FLIGHT BOOKING

CONTENTS

1 PROBLEM STATEMENT

Build a software system which lets user search for a Flight Ticket and book it & includes Admin related activities. User can also cancel or update the Ticket.

Below are the different roles, which need to be supported by above Software System.

1. User
2. Admin

The scope includes developing the application using

Backend microservices- Use Dot Net Core

Frontend/Presentation layer: React

2 WIREFRAMES

UI needs improvisation and modification as per given use case.

User - Booking History

			logout
Book Flight	Manage Bookings	Booking History	

Ticket Booking History

25/09/2019	Logo	Rs.2,504	3 Seats
			View Details
15/09/2019	Logo	Rs10,241	1 Seat
			View Details

<< more search results>>

Use Scrollbar. If required

Book Flight - Apply Discount

			logout
Book Flight	Manage Bookings	Booking History	

Discount Code	DISC12	Apply
Select Seat (Onward Journey)	3B ▽	
Select Seat (Return Journey)	5C ▽	

Check out

Manage Airlines

			logout
Manage Schedules	Manage Discounts	Manage Airlines	Reports

List of Airlines

Logo	Indigo	<Contact Number>	<Brief Writeup>
			View Details
Logo	GoAir	<Contact Number>	<Brief Writeup> View Details

<< other Airlines>>

Admin Menu

Admin logout

Manage Schedules   Manage Discounts   Manage Airlines   Reports

User - Book Flight

		logout
Book Flight	Manage Bookings	Booking History

○ One Way   ○ Round Trip
From [Bangalore]   To [New Delhi]

Onward Journey [Pick Date]   **Return Journey** [Pick Date]

Airline Logo Price Rs.2,504	Airline Logo Price Rs.3,703
Airline Logo Price Rs.1,984	Airline Logo Price Rs.5,304
Airline Logo Price Rs.2,804	Airline Logo Price Rs.3,504
Airline Logo Price Rs.1,984	Airline Logo Price Rs.4,504

Meal Preference [None ▽]   Meal Preference [None ▽]

Total Price: Rs3,142   Continue Booking

Clickable, select when Clicked

User - Manage Bookings

		logout
Book Flight	Manage Bookings	Booking History

Airline Logo Rs3,210 5th Nov 2019	View	Download	Cancel
Airline Logo Rs5,218 2nd Nov 2019	View	Download	Cancel
Airline Logo Rs4,642 29th Oct 2019	View	Download
Airline Logo Rs2,229 21st Oct 2019	View	Download
Airline Logo Rs8,216 19th Oct 2019	View	Download

Total Price: Rs3,142   Continue Booking

Show Tickets in reverse Chronological order. Cancel button available only for Tickets whose Travel is pending

Add Airline

	logout
Manage Schedules	Manage Discounts	Manage Airlines	Reports

Airline Name:	_____
Upload Logo	_____
Contact Number	_____
Contact Address	_____

Add New Airline

Schedule Search Results

	logout
Manage Schedules	Manage Discounts	Manage Airlines	Reports

Search Results

Logo	Bangalore	Hyderabad	A320
			Schedule Details
Logo	Chennai	New Delhi	A320 Neo
			Schedule Details

<< more search results>>

Use scrollbar, if required

Search Schedule

	logout
Manage Schedules	Manage Discounts	Manage Airlines	Reports

Select Airline	Indigo ▽
Flight Number	_____
Instrument Used	Abc

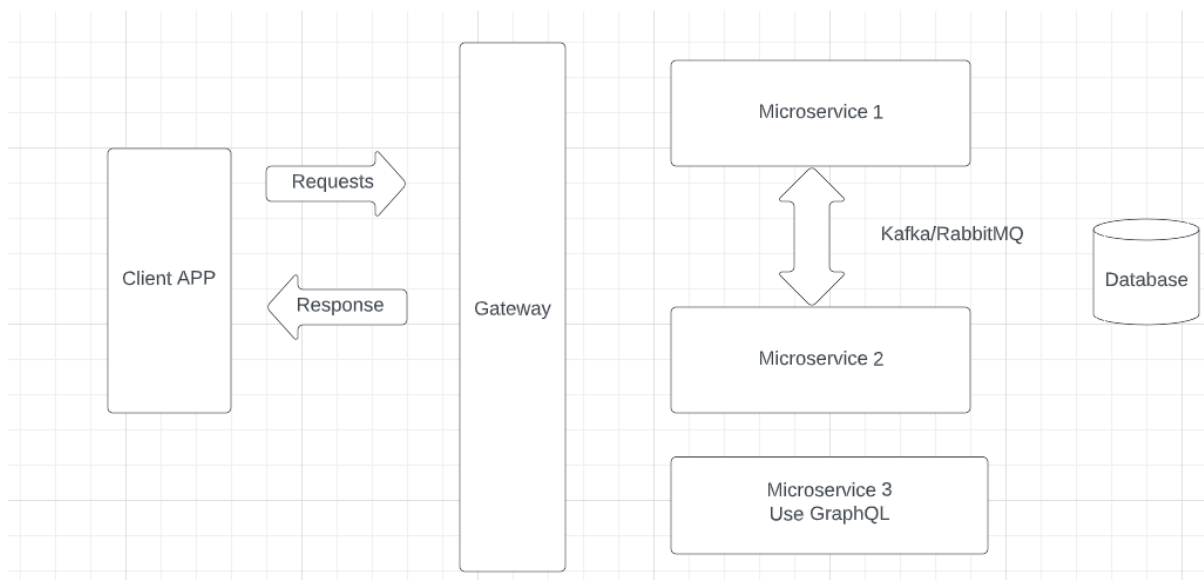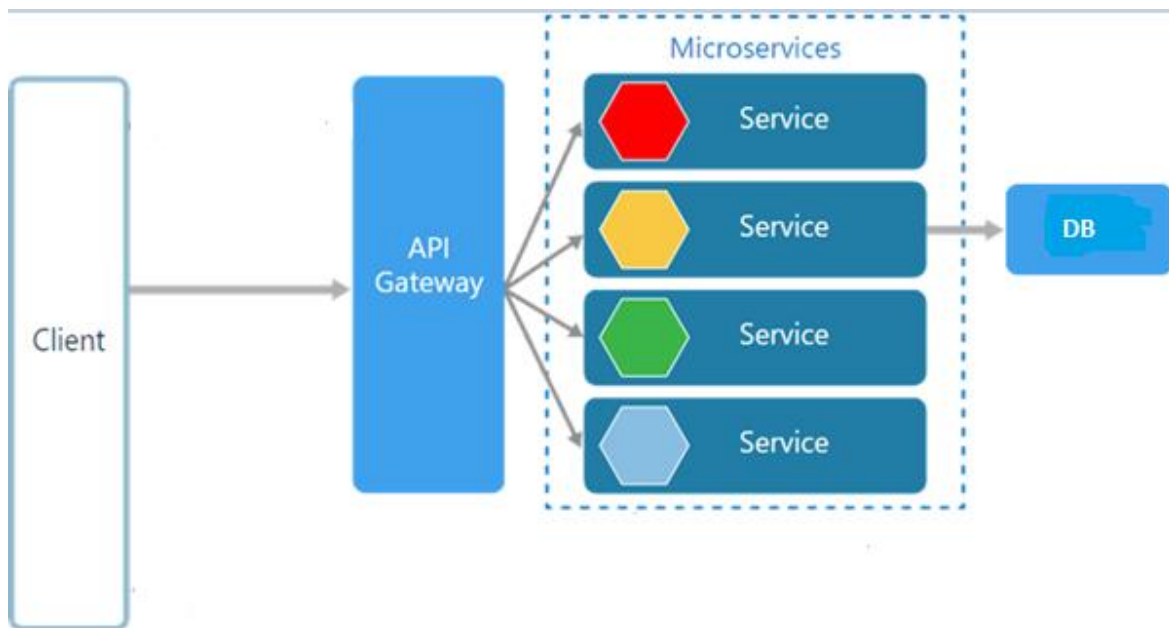<<More fields can be added to Search Criteria>>

Search

Select an Airline

Enter Flight Number

3 APPLICATION ARCHITECTURE

3.1 MICROSERVICE ARCHITECTURE (INTEGRATION/PRESENTATION/NETWORKING AND CONTENT DELIVERY):

4 BUSINESS REQUIREMENTS:

As an application developer, develop microservices with below guidelines:

User Story #	User Story Name	User Story

US_01	User Mode	1. User can search for a Flight based on date/time, from place/to place, one way or round trip
		2. Each Search result need to display Flight Date/time, Airline Name/Logo, Price(to & round trip – TBD)
		3. From Search results, User should be able to select a specific Flight and go ahead and complete Ticket Booking by providing below details
		    • Name and Email ID
		    • Number of seats to book.
		    • Details of each passenger (NAME:GENDER:AGE)
		    • Opt for Meal(Veg/Non veg)
		    • Select Seat Number(s)
		4. On successful Ticket Booking, PNR number need to be generated, it should be possible to download TicketBooking can be done a Logged in User only
		5. With email id user should be able to
		    • view History of Ticket Bookings,
		    • Cancel a Ticket only prior to a day(24 hrs) before journey date.
		6. With PNR number view the booked ticket details

US_02	Admin Mode	1. Admin shall be able to login/logout.
		2. There can be pre-defined username/password for Admin.
		3. Admin shall be able to add/block an Airline. When Airline is Blocked, Flights belonging to that Airline will not be shown in Ticket Search results.
		4. Admin shall be able to add Inventory/Schedule of an existing Airline by specifying below details:
		    • flight number
		    • Airline
		    • From Place
		    • To Place
		    • Start date time,
		    • End date time,
		    • Scheduled Days(Daily, Week Days, Week Ends, For specific days specify the list of Days like Mon, Wed)
		    • Instrument used(A320, A320 neo, etc…)
		    • Total number of business class Seats
		    • Total number of non-business class Seats
		    • Ticket cost (consider taxes and other charges),

		• number of rows, • meal(none, veg, non veg)	

5 PROPOSED REST ENDPOINTS TO BE EXPOSED

5.1 REST APIs:

POST	/api/v1.0/flight/airline/register	New airline booking
POST	/api/v1.0/flight/admin/login	Admin login
POST	/api/v1.0/flight/airline/inventory/add	Add Inventory/Schedule of an existing Airline
POST	/api/v1.0/flight/search	Searches for flight
POST	/api/v1.0/flight/booking/{flightid}	Book ticket
GET	/api/v1.0/flight/ticket/{pnr}	Get Booked ticket details based on PNR
GET	/api/v1.0/flight/booking/history/{emailId}	Get Booked tickets history based on Email ID
DELETE	/api/v1.0/flight/booking/cancel/{pnr}	Cancel a booked ticket

6 KEY RUBRICS/EXPECTED DELIVERABLES

As an application developer:

  a. Develop the application as a microservice architecture.
  b. Ensure layer project Structure with proper naming conventions and model classes.
  c. Use application.json file to maintain all configuration like connection string
  d. Implemented the layered structure - Controller, Interface, Service, DAO, Testing, Validation, Security etc
  e. Implementation as follows:
    i. Use Domain Driven Design to implement distributed architecture
    ii. Follow Single Data Store per microservice practice
    iii. Document REST endpoints with OpenAPI/ Swagger
    iv. Use Kafka/RabbitMQ for saving and retrieving flight details
    v. Expose all rest Endpoints using a common API Gateway Ocelot
  f. Secure all Rest End Points by configuring SSL Certificate for Cloud
  g. Use OpenIAM to add OTP based two factor authentication for secured operations
  h. Use Graphql for writing one of the microservice.

i.   Create test cases for each microservices using NUINT and MOQ framework
j.   Use Docker to host apps locally.
k.   Implement strategy pattern to implement price hike when occupancy of flight increased by 50%.