Project Design Phase-II
Technology Stack (Architecture & Stack)

Project Name	Snack Squad: A Customizable Snack Ordering and Delivery App
Maximum Marks	4 Marks

Technical Architecture:

The architecture includes the following logical and infrastructural components. It is designed to optimize scalability, maintainability, and performance in a cloud-enabled environment. The architecture supports both local and cloud deployment.

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Guidelines:

1. Include all the   processes   (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

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Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Web and mobile-based interface for interaction	HTML, CSS, JavaScript, React Js
2	Application Logic-1	Core business logic (order handling, cart, etc.)	Python (Flask/Django)
3	Application Logic-2	Voice-to-text input for order placement	IBM Watson STT service
4	Application Logic-3	Virtual assistant for help and suggestions	IBM Watson Assistant
5	Database	Stores user, order, and product information	MySQL
6	Cloud Database	Cloud-based replica for scale and backup	IBM Cloudant
7	File Storage	Snack images, receipts, static content	IBM Block Storage / Local Filesystem
8	External API-1	Weather-aware delivery suggestions	IBM Weather API
9	External API-2	Identity verification and age check	Aadhar API
10	Machine Learning Model	Personalized recommendations and order prediction	Object Recognition Model (Custom Model)
11	Infrastructure	Deployment environment	Cloud Foundry / Kubernetes / Local Server

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks and libraries used in development	React, Flask, Django, Bootstrap
2	Security Implementations	User data protection, secure APIs, hashed passwords	SHA-256, SSL, JWT, IAM Controls
3	Scalable Architecture	Modular and scalable deployment (3-tier, microservices)	Docker, Kubernetes, NGINX
4	Availability	Ensures uptime with load balancers and multi-zone servers	AWS Load Balancer, Auto-Scaling
5	Performance	Fast content delivery, caching, optimized API calls	Redis Cache, CDN, API Gateway

References

- https://c4model.com/
- https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/
- https://www.ibm.com/cloud/architecture
- https://aws.amazon.com/architecture
- https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d