COURSE TABLE OF CONTENTS

Advanced SOA Design & Architecture

OEM: Arcitura • Duration: 5 Days (40 hrs) • Code: S90.07B

COURSE MODULES & TOPICS

Module 1: Fundamental SOA, Services & Microservices

- Business and Technology Drivers for SOA, Services and Microservices
- Strategic Goals and Benefits of Service-Oriented Computing
- Plain English Introduction to Services and Microservices
- Fundamental Characteristics of a Service-Oriented Architecture
- Understanding Service-Orientation as a Design Paradigm, including coverage of the Four Pillars of Service-Orientation
- Introduction to Service Layers, Service Models and Service Compositions
- Service Inventories, Service Layers and Service API Governance and Management
- Introduction to Common Service Technologies, including API Gateways, Virtualization, Containerization
- Introduction to Cloud Computing and Cloud Services
- Adoption Impacts and Requirements, including considerations for Governance, Infrastructure, Performance and Standardization

Module 2: Microservice Technology Concepts

- Comparing Service Implementation Mediums
- Service Roles and Service Agents
- Message Exchange Patterns and Service Activities
- Basic XML, XML Schema, JSON and JSON Schema Concepts
- HTTP Methods, Response Codes and Headers
- Basic REST Service Concepts, including Properties and Constraints
- REST Services, Contracts, Resources and Messaging
- Hypermedia and Late Binding
- Basic WSDL and SOAP Concepts
- WS-* Technologies
- Web Service Contracts, Messaging and Registries
- Cloud Computing Concepts
- Vertical and Horizontal Scaling
- Multitenancy, Elasticity and Resiliency
- On-Demand Usage, Ubiquitous Access and Measured Usage
- Public, Private and Hybrid Clouds
- IaaS, PaaS and SaaS

Module 3: Design & Architecture with SOA, Services & Microservices

- Fundamental Application Design with SOA
- Service-Orientation vs. “Silo”-Based Design
- Service-Oriented Application Design with Microservices
- Understanding Services and Service Capabilities
- Understanding the Functional Context of Microservices
- Complex Service Composition Design, Composition Runtime Roles and Responsibilities
- Composition with Microservices
- Distinguishing Characteristics of the SOA Model
- The Eight Design Principles of Service-Orientation
- Contract-First Design, Standardized Service Contracts and Uniform Contracts
- Service Loose Coupling and Coupling Types, Service Abstraction and Information Hiding
- Service Reusability and Agwnostic Design, Service Autonomy and Runtime Control
- Service Statelessness and State Deferral, Service Discoverability and Interpretability
- Design Guidelines for REST Services
- Design Guidelines for Web Services
- Design Guidelines for Microservices

Module 7: Advanced SOA Design & Architecture with Services & Microservices

- SOA vs. Traditional Architectures
- Understanding Service and Composition Architectures
- Logic Centralization, Schema Centralization and Canonical Schemas
- Dual Protocols, Canonical Resources and Inventory Endpoints
- Contract Centralization, Official Endpoints and Services with Concurrent Contracts
- Lightweight Endpoints, Reusable and Uniform Contracts
- Service Façades, Legacy Wrappers and Service Data Replication
- Microservice Deployments and Containerization
- Redundant Implementations, Content Negotiation and Idempotent Capabilities
- Messaging Metadata, State Messaging and Event-Driven Messaging
- Service Instance Routing, Endpoint Redirection, Service Agents and Intermediate Routing
- API Gateways and Asynchronous Queuing
- Data Format Transformation, Data Model Transformation and Protocol Bridging
- Service Brokers and the Enterprise Service Bus
- Orchestration and Compensating Service Transactions
- Composition Autonomy, Entity Linking and State Repositories

Module 8: SOA Design & Architecture Lab with Services & Microservices

- Reading Exercise 8.1: Case Study Background E-Commerce Assist (ECA)
- Lab Exercise 8.2: Shopping Platform Upgrades
- Lab Exercise 8.3: Re-Modeling Web Services as REST Services
- Lab Exercise 8.4: API Gateway and Inventory Endpoint Design
- Reading Exercise 8.5: Case Study Background FRC

- Lab Exercise 8.6: Flight Plan Service Re-Design
- Lab Exercise 8.7: Platform Upgrades
- Lab Exercise 8.8: Regulatory Compliance Service Architecture
- Reading Exercise 8.9: Case Study Background Alleywood and Tri-Fold
- Lab Exercise 8.10: GetERPInvData Service Re-Design
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