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## 3 Months Immersive Course Structure .NET with Azure LOT

.NET with Azure LOT provides exposure to the entire spectrum of .NET/Azure technologies. It focuses on Desktop as well as Cloud application development using .NET Technologies. The following table lists the proposed course structure for 3 Months Immersive .NET/Azure LOT.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Course** | **Duration** | **Remarks** |
| 1 | Discover | 1 |  |
| 2 | Soft Skills Part 1 | 1 | Soft Skills Part 1 |
| 3 | .NET Framework Fundamentals | 8 |  |
| 4 | .NET Core Basics | 4 |  |
| 5 | Git | 1 |  |
| 6 | Soft Skills Part 2 | 1 | Soft Skills Part 2 (Saturday) |
| 7 | .NET Core Fundamentals Test | 0.5 | Module Test (MCQ + Coding) |
| 8 | RDBMS and SQL Server | 4 | Sprint 1 Implementation |
| 9 | LINQ and Entity Framework Core | 2.5 |
| 10 | ASP.NET Core Web API | 3 |
| 11 | Soft Skills Part 3 | 1 | Soft Skills Part 3 |
| 12 | WEBAPI + SQL Server + LINQ and EF MCQ Test (1 hr on Day1 of Sprint) & Sprint 1 Implementation | 4 | Sprint 1 Implementation + MCQ |
| 13 | Sprint 1 Evaluation | 1 |  |
| 14 | Cloud Computing & Microsoft Azure Fundamentals | 7 |  |
| 15 | Soft Skills Part 4 | 1 | Soft Skills Part 4 (Evaluation) |
| 16 | Cloud Networking and Storage | 7 | Sprint 2 Implementation |
| 17 | Azure PaaS Services | 7 |
| 18 | MCQ Test (1 hr on Day 1) + Azure Function App + Azure Service Bus + Azure Logic App Sprint 2 Implementation | 3 | Sprint 2 Implementation + MCQ |
| 19 | Sprint 2 Evaluation | 1 |  |
| 20 | L1 Preparation | 1 |  |
| 21 | L1 Test | 1 |  |
|  | Total Training Duration | 60 |  |

**.NET with Azure Curriculum**

.**NET Framework Fundamental**

**Program Duration**: 6 Days.

**Table of contents**

**.NET Framework Fundamental & Evolution**

* Microsoft Visual Studio & Framework History & Background
* Introduction to .NET Framework
  + What is .NET Platform?
  + What is .NET Framework
  + .NET Framework, Languages, and Tools
  + .NET Framework Major Components
  + Common Language Runtime (CLR)
  + The CLS (Common Language Specification)
  + The CTS (Common Type System)
  + Understand the .NET Framework 4.6 stack
* Introduction to C#
  + Features of C#
  + C# Compilation and Execution
  + General Structure of a C# Program
  + Creating and Using a DLL
* Data Types and Arrays in C#
  + Data Types in C#
  + Value Types and Reference Types
  + Boxing and UnBoxing
  + Single Dimensional, Multi-Dimensional & Jagged arrays
  + Nullable Types
  + Implicitly Typed Local variables
  + Var vs dynamic
  + Is and as operator
  + Ref vs out keywords
  + The ‘object’ base class in .net
  + Equals() vs ==
  + String vs StringBuilder
  + Various String class methods
  + Default parameters, named parameters
  + Parse() vs TryParse() vs Convert Class methods
* Using Microsoft Visual Studio Community
  + Various Types of .NET Projects
  + Tracing, Debugging, Build
  + Compile Options
  + Using break points
  + Using break conditions
  + Using watch and output window
  + Creating multiple projects within one solution
  + Customizing Visual Studio Settings – Extensions, NUGet Package, Environmental Settings
* OOP with C#
  + Structures and enums
  + The architecture of a class in C#
  + Instance, Class & Reference variables
  + Access Modifier
  + Abstract Classes
  + Constructors, Destructors, The GC
  + .NET Base class library
  + Inheritance in C#
  + Method Overloading
  + Method Overriding
  + Operator Overloading
  + Method Hiding
  + Access modifiers : private, pubic, protected, internal, protected internal, new
  + Anonymous types
  + Abstract classes
  + Sealed classes
  + Creating Interfaces
  + Implementing Interface inheritance
  + Declaring properties within Interfaces
  + Namespaces
  + Creating and using Generic classes
  + Indexers & Properties
  + Auto Implemented properties
  + Static Classes
  + Property Accessors
  + Partial types
  + Extension methods
  + Object Initializer
* Evaluating Regular Expressions in C#
  + RegEx Class
  + Forming Regular Expression
  + Methods for Regular Expression
* Exception Handling
  + Exceptions in C#
  + Exception class hierarchy
  + Try block
  + Multiple catch blocks
  + Finally block
  + Purpose of throw keyword
  + Purpose of inner exception
  + Creating Custom Exception
* Garbage Collection in C#
  + Role of a Garbage Collector
  + Garbage Collection Algorithm
  + Finalize vs Dispose
* Collections & Generics
  + System.Collections Namespace
  + Collection Interfaces
  + Collection Classes
  + The collection API
  + Working with Generics
  + Collection Initializers
  + Iterators
  + Constraints
* File I/O and Serialization
  + Persisting object state to a stream
  + Various classes used for File handling
  + Using StreamReader, StreamWritter
  + Using BinaryReader, BinaryWriter
  + Using File, FileInfo, Directory, DirectoryInfo
  + Serialization modes: Binary, SOAP, XML
  + JSON serialization using DataContractJsonSerializer
  + Performing various serializations,
  + Runtime serialization (Deep)
  + Marking a class serializable
  + Serialization and inherited classes
  + Customizing Serialization by Using attributes
  + Implementing ISerializable interface
* Threading, Parallel and Async programming with C#
  + Appdomain vs Process vs Thread
  + Process vs Thread
  + Creating and running a thread
  + Thread.Sleep() method
  + Parallelization Overview
  + Task Parallel Library
  + Threads Vs. Tasks
  + Parallel Extensions
  + Task Based Asynchronous Model
  + Async and Await
  + Using Locks
* C# New Features
  + Using Static
  + String Interpolation
  + Await in catch/finally
  + Exception filters
  + Pattern Matching
  + Tuples
  + Generalized async Return Types
* Utilizing Class Libraries & Console Project
  + The .NET Console Application Project Type
  + References and Importing Namespaces
  + Instancing Classes
* IOC Container
  + Dependency Injection – Only Concept and Simple Demo

**.Net Core Basics**

**Table of contents**

**Program Duration**: 3 Days.

**Understand .NET Core**

* Understand .NET Core architecture and Advantages
* Understand .NET Core middleware & Configuration
* Understand and Use Dependency Injection in .NET Core
* Handle Errors in .NET Core

**Git**

**Table of contents**

**Program Duration**: 1 Day.

* Getting Started with Git
  + Install the Git Tools
  + Clone an Existing Repository
  + Add Files to a Repository
  + Edit Files in a Git Repository
  + Create and Merge Branches
  + Rewrite History in a Git Repository
  + Resolve Merge Conflicts

**RDBMS –SQL Server**

**Program Duration**: 2.5 Days.

**Table of contents**

* Introduction to RDBMS
  + Introduction to databases
  + Data Models in Database
  + Properties of RDBMS
  + Normalization
  + CODD’s Relational Database Rules
  + Data Integrity
  + T-SQL Language
* Working with Data Types, Tables & Data Integrity covering DDL, DML, DCL statements
  + Working with Data Types (Only Basics of Data Types)
  + Working with Schema
  + Working with Tables
  + Implementing Data Integrity
* Beginning with Transact-SQL
  + Transact-SQL
  + System Functions
  + Advanced T-SQL Queries`
  + Advanced T-SQL Statements
  + Other T-SQL Statements
  + Set Operators
  + Transact-SQL
  + System Functions
  + Advanced T-SQL Queries
  + Advanced T-SQL Statements
  + Other T-SQL Statements
* Working with Joins and Subqueries
  + What are Joins?
  + Types of joins
  + Subqueries
* Database Objects: Indexes and Views
  + Introduction to Index in SQL Server
  + Introduction to Views in SQL Server
* Stored Procedures
  + Stored Procedure
  + Implementing Stored Procedure
  + Exception handling using TRY-CATCH
  + Trigger & Cursors Basics

**LINQ and Entity Framework Core**

**Program Duration**: 2 Days.

**Table of contents**

* Language Integrated Query
  + Introduction, LINQ Syntax
  + Query Operators
  + Select, from, Where
  + ofType
  + OrderBy
  + ThenBy
  + GroupBy, into
  + Select
  + SelectMany
  + Take, TakeWhile
  + First
  + FirstOrDefault
  + Single
  + SingleOrDefault
  + Aggregate functions Sum, Min, Max, Average, Count
  + Distinct
  + Intersect
  + Except
  + Join
  + LINQ projection
  + Deferred execution vs immediate execution
  + Let keyword
  + LINQ to Object
  + LINQ to DataTable
* Entity Framework Core
  + Overview of ORM Products
  + Entity Framework introduction
  + Using Database first Approach
  + Using Model First approach
  + Using Code First approach
  + Using LINQ to Entities to perform CRUD operations
  + SQL Query Logging
  + Migration & Database Update
  + Eager Loading Vs Explicit Loading Vs Lazy Loading
  + Raw SQL And Stored Procedures

**ASP.NET Core Web API**

**Program Duration**: 3 Days.

**Table of contents**

* Understand REST Service using .NET Core
* Understand Entity Framework Core
* Introduction to .Net Core WebAPI
  + Introduction to Web Service with Demo
  + Introduction to WCF Service with Demo
  + Introduction to Web API
  + Difference between Web Service, WCF Service and Web API
  + Web API features
  + HTTP Web Services
  + Web API Introduction
  + Middleware
  + Web API Routing
  + Configuring WebApi
  + Web API Parameter Biding
  + Action Return Type
  + WebApi Filters
  + Content Negotiation
  + Create CRUD WebApi
  + Consume WebApi
  + MSTest / XUnit
    - Basic Unit Test
  + Create CRUD WebApi
    - Working with swagger
    - Postman Utility
* Understand and Implement Repository, Unit of Work
* Publish WebApi on IIS

**Cloud Computing & Azure Fundamentals**

**Program Duration**: 6 Days.

**Table of contents**

* Cloud Computing & Microsoft Azure Fundamentals
* Microsoft Azure Portal Overview (Utilization, Cost)
* Overview of Cloud Computing (Benefit, Capex/Opex)
* Overview of Public and Private Cloud & Hybrid
* Core Azure Service
* Availability Zones, Availability Set, Resource Groups, Azure Resource Manager
* Security & Governance Overview
* Identity, Azure Active Directory, Users & Groups
* Subscriptions and Accounts, Azure Policy, Role-based Access Control (RBAC)
* Azure Portal and Cloud Shell & Azure PowerShell and CLI

**Cloud Networking & Storage**

**Program Duration**: 5 Days.

**Table of contents**

* Azure Virtual Machine
* Overview Virtual Networking
* Azure Load Balancer
* VPN Gateway, Azure Application Gateway, Azure CDN, Azure Traffic Manager
* Azure Storage Services
* Structured Data, Semi Structure Data, Unstructured Data
* Azure Database Services, Azure SQL Server

**Azure PaaS Services**

**Program Duration**: 6 Days.

**Table of contents**

* Azure App Service
* Overview of Azure Web App
* Overview of Azure Function App
* Overview of Disconnected Architecture
* Overview of Azure Service Bus
* Overview of Azure Logic App
* Overview of Azure Data Factory
* Overview of Azure Analysis Service
* Azure Function App + Azure Service Bus + Azure Logic App