

Practice Questions

Question 1: Basics of Application Integration

1. Explain the concept of application integration. Discuss the significance of integrating various software components and services in the context of modern applications. Provide examples to illustrate your points.

Question 2: RESTful API Integration

- a) Describe what a RESTful API is and how it differs from other API types. Provide a step-by-step explanation of how a client can make a GET request to a RESTful API endpoint. Use relevant terminology and example URLs.
- b) Discuss the benefits and challenges of integrating RESTful APIs into web applications. Give real-world scenarios where RESTful API integration can be beneficial.

Question 3: SOAP Web Services

- a) Explain SOAP (Simple Object Access Protocol) and its role in web services. Provide a sample SOAP request and response structure, highlighting the key components.
- b) Compare and contrast RESTful APIs with SOAP web services. Discuss situations where SOAP might be a better choice than RESTful APIs for integration.

Question 4: Achieving Interoperability

- a) How does achieving interoperability in application development relate to integrating various software components and services? Discuss the role of data formats like JSON and XML in promoting interoperability.

Question 5: API Authentication and Security

- a) Explain the importance of API authentication and security in application integration. Discuss common methods of securing API endpoints and data during integration.

Question 6: Real-World Integration Scenario

- a) The Dean of students requested that all who book hostels should be admitted as students at Makerere. The students' information is currently stored in the Student Records Management System. Based on your implementation of the hostel booking app. Describe the components and services that need to be integrated, and potential challenges. Explain how you would approach this integration.

Question 7: Data Format Selection

- a) When integrating external services, developers often need to choose between JSON and XML as the data format. Explain the considerations that influence this choice, and provide scenarios where one format might be more suitable than the other.

Question 8: API Rate Limiting

- a) Discuss the concept of rate limiting in API integration. Explain how rate limiting can help maintain system stability and prevent abuse. Provide an example of how you would implement rate limiting in an API.