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Microsoft Azure Developer Associate Training (AZ-204)

Course Curriculum : Your 12 module Learning Plan

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About Edureka

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About Course

Microsoft Azure Developer Associate (AZ-204) course is designed to help you prepare for the Exam AZ-204: Developing Solutions for Microsoft Azure, which is required to attain the Azure Developer Badge (Associate-level). You will be able to demonstrate comprehensive knowledge of Azure development using IaaS, PaaS solutions, and related Storage, Security, and Integration Services.

Microsoft Azure Developer AZ-204 Course Curriculum

Introduction to Azure IaaS Compute Solutions

Learning Objective: Get a brief overview of Microsoft Azure and its Infrastructure as a Service(IaaS) Compute Solutions. Learn how to plan for VM deployment and create VMs using Azure Portal, PowerShell and C# code.

Topics:

- Overview of Microsoft Azure
- Azure Virtual Machines
- Configure Azure VMs for remote access
- Using Azure SDKs

Hands-On:

- Provision VMs by using the Azure Portal, PowerShell, and code

Implementing Azure Batch Service and Disk Encryption

Learning Objective: Learn how to create and use ARM templates for repeatable deployments and encrypt Azure VM disks.

Also, learn to use Azure Batch, which creates and manages a pool of compute nodes (VMs), installs the applications you want to run, and schedules jobs to run on the nodes.

Topics:

- ARM templates for Azure Virtual Machines
- Azure Disk Encryption
- Azure Batch Services

Hands-On:

- Deploy ARM templates for VM
- Run a batch job by using Azure CLI, Azure portal and Code

Designing and Developing Applications that use Containers

Learning Objective: Build and run modern, portable, Microservices-based applications that benefit from Kubernetes orchestration and manage the availability of those application components.

Topics:

- Overview of Azure Kubernetes Service (AKS)
- AKS clusters
- Azure Container Registry

Hands-On:

- Create an Azure Managed Kubernetes Service (AKS) cluster
- Create container images for solutions
- Publish an image to the Azure Container Registry
- Run containers by using Azure Container Instance or AKS

Implementing Azure App Service Web Apps & Mobile Apps

Learning Objective: Use Azure App Service Web Apps for hosting web applications, REST APIs, and mobile back ends. Add more power to application by implementing security, load balancing, autoscaling, and automated management. Also, build engaging cross-platform and native apps using Azure App Service Mobile Apps.

Topics:

- Azure App Service core concepts
- Azure App Service Web Apps

- WebJobs
- Azure App Service Mobile Apps
- Registering apps for Push notifications

Hands-On:

- Creating App Service web apps by using Azure CLI, Azure Portal, and PowerShell
- Creating continuous and triggered WebJobs
- Pushing an app on to the Mobile App service
- Registering apps for push notifications

Implementing Azure App Service API Apps & Azure Functions

Learning Objective: Learn how to create and document an Azure App Service API and implement Azure Functions, which is a solution for easily running small pieces of code, or "functions," in the cloud.

Topics:

- Azure App Service API Apps
- API documentation
- Azure Functions overview
- Durable functions

Hands-On:

- Creating an APIM instance and a new API
- Use Swashbuckle to create Swagger objects in ASP.NET Core
- Creating functions, bindings, and triggers
- Creating Durable functions

Developing Solutions that use Azure Table Storage and Cosmos DB

Learning Objective: Use Azure Table storage service, that stores structured NoSQL data in the cloud, providing a key/attribute store with a schema-less design. Also, learn how to use Azure Cosmos DB storage to manage containers and items, handle documents by using code, and implement scaling.

Topics:

- Azure Table storage overview
- Authorization in Table storage
- Table service REST API
- Azure Cosmos DB overview
- Managing containers and items
- Handle documents
- Scaling
- Implement server-side programming

Hands-On:

- Perform Shared Key Authorization
- Use the Azure Table storage REST service to manage data
- Create, read, update, and delete data by using appropriate APIs
- Creating and updating documents by using code

Developing Solutions that use Relational Database and Azure Blob Storage

Learning Objective: Learn about Azure SQL Database, a managed service which is a general-purpose relational database that supports structures such as relational data, JSON, spatial, and XML. Also learn about Azure Blob storage, which is Microsoft's object storage solution for the cloud. Blob storage is optimized for storing massive amounts of unstructured data.

Topics:

- Azure SQL overview
- Database operations (CRUD)
- Azure Blob storage overview
- Working with Azure Blob storage
- Blob Leasing in Azure
- Hot Storage
- Cool Storage
- Archive Storage

Hands-On:

- Create, read, update, and delete database tables by using code
- Set and retrieve Blob storage properties and metadata
- Replicate and copy Blobs
- Implement Blob Leasing on Portal

Implementing Authentication and Access Control in Azure

Learning Objective: Learn about Microsoft identity platform, which is an evolution of the Azure Active Directory (Azure AD) identity service and developer platform. It allows developers to build applications that sign in all Microsoft identities, get tokens to call Microsoft Graph, other Microsoft APIs, or APIs that developers have built. Also, learn about Claims-based and Role-based access control.

Topics:

- Microsoft identity platform
- OAuth2 authentication
- Managed Identities
- Azure Key Vault
- Claims-based authorization

- Role-based access control (RBAC) authorization

Hands-On:

- Implementing OAuth2 authentication in the solutions
- Using Azure Key Vault to store and retrieve authentication information
- Implementing multi-factor authentication
- Implementing Claims-based authorization
- Manage access to resources using RBAC through the REST API

Implementing Secure Data Solutions and Integrating Caching and CDN

Learning Objective: This module covers securing data at rest and during transmission. You will also learn how to leverage Azure Cache for Redis and Azure CDNs to deliver assets to users more quickly.

Topics:

- Encryption options
- End-to-end encryption
- Azure confidential computing
- Managing cryptographic keys in Azure Key Vault
- Azure Cache for Redis
- Develop for storage on CDNs

Hands-On:

- Encrypting data with Transparent Data Encryption
- Managing and utilizing encryption keys by using the Azure key Vault
- Configuring and interacting with Azure Redis Cache
- Managing Azure CDN

Instrument Monitoring, Logging and Scalability of Apps and Services

Learning Objective:This module covers adding code to your app to send the data to Azure Monitor, which is the central service that includes all the tools you need to monitor and optimize your solution. This module also covers how applications scale and how to handle troubleshooting.

Topics:

- Overview of Azure Monitor
- Application Insights
- Autoscale patterns and best practices
- Handling transient faults

Hands-On:

- Adding default code to web pages, console apps, and Windows desktop apps to support telemetry
- Using dashboards and other tools to monitor and troubleshoot their app
- Implementing Autoscale
- Implementing code that addresses singleton application instances
- Implementing code that handles transient faults

Connecting to and Consuming Azure and Third-party Services

Learning Objective:This module provides an overview of Logic Apps and API Management. In this module, you will also learn how to integrate Azure Search (Search-as-a-Service).

Topics:

- Azure Logic Apps overview
- Custom connectors for Logic Apps

- Custom templates for Logic Apps
- Azure Search service
- Introduction to the API Management service
- Secure APIs
- Define API policies

Hands-On:

- Creating Logic Apps by using Visual Studio
- Creating an Azure Search index
- Importing searchable data
- Querying the Azure Search index
- Secure APIs

Developing Event-based and Message-based Solutions in Azure

Learning Objective:Develop event-based solutions in Azure by integrating Azure Event Grid, Event Hubs, and Notification Hubs in your applications. Also, learn about Microsoft Azure Service Bus, which is a fully managed enterprise integration message broker.

Topics:

- Azure Event Grid
- Azure Event Hubs
- Azure Notification Hubs
- Azure Service Bus
- Azure Queue Storage queues

Hands-On:

- Create and integrate Event Grid, Event Hubs and Notification Hubs
- Create and integrate Azure Service Bus

Microsoft Azure Developer AZ-204 Projects

What are the system requirements for this Microsoft Azure Developer AZ-204 Course?

- **Hardware Requirements:**
    - Memory – Minimum 8 GB RAM
    - Processor – Intel Core i3 CPU @2.00 GHz or later
    - Storage – 250 GB HDD/SDD or later

Software Requirements:

- Operating System – Windows 7 or later, Ubuntu 14 or later
- Visual Studio 2017 community edition (Include Azure packages)
- Windows PowerShell 4.0 or later (Install Azure Module)
- Microsoft Azure SDK for .NET v2.9 or later

How will I execute practicals in this Microsoft Azure Developer AZ-204 Course?

- You will be executing all the practicals on free tier Azure account, which you will be creating during the class.

Which projects will be a part of this Microsoft Azure Developer AZ-204?

Project 1

- **Domain**: Automobiles

  Background:

  Zoyota is an MNC, which manufactures automobiles. They have over 10 million customers across the globe. Due to the outstanding vehicle performance and improved technical specifications, the number of customers is increasing at an exponential rate. The company has its manufacturing units across the globe. Every year, the company launches on an average 10 different models of their automobiles in each region.

  Business Requirement:

  The company currently has its entire application and management portal infrastructure on-premise. It has been decided to migrate the infrastructure to Azure as its entire application is built on top of Microsoft Stack. To start with, the organization has decided to migrate the "Fleet Management Portal" to Azure. As per the company's compliance, no data should be available outside the country. Business users must perform the acceptance testing of the new versions of the applications before deploying them to the production environment. There must be a provision for Identity Access Management as well.

  Technical Requirements:

  - **Storage repository:** The data storage currently used on-premise has a storage capacity of a minimum of 250 TB. Data should be replicated at various locations to reduce latency. The designated "Admin" user should be able to grant "Admin" rights to another user when he/she is going to be unavailable. This should be done in such a manner that the temporary "Admin" has "Admin" access only to the Storage repository and no other components of the infrastructure.
  - **Website:** The company website must be deployed on Azure as a Web App service. Scheduling must be done to take weekly back up of the Web App. The website should have access to a minimum storage space of 100 GB to account for the log files which get stored in the file server. Developers must validate the application deployed on the staging server.

- **Security:** Authentication must be provided for accessing the application via Azure Active Directory. The Application Request Routing must be disabled for the application due to security reasons. All new Customers must submit proof of purchase on the portal within 48 hours of the intimation by the marketing team. The proofs will be stored in the Blob storage. After 48 hours, the proof submission is blocked.
- **Search:** The Employee Management Portal should have a search logic implemented. Apart from search, the service should also provide suggestions on the search. The company is currently using SQL queries with the “LIKE” operator to perform the search but as the size of the database has increased, the search performance has degraded.