Flight Management System – Data Structures and Data Flow

Alert Management Service:

- **Description: Holds and manages users and users' preferences data, consumes FlightAlert from external api service (Flight companies apis, site-crawling etc.) and continues to save the data and pass it to the alert service.**

Database

- **User**
    - **Description: Represents the user's personal and account data.**
    - **Fields: Id, Username, Email, FirstName, LastName, PasswordHash**
    - **Relationship: One-to-many with UserPreference.**
- **UserPreference**
    - **Description: Represents each user's one or many preferences – serves as a condition for which notifications the user will receive.**
    - **Fields: Id, UserId, MinPrice, MaxPrice, Origin, Destination.**
    - **Relationship: Many-to-one with User.**
- **FlightAlert**
    - **Description: Holds the data for the flight (price) alert that was received from the external API.**
    - **Fields: Id, FlightId, Airline, Origin, Destination, DepartureDate, ArrivalDate, Price, CreatedAt.**

RabbitMQ (Consumer Service)

- **Description: Consumes data (FlightAlert) from external Api (Flight price alerts), saves to DB and passes on to alert service.**

Alert Service

- **Description: Receives FlightAlert, comparing with user preferences and sends a NotificationMessage to the RabbitMQ queue if the FlightAlert is relevant.**
- **NotificationMessage**
    - **Fields: UserId, FlightDetails, Price, AlertTime.**

Push Notification Service

- **Description: Consumes NotificationMessage from the messages queue, and continues to push the notification to the relevant user.**
- **PushNotification**
    - **Fields: UserId, MessageTitle, MessageBody.**