

# Cloud Programming Workshop

WT1827

This workshop introduces a Cloud Reference Model and explores various aspects of Cloud solution development. Special attention is given to cloud programming standards and development best practices. Upon completion of this course, students will have an understanding of the Cloud Computing environment and practical experience in designing, developing, and deploying Cloud-based solutions.

## Audience

- Information Technology Developers and Architects

## Prerequisites

- Foundational Knowledge in Cloud Computing, such as is provided by our Cloud Computing Primer (WT1723) and / or Cloud Computing Workshop (WT1724)

## Course Length

- 2 days

## Learning Objectives

- Cloud Reference Model
- Cloud Layering
- Cloud Development Life Cycle
- Programming Standards for the Cloud
- Cloud User Interfaces
- Service Interface Development
- Testing and Security in the Cloud

## Teaching Methods

- Lectures
- Hands-on workshops

## Course Outline

WTE10

### Cloud Reference Model

- Objectives
- Cloud Computing Stack
- Cloud Infrastructure
- Cloud Storage
- Cloud Platform
- Cloud Services
- Cloud Applications
- Categorizing Clouds
- Scoping Clouds
- Cloud Types
- Cloud Roles
- Cloud Solution Stacks
- Solution Stack – Cloud Desktop
- Solution Stack – Cloud Software
- Solution Stack – Cloud Service
- Solution Stack – Cloud Processing
- Solution Stack – Cloud Storage

### Cloud Layering

- Objectives
- Cloud Application Services
- Cloud Business Services
- Composite Cloud Services
- Cloud Security Services
- Cloud Data Services
- Orchestration in the Cloud

### Cloud Development Life Cycle

- Objectives
- Cloud Development Life Cycle
- Requirements Discovery
- Analysis & Design
- Development
- Testing
- Deployment
- Monitoring
- Retirement

### Development

- Objectives
- Implementing Cloud Services
- Building Composite Solutions
- Creating Services for Amazon
- Testing Amazon Cloud Services
- Deploying Amazon Services
- Consuming Amazon Services
- Creating Services for Google
- Testing Google Cloud Services

### Cloud Programming Standards

- Objectives
- Perspectives on Cloud Standards
- Cloud Standards Turf War
- Interface Standards
- Messaging Standards
- Networking Standards
- Platform Standards
- Security Standards

### Programming Cloud User Interfaces

- Objectives
- User Interface Types
- User Interface Considerations
- Cloud Desktop UI
- Cloud Web UI
- Mashups in the Cloud

### Programming Cloud Service Interfaces

- Objectives
- Service Interface Elements
- Data Model Design Considerations
- Service Interface Standards
- Service Interface Examples
- Granularity Considerations
- Interface Version Management
- Service Interface Design Best Practices

### Consuming Cloud Solutions

- Objectives
- Client Types
- Working with Cloud-based Clients
- Working with Non-cloud Clients
- Interface-driven Client Development
- Handling Error Messages in the Cloud
- Cloud Consumption Best Practices

### Testing Cloud Applications

- Objectives
- Cloud Testing Overview
- Layered Testing
- Phase Testing
- Unit Testing Cloud Solutions
- Integration Testing Cloud Solutions
- Exception-based Testing
- Black box and White box testing
- Interoperability Testing in the Cloud
- Testing Best Practices

### Securing Cloud Applications

- Objectives
- Security in the Amazon Cloud
- Working with the AWS Cloud ID Service
- AWS Security Example
- Security in the Google Cloud
- Working with the Google Developer ID
- Google App Engine Security Example
- Summary

### Appendix A – Cloud Computing Glossary

### Appendix B – Cloud Computing Roadmap