i>User Authentication and Authorization</i>
Actors	<i>Primary Actor: Passengers</i>
Preconditions	<i>Before utilizing the flight search functionality, users must be authenticated and logged into their account within the airline software, ensuring that only authorized users can access and utilize the search feature.</i>
Description of the Main Sequence	<p><b>Step 1: User Input</b> <i>Users input their flight preferences, such as departure city, destination, travel dates, price, and class, into the search interface.</i></p> <p><b>Step 2: Query Submission</b> <i>Upon inputting preferences, users submit their search query by clicking a search button or similar action.</i></p> <p><b>Step 3: Search Processing</b> <i>The system processes the search query, analyzing the user's input criteria to retrieve relevant flight options from the database.</i></p> <p><b>Step 4: Flight Retrieval</b> <i>Based on the search criteria, the system retrieves available flight options that match the user's preferences, including flight schedules, fares, and availability.</i></p> <p><b>Step 5: Display Results</b></p>

	<p><i>The system displays the retrieved flight options in a clear and organized manner, presenting essential details such as departure times, arrival times, airlines, and ticket prices.</i></p> <p><b>Step 6: Refinement Options</b>  <i>Users may have options to refine their search results further, such as filtering by airline, price range, departure time, or number of stops.</i></p> <p><b>Step 7: Selection</b>  <i>Users review the displayed flight options and select the one that best fits their preferences and requirements.</i></p> <p><b>Step 8: View Details</b>  <i>Upon selecting a flight, users may have the option to view additional details, such as seat availability, aircraft type, in-flight amenities, and fare conditions.</i></p> <p><b>Step 9: Return to Search</b>  <i>Users have the option to return to the flight search interface to perform additional searches or explore alternative flight options if needed.</i></p>
Description of the Alternative Sequence	<p><b>Step 1: User Input</b>  <i>Users input their flight preferences, such as departure city, destination, travel dates, and class, into the search interface.</i></p> <p><b>Step 2: Query Submission</b>  <i>Upon inputting preferences, users submit their search query by clicking a search button or similar action.</i></p> <p><b>Step 3: Search Processing</b>  <i>The system processes the search query, analyzing the user's input criteria to retrieve relevant flight options from the database.</i></p> <p><b>Step 4: Flight Retrieval</b>  <i>The system checks the database for available flight options that match the user's preferences.</i></p> <p><b>Step 5: No Matching Flights Found</b>  <i>If there are no flights that match the user's input criteria, the system informs the user that no matching flights were found.</i></p> <p><b>Step 6: Error Handling</b>  <i>The system may provide suggestions to the user, such as</i></p>

	<p><i>adjusting the search criteria, selecting alternative travel dates, or considering nearby airports.</i></p> <p><b>Step 7: Return to Search</b></p> <p><i>Users have the option to return to the flight search interface to modify their search criteria and perform a new search.</i></p>
Nonfunctional requirements	<p><b>Performance:</b> <i>Ensure fast response times.</i></p> <p><b>Usability:</b> <i>Maintain an intuitive user interface.</i></p> <p><b>Accessibility:</b> <i>Comply with accessibility standards.</i></p> <p><b>Reliability:</b> <i>Provide accurate and reliable search results.</i></p> <p><b>Scalability:</b> <i>Handle increasing user load without performance degradation.</i></p> <p><b>Security:</b> <i>Protect user data during search queries.</i></p>
Postconditions	<p><i>After selecting a flight, users are seamlessly guided through the booking process, where they can confirm their flight selection, provide necessary passenger information, and complete the reservation. Upon successful booking, users receive a confirmation of their flight reservation along with relevant booking details.</i></p>

The system shall allow the user to book a selected flight

UC Name	<i>Book Flight</i>
Summary	<p><i>The system must enable users to book a selected flight seamlessly. This feature allows users to confirm their flight selection, provide passenger details, and complete the reservation process efficiently within the airline software. By providing robust flight booking functionality, the system enhances user experience and facilitates hassle-free flight</i></p>

	<i>reservations.</i>
Dependency	<i>Filter Flights</i> <i>User Authentication and Authorization</i> <i>Secure Payment Transactions</i>
Actors	<i>Primary Actor: Passenger</i>
Preconditions	<i>Passenger has searched the particular flight and selected to see the details for that flight</i>
Description of the Main Sequence	<p><b>Step 1: Flight Selection</b></p> <p><i>After searching for and selecting a desired flight, users proceed to book the chosen flight.</i></p> <p><b>Step 2: Flight Details Review</b></p> <p><i>Users review the details of the selected flight, including departure and arrival times, fares, and other relevant information.</i></p> <p><b>Step 3: Passenger Information</b></p> <p><i>Users provide necessary passenger details such as names, contact information, and any special requirements.</i></p> <p><b>Step 4: Seat Selection (if applicable)</b></p> <p><i>If seat selection is available, users may choose their preferred seats or seating options for the flight.</i></p> <p><b>Step 5: Additional Services (if applicable)</b></p> <p><i>Users may have the option to select additional services such as baggage allowance, meal preferences, or seat upgrades.</i></p>

	<p><b>Step 6: Payment</b></p> <p><i>Users proceed to the payment step, where they provide payment details and confirm the booking.</i></p> <p><b>Step 7: Confirmation</b></p> <p><i>Upon successful payment processing, users receive a confirmation of their flight booking, along with relevant booking details and instructions for further steps.</i></p> <p><b>Step 8: Ticket Issuance</b></p> <p><i>The system generates and issues electronic tickets or booking references, which users can use for check-in and boarding.</i></p> <p><b>Step 9: Email Notification (optional)</b></p> <p><i>Optionally, users may receive an email confirmation of their booking for their records.</i></p>
Description of the Alternative Sequence	<p><b>Step 1: Flight Selection</b></p> <p><i>After selecting a desired flight, users proceed to book the chosen flight.</i></p> <p><b>Step 2: Flight Details Review</b></p> <p><i>Users review the details of the selected flight, including departure and arrival times, fares, and other relevant information.</i></p> <p><b>Step 3: Passenger Information</b></p> <p><i>Users provide necessary passenger details such as names, contact information, and any special requirements.</i></p> <p><b>Step 4: Seat Selection (if applicable)</b></p>

	<p><i>If seat selection is available, users may choose their preferred seats or seating options for the flight.</i></p> <p><b>Step 5: Additional Services (if applicable)</b></p> <p><i>Users may have the option to select additional services such as baggage allowance, meal preferences, or seat upgrades.</i></p> <p><b>Step 6: Payment Processing</b></p> <p><i>Upon attempting to proceed with payment, the system encounters an error or the payment is declined due to insufficient funds or other issues.</i></p> <p><b>Step 7: Error Notification</b></p> <p><i>The system notifies the user that the booking process was unsuccessful due to payment failure or other reasons.</i></p> <p><b>Step 8: Retry or Contact Support</b></p> <p><i>Users may have the option to retry the payment process with corrected details or contact customer support for assistance in resolving the issue.</i></p>
Nonfunctional requirements	<p><b>Performance:</b> <i>Ensure fast response times during the booking process.</i></p> <p><b>Usability:</b> <i>Maintain an intuitive and user-friendly interface for seamless booking.</i></p> <p><b>Accessibility:</b> <i>Comply with accessibility standards to accommodate users with disabilities.</i></p> <p><b>Reliability:</b> <i>Provide reliable booking functionality with minimal downtime.</i></p> <p><b>Scalability:</b> <i>Handle concurrent booking requests from multiple users without performance degradation.</i></p> <p><b>Security:</b> <i>Safeguard user payment and personal information during the booking process.</i></p> <p><b>Error Handling:</b> <i>Effectively handle errors and edge cases</i></p>

	<p>during booking to ensure a smooth user experience.</p> <p><b>Availability:</b> Ensure the booking system is available 24/7 to accommodate users from different time zones.</p>
Postconditions	<p>After successfully completing the booking process, users receive a confirmation of their flight reservation along with relevant booking details. The system generates electronic tickets or booking references, which users can use for check-in and boarding. Optionally, users may receive an email confirmation of their booking for their records.</p>

The system shall allow users to cancel already booked flights

UC Name	<i>Cancel Flight</i>
Summary	<p>The system must allow users to cancel already booked flights seamlessly. This feature enables users to cancel their flight reservations within the airline software efficiently. By providing robust flight cancellation functionality, the system enhances user experience and facilitates hassle-free flight management.</p>
Dependency	<i>User Authentication and Authorization</i>
Actors	<i>Primary Actor: Passenger</i>
Preconditions	<p>Before users can cancel already booked flights, they must be authenticated and logged into their account within the airline software. This ensures that only authorized users can access</p>

	<p><i>and utilize the flight cancellation functionality. Additionally, the flight to be canceled must be within the permissible cancellation window defined by the airline's policies and regulations.</i></p>
<p>Description of the Main Sequence</p>	<p><b>Step 1: User Authentication</b></p> <p><i>Users log into their account within the airline software.</i></p> <p><b>Step 2: Access Booking Management</b></p> <p><i>Users navigate to the section or feature within the software specifically designated for managing booked flights.</i></p> <p><b>Step 3: Select Flight to Cancel</b></p> <p><i>Users locate and select the flight reservation they wish to cancel from their booking history.</i></p> <p><b>Step 4: Cancellation Confirmation</b></p> <p><i>The system prompts users to confirm their decision to cancel the selected flight.</i></p> <p><b>Step 5: Cancellation Processing</b></p> <p><i>Upon confirmation, the system processes the cancellation request for the selected flight.</i></p> <p><b>Step 6: Refund Calculation (if applicable)</b></p> <p><i>If the cancellation is eligible for a refund according to the airline's policies, the system calculates the refund amount based on the cancellation terms and conditions.</i></p> <p><b>Step 7: Cancellation Confirmation</b></p> <p><i>The system provides users with a confirmation of the flight cancellation, including details of any applicable refunds or</i></p>



	<p><i>penalties.</i></p> <p><b>Step 8: Update Booking Status</b></p> <p><i>The system updates the booking status for the canceled flight in the user's booking history, marking it as canceled.</i></p> <p><b>Step 9: Email Notification (optional)</b></p> <p><i>Optionally, users may receive an email confirmation of the flight cancellation for their records.</i></p>
Description of the Alternative Sequence	<p><b>Step 1: User Authentication</b></p> <p><i>Users log into their account within the airline software.</i></p> <p><b>Step 2: Access Booking Management</b></p> <p><i>Users navigate to the section or feature within the software specifically designated for managing booked flights.</i></p> <p><b>Step 3: Select Flight to Cancel</b></p> <p><i>Users locate and select the flight reservation they wish to cancel from their booking history.</i></p> <p><b>Step 4: Cancellation Confirmation</b></p> <p><i>The system prompts users to confirm their decision to cancel the selected flight.</i></p> <p><b>Step 5: Cancellation Processing</b></p> <p><i>Upon confirmation, the system attempts to process the cancellation request for the selected flight.</i></p> <p><b>Step 6: Error Handling</b></p> <p><i>If an error occurs during the cancellation process (e.g.,</i></p>

	<p>system error, connectivity issues), the system notifies the user that the cancellation request could not be processed at the moment.</p> <p><b>Step 7: Retry or Contact Support</b></p> <p>Users may have the option to retry the cancellation process later or contact customer support for assistance in resolving the issue.</p>
Non functional requirements	<p><b>Performance:</b> Ensure fast response times during the cancellation process.</p> <p><b>Usability:</b> Maintain an intuitive and user-friendly interface for seamless cancellation.</p> <p><b>Accessibility:</b> Comply with accessibility standards to accommodate users with disabilities during cancellation.</p> <p><b>Reliability:</b> Provide reliable cancellation functionality with minimal downtime.</p> <p><b>Scalability:</b> Handle concurrent cancellation requests from multiple users without performance degradation.</p> <p><b>Security:</b> Safeguard user information and prevent unauthorized cancellation attempts.</p> <p><b>Error Handling:</b> Effectively handle errors and edge cases during cancellation to ensure a smooth user experience.</p> <p><b>Audit Trail:</b> Maintain an audit trail of cancellation actions for accountability and record-keeping purposes.</p> <p><b>Notification:</b> Notify users promptly of successful cancellations and any refund or penalty information.</p> <p><b>Regulatory Compliance:</b> Ensure compliance with airline policies and regulations regarding cancellation terms and conditions.</p>
Postconditions	<p>After successfully canceling a flight, users receive a confirmation of the cancellation along with any applicable refund details. The system updates the booking status for the canceled flight in the user's booking history, marking it as canceled. Optionally, users may receive an email confirmation of the flight cancellation for their records.</p>

**The system shall enable users (Passengers) to initiate the creation of new accounts.**

UC Name	<i>User Account Creation UC-201</i>
Summary	<i>Enabling passengers to create new accounts within the system.</i>
Dependency	<i>None</i>
Actors	Primary Actor: User (Passenger) Secondary Actor: System
Preconditions	<i>1. The user attempts to sign up using personal information.</i> <i>2. The user's unique account identifiers (email) do not match with another user's in the system.</i> <i>3. The user agrees to the terms and conditions of service before proceeding with the sign-up process.</i> <i>4. The user provides all required information fields (such as name, email, password) during the sign-up attempt.</i>
Description of the Main Sequence	<i>Step 1: The user navigates to the sign-up page on the system.</i> <i>Step 2: The user fills in the required personal information such as name, email address, and password.</i> <i>Step 3: The system validates the entered information to ensure all required fields are filled correctly.</i> <i>Step 4: The system checks if the provided email address is unique and not already associated with an existing account.</i> <i>Step 5: If the email address is unique, the system sends a verification email to the provided address.</i> <i>Step 6: The user receives the verification email and clicks on the verification link to confirm their email address.</i> <i>Step 7: Upon email verification, the system creates a new account for the user.</i> <i>Step 8: The user receives a confirmation message indicating successful account creation.</i> <i>Step 9: The user can now log in to the system using their email address and password.</i>
Description of the Alternative Sequence	<b>Alternative Sequence 1:</b> If the email address provided is already associated with an existing account, the system prompts the user to choose a different email address or attempt to recover their existing account.

	<b>Alternative Sequence 2:</b> If any errors occur during the sign-up process, such as invalid information or technical issues, the system provides appropriate error messages and prompts the user to correct the issues and try again.
Non functional requirements	<p><b>Security:</b> The security requirement for the sign-up process ensures the protection of user accounts and sensitive information from unauthorized access and potential breaches.</p> <p><b>Performance:</b> The authentication process is expected to conclude within a specified duration of seconds.</p> <p><b>Scalability:</b> The authentication database system should be capable of handling a large number of accounts.</p>
Postconditions	<ul style="list-style-type: none"> <li>• If account creation is successful, user should be able to login with their registered information.</li> <li>• In case account creation fails, user shall not be able to login.</li> </ul>

**The system shall provide users (Passengers) with the ability to securely authenticate and access their accounts.**

UC Name	<i>User Account Creation UC-202</i>
Summary	<i>Enabling passengers to securely access their accounts within the system.</i>
Dependency	<i>User Account Creation (UC-201)</i>
Actors	Primary Actor: User (Passenger) Secondary Actor: System
Preconditions	<i>1. The user has already created an account with the system.</i> <i>2. The user possesses valid login credentials, including a registered email address and password.</i> <i>3. The user has agreed to the terms and conditions of service before attempting to log in.</i> <i>4. The system is operational and accessible for user login.</i>
Description of the Main	<i>Step 1: The user enters their credentials to log in to the system.</i>

Sequence	<p><i>Step 2: The system verifies the provided credentials against the stored user data.</i></p> <p><i>Step 3: If the credentials match an existing user account, the system grants access to the user.</i></p>
Description of the Alternative Sequence	<p><b>Alternative Sequence 1:</b> If the credentials do not match or are invalid, the system denies access and prompts the user to try again or reset their password.</p> <p><b>Alternative Sequence 2:</b> If any errors occur during the log-in process, such as invalid information or technical issues, the system provides appropriate error messages and prompts the user to correct the issues and try again.</p>
Non functional requirements	<p><b>Security:</b> The security requirement for the login process ensures the protection of user accounts and sensitive information from unauthorized access and potential breaches.</p> <p><b>Performance:</b> The authentication process is expected to conclude within a specified duration of seconds.</p> <p><b>Scalability:</b> The authentication database system should be capable of handling a large number of accounts.</p>
Postconditions	<ul style="list-style-type: none"> <li>• 1. If the user's credentials are validated successfully, the user gains access to their account.</li> <li>• 2. Upon successful login, the system may redirect the user to their account dashboard or another designated landing page.</li> <li>• 3. If the user's credentials are invalid, the system denies access and provides appropriate error messages.</li> <li>• 4. After a specified number of unsuccessful login attempts, the system may lock the user's account for security purposes.</li> <li>• 5. The system logs the login activity, recording successful and unsuccessful login attempts for security auditing purposes.</li> </ul>

**The system shall grant administrators the capability to create new specialized permission accounts for privileged users.**

UC Name	<i>Admin Account Creation UC-203</i>
Summary	<i>Enabling administrators to create accounts for privileged users.</i>
Dependency	<i>None</i>
Actors	Primary Actor: User (Admin) Secondary Actor: System
Preconditions	<ol style="list-style-type: none"> <li><i>1. The administrator has appropriate access privileges and permissions to create new accounts.</i></li> <li><i>2. The administrator is logged into the system.</i></li> <li><i>3. The system is operational and accessible.</i></li> <li><i>4. The administrator possesses all necessary information required to create the new accounts, including user details and assigned permissions.</i></li> </ol>
Description of the Main Sequence	<p><i>Step 1: The administrator accesses the account management section of the system.</i></p> <p><i>Step 2: The administrator fills in the required details for the new account, including username, email, and any additional information.</i></p> <p><i>Step 3: The administrator selects or defines the special permissions for the new account.</i></p> <p><i>Step 4: The system validates the entered information to ensure accuracy and completeness.</i></p> <p><i>Step 5: Upon successful validation, the administrator confirms the creation of the new account.</i></p> <p><i>Step 6: The system generates a confirmation message, indicating that the new account has been successfully created.</i></p> <p><i>Step 7: If applicable, the system sends a notification to the newly created account, providing login credentials and instructions.</i></p> <p><i>Step 8: The system logs the creation of the new account for auditing purposes.</i></p> <p><i>Step 9: The administrator is returned to the main interface or account management section for further actions.</i></p>
Description of the Alternative Sequence	<b>Alternative Sequence 1:</b> If during the account creation process, the system encounters a critical error such as database connectivity issues or server malfunction, it halts

	<p>the account creation process, displays an error message informing the administrator of the technical issue, and advises them to attempt account creation again later or contact technical support for assistance.</p>
Non functional requirements	<ul style="list-style-type: none"> <li>-Reliability: The system should maintain consistent availability, minimizing downtime to ensure users can reliably access account creation and management functionalities.</li> <li>-Usability: The account creation interface should be intuitive and user-friendly, guiding administrators through the process with clear instructions and minimal complexity.</li> <li>-Scalability: The authentication database system should be capable of handling a large number of accounts.</li> <li>- Performance: The authentication process is expected to conclude within a specified duration of seconds.</li> <li>-Security: The security requirement for the sign up process ensures the protection of user accounts and sensitive information from unauthorized access and potential breaches.</li> </ul>
Postconditions	<ol style="list-style-type: none"> <li>1. The newly created account is added to the system's user database, allowing the administrator to manage its permissions and access rights.</li> <li>2. The system generates a confirmation message, notifying the administrator of the successful account creation.</li> <li>3. If applicable, the system sends a notification to the newly created account, providing login credentials and instructions on accessing the system.</li> <li>4. The creation event is logged in the system's audit trail, recording details such as the administrator responsible, timestamp, and any relevant metadata for auditing purposes.</li> <li>5. The administrator is returned to the main interface or account management section, ready for further actions or tasks.</li> </ol>

**The system shall grant administrators the capability to delete accounts from the system.**

UC Name	<i>Admin Account Deletion UC-204</i>
Summary	<i>Enabling administrators to delete accounts for privileged users.</i>
Dependency	<i>None</i>
Actors	Primary Actor: User (Admin) Secondary Actor: System
Preconditions	<ol style="list-style-type: none"><li><i>1. The administrator has appropriate access privileges and permissions to delete accounts.</i></li><li><i>2. The administrator is logged into the system.</i></li><li><i>3. The system is operational and accessible.</i></li><li><i>4. The administrator possesses all necessary information required to identify the account to be deleted.</i></li></ol>
Description of the Main Sequence	<p><i>Step 1: The administrator accesses the account management section of the system.</i></p> <p><i>Step 2: The administrator navigates to the list of user accounts and selects the account to be deleted.</i></p> <p><i>Step 3: The system prompts the administrator to confirm the deletion action.</i></p> <p><i>Step 4: The administrator confirms the deletion of the selected account.</i></p> <p><i>Step 5: The system removes the selected account from the user database.</i></p> <p><i>Step 6: The system generates a confirmation message, indicating that the account has been successfully deleted.</i></p> <p><i>Step 7: The deletion event is logged in the system's audit trail, recording details such as the administrator responsible, timestamp, and any relevant metadata for auditing purposes.</i></p> <p><i>Step 8: The administrator is returned to the main interface or account management section for further actions.</i></p>
Description of the Alternative Sequence	<p><b>Alternative Sequence 1:</b></p> <p>If during the account deletion process, the system encounters a critical error such as database connectivity issues or server malfunction, it halts the account deletion</p>



	process, displays an error message informing the administrator of the technical issue, and advises them to attempt account deletion again later or contact technical support for assistance.
Non functional requirements	<ul style="list-style-type: none"> <li>• Usability: The account deletion interface should be intuitive and user-friendly, guiding administrators through the process with clear instructions and minimal complexity.</li> <li>• Performance: The account deletion process is expected to conclude within a specified duration of seconds.</li> <li>• Security: The security requirement for the account deletion process ensures that only authorized administrators can delete accounts, preventing unauthorized access to user data.</li> </ul>
Postconditions	<ol style="list-style-type: none"> <li>1. The selected account is successfully removed from the system's user database.</li> <li>2. The system generates a confirmation message, notifying the administrator of the successful account deletion.</li> <li>3. The administrator is returned to the main interface or account management section for further actions.</li> </ol>

**The system shall grant administrators the capability to reset the password of accounts.**

UC Name	<i>Admin Password Reset UC-205</i>
Summary	<i>Enabling administrators to reset passwords for user accounts.</i>
Dependency	<i>User Account Creation (UC-201), Admin Account Creation (UC-203)</i>
Actors	Primary Actor: User (Admin) Secondary Actor: System

Preconditions	<ol style="list-style-type: none"> <li>1. <i>The administrator has appropriate access privileges and permissions to reset passwords.</i></li> <li>2. <i>The administrator is logged into the system.</i></li> <li>3. <i>The system is operational and accessible.</i></li> <li>4. <i>The administrator possesses all necessary information required to identify the account for which the password needs to be reset.</i></li> </ol>
Description of the Main Sequence	<p><i>Step 1: The administrator accesses the account management section of the system.</i></p> <p><i>Step 2: The administrator navigates to the list of user accounts and selects the account for which the password needs to be reset.</i></p> <p><i>Step 3: The system prompts the administrator to enter a new password for the selected account.</i></p> <p><i>Step 4: The administrator enters the new password.</i></p> <p><i>Step 5: The system verifies the new password and updates it for the selected account.</i></p> <p><i>Step 6: The system generates a confirmation message, indicating that the password has been successfully reset.</i></p> <p><i>Step 7: The password reset event is logged in the system's audit trail, recording details such as the administrator responsible, timestamp, and any relevant metadata for auditing purposes.</i></p> <p><i>Step 8: The administrator is returned to the main interface or account management section for further actions.</i></p>
Description of the Alternative Sequence	<p><b>Alternative Sequence 1:</b></p> <p>If during the password reset process, the system encounters a critical error such as database connectivity issues or server malfunction, it halts the password reset process, displays an error message informing the administrator of the technical issue, and advises them to attempt the password reset again later or contact technical support for assistance.</p>
Non functional requirements	<ul style="list-style-type: none"> <li>• <b>Reliability:</b> The system should maintain consistent availability, minimizing downtime to ensure administrators can reliably reset passwords.</li> <li>• <b>Usability:</b> The password reset interface should be intuitive and user-friendly, guiding administrators through the process with clear instructions and minimal</li> </ul>

	<p>complexity.</p> <ul style="list-style-type: none"> <li>• Performance: The password reset process is expected to conclude within a specified duration of seconds.</li> <li>• Security: The security requirement for the password reset process ensures that only authorized administrators can reset passwords, preventing unauthorized access to user accounts.</li> </ul>
Postconditions	<ol style="list-style-type: none"> <li>1. The password for the selected account is successfully updated in the system's user database.</li> <li>2. The system generates a confirmation message, notifying the administrator of the successful password reset.</li> <li>3. The administrator is returned to the main interface or account management section for further actions.</li> </ol>

**The system shall grant administrators the capability to change the permission of accounts.**

UC Name	<i>Admin Account Permissions Modification UC-206</i>
Summary	<i>Enabling administrators to modify permissions for user accounts.</i>
Dependency	<i>Admin Account Creation (UC-203)</i>
Actors	Primary Actor: User (Admin) Secondary Actor: System
Preconditions	<ol style="list-style-type: none"> <li>1. <i>The administrator has appropriate access privileges and permissions to modify account permissions.</i></li> <li>2. <i>The administrator is logged into the system.</i></li> <li>3. <i>The system is operational and accessible.</i></li> <li>4. <i>The administrator possesses all necessary information required to identify the account for which permissions need to be modified.</i></li> </ol>

<p>Description of the Main Sequence</p>	<p><i>Step 1: The administrator accesses the account management section of the system.</i></p> <p><i>Step 2: The administrator navigates to the list of user accounts and selects the account for which permissions need to be modified.</i></p> <p><i>Step 3: The system displays the current permissions for the selected account.</i></p> <p><i>Step 4: The administrator modifies the permissions as required.</i></p> <p><i>Step 5: The system verifies the modified permissions and updates them for the selected account.</i></p> <p><i>Step 6: The system generates a confirmation message, indicating that the permissions have been successfully modified.</i></p> <p><i>Step 7: The permission modification event is logged in the system's audit trail, recording details such as the administrator responsible, timestamp, and any relevant metadata for auditing purposes.</i></p> <p><i>Step 8: The administrator is returned to the main interface or account management section for further actions.</i></p>
<p>Description of the Alternative Sequence</p>	<p><b>Alternative Sequence 1:</b></p> <p>If during the permission modification process, the system encounters a critical error such as database connectivity issues or server malfunction, it halts the process, displays an error message informing the administrator of the technical issue, and advises them to attempt the modification again later or contact technical support for assistance.</p>
<p>Non functional requirements</p>	<ul style="list-style-type: none"> <li>• <b>Reliability:</b> The system should maintain consistent availability, minimizing downtime to ensure administrators can reliably modify account permissions.</li> <li>• <b>Usability:</b> The permission modification interface should be intuitive and user-friendly, guiding administrators through the process with clear instructions and minimal complexity.</li> <li>• <b>Performance:</b> The permission modification process is expected to conclude within a specified duration of seconds.</li> <li>• <b>Security:</b> The security requirement for the permission modification process ensures that only authorized administrators can modify permissions, preventing unauthorized access to sensitive functionalities.</li> </ul>

Postconditions	<ol style="list-style-type: none"><li>1. The permissions for the selected account are successfully updated in the system's user database.</li><li>2. The system generates a confirmation message, notifying the administrator of the successful permission modification.</li><li>3. The administrator is returned to the main interface or account management section for further actions.</li></ol>
----------------	--

**Payment Method Selection:** The system shall provide users with options to choose from multiple payment methods including credit/debit cards, digital wallets, and bank transfers during the checkout process.

UC Name	Payment Method Selection (UC-301)
Summary	Allows users to select a preferred payment method during the checkout process.
Dependency	Book Flight (UC-102)
Actors	Primary Actor: User (Passenger) Secondary Actor: System
Preconditions	User has initiated the checkout process and reached the payment step.
Description of the Main Sequence	1. System presents the available payment methods (credit/debit cards, digital wallets, bank transfers) to the user. 2. User selects a preferred payment method from the options provided. 3. System proceeds with the selected payment method for transaction processing.
Description of the Alternative Sequence	1a. If the user is not satisfied with the available payment methods, they can abort the transaction and can contact customer support if needed. 1b. If the selected payment method is unavailable or encounters an error, the system prompts the user to choose an alternative payment method. 1c. If the system fails to present the available payment methods due to technical issues, it displays an error message and prompts the user to try again later.
Non functional requirements	<b>Security:</b> The system must ensure that users' payment information is securely handled and transmitted during the payment method selection process. <b>Performance:</b> The payment method selection process should have low latency and high responsiveness to provide users with a smooth and efficient checkout experience, even during periods of high traffic. <b>Compatibility:</b> The payment method selection interface should be compatible with various devices and screen sizes, ensuring accessibility for users across different platforms.

Postconditions	User successfully selects a payment method, unless a problem occurred.
----------------	--

**Payment Processing:** The system shall securely process payments made by users through the selected payment method, ensuring accuracy and reliability of transaction data.

UC Name	Payment Processing (UC-302)
Summary	System securely processes payments made by users through the selected payment method, ensuring accuracy and reliability of transaction data.
Dependency	Payment Method Selection (UC-301)
Actors	Primary Actor: User (Passenger) Secondary Actors: Fraud Department, Finance Department
Preconditions	User has selected a payment method and initiated the payment process.
Description of the Main Sequence	<ol style="list-style-type: none"> <li>1. User provides payment details through the selected payment method (e.g., card details, wallet information).</li> <li>2. The Fraud Department will monitor for payment fraud.</li> <li>3. The Finance Department <b>securely communicates</b> with the financial institution to authorize and process the transaction.</li> <li>4. Upon successful authorization, the payment system updates the transaction status and records the payment details.</li> <li>5. Confirmation of successful payment is displayed to the user.</li> <li>6. The system delivers the E-ticket to the user through their preferred communication channel (e.g., email, website).</li> </ol>
Description of the Alternative Sequence	<ol style="list-style-type: none"> <li>2a. If the fraud department finds something suspicious they will not approve the transaction and the system will perform as described in UC-303 (Fraud Detection and Prevention)</li> <li>3a. If the payment authorization fails, the payment system notifies the user and prompts for alternative payment details or methods.</li> <li>4a. If the payment processing encounters an error after authorization, the payment system provides appropriate error messages and instructs the users to contact customer support.</li> </ol>
Non functional requirements	<b>Security:</b> The payment processing system must adhere to strict security protocols to protect users' payment information during

	<p>transmission and storage.</p> <p><b>Performance:</b> The payment processing system should have low latency and high throughput to efficiently handle payment transactions, ensuring timely processing and responsiveness to user actions..</p> <p><b>Scalability:</b> The payment processing system should be scalable to accommodate increasing transaction volumes without degradation in performance, ensuring seamless operation during peak usage periods.</p> <p><b>Reliability:</b> The payment processing system should be highly reliable, minimizing the risk of transaction failures or data inaccuracies to maintain trust and confidence among users.</p>
Postconditions	Payment is successfully processed, and transaction data is accurately recorded.

**Transaction history:** The system should provide an easy way to review transactions made.

UC Name	Reviewing transactions (UC-303)
Summary	The system provides an easy way for users to review transactions made, allowing them to view details of past transactions.
Dependency	Payment Processing (UC-302)
Actors	Primary Actor: User (Passenger) Secondary Actor: System
Preconditions	User is logged into their account on the system.
Description of the Main Sequence	<ol style="list-style-type: none"> <li>1. User navigates to the "Transactions" or "Order History" section within their account settings.</li> <li>2. The system retrieves and displays a list of past transactions associated with the user's account.</li> <li>3. User can select a specific transaction to review by clicking on it.</li> <li>4. The system presents detailed information about the selected transaction, including date, time, payment method, amount, and</li> </ol>



	<p>any relevant order details.</p> <p>5. User reviews the transaction details and can optionally print or save a copy for their records.</p>
Description of the Alternative Sequence	
Non functional requirements	<p><b>Reliability:</b> The system's transaction review functionality should be reliable, ensuring that users can consistently access and review past transactions without errors or data discrepancies.</p> <p><b>Usability:</b> The interface for reviewing transactions should be user-friendly and intuitive, providing clear navigation and presentation of transaction details to enhance the user experience.</p> <p><b>Performance:</b> The performance impact of retrieving and displaying transaction data should be minimized to ensure fast and responsive access to transaction details, even for users with large transaction histories.</p> <p><b>Security:</b> The system must ensure the confidentiality and integrity of transaction data during retrieval and display to prevent unauthorized access or tampering.</p>
Postconditions	User successfully reviews transactions made.

### Encryption of Sensitive Information:

The system shall encrypt all sensitive user data using industry-standard encryption algorithms such as AES (Advanced Encryption Standard) or equivalent. It must ensure that sensitive information, including user credentials, financial data, and personal details, are securely encrypted during storage and transmission.

UC Name	<b>Encryption of Sensitive Information UC-401</b>
Summary	The system encrypts all sensitive user data, including user credentials, financial data, and personal details, using industry-standard encryption algorithms such as AES (Advanced

	Encryption Standard) or equivalent, to ensure security during storage and transmission.
Dependency	User account creation (UC-201) , Payment Processing (UC-302)
Actors	Primary Actor: User (Admin) Secondary Actors: System, IT Department
Preconditions	Sensitive user data is collected or transmitted within the system.
Description of the Main Sequence	<ol style="list-style-type: none"> <li>1. The system identifies sensitive user data that requires encryption, including user credentials, financial data, and personal details.</li> <li>2. The system utilizes industry-standard encryption algorithms such as AES or equivalent to encrypt the sensitive user data.</li> <li>3. Encrypted data is securely stored in the system's cloud database or transmitted over networks.</li> </ol>
Description of the Alternative Sequence	None
Non functional requirements	<p><b>Security:</b> The encryption system must adhere to industry-standard encryption algorithms and practices to ensure the confidentiality and integrity of sensitive user data.</p> <p><b>Reliability:</b> The encryption system should be reliable, ensuring that sensitive user data is consistently encrypted and protected from unauthorized access or tampering.</p> <p><b>Performance:</b>The encryption system should have minimal impact on system performance, ensuring that encryption processes do not significantly degrade system responsiveness or throughput.</p> <p><b>Compliance:</b> The encryption system must comply with relevant regulations and standards governing the protection of sensitive user data, such as GDPR, HIPAA, or PCI DSS.</p>
Postconditions	Sensitive user data is securely encrypted and stored or transmitted.

## Protection Against Cyber Threats:

The system must incorporate mechanisms to detect and mitigate various cyber threats such as malware, phishing attacks, SQL injection, cross-site scripting (XSS), and denial-of-service (DoS) attacks. It should implement intrusion detection and prevention systems (IDPS) to monitor and respond to suspicious activities in real-time.

UC Name	Protection Against Cyber Threats
Summary	The system incorporates mechanisms to detect and mitigate various cyber threats such as malware, phishing attacks, SQL injection, cross-site scripting (XSS), and denial-of-service (DoS) attacks. It implements intrusion detection and prevention systems (IDPS) to monitor and respond to suspicious activities in real-time.
Dependency	
Actors	Primary Actor: User (Admin) Secondary Actor: IT Department, Fraud Department
Preconditions	Ticket booking functionality is available, and users are making transactions.
Description of the Main Sequence	<ol style="list-style-type: none"><li>1. The system continuously monitors ticket booking transactions for suspicious payment transactions, multiple bookings from the same IP address, or anomalies in user behavior.</li><li>2. Upon detecting potentially fraudulent transactions, the system flags them for further investigation by the IT department and Fraud Department.</li><li>3. The flagged transactions are analyzed by the IT department and fraud detection algorithms or services to determine the likelihood of fraud.</li><li>4. Based on the analysis, the fraud department takes appropriate actions, such as reviewing transactions, contacting users for verification, or blocking suspicious accounts.</li></ol>
Description of the Alternative Sequence	<b>None</b>
Non functional requirements	<b>Reliability:</b> The system's fraud detection mechanisms should be reliable and accurate in identifying potentially fraudulent

	<p>transactions to minimize false positives and negatives.</p> <p><b>Performance:</b> The performance impact of fraud detection algorithms or services should be optimized to ensure timely analysis and response to potentially fraudulent transactions without significantly affecting system responsiveness or transaction processing times.</p> <p><b>Security:</b> The fraud detection and prevention features implemented by the system must ensure the security and integrity of user transactions and sensitive information while minimizing the risk of fraudulent activities.</p> <p><b>Compliance:</b> The system's fraud detection and prevention measures must comply with relevant regulations and standards governing fraud prevention, such as PCI DSS, GDPR, or industry-specific compliance requirements.</p>
Postconditions	Potentially fraudulent transactions are flagged for further investigation, and appropriate actions are taken by the fraud department.

### Fraud Detection and Prevention:

The system should include features to detect and prevent fraudulent activities related to ticket bookings, such as suspicious payment transactions, multiple bookings from the same IP address, or anomalies in user behavior.

Integration with fraud detection services or algorithms should be implemented to analyze booking patterns and flag potentially fraudulent transactions for further investigation by the fraud department.

UC Name	Fraud Detection and Prevention (UC-303)
Summary	The system includes features to detect and prevent fraudulent activities related to payment. It integrates with fraud detection services or algorithms to analyze booking patterns and flag potentially fraudulent transactions for further investigation by the fraud department.

Dependency	Payment Processing (UC-202)
Actors	Primary Actor: System Secondary Actor: Fraud Department
Preconditions	User has initiated the checkout process and reached the payment step.
Description of the Main Sequence	<ol style="list-style-type: none"> <li>1. The system monitors ticket booking transactions in real-time for signs of fraudulent activity, such as unusual payment patterns, multiple bookings from the same IP address, or suspicious user behavior.</li> <li>2. Upon detecting potentially fraudulent transactions, the system flags them for further investigation by the fraud department.</li> <li>3. The flagged transactions are reviewed by fraud detection algorithms or services to assess the likelihood of fraud based on predefined criteria and thresholds.</li> <li>4. Based on the analysis, the fraud department takes appropriate actions, such as contacting users for verification, blocking suspicious accounts, or initiating legal proceedings against perpetrators.</li> </ol>
Description of the Alternative Sequence	<ol style="list-style-type: none"> <li>1. If the fraud detection system encounters technical issues or errors, the system logs the incident and notifies administrators for resolution.</li> </ol>
Non functional requirements	<p><b>Performance:</b> The performance impact of fraud detection algorithms or services should be optimized to ensure timely analysis and response to potentially fraudulent transactions without significantly affecting system responsiveness or transaction processing times.</p> <p><b>Compatibility:</b> The system's fraud detection and prevention measures must comply with relevant regulations and standards governing fraud prevention, such as PCI DSS, GDPR, or industry-specific compliance requirements.</p> <p><b>Reliability:</b> The system's fraud detection mechanisms should be reliable and accurate in identifying potentially fraudulent transactions to minimize false positives and negatives.</p>
Postconditions	Potentially fraudulent transactions are flagged for further investigation.



The system shall provide secure user authentication mechanisms.

UC Name	<i>User Authentication and Authorization UC-001</i>
Summary	<i>Verifying the identity and the permissions of the users accessing the planning features.</i>
Dependency	<i>None</i>
Actors	Primary Actor: Air Control Department Users Secondary Actor: System
Preconditions	<i>1. The user's credentials are valid. 2. The user attempts to access the air control department.</i>
Description of the Main Sequence	<b>Step 1:</b> The user fills in the username and password. <b>Step 2:</b> The system verifies the provided credentials with those on the database. <b>Step 3:</b> The system checks the user's role and permissions based on credentials. <b>Step 4:</b> If the credentials are valid, the system gives access to the user as part of air control department. <b>Step 5:</b> If the credentials are invalid, the system denies access and the user has to try again.
Description of the Alternative Sequence	<b>Step 1:</b> If the user fails to give the valid credentials after three times, the system deactivates the user's account and notifies the administrator.
Non functional requirements	<b>Security:</b> User authentication must have strong encryption methods to protect sensitive information. <b>Performance:</b> The authentication process should be completed within ... seconds. <b>Scalability:</b> The authentication system should be capable of handling a large number of login attempts.
Postconditions	<ul style="list-style-type: none"><li>• If authentication and authorisation is successful, user should have access as air control department personnel.</li><li>• In case of failure, user access is denied.</li></ul>

The system shall validate user inputs to ensure data integrity and consistency.

UC Name	<i>Data Validation and Integrity</i> <i>UC-002</i>
Summary	Ensuring the integrity and consistency of data inputs by users.
Dependency	<i>User Authentication and Authorization (UC-001)</i>
Actors	<b>Primary Actor:</b> Air Control Department Users <b>Secondary Actor:</b> System
Preconditions	The user attempts to input or modify flight data into the system.
Description of the Main Sequence	<b>Step 1:</b> The user provides input data such as airport coordinates, aircraft details, routes and estimated time of arrival. <b>Step 2:</b> The system provides validation checks on the integrity and consistency of the data. <b>Step 3:</b> The system checks the user's role and permissions based on credentials. <b>Step 4:</b> Verifies if the coordinates are according to the required format. <b>Step 5:</b> The system ensures that the provided information aligns with known parameters. <b>Step 6:</b> If validation errors are detected,the system notifies the user. <b>Step 7:</b> The system provides the user with the correct data. <b>Step 8:</b> Once all the validations are passed successfully, the input data is accepted by the system and proceed for further actions.
Description of the Alternative Sequence	If the input data fails any validation check, the system provides a specific error message, indicating the nature of the failure.
Non functional requirements	<b>Accuracy:</b> Validation checks should identify errors in user input. <b>Performance:</b> Data validation should be performed in real-time. <b>Flexibility:</b> Tha validation should be configurable to accommodate changes in flight data.
Postconditions	Validated input data is stored in the system, ensuring integrity and consistency of information about the flight.



The system shall support real-time collaboration features for multiple users.

UC Name	Real-Time collaboration UC-003
Summary	The system should support real-time collaboration, where changes should be immediately visible to other users.
Dependency	<i>User Authentication and Authorization (UC001)</i> <i>Data Validation and Integrity (UC-002)</i>
Actors	<b>Primary Actor:</b> Air Control Department Users <b>Secondary Actor:</b> System
Preconditions	<ul style="list-style-type: none"><li>• The user is authorized to access the system as part of the air control department.</li><li>• The user has initiated the collaboration session within the system.</li></ul>
Description of the Main Sequence	<b>Step 1:</b> <i>The system displays the list of all available flight plans.</i> <b>Step 2:</b> <i>The user selects a specific flight plan.</i> <b>Step 3:</b> <i>The system gets the flight plan details for the one that is chosen and presents them to the user for viewing and modifying.</i> <b>Step 4:</b> <i>If another user is editing the same flight at that time the system notifies both parties for the presence.</i> <b>Step 5:</b> <i>The user can change the plan such as updating route details, modifying aircraft information.</i> <b>Step 6:</b> <i>When the user makes the changes, the system updates them in real-time.</i> <b>Step 7:</b> <i>If another user is currently editing the same plan, the system updates their view to reflect the made changes.</i> <b>Step 8:</b> <i>If conflicts arise, such as modifying the same data field at the same time, the system provides a version control for the differences.</i>
Description of the Alternative	<i>If the conflict occurred due to edits by multiple users on the same time, the system prompts the affected users to review</i>

Sequence	<i>and resolve the conflict manually.</i>
Non functional requirements	<p><b>Performance</b> : Real-time updates must happen within a short time.</p> <p><b>Scalability</b> : The system should scale to accommodate a large number of users collaborating on multiple flight plans at the same time.</p> <p><b>Reliability</b> : Collaborating features should be reliable, ensuring the changes are shown properly at all user's views.</p>
Postconditions	Collaborative changes to the flight plan are successfully integrated and reflected in the system, maintaining consistency and coherence.

The system shall perform regular backups for flight plan data.

UC Name	<i>Backup and Recovery UC-004</i>
Summary	The regular backup of flight plan data to prevent loss due to system failures or data corruption.
Dependency	Audit Trail (UC-005)
Actors	Primary actor: Administrator Secondary actor : System
Preconditions	<ul style="list-style-type: none"> <li>• The system is capable of performing backup operations.</li> <li>• In the system are existing flight plans data.</li> </ul>
Description of the Main Sequence	<p><b>Step 1</b> : The system administrator initiates the backup process.</p> <p><b>Step 2</b> : The system identifies the flight plan data that is going to be backed up.</p> <p><b>Step 3</b> : The system creates a backup of the plan, ensuring data integrity and consistency.</p> <p><b>Step 4</b> : Backup files are stored in a secure location according to data policies and procedures.</p> <p><b>Step 5</b> : Administrator verifies and confirms the successful creation of backup files.</p> <p><b>Step 6</b> : The system maintains a log of backup operations with timestamps and details..</p>

Description of the Alternative Sequence	If the backup process fails, the system notifies the administrator and retires the process automatically.
Non functional requirements	<b>Reliability</b> : The backup process should be reliable and resilient, capable of handling large volumes of data without loss or errors. <b>Security</b> : Backup files should be encrypted to protect the data. <b>Scalability</b> : The backup mechanism should scale to store increasing volume of data.
Postconditions	<ul style="list-style-type: none"> <li>Backup files are successfully stored and created in a secure location , mitigating the risk of data loss in the event of system failures or data corruption.</li> <li>The system is equipped with a robust recovery mechanism to restore the data from backup-s in case of emergencies with minimal downtime.</li> </ul>

The system shall maintain an audit trail of all actions performed on flight plans.

UC Name	<i>Audit Trail UC-005</i>
Summary	<i>The maintenance of audit trail, documenting all actions performed on flight plans such as creation, modification and deletion. It includes the timestamp and the user responsible for the action.</i>
Dependency	<i>User Authentication and Authorization (UC-001)</i> <i>Data Validation and Integrity (UC-002)</i> <i>Real-time Collaboration (UC-003)</i>
Actors	<b>Primary actor:</b> Administrator <b>Secondary actor:</b> System
Preconditions	<i>The system is operational and capable of tracking user actions.</i> <i>Flight plan data exists in the system.</i>
Description of	<b>Step 1</b> : <i>The system captures the data associated with each</i>

the Main Sequence	<p><i>action performed on the plans.</i></p> <p><b>Step 2 :</b> <i>When the user creates a new flight plan, the system records the timestamp, the user and the details of the created flight plan</i></p> <p><b>Step 3 :</b> <i>When the user modifies an existing plan, the system records the timestamp, the name of the user and the specific changes made to the plan.</i></p> <p><b>Step 4 :</b> <i>When a user deletes a flight plan, the system logs the timestamp, the responsible user and all the details of the deleted flight.</i></p> <p><b>Step 5 :</b> <i>Audit trail events are stored in a secure manner to ensure data integrity.</i></p> <p><b>Step 6 :</b> <i>The administrator can access and review the audit trail.</i></p> <p><b>Step 7:</b> <i>The trail is searchable and filterable.</i></p> <p><b>Step 8 :</b> <i>The audit trails events are maintained according to data policies and procedures.</i></p>
Description of the Alternative Sequence	<p><i>If the system encounters errors while logging in into audit trail events, it notifies the administrator and retires to log in.</i></p>
Non functional requirements	<p><b>Reliability :</b> <i>The audit trail logging mechanism should be reliable and resilient.</i></p> <p><b>Security :</b> <i>Audit trail events should be securely stored and protected for maintaining integrity and trustworthiness.</i></p> <p><b>Performance :</b> <i>The audit trail logging process should have minimal impact on system performance, allowing the system to operate efficiently under normal and peak load conditions.</i></p>
Postconditions	<p><i>An audit trail containing details of all actions performed on flight plans is maintained within the system providing accountability and traceability.</i></p> <p><i>The administrator can review and analyze audit trail events.</i></p>

The system shall be capable of integrating with external airline systems.

UC Name	<i>Integration with External Systems UC-006</i>
Summary	<i>This use case involves enabling the software to integrate with external systems, aircraft tracking systems or weather services.</i>
Dependency	<i>Data Validation and Integrity (UC-002)</i>
Actors	<b>Primary Actor:</b> Administrator <b>Secondary Actor:</b> Air Control Department User
Preconditions	<i>The system is operational and capable of integrating with external systems.</i>
Description of the Main Sequence	<b>Step 1 :</b> Administrator initiates the integration process. <b>Step 2 :</b> Administrator identifies the external systems to integrate with (aircraft tracking systems, weather forecasting services). <b>Step 3 :</b> Administrator configures connection parameters, authentication credentials, data formats. <b>Step 4 :</b> The system establishes connections with external systems verifying the compatibility. <b>Step 5 :</b> The system retrieves relevant data from the external system (real-time aircraft locations from tracking system, weather forecasts for specific routes). <b>Step 6 :</b> The integrated data is processed and incorporated into the flight planning features providing comprehensive information. <b>Step 7:</b> Air control department users can access the integrated data to make informed decisions and adjustments to flight plans.
Description of the Alternative Sequence	<i>If there are connectivity issues or errors in retrieving data, the system notifies the administrator.</i>
Non functional requirements	<b>Compatibility :</b> The integration mechanism should support the interoperability with a wide range of external systems.

	<p><b>Reliability</b> : Integration with external systems should be reliable and resilient, with error handling mechanisms.</p> <p><b>Security</b> : Integration interfaces should be secured using encryption and authentication to protect sensitive data exchange.</p>
Postconditions	<ul style="list-style-type: none"> <li>• The software is successfully integrated with external systems, providing users with real-time data for decision making.</li> <li>• Users can access and utilize integrated data improving operational efficiency and flight management.</li> </ul>

The system shall be designed to handle a large volume of flight plans and user efficiently.

UC Name	<p><i>Scalability and Performance</i> <i>UC-007</i></p>
Summary	<p><i>This use case ensures that the software is designed to handle large volumes of flight plans and users efficiently.</i></p>
Dependency	<p><i>User Authentication and Authorization (UC-001)</i> <i>Real-time Collaboration (UC-003)</i> <i>Integration with External Systems (UC-006)</i></p>
Actors	<p><b>Primary actor:</b> Administrator <b>Secondary actor :</b> Air control Department User</p>
Preconditions	<p><i>The system is operational and capable of managing flight plans and user interactions.</i></p>
Description of the Main Sequence	<p><b>Step 1</b> : Administrator monitors system performance (response time, resource utilization).  <b>Step 2</b> : Based on performance analysis the administrator identifies areas for optimization.  <b>Step 3</b> : The administrator implements performance optimizations.  <b>Step 4</b> : The system does stress testing to test its ability to handle a large volume of concurrent users and flight plans.  <b>Step 5</b> : Performance optimizations are fine-tuned based on</p>

	<p><i>results of stress testing and user feedback.</i></p> <p><b>Step 6 :</b> <i>Users interact with the system, performing actions (creating, modifying or accessing flight plans).</i></p> <p><b>Step 7 :</b> <i>The system efficiently processes user requests and maintains responsive user interface even during peak usage period.</i></p> <p><b>Step 8 :</b> <i>Air control department users utilize the system for flight planning and management, benefiting from fast response time.</i></p>
Description of the Alternative Sequence	<p><i>If performance issues are identified during stress testing or user feedback, the administrator applies additional optimizations and re-evaluates system performance.</i></p>
Non functional requirements	<p><b>Scalability :</b> <i>The system should be capable of scaling horizontally and vertically to accommodate increasing numbers of users without degradation in performance.</i></p> <p><b>Responsiveness :</b> <i>User interactions with the system should have minimal delay.</i></p> <p><b>Stability :</b> <i>The system should maintain stability and reliability under loading conditions avoiding downtime.</i></p>
Postconditions	<p><i>The software demonstrates high scalability and performance, efficiently handling a large volume of flight plans and users. Users experience smooth interactions with the system enhancing user satisfaction and productivity.</i></p>

<b>UC Name</b>	<b><i>UC - 01 Include Flight Frequency Data</i></b>
<b>Summary</b>	This requirement ensures that the reports offer comprehensive analysis by considering the frequency of flight occurrences, allowing for a deeper understanding of booking patterns and trends over time.
<b>Dependency</b>	It doesn't depend on any other use case.
<b>Actors</b>	<b>Primary Actor:</b> Data Analyst
<b>Preconditions</b>	<ul style="list-style-type: none"> <li>• <b>Availability of Flight Frequency Data:</b> Flight frequency data must be accessible from relevant sources.</li> <li>• <b>Access Permissions:</b> Users initiating the use case must have necessary permissions to access and integrate data.</li> <li>• <b>Data Compatibility:</b> The system must be compatible with the format and structure of the flight frequency data.</li> <li>• <b>System Stability:</b> The system must be stable and operational.</li> <li>• <b>Technical Resources:</b> Adequate technical resources must be available for data integration.</li> <li>• <b>Documentation and Requirements Clarification:</b> Clear documentation and understanding of requirements are necessary.</li> </ul>
<b>Description of the Main Sequence</b>	<ul style="list-style-type: none"> <li>• <b>Step 1:</b> Obtain access to flight frequency data from relevant sources.</li> <li>• <b>Step 2:</b> Validate compatibility of the data format and structure with the system.</li> <li>• <b>Step 3:</b> Configure necessary permissions and settings for data integration.</li> <li>• <b>Step 4:</b> Implement data integration procedures into the system.</li> <li>• <b>Step 5:</b> Conduct testing to ensure accuracy and functionality of</li> </ul>



	<p>integrated data.</p> <ul style="list-style-type: none"> <li>• <b>Step 6:</b> Provide documentation as needed for users accessing flight frequency data within the system.</li> <li>• <b>Step 7:</b> Monitor ongoing data updates and system performance to maintain data accuracy and reliability.</li> </ul>
<b>Description of the Alternative Sequence</b>	<ul style="list-style-type: none"> <li>• <b>Step 1:</b> If flight frequency data from primary sources is unavailable, initiate communication with alternative data providers.</li> <li>• <b>Step 2:</b> Negotiate data access agreements and obtain necessary permissions from alternative sources.</li> <li>• <b>Step 3:</b> Adapt data integration procedures to accommodate different data formats or structures from alternative sources.</li> <li>• <b>Step 4:</b> Implement fallback mechanisms or error handling procedures in case of data inconsistencies or integration challenges.</li> <li>• <b>Step 5:</b> Validate the quality and reliability of data obtained from alternative sources through thorough testing and validation processes.</li> <li>• <b>Step 6:</b> Update documentation and inform relevant stakeholders about the use of alternative data sources.</li> <li>• <b>Step 7:</b> Monitor the performance and accuracy of data obtained from alternative sources to ensure ongoing reliability and effectiveness.</li> </ul>
<b>Non functional requirements</b>	<ul style="list-style-type: none"> <li>• <b>Performance:</b> Ensure fast data processing and display.</li> <li>• <b>Scalability:</b> System should handle multiple users without performance degradation.</li> <li>• <b>Availability:</b> Maintain 99.9% uptime, with minimal scheduled maintenance during off-peak hours.</li> <li>• <b>Reliability:</b> Ensure accurate data retrieval and display with built-in redundancy and failover mechanisms.</li> <li>• <b>Security:</b> Adhere to industry-standard security practices, including encryption, access controls, and regular audits.</li> </ul>

<b><i>Postconditions</i></b>	The system successfully integrates accurate and accessible flight frequency data, ensuring stability, updated documentation, user training if necessary, and ongoing monitoring for reliability.
------------------------------	--

<b><i>UC Name</i></b>	<b><i>UC - 02 Incorporate Client Reviews</i></b>
<b><i>Summary</i></b>	This requirement ensures that client feedback is considered in evaluating the performance of the flight booking process.
<b><i>Dependency</i></b>	It doesn't depend on any other use case.
<b><i>Actors</i></b>	<b><i>Primary Actor:</i></b> Clients (Users) <b><i>Secondary Actor:</i></b> Customer Support Representatives
<b><i>Preconditions</i></b>	<ul style="list-style-type: none"> <li>• <b><i>Feedback Mechanism:</i></b> The system must have a mechanism in place for clients to submit reviews or feedback about their experience.</li> <li>• <b><i>Client Interaction:</i></b> Clients must have interacted with the system or its services to provide meaningful reviews or feedback.</li> <li>• <b><i>Access Permissions:</i></b> Users involved in the incorporation of client reviews must have appropriate permissions to access and analyze the feedback data.</li> <li>• <b><i>Feedback Collection Infrastructure:</i></b> The system should have infrastructure in place to collect, store, and manage client reviews efficiently.</li> </ul>

<b><i>Description of the Main Sequence</i></b>	<ul style="list-style-type: none"> <li>• <b><i>Step 1:</i></b> Clients submit reviews or feedback through the designated feedback mechanism provided by the system.</li> <li>• <b><i>Step 2:</i></b> Designated personnel review and analyze the received feedback to identify common themes, trends, or areas for improvement.</li> <li>• <b><i>Step 3:</i></b> Based on the analysis, prioritization, and decision-making process, relevant changes or enhancements are identified for incorporation into the system.</li> </ul>
<b><i>Description of the Alternative Sequence</i></b>	<ul style="list-style-type: none"> <li>• <b><i>Step 1:</i></b> In case the feedback mechanism provided by the system is not accessible or malfunctioning, clients may resort to alternative communication channels such as email, phone calls, or in-person meetings to provide their feedback.</li> <li>• <b><i>Step 2:</i></b> Designated personnel manually gather feedback received through alternative channels and document them for analysis.</li> <li>• <b><i>Step 3:</i></b> The analysis of feedback gathered through alternative channels may differ in process or priority compared to feedback received through the system's designated mechanism.</li> <li>• <b><i>Step 4:</i></b> Based on the analysis, relevant changes or enhancements are identified for incorporation into the system, considering both feedback received through the system and alternative channels.</li> </ul>
<b><i>Non functional requirements</i></b>	<ul style="list-style-type: none"> <li>• <b><i>Scalability:</i></b> System should handle multiple users without performance degradation.</li> <li>• <b><i>Availability:</i></b> Maintain 99.9% uptime, with minimal scheduled maintenance during off-peak hours.</li> <li>• <b><i>Reliability:</i></b> Ensure accurate data retrieval and display with built-in redundancy and failover mechanisms.</li> </ul>

<b><i>Postconditions</i></b>	The successful retrieval, selection, and utilization of client feedback to enact system improvements.
------------------------------	---

<b><i>UC Name</i></b>	<b><i>UC - 03 Generate Monthly Statistical Reports</i></b>
<b><i>Summary</i></b>	This use case entails the system's ability to produce monthly statistical reports regarding the maintenance of the flight booking process. These reports encompass the entire booking process, from initiation to completion, and provide valuable insights derived from client reviews and flight frequency data. Managers utilize these reports to assess performance and make informed decisions for process improvement.
<b><i>Dependency</i></b>	It depends on <b>UC-01</b> and <b>UC-02</b> .
<b><i>Actors</i></b>	<b><i>Primary Actor:</i></b> Manager
<b><i>Preconditions</i></b>	<ul style="list-style-type: none"> <li>• The system is operational and accessible to the Manager.</li> <li>• Sufficient data related to the flight booking process, including client reviews and flight frequency data, is available for analysis.</li> <li>• The Manager has access to the statistical reports and intends to utilize the data, including flight frequency information, for analysis and decision-making purposes</li> <li>• There are no ongoing system maintenance activities or technical issues that hinder report generation.</li> <li>• The designated time period for generating monthly statistical reports has commenced (e.g., beginning of a new month).</li> </ul>
<b><i>Description of the Main Sequence</i></b>	<ul style="list-style-type: none"> <li>• <b><i>Step 1:</i></b> The Manager accesses the system and selects the option to</li> </ul>

	<p>generate a monthly statistical report.</p> <ul style="list-style-type: none"> <li>• <b>Step 2:</b> The system collects data on the flight booking process, including client reviews and flight frequency.</li> <li>• <b>Step 3:</b> Using the collected data, the system generates a comprehensive report.</li> <li>• <b>Step 4:</b> The Manager reviews and finalizes the report.</li> <li>• <b>Step 5:</b> The system compiles and presents the report in a suitable format.</li> </ul>
<b>Description of the Alternative Sequence</b>	<ul style="list-style-type: none"> <li>• <b>Step 1:</b> The Manager accesses the system and navigates to the statistical reporting module.</li> <li>• <b>Step 2:</b> The Manager selects the option to generate a monthly statistical report.</li> <li>• <b>Step 3:</b> The system encounters an error while collecting data on the flight booking process.</li> <li>• <b>Step 4:</b> The system prompts the Manager with an error message indicating the issue.</li> <li>• <b>Step 5:</b> The Manager attempts to troubleshoot the error by reinitiating the data collection process.</li> <li>• <b>Step 6:</b> The system successfully collects the necessary data and proceeds with generating the report.</li> <li>• <b>Step 7:</b> The Manager reviews and finalizes the report as usual.</li> <li>• <b>Step 8:</b> The system compiles and presents the report in a suitable format.</li> </ul>
<b>Non functional requirements</b>	<ul style="list-style-type: none"> <li>• <b>Performance:</b> Fast response time, scalable for growth.</li> <li>• <b>Reliability:</b> High uptime, quick recovery from failures.</li> <li>• <b>Security:</b> Secure authentication, encrypted data.</li> <li>• <b>Maintainability:</b> Modular design, comprehensive documentation.</li> </ul>

<b><i>Postconditions</i></b>	The monthly statistical report for the flight booking process has been generated and is available for review by the Manager.
------------------------------	--

<b><i>UC Name</i></b>	<b><i>UC - 05 Present Reports to Supervisor</i></b>
<b><i>Summary</i></b>	The Manager is required to present detailed statistical reports, including relevant statistics, to their supervisor for further review and analysis, facilitating informed decision-making and oversight of the flight booking process.
<b><i>Dependency</i></b>	It depends on <a href="#">UC-03</a> .
<b><i>Actors</i></b>	<b><i>Primary Actor:</i></b> Manager <b><i>Secondary Actor:</i></b> Supervisor
<b><i>Preconditions</i></b>	<ul style="list-style-type: none"> <li>• The Manager has successfully generated the required statistical reports, incorporating relevant data such as client reviews and flight frequency information.</li> <li>• The Supervisor is available and accessible to receive the presented reports from the Manager.</li> <li>• The reporting mechanism or interface used by the Manager to present the reports to the Supervisor is operational and functional.</li> <li>• The Manager has allocated sufficient time and resources to prepare and present the reports to the Supervisor.</li> </ul>
<b><i>Description of the Main Sequence</i></b>	<ul style="list-style-type: none"> <li>• <b><i>Step 1:</i></b> The Manager accesses the generated statistical reports,</li> </ul>

	<p>ensuring they contain all relevant data, including client reviews and flight frequency information.</p> <ul style="list-style-type: none"> <li>• <b>Step 2:</b> The Manager schedules a meeting or prepares to present the reports to their Supervisor.</li> <li>• <b>Step 3:</b> During the meeting or presentation, the Manager discusses the insights and findings from the reports, highlighting key statistics and trends.</li> <li>• <b>Step 4:</b> The Supervisor reviews the presented reports, asking questions or seeking clarification on specific aspects as needed.</li> <li>• <b>Step 5:</b> The Manager addresses any inquiries from the Supervisor and provides additional context or explanations where necessary.</li> <li>• <b>Step 6:</b> The Supervisor evaluates the reports and may provide feedback or further instructions based on the insights gained.</li> <li>• <b>Step 7:</b> The meeting or presentation concludes, and both the Manager and Supervisor may agree on any follow-up actions or next steps based on the report findings.</li> </ul>
<b>Description of the Alternative Sequence</b>	<ul style="list-style-type: none"> <li>• <b>Step 1:</b> The Manager sends the reports electronically to the Supervisor.</li> <li>• <b>Step 2:</b> The Supervisor receives and reviews the reports.</li> <li>• <b>Step 3:</b> The Supervisor may send follow-up questions or feedback to the Manager.</li> <li>• <b>Step 4:</b> The Manager responds to inquiries or feedback from the Supervisor.</li> <li>• <b>Step 5:</b> The Supervisor evaluates the reports and may provide further instructions or actions.</li> <li>• <b>Step 6:</b> The Manager and Supervisor may schedule a follow-up discussion if needed.</li> </ul>
<b>Non functional requirements</b>	<p><b>Performance:</b> Ensure prompt delivery and minimal loading times for accessing reports.</p>

<b><i>Postconditions</i></b>	Ensure that the Supervisor has received, reviewed, and potentially provided feedback on the reports, facilitating informed decision-making and potential follow-up actions by the Manager.
------------------------------	--



The system shall allow the passengers to communicate with customer service operators through live chat.

UC Name	UC - 701 Live Chat Communication
Summary	It provides a means of communication within the platform for the passenger to get help from experienced staff, enabling real-time interaction for inquiries, assistance, and support throughout the booking process.
Dependency	Dependent on <i>UC-202 User Account Log-In</i> and <i>UC-203 Admin Account Creation</i> .
Actors	Primary actor: Passenger Secondary actor: Operator
Preconditions	<ol style="list-style-type: none"> <li>1. The airline booking system must be operational and accessible to passengers and operators.</li> <li>2. The passenger must be logged in to their account to access the live chat functionality.</li> <li>3. The operator must be logged in to their account and available to respond to passengers.</li> <li>4. Live chat support should be available during specified operating hours as per the airline's customer service policy.</li> <li>5. The system should provide a way for the operator to access the passenger's booking by using booking details or booking code to locate it.</li> </ol>
Description of the Main Sequence	<p>Step 1: The operator logs in to their account during operating hours to be available to assist customers through live chat.</p> <p>Step 2: The passenger logs in to their account using their credentials.</p> <p>Step 3: The passenger accesses the live chat feature through their profile during operating hours.</p> <p>Step 4: Upon activating the live chat feature, the system connects the passenger with an available operator.</p> <p>Step 5: Once connected, the passenger provides the booking details and makes inquiries regarding the booking process for the operator to help them.</p>

	Step 6: The available operator receives the passenger's requests and proceeds to help with the request in real-time.
Description of the Alternative Sequence	The passenger logs in to their account and accesses the live chat feature outside of operating hours. The system won't be able to connect the passenger with any operator since no one will be available. The system will show an informative popup to the passenger reminding them to try again within operating hours.
Non-functional requirements	<p>Performance: The live chat system should have low latency to ensure quick response times between passengers and operators.</p> <p>Scalability: The live chat system should be scalable to accommodate increasing demand during peak periods without compromising performance. It should be capable of dynamically allocating resources to handle fluctuations in chat volume efficiently.</p> <p>Availability: The chat service depends on the number of operators working in different countries. If there are enough employers to have night shifts as well, the chat will be available 24/7 in that country, otherwise, the chat will be available from 7 pm to 10 pm.</p> <p>Security: The live chat communication should be encrypted to ensure the confidentiality and integrity of passenger data and conversations.</p>
Postconditions	<p>The passenger's query or issue is resolved satisfactorily, and they receive the necessary assistance or information from the customer service operator.</p> <p>The live chat session is successfully concluded, and both the passenger and the operator are disconnected from the chat interface.</p> <p>Relevant details of the live chat interaction, including the query, response, and any actions taken by the operator, are logged or documented for future reference.</p>

The system shall provide updates in real-time to passengers regarding booking confirmations, changes, cancellations, different promotions, and discounts.

UC Name	UC - 702 Booking Updates Notifications
Summary	The system ensures that SMS and/or emails are sent in real-time to passengers to inform them regarding booking confirmation, any modifications or changes to their existing booking (such as flight changes or seat changes), booking cancellations, and different available upgrades or discounts.
Dependency	None
Actors	Primary Actor: System Secondary Actor: Passenger
Preconditions	<ol style="list-style-type: none"> <li>1. The passenger must have an existing booking with the airline for the system to provide updates.</li> <li>2. The airline's booking system must support real-time modification capabilities for bookings, allowing changes such as flight rescheduling, seat upgrades, or cancellations.</li> <li>3. Passengers must have access to communication channels through which they can receive updates, such as email or SMS.</li> <li>4. Passengers must provide at least one form of communication (SMS or email) as information in their existing booking.</li> </ol>
Description of the Main Sequence	<p>Step 1: The system continuously monitors booking data and associated flight information for any changes or available upgrade options to be provided.</p> <p>Step 2: Upon detection, the system generates update notifications containing relevant information about the modification, including the nature of the change and its impact on the passenger's itinerary.</p> <p>Step 3: The system checks the booking to see available/preferred forms of communication provided by the passenger.</p>

	<p>Step 4: The system dispatches the update notifications to the affected passengers in real-time via email and/or SMS.</p> <p>Step 5: Passengers receive the update notifications on their preferred communication devices, providing them with all important information.</p> <p>Step 6: Passengers acknowledge receipt of the update notification and may take further action based on the information provided, such as confirming the change, requesting assistance, or initiating alternative arrangements if necessary.</p>
Description of the Alternative Sequence	<p>The system continuously monitors the booking for any changes or available upgrades. Upon detection, the system generates the update notifications with the relevant information. The system then checks the booking for available forms of communication but doesn't find any provided. The system will terminate the process and the passenger won't be notified.</p>
Non-functional requirements	<p>Performance: The system should deliver update notifications to passengers within a specified timeframe, ensuring timely communication of booking changes.</p> <p>Reliability: The system should be highly reliable, ensuring that update notifications are delivered accurately and consistently to passengers without loss or delay.</p> <p>Availability: The system should be available 24/7 to provide real-time updates to passengers, regardless of time zone or location.</p> <p>Scalability: The system should be scalable to accommodate increasing numbers of passengers and booking modifications without impacting performance or reliability.</p> <p>Security: The system should ensure the security and confidentiality of passenger data and update notifications, protecting them from unauthorized access or interception. It should comply with industry standards and regulations for data protection and privacy.</p>

Postconditions	<p>Update notifications regarding changes to the existing booking or available upgrades for the existing booking are successfully delivered to the passengers through the communication channels provided by them.</p> <p>Passengers have access to detailed information about the changes made to their booking, enabling them to understand the impact on their travel plans.</p> <p>Passengers may take appropriate actions based on the update notifications.</p> <p>The system records the successful delivery of update notifications.</p>
----------------	--

The system shall allow operators to create new bookings for passengers.

UC Name	UC - 703 Customer Service New Booking
Summary	The system enables the operators to create a new booking, following the entire booking process, for passengers who might have difficulty booking flights on their own.
Dependency	Dependent on <i>UC-203 Admin Account Creation</i> .
Actors	Primary Actor: Operator Secondary Actor: Passenger
Preconditions	<ol style="list-style-type: none"><li>1. The operators attempting to create new bookings must be logged in.</li><li>2. The booking system must be operational and accessible to operators to initiate the creation of new bookings.</li><li>3. Operators must have access to relevant passenger information required for booking creation, such as names, contact details, and travel preferences.</li><li>4. The system must have up-to-date information on flight availability, including schedules, seat availability, and pricing.</li><li>5. The system must be integrated with payment processing services to authorize and process transactions.</li><li>6. Operators must confirm that all booking conditions, such as fare rules, baggage allowances, and cancellation policies, are communicated accurately to passengers during the booking process.</li></ol>
Description of the Main Sequence	Step 1: The operator logs into the booking system using their credentials to access the booking creation functionality. Step 2: The operator enters the required passenger information into the booking system, including names, birthdays, and contact details.

	<p>Step 3: The operator selects the desired flight(s) for the passenger(s), specifying the departure and arrival airports, dates, and flight class.</p> <p>Step 4: The operator may add additional services to the booking if the passenger requests it.</p> <p>Step 5: The system calculates the total price of the booking based on the selected flight(s), additional services, and any applicable taxes or fees.</p> <p>Step 6: The operator initiates the payment process using the selected payment method, such as credit card.</p> <p>Step 7: Once the payment is processed successfully, the system generates a booking confirmation containing the booking code, itinerary details, and payment receipt.</p> <p>Step 8: The system sends a confirmation email or SMS to the passenger(s), providing them with the booking details and instructions for managing their reservation.</p> <p>Step 9: The system updates the booking database with the newly created reservation, ensuring that it is reflected accurately in the airline's records for future reference and management.</p>
Description of the Alternative Sequence	<p>Alternative Sequence 1: The operator logs in to create a new booking. Some of the required passenger information is missing. The system will terminate the process and ask to start from the beginning providing all mandatory details.</p> <p>Alternative Sequence 2: The operator logs in to create a new booking. Provides all mandatory passenger information. There are no flights available meeting passenger criteria. The booking process is terminated.</p> <p>Alternative Sequence 3: The operator logs in to create a new booking. Provides all mandatory passenger information. The operator finds available desired flights. Calculates the total price. The passenger doesn't accept the price or can't provide a form of payment at the moment. The booking process is terminated.</p>
Non-functional requirements	<p>Performance: The system should respond promptly to operator actions, with minimal latency during the booking</p>

	<p>creation process. It should be able to handle concurrent booking requests from multiple operators without experiencing performance degradation.</p> <p>Scalability: The system should be scalable to accommodate increasing numbers of booking transactions as the airline's operations grow.</p> <p>Security: The system should ensure the security and confidentiality of passenger data and payment information entered during the booking process. It should implement encryption and other security measures to protect against unauthorized access, data breaches, and fraudulent activities.</p>
Postconditions	<p>The system confirms the successful creation of the booking and provides the operator with a unique booking code. The newly created booking is added to the airline's booking database, ensuring that it is accurately reflected in the system for future reference and management.</p> <p>The system sends a confirmation email or SMS to the passenger(s), providing them with the booking details, itinerary, payment receipt, and instructions for managing their reservation.</p>



The system shall allow the operator to modify the passenger's personal information with the manager's permission.

UC Name	UC - 704 Personal Information Modification
Summary	The system permits operators to modify passengers' personal information (such as full name, gender, and birthday), subject to managerial approval after receiving the necessary documentation, ensuring data accuracy and compliance with established protocols.
Dependency	Dependent on <i>UC-203 Admin Account Creation</i> .
Actors	Primary Actor: Operator Secondary Actor: Manager, Passenger
Preconditions	<ol style="list-style-type: none"> <li>1. The operator attempting the modification must be logged in to their account.</li> <li>2. The system should provide a way for the operator to access the passenger's booking by using booking details or booking code to locate it.</li> <li>3. The passenger must provide the necessary legal documentation for the change of personal data.</li> <li>4. The manager must check the documentation and permit for the change to happen.</li> <li>5. Before proceeding with the modification, the system should require a confirmation from the manager (inputting the manager's unique code) to ensure that the requested changes are valid and authorized.</li> </ol>
Description of the Main Sequence	<p>Step 1: The operator logs in to their account.</p> <p>Step 2: The passenger provides the booking code or booking details and the necessary legal documentation for the change.</p> <p>Step 3: The operator locates passengers booking.</p> <p>Step 4: The manager checks the documents and permits the change.</p> <p>Step 5: The operator requests to modify specific personal information fields for the identified passenger, such as name, gender, and birthday).</p>

	<p>Step 6: The system prompts the manager to review and approve the request by entering the manager's unique code.</p> <p>Step 7: With managerial approval obtained, the system goes through with the changes and saves the new information in the booking.</p> <p>Step 8: Once the modification is successfully processed, the system generates a notification regarding the changes made in the booking.</p> <p>Step 9: The system sends a confirmation email or SMS to the passenger.</p>
Description of the Alternative Sequence	<p>Alternative Sequence 1: The operator logs in to their account. The passenger provides the booking code or booking details and the necessary legal documentation for the change. The operator locates passengers booking. The manager checks the documents but doesn't permit the change. The process is terminated.</p>
Non-functional requirements	<p><b>Security:</b> The system should ensure the confidentiality and integrity of passenger data during the modification process, implementing measures such as encryption and access controls to prevent unauthorized access or data breaches.</p> <p><b>Authorization and Authentication:</b> The system should authenticate operators and managers securely before granting access to modify passenger information, ensuring that only authorized personnel can initiate and approve changes.</p> <p><b>Error Handling:</b> The system should provide clear error messages and guidance to operators and managers in case of invalid or unauthorized modification requests, helping them rectify issues and proceed with the correct procedures.</p> <p><b>Compliance:</b> The system should comply with data protection regulations and privacy laws governing the handling of passenger personal information, ensuring that modification processes adhere to legal requirements and industry standards.</p>

Postconditions	<p>The system confirms the successful modification of the passenger's personal information, providing feedback to the operator that the changes have been applied.</p> <p>The passenger's record within the system is updated with the modified personal information, ensuring that the changes are accurately reflected for future reference and management.</p> <p>The system sends a notification to inform the passenger of the changes made to their personal information, ensuring transparency and accountability.</p>
----------------	---

The system shall allow the operator to rebook an existing booking as per the passenger's request.

UC Name	UC - 705 Rebooking
Summary	The system enables the operator to modify the itinerary on an existing booking as per passenger request, therefore assisting passengers having difficulties rebooking on their own.
Dependency	Dependent on <i>UC-203 Admin Account Creation</i> .
Actors	Primary Actor: Operator Secondary Actor: Passenger
Preconditions	<ol style="list-style-type: none"> <li>1. The operator attempting the rebooking process must be logged in to their account.</li> <li>2. There must be an existing booking for the passenger making the rebooking request.</li> <li>3. The system should provide a way for the operator to access the passenger's booking by using booking details or booking code to locate it.</li> <li>4. The booking system must be operational and accessible to operators to initiate the rebooking process.</li> <li>5. The system must have up-to-date information on flight availability, including schedules, seat availability, and pricing.</li> <li>6. The system must be integrated with payment processing services to authorize and process transactions.</li> <li>7. Operators must confirm all rebooking conditions, such as fare rules, before proceeding and must accurately communicate them to passengers during the rebooking process.</li> </ol>
Description of the Main Sequence	<p>Step 1: The operator logs in to their account.</p> <p>Step 2: The passenger provides the booking code or booking details.</p> <p>Step 3: The operator locates the booking.</p>

	<p>Step 4: The operator confirms all ticket rules to check if the ticket is rebookable and if there are any penalty fees to be paid.</p> <p>Step 5: The operator selects the desired flight(s) for the passenger(s), specifying the departure and arrival airports, dates, and flight class.</p> <p>Step 6: The system calculates the total price of the rebooking based on the selected flight(s), and any applicable taxes or fees.</p> <p>Step 7: If applicable, the operator initiates the payment process using the selected payment method, such as credit card.</p> <p>Step 8: Once the payment is processed successfully, the system generates a rebooking confirmation containing the booking code, itinerary details, and payment receipt.</p> <p>Step 9: The system sends a confirmation email or SMS to the passenger(s), providing them with the rebooking details.</p> <p>Step 10: The system updates the booking database with the modified reservation, ensuring that it is reflected accurately in the airline's records for future reference and management.</p>
Description of the Alternative Sequence	<p>Alternative Sequence 1: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator checks ticket rules. Ticket rules don't allow rebooking. The process is terminated.</p> <p>Alternative Sequence 2: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator confirms all ticket rules. There are no available flights that meet passenger criteria. The process is terminated.</p> <p>Alternative Sequence 3: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator confirms all ticket rules. The operator selects the desired flight(s). The system calculates the total price of the rebooking. The passenger doesn't accept the price or can't provide a form of payment at the moment. The rebooking process is terminated.</p>

Non-functional requirements	<p>Performance: The system should respond promptly to operator actions, with minimal latency during the booking creation process. It should be able to handle concurrent booking requests from multiple operators without experiencing performance degradation.</p> <p>Scalability: The system should be scalable to accommodate increasing numbers of booking transactions as the airline's operations grow.</p> <p>Security: The system should ensure the security and confidentiality of passenger data and payment information entered during the booking process. It should implement encryption and other security measures to protect against unauthorized access, data breaches, and fraudulent activities.</p>
Postconditions	<p>The booking associated with the passenger's request is updated successfully with the new itinerary details, reflecting any changes made during the rebooking process.</p> <p>The system calculates any fare differences, fees, or penalties associated with the rebooking, providing accurate pricing information to the operator and passenger.</p> <p>The system sends a confirmation email or SMS to the passenger, providing them with the updated booking details and itinerary information.</p> <p>The system adds an entry to the audit log indicating the successful completion of the rebooking process, including details such as the date, time, user, and nature of the changes.</p>

The system shall allow the operator to cancel an existing booking as per the passenger's request.

UC Name	UC - 706 Cancellation
Summary	The system enables the operator to cancel the itinerary of an existing booking as per passenger request and give a refund if applicable, therefore assisting passengers having difficulties canceling on their own.
Dependency	Dependent on <i>UC-203 Admin Account Creation</i> .
Actors	Primary Actor: Operator Secondary Actor: Passenger
Preconditions	<ol style="list-style-type: none"> <li>1. The operator attempting the cancellation process must be logged in to their account.</li> <li>2. There must be an existing booking for the passenger making the cancellation request.</li> <li>3. The system should provide a way for the operator to access the passenger's booking by using booking details or booking code to locate it.</li> <li>4. The booking system must be operational and accessible to operators to initiate the cancellation process.</li> <li>5. The system must be integrated with payment processing services to authorize and process refund transactions.</li> <li>6. Operators must confirm all cancellation policies, before proceeding and must accurately communicate them to passengers during the cancellation process.</li> </ol>
Description of the Main Sequence	<p>Step 1: The operator logs in to their account.</p> <p>Step 2: The passenger provides the booking code or booking details.</p> <p>Step 3: The operator locates the booking.</p> <p>Step 4: The operator confirms all ticket rules to check if the ticket is fully, partially, or not at all refundable.</p> <p>Step 5: The system calculates the total amount that will be refunded.</p>

	<p>Step 6: If applicable, the operator initiates the refund transaction to be paid back to the original form of payment that was provided in the creation of the booking.</p> <p>Step 7: Once the refund is initiated, the itinerary is completely canceled from the booking.</p> <p>Step 8: The system generates a cancellation confirmation containing the booking code, the canceled itinerary, and the refund receipt.</p> <p>Step 9: The system sends a confirmation email or SMS to the passenger(s).</p> <p>Step 10: The system updates the booking database with the modified reservation, ensuring that it is reflected accurately in the airline's records for future reference and management.</p>
Description of the Alternative Sequence	<p>Alternative Sequence 1: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator checks ticket rules. Ticket rules state the ticket is not refundable or the refund amount isn't full. The passenger doesn't want to cancel any more. The process is terminated.</p>
Non-functional requirements	<p>Performance: The system should respond promptly to cancellation requests, ensuring minimal latency in processing time to provide a seamless user experience for operators and passengers.</p> <p>Reliability: The system should be highly reliable, ensuring that cancellation transactions are processed accurately and consistently without errors or data loss.</p> <p>Security: The system should ensure the security and confidentiality of passenger data during the cancellation process, implementing encryption and access controls to prevent unauthorized access or data breaches.</p> <p>Compliance: The system should comply with industry regulations and standards governing cancellation processes, ensuring that cancellation transactions adhere to legal requirements and industry best practices.</p>



Postconditions	<p>The booking is successfully canceled.</p> <p>The booking associated with the canceled reservation is updated within the system to reflect its cancellation status, ensuring that it is accurately recorded and no longer active.</p> <p>If a refund is due to the passenger, the system initiates the refund process, processing the refund amount to the original payment method used for the booking.</p> <p>The system sends a confirmation email or SMS to the passenger, informing them that their booking has been successfully canceled and providing any relevant details regarding refunds or penalties.</p>
----------------	--

The system shall allow the operator to add/modify additional services (such as seat assignment, pet, special meal, extra baggage, etc.) to an existing booking as per passenger request.

UC Name	UC - 707 Additional Services
Summary	The system enables operators to add or modify additional services to existing bookings based on passenger requests. The additional services available are seat assignment, pet in cabin or cargo, special meal, extra baggage (including sports equipment), cabin baggage (eg. musical instruments or works of art), weapon, and wheelchair assistance. For these kinds of requests, the passengers don't have access to add them by themselves in the booking (except the seat assignment) so they need to be fulfilled by the customer service operators.
Dependency	Dependent on <i>UC-203 Admin Account Creation</i> .
Actors	Primary Actor: Operator Secondary Actor: Passenger
Preconditions	<ol style="list-style-type: none"> <li>1. The operator attempting to add additional services must be logged in to their account.</li> <li>2. There must be an existing booking for the passenger making the request.</li> <li>3. The system should provide a way for the operator to access the passenger's booking by using booking details or booking code to locate it.</li> <li>4. The booking system must be operational and accessible to operators to fulfill the request.</li> <li>5. The system must be integrated with payment processing services to authorize and process transactions if needed.</li> </ol>
Description of the Main Sequence	<p>Step 1: The operator logs in to their account.</p> <p>Step 2: The passenger provides the booking code or booking details.</p> <p>Step 3: The operator locates the booking.</p>

	<p>Step 4: The operator checks availability and all criteria for the additional service(s).</p> <p>Step 5: The system calculates the total amount that will need to be paid for the service(s).</p> <p>Step 6: If applicable, the operator initiates the payment process using the selected payment method, such as credit card.</p> <p>Step 7: Once the payment goes through, the system generates an update confirmation containing the booking code, the itinerary, the added service(s), and the payment receipt.</p> <p>Step 9: The system sends a confirmation email or SMS to the passenger(s).</p> <p>Step 10: The system updates the booking database with the modified reservation, ensuring that it is reflected accurately in the airline's records for future reference and management.</p>
Description of the Alternative Sequence	<p>Alternative Sequence 1: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator checks the availability and criteria for the additional service. One of the two (or both) conditions aren't satisfied. The passenger can't book the additional service. The process is terminated.</p> <p>Alternative Sequence 1: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator checks the availability and criteria for the additional service. The system calculated the total amount to be paid. The passenger doesn't accept the price or can't provide a form of payment at the moment. The booking process is terminated.</p>
Non-functional requirements	<p>Performance: The system should respond promptly to the requests, ensuring minimal latency in processing time to provide a seamless user experience for operators and passengers.</p> <p>Security: The system should ensure the security and confidentiality of passenger data during the process,</p>

	<p>implementing encryption and access controls to prevent unauthorized access or data breaches.</p> <p>Compliance: The system should comply with industry regulations and standards governing payment processes, ensuring that transactions adhere to legal requirements and industry best practices.</p>
Postconditions	<p>The additional service(s) is/are successfully added to the booking.</p> <p>The booking is updated within the system to keep track of data for future reference.</p> <p>The system calculates additional prices, providing accurate pricing information to the operator and passenger.</p> <p>The system sends a confirmation email or SMS to the passenger, providing them with the updated booking details and payment receipt.</p>

The system shall allow the operator to upgrade the passenger(s).

UC Name	UC - 708 Flight Upgrade
Summary	The system permits the operator to give an upgrade of the compartment (when available) on the flight(s) that the passenger(s) want.
Dependency	Dependent on <i>UC-203 Admin Account Creation</i> .
Actors	Primary Actor: Operator Secondary Actor: Passenger
Preconditions	<ol style="list-style-type: none"><li>1. The operator must be authenticated and authorized to access the upgrade functionality within the system.</li><li>2. There must be an existing booking for the passenger making the request.</li><li>3. The system should provide a way for the operator to access the passenger's booking by using booking details or booking code to locate it.</li><li>4. The upgrade functionality within the system must be operational and accessible to operators to facilitate the upgrade process.</li><li>5. There must be available upgrade options, such as class upgrades, that meet the passenger's preferences and the airline's offerings.</li><li>6. The passenger(s) requesting upgrades must meet the eligibility criteria set by the airline, such as loyalty status, fare class, or available inventory for upgrades.</li></ol>
Description of the Main Sequence	<p>Step 1: The operator logs in to their account.</p> <p>Step 2: The passenger provides the booking code or booking details.</p> <p>Step 3: The operator locates the booking.</p> <p>Step 4: The operator confirms upgrade availability and all criteria.</p> <p>Step 5: The operator selects the desired flight(s) and the desired compartment to be upgraded to.</p>

	<p>Step 6: The system calculates the total price of the upgrade based on the selected flight(s), and any applicable taxes or fees.</p> <p>Step 7: If applicable, the operator initiates the payment process using the selected payment method, such as credit card.</p> <p>Step 8: Once the payment is processed successfully, the system generates an upgrade confirmation containing the booking code, itinerary details, and payment receipt.</p> <p>Step 9: The system sends a confirmation email or SMS to the passenger(s), providing them with the upgrade details.</p> <p>Step 10: The system updates the booking database with the modified reservation, ensuring that it is reflected accurately in the airline's records for future reference and management.</p>
Description of the Alternative Sequence	<p>Alternative Sequence 1: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator checks upgrade availability and criteria for the desired flight(s) and compartment. One, if not both, of the conditions aren't met. The upgrade isn't possible. The process is terminated.</p> <p>Alternative Sequence 2: The operator logs in. The passenger provides the booking code. The operator locates the booking. The operator confirms upgrade availability and criteria for the desired flight(s) and compartment. The system calculates the total price for the upgrade. The passenger doesn't accept the price or can't provide a form of payment at the moment. The upgrade process is terminated.</p>
Non-functional requirements	<p>Performance: The system should respond promptly to upgrade requests, ensuring minimal latency in processing time to provide a seamless user experience for operators and passengers.</p> <p>Security: The system should ensure the security and confidentiality of passenger data during the upgrade process, implementing encryption and access controls to prevent unauthorized access or data breaches.</p>

	<p>Compliance: The system should comply with industry regulations and standards governing upgrade processes, ensuring that upgrade transactions adhere to legal requirements and industry best practices.</p>
Postconditions	<p>The passenger(s) is/are successfully upgraded as requested.</p> <p>The booking associated with the upgraded passenger(s) is updated within the system to reflect the changes.</p> <p>If there are additional costs associated with the upgrade, the system calculates the total amount and adjusts the booking accordingly.</p> <p>The system sends a confirmation email or SMS to the passenger, informing them of the successful upgrade and providing details of the upgraded services.</p> <p>The system updates the booking database with the upgrade details, including the date, time, operator, and nature of the upgrade, ensuring accurate record-keeping for future reference and management.</p>