AIRLINE BACKEND SYSTEM

Objective

We need to build a backend system that can support different features for an airline company . Our end user is going to be someone who wants book flights and query about flights so we need a robust system to actually help them give the best experience possible. This doc is solely going to focus on the backend part of the system . We want to prepare the whole backend keeping the fact in mind that the code base should be as maintainable as possible.

Requirements:

- A user should be able to search for flights for one place to another.
  - User should be able to mention source and destination address.
  - User should be able to select the date of the journey .
  - [v2]In future user will be able to search for return to the source .
  - User should be able to select the class of the flights .
  - User should be able to select the number of sits they want to book . [Not required]
  - Based on the above details we select the flights .
  - We should show our users the best available flights at the top based on time period of flights and then based on the prices .
  - We need to support the pagination show that we can list the chunk of the flights .
  - We should support the custom filter for the flight . [v2] more filter will be add.
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- A user should be able to book a flights considering that user is registered on the platform.
  - A user should be able to cancel the booking , and then based on some criteria we can initiate a refund for them.
- For making the booking , User have to make the payment
- Tracking flight prices should be possible , the user should be notified about any price drops or any delays.
- User should be able to list their previous and upcoming fights.
- User should be able to download the Boarding pass if they have done online checkin.

- Online check in mechanism should be supported.
- Notification via email for completing online check-in before 3 hours of departure.
- Notification to users about any fight delay.
- User should be able to review the fight journey, if and only if they have booked a fight.
    - Review mechanism should be involve star rating along with a comment.
    - While listing any flight we should also display the reive fight.
- User should be able to authenticate to our system using email and password.
    - [v2] Support ticketing , where user can raise their queries.
- Listing FAQ which will be static data
    - [v2] prepare seat selection
- Coupons for discounts and offers .
- While making a booking a person can reverse more than one seats with one login id .

Non – Functional Requirements:

- We can expect that we are going to have more flight searches than fight booking.
- The system needs to be accurate in terms of booking.
- Expect that we will be having approx. 1,00,000 total users , 10,000,00 booking might come up in one quarter.
- So in one day we can expect 10000 bookings.
- System should be capable of scaling upto at least 3x the current estimated traffic .
- The system should handle real time updates to fights prices , before user makes the final booking .

Capacity Estimation

- Storage estimates:
    - For upcoming 5 years , 20,000,000 booking , 2,00,000 users . Considering all the users records of the user we can except the 40GB if data, then overall 2 TB of memory should be find for our initial pilot run.

- Traffic estimations :
  - If we consider 10.1 as the searches booking ratio, then at max we expect 5 0000 search queries a day . 2 query/s