

IT 2401

Service Oriented Architecture

16 Marks

UNIT I

1. Compare SOA with client-server and distributed internet architectures.

1) Client- Server Architecture - Brief history

- ✓ Single tier client server architecture
- ✓ Two tier client server architecture
- ✓ Three tier client server architecture

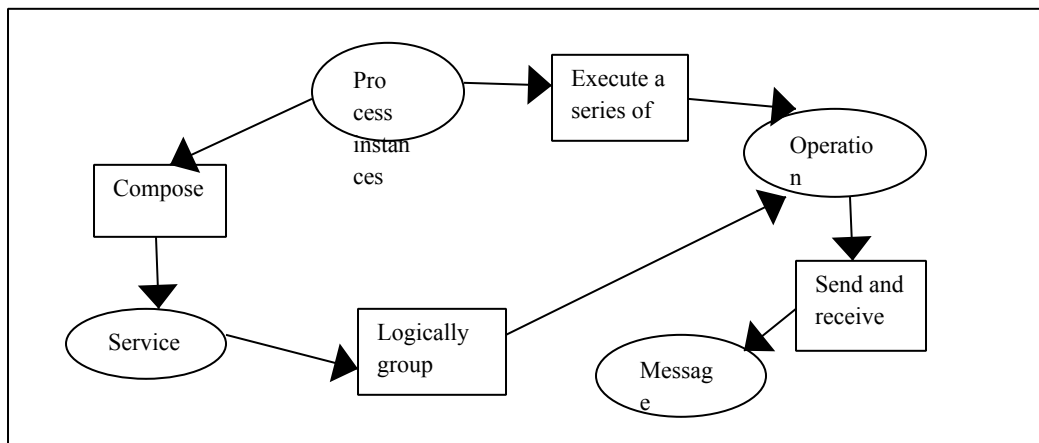
2) Distributed internet Architecture - Brief history

- ✓ Multi tier client server architecture
- ✓ Distributed internet architecture
- ✓ Component rely on proxy stubs for remote communication

2. Explain in detail about various components of SOA and how they inter – relate to each other.

- 1) Message
- 2) Operation
- 3) Service
- 4) Process

How components in an SOA inter-relate?



3. Discuss in detail about the Common principles of service- orientation.

- 1) Services are reusable
- 2) Services share a formal contract
- 3) Services are loosely coupled
- 4) Services abstract underlying logic
- 5) Services are composable
- 6) Services are autonomous
- 7) Services are stateless and
- 8) Services are discoverable

UNIT II

1. Explain in detail about Message Exchange Patterns.

1) Definitions

2) Primitive MEPs

- ✓ Request – Response

- ✓ Fire- and – forget

- ✓ Complex MEPS

3) MEPs and SOAP

4) MEPs and WSDL

- ✓ Request – Response operation

- ✓ Solicit – Response operation

- ✓ One way operation

- ✓ Notification operation

5) MEPs and SOA

2. Write about following

a. Write in detail about WSDL with examples.

b. Write in detail about SOAP with examples.

WSDL with examples:

1) Service end points and Service description

- ✓ Abstract description

- ✓ Concrete description

2) Meta data and Service contracts

3) Semantic description

4) Service description advertisement and discovery

SOAP with examples:

1) Message

- ✓ Envelope header and body
- ✓ Header block
- ✓ Message style
- ✓ Attachments and faults

2) Nodes

- ✓ Node types
- ✓ SOAP intermediaries

3) Message points

3. Explain in detail about Atomic Transaction Process with suitable diagrams.

- 1) ACID transaction
- 2) Atomic transaction protocols
- 3) Atomic transaction Co- ordination
- 4) Atomic transaction Process
- 5) Atomic transaction and SOA

4. Discuss in detail about Business Activities.

- 1) Business activity protocols
- 2) Business activity Co- ordination
- 3) Business activity status
- 4) Business activity and Atomic transaction
- 5) Business activity and SOA

5. Discuss in detail about Orchestration and Choreography.

Orchestration:

- 1) Business protocols and process definition
- 2) Process services and partner services

- 3) Basic activities and structured activities
- 4) Sequence, flows and links
- 5) Orchestration and activities
- 6) Orchestration and co -ordination
- 7) Orchestration and SOA

Choreography:

- 1) Collaboration
- 2) Roles and participants
- 3) Relationships and channels
- 4) Interaction and work units
- 5) Reusability , composability and modularity
- 6) Orchestration and choreography
- 7) Choreography and SOA

6. Explain about Service Layer Abstraction in detail.

- 1) Problem solved by layering services
 - ✓ What logic should be represented by services?
 - ✓ How should services relate to existing application logic?
 - ✓ How can services best represent business process logic?
 - ✓ How can services be built and positioned to promote agility?

UNIT III

1. Write in detail about service oriented analysis.

1) Introduction to service oriented analysis

- ✓ Objectives of service oriented analysis
- ✓ Service oriented analysis process
 - Define business automation requirements
 - Identify existing automation system
 - Model candidate service

2. Write in detail about Business Centric SOA?

- 1) Business service build agility into business models
- 2) Business service prepare a service for orchestration
- 3) Business Service enable reuse
- 4) Only business service can realize a service oriented enterprise.

3. Explain about deriving business modeling.

1) Source from which business services can be derived.

- a. Business process management model
- b. Entity model

2) Types of derived business service

- a. Task centric business service
- b. Entity centric business service

3) Business service and orchestration

4. Discuss in detail about service modeling.

1) Service versus service candidate

2) Process description

- a. Decompose the business process
- b. Identify business service operation candidates
- c. Abstract orchestration logic
- d. Create business service candidate
- e. Refine and apply principles of services orientation
- f. Identify candidate service composition
- g. Revise business service operation grouping
- h. Analyse application processing requirements
- i. Identify application service operation candidate
- j. Create application service candidate
- k. Revise candidate service composition
- l. Revise application service operation grouping.

5. Write in detail about Service Oriented Design.

- 1) Introduction to service oriented design
- 2) Objectives of service oriented design
- 3) Service oriented design process
- 4) Prerequisites

6. Write in detail about XML Schemas and WSDL with examples.

- 1) Schema element
- 2) The element element
- 3) The complex type and the simple type element
- 4) The important and include element
- 5) Other important element

WSDL language basics

- 1) The definition element

- 2) The types elements
- 3) The message and parts elements
- 4) The port type, interface and operation elements
- 5) The input and output elements
- 6) The binding elements
- 7) The input and output elements when used with binding
- 8) The service port and endpoint element
- 9) The import element and documentation elements.

7. Write in detail about SOAP with examples.

- 1) The envelope element
- 2) The header element
- 3) The body element
- 4) The fault element

8. Explain about SOA Composition Guidelines.

- 1) Steps to composition SOA
- 2) Steps to composing SOA
- 3) Consideration for choosing service layers
- 4) Consideration for positioning core SOA standards
- 5) Consideration for choosing SOA extensions.

9. Write in detail about Service design.

- 1) Service design overview
- 2) Entity centric business service design (A step by step process)
- 3) Application service design
- 4) Data centric business service design
- 5) Service design guidelines.

UNIT IV

1. Explain in detail about SOA Platform Layers.
 - ✓ Basic platform building blocks
 - ✓ Common SOA platform layers
 - ✓ Relationship between SOA layers and technologies
 - ✓ Fundamental service technology architecture
 - ✓ Vendor platforms.
2. Discuss in detail about SOA Support with J2EE and its API's.
 - 1) Platform overview
 - 2) Primitive SOA support
 - 3) Support for service orientation principles
 - 4) Contemporary SOA support.
3. Discuss in detail about SOA Support with .NET.
 - 1) Platform overview
 - 2) Primitive SOA support
 - 3) Support for service orientation principles
 - 4) Contemporary SOA support.

UNIT V

1. Discuss in detail about the WS – BPEL with code snippets.

- 1) WS-BPEL language basics
 - i) A brief history of BPEL 4 WS and WS-BPEL
 - ii) Prerequisites
 - iii) The process element
 - iv) The partner links and partner link element
 - v) The partner link type element
 - vi) The variables element
 - vii) The get variable properly and get variable data functions
 - viii) The sequence element
 - ix) The invoke element
 - x) The receive element
 - xi) The reply element
 - xii) The switch, case and otherwise element
 - xiii) The assign, copy, from and to elements
 - xiv) Fault handlers, catch and catch all elements
 - xv) Other WS-BPEL elements.

2) Explain about WS-Coordination with code example.

- 1) The coordination context element
- 2) The identifier and expires elements
- 3) The coordination type element
- 4) The registration service element
- 5) Designating the WS-Business activity coordination type

6) Designating the WS-Atomic transaction coordination type.

3) Explain about WS-Policy with code example.

1) The policy element and common policy assertion

2) The exactly one element

3) The all element

4) The usage attributes

5) The preference attributes

6) The policy reference element

7) The policy URIs attributes

8) The policy Attachment element

9) Additional types of policy assertions.

4. Explain about WS-Security with code example.

1) The security element (ws-security)

2) The username token, username and password elements (WS- security)

3) The binary security token element (WS-security)

4) The security token reference element (WS-security)

5) Composing security element contents (WS-security)

6) The encrypted data element (XML encryption)

7) The cipher data cipher value and cipher reference elements (XML encryption)

8) XML- signature elements.

