Functional & Infrastructure Design for Interview Preparation

1. Food Delivery Application (e.g., Zomato, Swiggy, EatSure)

a) User Registration and Login

- Users can register using email or mobile number with secure login.

- Functional tracking via Jira or Azure Boards.

b) Restaurant Search

- Filters: name, location, ratings.

c) Restaurant Menu & Cart

- Browse menu, add to cart, modify items.

d) Order Placement & Payment

- UPI, COD, and card payments with secure gateways.

e) Real-time Order Tracking

- Order status tracking from kitchen to delivery.

2. School Management System

a) Role-Based Login

- Students, teachers, admins, and parents login separately.

b) Attendance Management

- Teachers mark/view daily attendance.

c) Timetable & Class Schedule

- Admins manage class schedules.

d) Grades and Report Cards

- Teachers input marks; report card generated.

e) Fees Section

- Online fee payments by parents.

3. Functional Documentation & Architecture Planning

- Stakeholders: Director, Architects (Infra, App), Pre-Sales, TPM.
- Functional breakdown and architecture in Draw.io/Visio.
- Monolithic architecture selected.
- Frontend: Angular/React | Backend: Java/.NET | DB: MySQL/PostgreSQL.

4. Agile Framework & Planning

a) PI Planning: Quarterly feature alignment.

b) User Stories: Managed in Jira, Rally, Azure Boards.

c) Sprints: 15-21 day cycle.

d) Daily Scrum: 15-30 min calls.

e) Retrospective: Review progress, backlog, improvements.

5. Infrastructure Automation Using Terraform

- Generic modules with for_each, dynamic blocks, optional & conditional logic.

Use Case 1: Subscription and Identity Onboarding

- MG creation, Subscription association, RBAC, Group/User setup.

Use Case 2: Four Environment Setup (Dev, Test, QA, Prod)

a) Infra: VNet, Subnets, VMs, DBs, Load Balancer, NSG, App Gateway.

b) Monitoring: Azure Monitor, Log Analytics, Prometheus, Grafana.

c) Backup & DR: Azure Backup, High Availability.

d) Security: Defender, Policy, Key Vault, Bastion.

e) Cost Optimization: Cost analysis, budgets.

f) Network: VNet Peering, VPN, ExpressRoute.

6. Terraform Workflow in Azure DevOps

- Child modules tagged/versioned in Azure Repo.
- Parent module references child modules via tfvars.

Example Ticket: VM Creation

1. Clone parent module.
2. Create feature branch (e.g., vm-creation-ticket2035).
3. Modify tfvars, push code.
4. CI Pipeline: tfsec, trufflehog, tflint, Chef, BlackAqua, Checkov.
5. PR to main branch -> CD pipeline triggers.
6. Manual validation by lead -> terraform apply executes.

Summary

- Real-world functional + infra case studies.
- Agile methodology with tools.
- Full automation with Terraform & Azure DevOps.
- Security, cost, and DR best practices.