

The system shall provide secure user payment transactions.

UC Name	<i>Secure Payment Transactions</i>
Summary	<i>Providing secure mechanisms for fast and safe payments</i>
Dependency	<i>None</i>
Actors	<i>Primary Actor: Passengers</i>
Preconditions	<b><i>Integration with Certified Payment Gateways:</i></b> <i>Successful integration with secure and certified payment gateways is crucial. These gateways must meet industry standards for security and compliance with regulations such as PCI DSS.</i>
Description of the Main Sequence	<b><i>Step 1: User Input:</i></b> <i>Users input payment details securely into the airline software.</i> <b><i>Step 2: Encryption:</i></b> <i>Payment data is encrypted using industry-standard protocols.</i> <b><i>Step 3: Transmission:</i></b> <i>Encrypted data is sent securely to the payment gateway.</i> <b><i>Step 4: Authorization:</i></b> <i>Payment gateway requests authorization from the financial institution.</i> <b><i>Step 5: Approval:</i></b> <i>Financial institution approves or denies the transaction.</i> <b><i>Step 6: Tokenization:</i></b> <i>Optionally, sensitive data may be tokenized for future use.</i> <b><i>Step 7: Confirmation:</i></b> <i>User receives confirmation of transaction completion.</i> <b><i>Step 8: Logging:</i></b> <i>Details of the transaction are logged for auditing and security purposes.</i>
Description of the Alternative Sequence	... <b><i>Step 5: Authorization Declined:</i></b> <i>The financial institution denies authorization for the transaction.</i> <b><i>Step 6: Error Notification:</i></b> <i>The payment gateway sends an error response to the airline software.</i>

	<p><b>Step 7: User Notification:</b> <i>The airline software displays an error message to the user.</i></p> <p><b>Step 8: Options Presented:</b> <i>Users are offered options to correct details or choose an alternative payment method.</i></p> <p><b>Step 9: Retry or Cancel:</b> <i>Users can retry with corrected details or cancel the transaction.</i></p> <p><b>Step 10: Logging:</b> <i>Details of the decline are logged for analysis.</i></p> <p><b>Step 11: Customer Support:</b> <i>Users may contact support for further assistance.</i></p>
Nonfunctional requirements	<p><b>Reliability:</b> The system consistently completes payment transactions without errors, ensuring availability, seamless functionality, and data integrity throughout the process.</p> <p><b>Security:</b> The system employs robust encryption, authentication, compliance measures, and fraud detection to protect sensitive financial information, prevent unauthorized access, and ensure regulatory compliance.</p>
Postconditions	<p><i>Upon successful completion of a payment transaction, the postcondition ensures that the user receives immediate confirmation of the transaction, along with relevant details such as booking reference numbers and payment receipts. Additionally, the system logs the transaction details securely for auditing and record-keeping purposes, maintaining a comprehensive trail of payment activities.</i></p>

The system shall provide an easy access way to see transaction history

UC Name	<i>Transaction History</i>
Summary	<i>The system must offer a straightforward and user-friendly method for users to access their transaction history. This</i>

	<i>ensures that users can conveniently review past transactions, including purchases, payments, and bookings, within the airline software. Easy access to transaction history enhances user experience and facilitates transparency in financial activities.</i>
Dependency	<i>Secure Payment Transactions User Authentication and Authorization</i>
Actors	<i>Primary Actor: Passengers</i>
Preconditions	<i>Before accessing the transaction history, users must authenticate themselves securely within the system. This ensures that only authorized users have access to their transaction records, maintaining privacy and security.</i>
Description of the Main Sequence	<p><b>Step 1: User Login</b> <i>Users log into their account within the airline software.</i></p> <p><b>Step 2: Access Transaction History</b> <i>Users navigate to the designated section for transaction history.</i></p> <p><b>Step 3: View Transactions</b> <i>The system displays past transactions with details like date, description, and amount.</i></p> <p><b>Step 4: Sort and Filter</b> <i>Users can sort and filter transactions based on different parameters.</i></p> <p><b>Step 5: Interact with Transactions</b> <i>Users have options to view details, download records, or take action on transactions.</i></p> <p><b>Step 6: Maintain Security</b> <i>Throughout the process, the system ensures data security and privacy.</i></p> <p><b>Step 7: Logout or Navigate</b> <i>After reviewing, users can logout or continue to other features within the software.</i></p>

Description of the Alternative Sequence	
Non functional requirements	<b>Performance:</b> <i>Ensure fast loading times.</i> <b>Usability:</b> <i>Maintain an intuitive interface.</i> <b>Accessibility:</b> <i>Comply with accessibility standards.</i> <b>Reliability:</b> <i>Provide accurate transaction records.</i> <b>Scalability:</b> <i>Handle increasing user and transaction volumes.</i> <b>Security:</b> <i>Securely authenticate and protect user data.</i>
Postconditions	<i>After accessing transaction history, users are provided with the option to logout or seamlessly navigate to other features within the airline software.</i>

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</i>

	<p><i>authenticated and logged into their account within the airline software, ensuring that only authorized users can access and utilize the search feature.</i></p>
<p>Description of the Main Sequence</p>	<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>  <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 adjusting the search criteria, selecting alternative travel dates, or considering nearby airports.</i></p> <p><b>Step 7: Return to Search</b>  <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</i></p>

	<i>receive a confirmation of their flight reservation along with relevant booking details.</i>
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The system shall allow the user to book a selected flight

UC Name	<i>Book Flight</i>
Summary	<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 reservations.</i>
Dependency	<i>Filter Flights User Authentication and Authorization 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>

*Users review the details of the selected flight, including departure and arrival times, fares, and other relevant information.*

**Step 3: Passenger Information**

*Users provide necessary passenger details such as names, contact information, and any special requirements.*

**Step 4: Seat Selection (if applicable)**

*If seat selection is available, users may choose their preferred seats or seating options for the flight.*

**Step 5: Additional Services (if applicable)**

*Users may have the option to select additional services such as baggage allowance, meal preferences, or seat upgrades.*

**Step 6: Payment**

*Users proceed to the payment step, where they provide payment details and confirm the booking.*

**Step 7: Confirmation**

*Upon successful payment processing, users receive a confirmation of their flight booking, along with relevant booking details and instructions for further steps.*

**Step 8: Ticket Issuance**

*The system generates and issues electronic tickets or booking references, which users can use for check-in and boarding.*

**Step 9: Email Notification (optional)**



	<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</i></p>

	<p><i>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 during booking to ensure a smooth user experience.</i></p> <p><b>Availability:</b> <i>Ensure the booking system is available 24/7 to accommodate users from different time zones.</i></p>
Postconditions	<p><i>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.</i></p>

The system shall allow users to cancel already booked flights

UC Name	<i>Cancel Flight</i>
Summary	<i>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.</i>
Dependency	<i>User Authentication and Authorization</i>
Actors	<i>Primary Actor: Passenger</i>
Preconditions	<i>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 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>
Description of the Main 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 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 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</i></p>

	<p><i>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., system error, connectivity issues), the system notifies the user that the cancellation request could not be processed at the moment.</i></p> <p><b>Step 7: Retry or Contact Support</b></p> <p><i>Users may have the option to retry the cancellation process later or contact customer support for assistance in resolving the issue.</i></p>
Non functional requirements	<p><b>Performance:</b> <i>Ensure fast response times during the cancellation process.</i></p> <p><b>Usability:</b> <i>Maintain an intuitive and user-friendly interface for seamless cancellation.</i></p> <p><b>Accessibility:</b> <i>Comply with accessibility standards to accommodate users with disabilities during cancellation.</i></p> <p><b>Reliability:</b> <i>Provide reliable cancellation functionality with minimal downtime.</i></p> <p><b>Scalability:</b> <i>Handle concurrent cancellation requests from</i></p>

	<p><i>multiple users without performance degradation.</i></p> <p><b>Security:</b> <i>Safeguard user information and prevent unauthorized cancellation attempts.</i></p> <p><b>Error Handling:</b> <i>Effectively handle errors and edge cases during cancellation to ensure a smooth user experience.</i></p> <p><b>Audit Trail:</b> <i>Maintain an audit trail of cancellation actions for accountability and record-keeping purposes.</i></p> <p><b>Notification:</b> <i>Notify users promptly of successful cancellations and any refund or penalty information.</i></p> <p><b>Regulatory Compliance:</b> <i>Ensure compliance with airline policies and regulations regarding cancellation terms and conditions.</i></p>
Postconditions	<p><i>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.</i></p>