AZ-220: Microsoft Azure IoT Developer Course Outline

Duration: 40–50 Hours
Level: Intermediate to Advanced
Delivery Mode: Online / Offline
Target Audience: IoT Developers, Azure Developers, System Administrators, and IT Professionals
Certification: Microsoft Certified: Azure IoT Developer Associate

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Module 1: Introduction to Azure IoT Development

- Overview of Microsoft Azure and IoT Development
- Azure IoT Developer Role and Responsibilities
- Understanding Azure IoT Architecture
- Introduction to Azure IoT Hub and its Features
- IoT Security in Azure

Module 2: Setting Up Azure IoT Solutions

- Setting Up and Configuring an Azure IoT Hub
- Exploring IoT Hub Device Identity and Device Provisioning
- Understanding Azure IoT Hub Device SDKs (C, Python, Java, .NET)
- Using Azure IoT Hub to Manage Device Lifecycle
- Connecting Devices to Azure IoT Hub

Module 3: Implementing Azure IoT Security

- Securing IoT Solutions in Azure
- Authentication and Authorization with Azure IoT Hub
- IoT Hub Device Security Best Practices
- Using Shared Access Signatures (SAS) and X.509 Certificates
- Implementing Secure Device Connectivity

Module 4: Implementing Device Communication with Azure IoT Hub

- Device-to-Cloud Communication Using IoT Hub
- Cloud-to-Device Communication with Azure IoT Hub
- Managing Device Twins for Device State Management
- Using Direct Methods and Cloud-to-Device Messaging
- Integrating Devices with Azure Event Grid and Azure Functions

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Module 5: Implementing Data Processing and Integration

- Using Azure Stream Analytics for Real-Time Data Processing
- Processing IoT Data with Azure Functions
- Storing IoT Data in Azure Storage and Azure SQL Database
- Integrating IoT Solutions with Power BI for Visualization
- Managing IoT Data with Azure Time Series Insights

Module 6: Implementing Azure IoT Edge

- Introduction to Azure IoT Edge
- Deploying IoT Edge Modules to Devices
- Implementing Edge Device Communication
- Managing IoT Edge with Azure Portal and CLI
- Using Azure IoT Edge for Offline and Edge Computing

Module 7: Developing Solutions with Azure Digital Twins

- What is Azure Digital Twins?
- Use Cases for Digital Twins in IoT
- Setting Up Azure Digital Twins in IoT Solutions
- Integrating IoT Devices with Azure Digital Twins
- Using Digital Twins for Real-Time Monitoring and Simulation

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Module 8: Implementing Azure IoT Central

- Overview of Azure IoT Central and its Benefits
- Creating and Configuring IoT Central Applications
- Device Templates and Device Configuration in IoT Central
- Device Monitoring and Data Analytics in IoT Central
- Managing Devices and Solutions with IoT Central

Module 9: Monitoring and Troubleshooting IoT Solutions

- Monitoring IoT Devices with Azure Monitor
- Troubleshooting Device Connectivity Issues
- Logging and Diagnostics with Azure Application Insights
- Using Azure IoT Hub Metrics and Alerts
- Performance Optimization of IoT Solutions

Module 10: Hands-On Project and Exam Preparation

- Design and Deploy an IoT Solution with Azure
- Implement Security, Data Processing, and Edge Computing
- Create IoT Analytics Dashboards with Power BI
- Review and Practice Microsoft AZ-220 Exam Questions
- Best Practices for Microsoft Certification Exam