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**Essential .Net ++ using Visual Studio 2015 - Course Content**  
**(Duration 225 hours with Projects) Effective June 1<sup>st</sup> 2016**

**C#**

- Object Oriented Programming Concepts
- WHY .NET?
- WHAT IS .NET?
- Namespaces in .Net
- Variables and their scope
- Value Types and Reference Types
- Structs vs Classes
- Boxing / Unboxing
- Enums
- Class Members and Instance Members
- Properties in .Net
- Static Fields, Properties, Methods, Constructors and Classes
- Readonly and Constant Fields
- Operators
- OOPs Concepts applied in C#
- Interfaces
- Delegates and Events
- var and dynamic types
- Anonymous delegates and Lambda operator
- Collections and Generics
- Exception Handling
- Serialization
- Threading
- File I/O
- .Net Assemblies
  - o Creating an Assembly
  - o Using a private Assembly
  - o Creating and using a shared Assembly through Global Assembly Cache
  - o Working with Reflection API

(Several assignments on basic logic building, OOPS concepts and IO)

## **SQL**

- Introduction
- Writing a Basic SQL Statement
- Restricting and Sorting Data
- Single Row Functions
- Displaying Data from Multiple Tables
- Writing Joins
- Using Group Functions
- Writing Sub queries
- Modifying Data
- Creating and Managing Tables
- Including Constraints
- Creating View
- Indexes
- Stored Procedures
- User defined Functions
- Triggers

(Assignments on writing stored procedures, write nested queries (sub queries) etc)

## **ADO .NET**

- Introduction to Databases
  - Creating Databases, Tables Using Enterprise Edition of SQL Server 2005
  - Understanding SQL Queries using Visual Studio
  
- Introduction to ADO .Net
  - Working in Connected Architecture
    - Select, Insert, Update Queries
    - Creating Stored Procedures (with various examples)
    - Executing Stored Procedures using ADO .Net
    - Transactions
  - Working with Disconnected Architecture
    - Dataset, DataAdapter
    - Creating Tables dynamically
    - Using Relations within Dataset

## **LINQ**

- Anonymous delegates
- Lambda Operator
- Writing queries using Method Syntax
- Deferred execution
- Writing queries using Query syntax

## **Entity Framework**

- Basics of an ORM
- Database First and Code First approach

(Assignments on ADO .Net and LINQ)

## **Web UI Development**

- Html5
- Css3
- Javascript
- JQuery
- Bootstrap

(Several assignments on UI Development)

## **ASP .NET**

- All about ASP .Net
  - o Introduction
  - o Working with ASP .Net Solutions in Visual Studio
  - o Designing Forms and doing Validations
  - o Persisting data using ADO .Net
  - o Designing with Master Pages
  - o Concept of Get and Post Back Requests
  - o Data Controls – Mainly Gridview Control
    - Designing the control by selecting appropriate Column types
    - Using Datasource and DatasourceId for binding data to the control
    - Providing paging in the Gridview
    - Allowing Sort on different columns
    - Showing Filtered data in the Gridview
    - Editing the data in GridView (In place editing)
    - Purpose of Template Fields
    - Doing Validations and rendering data appropriately using Template Fields
    - Using Hyperlink Fields to pass data in QueryString to navigated page
    - Using Command Fields and Button Fields
    - Using Image Fields to display images
    - Using SqlDataSource Control for auto generating the above operations
    - Maintaining multiple selections on different pages of GridView using ViewState
    - Custom Paging using DataList Control
    - Cross Page Data Transfer
  - o Understanding Cookies
  - o Session State management via Session Object
  - o Application state management via Application Object
  - o Authentication and Authorization
  - o Understanding request life cycle of ASP .Net
  - o Handling non-page events via Global asx file
  - o Web Services with .Net
    - Creating a Web Service

- Understanding WSDL
- Consuming a web service by Web reference to a service
- ASP .Net AJAX
  - Update Panel
  - UpdateProgress
  - Timer
  - Using AJAX Extension kit AutoCompleteExtender, ModalPopupExtender

(Shopping Cart Project in ASP .Net Web Forms)

- **ASP .Net MVC**

- Understanding MVC model
- ASP .Net implementation of MVC model
- Writing an ASP .Net MVC application
  - Creating Models
  - Creating Controllers
  - Creating Views for Controller Actions
- Using JQuery with MVC
- Doing Validations in MVC
- Form handling and ajax in MVC
- Using Entity Framework as a Model
- Authentication and Authorization in MVC

(Project in ASP .Net Mvc)