Section 2: System Design and Architecture

Task 1: High-Level System Architecture

Microservices to Implement:

1. User Service: Handles users related operations
2. Product Service: Handles product related operations.
3. Order Service: Handles order processing and management.
4. Payment Service: Handles payment processing and transactions.
5. Inventory Service: Tracks and manages product inventory.
6. Identity Service: Handles user authentication and authorization.

Service Communication:

- RESTful API: to communicate with frontend clients or other third-party services.
- Message Queues (e.g., RabbitMQ, Kafka): to pass information between the microservice. Data are stored in the order of transmission until the consumer can process them

Data Storage and Caching:

- We can use PostgreSQL for payment service to maintain transaction consistency then use MYSQL/ PostgreSQL for other services
- Caching: Redis for caching frequently accessed data like user sessions and product details.

Scalability and Reliability:

- Deploy microservices independently(on different server) and we can also employ the use of load balancer to manage and distribute traffic.

Security Considerations:

- Use JWT, encrypt data in transit and use of an API gateway

Section 4: Leadership and Team Collaboration

How would you approach mentoring junior developers to improve their skills and confidence?

1. Get to know more about their skills level individually and what learning style works for them
2. Provide access to comprehensive learning resources
3. Encourage Hands-On Practice with Real Projects:
4. Reviewing other members code can also help
5. Setup a system in other to provide regular feedback

2. Describe how you would handle a situation where two team members disagree on implementing a feature.

1. Listening to both members to in other understand their point and proposed solution:
2. Rediscuss the objective and end goal of the feature then analyse the pros and cons of individual solutions.
3. Make them see reason on why an approach is better as an experienced member of the team.
4. We can also combine features from both solutions if possible

3. What steps would you take to ensure the team remains productive and motivated?

Steps to Ensure Team Productivity and Motivation:

1. Ensuring that each members understands what they need to do and how soon to complete their tasks
2. Implement a system that provides regular feedback and recognize achievements
3. Encourage and Provide resources to professional development

4. How would you communicate complex technical concepts to non-technical stakeholders?

1. Avoid using technical language during communication. We can also cite scenarios that can make the information more easier to understand and relatable. Visual diagrams/Images can also help communicate better
2. Emphasize on the business impact and values