BITS Pilani
Pilani | Dubai | Goa | Hyderabad

COURSE- SEZG533/CSIZG533 SERVICE ORIENTED COMPUTING

ASSIGNMENT- DESIGN AND IMPLEMENTATION OF AN SOA APPLICATION

Submission Date: 6th November 2023

Assignment Submission Mode: LMS- File Upload

Weightage: 20%

OBJECTIVE:

To design and implement a service-based application for any application of your choice

Note: This is an individual assignment

PROBLEM STATEMENT:

PART 1: DESIGN

Design a service-oriented architecture and define the REST API endpoints for the application of your choice.

- Identify the basic capabilities of the application based on the core practical use case of the application.
- Once you figure out the different entities and models in the application, split them into individual resources and describe them.
- Name the resource and define the operations that can be performed for each resource.
- For each operation, design the URI and choose the appropriate HTTP method and headers required.
- Design the representation(s) accepted by the client and the representation(s) served to the client.
- Categorize the resources based on their type.

[Note: A sample application is given below for your reference. Do not use the sample application, Use the sample application as reference and design your application]

A new startup company planning to launch an Online Food Delivery System has approached your team to design a scalable application. Below are some requirements for the Food Delivery App:

Features available to the Customer:

1. Searching /browse menu
2. Order placement
3. Tracking Delivery Status
4. Payment

Features available to Food Partners/ Restaurants

1. Manage Restaurant Profile/Menu details
2. Order Management

PART 2.1: IMPLEMENTATION OF SERVICE ENDPOINTS

You have designed a service-oriented architecture and defined the REST API endpoints for the application of your choice in Part 1

Implement a functional prototype of the application of your choice, demonstrating the key requirements of the application. Choose the core important resources defined in Part 1 and implement them.

Key Requirements for the Sample Application [for your reference only]:

User Registration and Authentication: Users should be able to create accounts, log in securely, and manage their profiles. Ensure proper authentication and authorization mechanisms are in place.

Vendor Onboarding and Menu Management: Food vendors should be able to register on the platform, providing necessary details about their businesses, menus, and operating hours.

Ordering Processing: Users should be able to browse through available food items, add them to the cart, and place orders

Reviews and Ratings: Implement a system for users to provide feedback on their orders and rate the food vendors.

The participants are encouraged to use suitable programming languages, frameworks, and technologies of their choice, considering the requirements and objectives of the assignment.

PART 2.2: API GATEWAY

As part of the implementation process for the service-oriented application, your task is to design and develop an API Gateway that acts as a single entry point for all client requests and routes them to the corresponding services.

The API Gateway should be a central component to handle routing and ensure seamless communication between clients and the underlying services.

Depending on the application design, you can handle authentication at the API gateway or use other methods.

You can create custom API gateways that satisfy basic needs like routing or use open-source API gateways or cloud provider API gateways.

SUBMISSION INSTRUCTIONS

Create detailed documentation outlining the architecture, service interactions, data flow, database schema, services implemented, snapshots of the testing (postman) etc.,

1) Include details of the group members in the document
2) All of this has to be submitted with the zip file name <studentname>_<application name>.
3) Academic Honesty: You can discuss with peers and refer to the internet to understand the concept better. However, you may not share, or do a verbatim online copy from GitHub or other sources.

Files to Be Submitted

1) Detailed documentation

It contains

- Details of the group members
- Description of application
- Design and Architecture
- REST API endpoints of the services implemented
- Service interactions, data flow, database schema,
- Execution instructions
- snapshots of the testing from Postman or other tools
- GITHUB LINK Complete code to be added to Github- Link to be shared.

2) A video /screen recording of the Demo (If you face a size limit issue while uploading the video to LMS, add it to Google Drive and share the link.)

EVALUATION:

The relevant documents are to be submitted in Canvas LMS. After the completion of the deadline, the Assignment will be evaluated on the submissions made.

The evaluation will be based on

i) the adherence to SOA principles.
ii) Design of REST Endpoints- Resources, URI
iii) Interaction with DB
iv) Authentication implementation
v) API gateway approach

If there are no submissions, no marks can be awarded.

WEIGHTAGE:

Total: 20 Points

Part 1: Design 7%

Part 2: Implementation: 13% [8 % for Part 2.1, 5% for Part 2.2]

NOTES:

- This is a take-home assignment to be carried out by each participant independently
- In case of any further queries, use discussion forums or email: akshaya.ganesan@pilani.bits-pilani.ac.in