

# CETPA INFOTECH PVT. LTD.

## CURRICULUM OF .NET

### INTRODUCTION TO .NET

- What is Microsoft .NET
- History of .NET
- Origin of .NET
- Usages of .Net
- D.N.A. Architecture
- Dot NET Architecture and Its Type
  1. One Tier
  2. Two Tier
  3. Three Tier
  4. N-Tier

#### Lab:-

- How to work with IDE on Visual studio and their Tools
- Implement of Adding numbers on IDE

### THE COMMON LANGUAGE RUNTIME (C.L.R.)

- CLR Architecture and Services
- The .Net Intermediate Language (IL)
- Just- In- Time Compilation and CLS
- Disassembling .Net Application to IL
- Strict Type Checking

#### Lab:-

- Table Prints On Windows application
- Pattern printing on windows

### SYNTAX & DATA TYPES (LANGUAGE FUNDAMENTAL)

- Data type and Control Constructs
- Value and Reference Types

- Declaring and Initializing Variables
- Unicode Characters and Strings C.T.S Type
- Implicitly Typed Local Variables
- Conditional Syntax
- C# Operator
- Looping Syntax
- Structure

#### Lab:-

- Calculator lab

### FUNCTION AND ITS TYPES

- What is Function?
- Define the Advantage of Function
- Define the Declaration of Function and Its Syntax
- Types of function
  - Call by Value
  - Call by Reference
  - Call by Address
  - Call by prams
- Use of function in layered architecture

#### Lab:-

- *Tick Tock* Game
- Repetition of calculator lab using function

### ARRAY & STRING

- Arrays in General
- Declaring of different type Arrays
- Initializing Arrays
- Resizing array
- Accessing element of different type Array Members

- Arrays of Objects
- Structure type array
- Using foreach with Arrays
- Understanding System. String class and its various operations

#### Lab:-

- Customer Management system (using array with structure)

### OOPS (PART-1)

- Class & Object Creation
- Describe the Advantage of Class and Object
- Types Of classes...
- What is this keyword? Use of this keyword...
- Define Property
- Define Properties types
- Define Constructor and destructor
- Type of Constructor
  - Default Constructor
  - Parameterized Constructor
  - Copy constructor
  - Static Constructor
  - Private Constructor
- Constructor overloading
- The Memory Allocation with New Keyword
- Invoking Property and Methods

#### Lab:-

- Practical Implementation with Default, parameterized ,copy constructor

- Customer Management system(Two tier Architecture:- STATIC DATA)
- Customer Management system(Two tier Architecture:- DYNAMIC DATA WITH ARRAY)

## **OOPS CONCEPTS (PART-2)**

### **INHERITANCE**

- What is inheritance and its Advantages
- Implementing Inheritance Hierarchies
- Inheritance with constructor and Its working
- Type of inheritance
- Class Access Modifiers
- Describe the base keyword

### **Lab:-**

- Practical implementation of Inheritance lab with class access Modifiers
- Practical implementation of constructor with inheritance

### **POLYMORPHISM**

- What is polymorphism and its Advantage
- Type of Polymorphism
  - Method Overloading
  - Method Overriding
  - Operator Overloading
  - Run time polymorphism
- Method hiding

### **Lab:-**

- Practical implementation of method overloading, method overriding

- Practical implementation of operator overloading and method hiding
- Package Management Lab (Two Tier Architecture)

### **ENCAPSULATION AND (BOXING AND UNBOXING)**

- Implement of encapsulation
- Property with class
- Define the boxing and unboxing
- Define the Up-casting and Down-casting

### **Lab:-**

- Practical Implementation of encapsulation
- Practical implementation of boxing and unboxing and Downcasting and up casting

### **EVALUATION OF STATIC KEYWORD**

- What are static keyword and its advantage?
- Define static Data type
- Describe the static function and its use
- Describe the static constructor
- What is the private constructor
- Use of Private constructor in singleton class

### **Lab:-**

- Practical implementation of static method and class
- Practical implementation of static constructor
- Practical implementation of private constructor with singleton Class

### **ABSTRACTION AND INTERFACE**

- What is abstraction and its advantage
- Describe between abstract and no abstract method
- What is Interface and why we use it.
- Describe the Advantage of interface and its implementation
- Difference between abstract class and interface

### **Lab:-**

- Practical implementation of the abstract class and interface
- Practical Implementation of Implicit and explicit interface

### **INDEXER**

- What is the indexer?
- Describe the indexer advantage?

### **Lab:-**

- Practical implementation of indexer

## **EXCEPTION HANDLING**

- What is exception handling
- Means of Error and Exceptions
- What is the Difference between exception and error
- Describe the advantage of exception handling
- Describe the type of exception
- Describe the Try, Catch and Finally Block with Examples
- Handling Multiple Exception
- Throw Exception on Request User Defined Exception

### **Lab:-**

- Practical Implement Of Exception Handling And Describe Try ,Catch ,And Finally
- Practical Implementation Of User Define Exception Handling

## **DELEGATES AND ITS TYPE**

- What is Delegate?
- Type of Delegate
  - Single cast Delegate
  - Multicast Delegate
- Define the covariance and contra-variance in Delegate
- What is anonymous method

### **Lab:-**

- Practical implementation of Delegate and its type
- Practical implementation of covariance and contra-variance

## **Events:-**

- What is Events?
- What is events model
- Creation of event with Delegate
- Understanding of events like button click and text change etc
- Dynamic generation of controls in from
- Event writing of Dynamic control

### **Lab:-**

- Practical implementation of dynamic control
- Create a calculator using Events (No Drag and Drop any controls form the Toolbox)

## **MULTITHREADING**

- Understanding Thread, Process and Task
- Understanding Multithreading, Multiprocessing and Multitasking
- Working with Thread Class
- Thread State
- Thread Priority
- Thread Pool
- Thread Synchronization
- Inter-Thread Communication

## **Lab:-**

- Understand thread synchronization

## **COLLECTION CLASSES**

- Array list
- Hash table
- Stack
- Queue
- Sorted List
- Name value Collection
- Dictionary Entry structure
- Interfaces
- ICollection, IList, IEnumerable, IEnumerator, ICloneable, IComparable

### **Lab:-**

- Practical Implementation of collection

## **I/O OPERATIONS WITH FILE SYSTEMS**

- File and Directory Class
- Marshal Classes, File Info and Directory Info
- Path Class
- Drive Info Class
- Stream Object with Files: Stream Reader, Stream Writer
- File Stream and Memory Stream

### **Lab:-**

- Practical implementation of I/O operation with File systems

## **REFLECTION**

- System. Reflection namespace
- Core reflection classes

- Accessing assembly through reflection
- Method info
- Member info
- Property info
- Invoking methods and property and runtime
- Reflection on shared assembly

### **Lab:-**

- Practical Implementation of Reflection

### **INTRODUCTION TO ADO.NET**

- How ADO.NET works and how it differs from ADO?
- Evolution of ADO to ADO.NET
- What is Connected and Disconnected architecture
- Connection Object
- Command Object

### **ADO.NET? AND IT'S CONNECTED ARCHITECTURE**

- Connection Object
- Command Object
- Execute Non Query
- Execute Scalar
- Execute Reader
- Reading Data in Connected Environment
- Moving and Accessing Value of Record
- Execute Reader

### **Lab:-**

- Practical implementation of Connected Architecture

### **DISCONNECTED ARCHITECTURE**

- Creating Tables in Dataset
- Data Adapter Object
- Data Column
- Data Row
- Data Table
- Updating, Inserting and Modification in Data Table
- Saving Changes into Data Base using Command Builder
- Working With Command and Connection

### **Lab:-**

- Practical implementation of Disconnected architecture
- Disconnected mode with Dataset Controls

### **DATAGRIDVIEW & DATA BINDING**

- Row State Filter and Sort Property
- Update records via a Datagridview
- Insert records via a Datagridview
- Delete records via a Datagridview

### **Lab:-**

- Practical implementation of how to bind the connected and disconnected in DATAGRIDVIEW

### **THREE TIER ARCHITECTURE**

#### **Describe the All Layers**

- Presentation layers
- Business logic layers
- Data Access layers

### **Lab:-**

- Implementation of Three architecture
- Implementation of three architecture with DLL(class library)

### **TRANSACTION**

- Introduction of Transaction (ACID)
- Transaction Class
- Method and Property Commit and Rollback

### **MIRCOSFT SQL SERVER**

- Create databases and database files
- Create data types and tables
- **SQL Commands** (DDL,DML,DCL,DQL)
- **SQL Data Types** Numeric Data type, Character Strings, binary, money etc.
- **SQL Constraints** NOT NULL, unique, check, PRIMARY Key, FOREIGN Key, Composite key, Candidate Key etc.
- **SQL Syntax** INSERT, DELETE, UPDATE, SELECT, ALTER, Drop, Truncate etc.
- **Sql clause** TOP, WHERE, AND/OR/IN/BETWEEN, LIKE, GROUP BY, ORDER BY, Count, Having, Unions, intersect, Except etc.
- **Sql join**
  - Inner join

- Left Join
- Right Join
- Self Join

### **Lab:-**

- Practical implementation of All join

### • **Views**

- What is view
- Describe the view and its advantage
- Describe the view and its Types

### **Lab:-**

- Practical implementation of views
- Practical implementation of views type on sql server

### • **Clustered And Nonclustered Index In Sql Server**

### • **Stored Procedures And Function In Sql**

- What is stored procedures and Function
- Advantage and Disadvantage of stored procedure and Function
- Implementation of Stored procedures and function
- Describe the functions and its All types
- Difference between stored procedures and Function

### **Lab:-**

- Practical implementation of stored procedures
- Practical implementation of functions

### **SQL SERVER TRIGGERS**

- What is triggers

- Describe the advantage and Disadvantage of trigger
- Describe the Types of triggers in sql server

### **Lab:-**

- Practical Implementation of triggers
- Practical implementation of triggers of after and before

### **CURSOR AND INDEXER**

- What is the cursor
- Describe the advantage of cursor
- Describe the indexer
- Describe the indexer types

### **Lab:-**

- Practical implementation of cursor and indexer

## **WEB DESIGNING CONTENTS**

### **HTML (HYPERTEXT MARKUP LANGUAGE)**

- What is html?
- Describe the advantage and Disadvantage of HTML
- History of HTML and Its invention
- Type of IDE(integrated Development Environment) of HTML
- Understanding & using HTML
- HTML Headings, Paragraph, Comment
- HTML Formatting Elements
- HTML Form controls

### **Lab:-**

- Practical implementation of Form Controls in HTML Page
- Practical implementation of registration Form of Clients side HTML controls

### **CASCADING STYLE SHEET**

- What is CSS? Define the advantage of CSS
- Describe the Type OF CSS
- Describe the Pseudo Class and Combination Elements
- Creating style sheet
- Apply Style Sheet
- Creating Rules
- Creating Elements setting

### **JQUERY**

- JQuery Overview
- JQuery Basic
- JQuery Selector
- JQuery Dom
- JQuery Css
- JQuery Event

### **XML**

- Introduction of XML
- XML Documentation structure
- WFF Format of XML
- Parsers DOM and SAX
- XML classes
- Reading and writing XML file

## **ASP .NET**

### **INTRODUCTION TO WEB FORM**

- What is the Web Application
- Need Of Web Application
- What Is Asp And Asp.Net
- Describe The Advantage Of Asp.Net
- Http Protocol
- Static And Dynamic Page
- Concept Working Of IIS And Browser
- Differences Between ASP And Asp.Net

## SERVER PAGES USING ASP.NET

- Creating sever pages
- Architecture of handling request
- In Web server
- Http request object
- Http response object
- Understanding post back

### Lab:-

- Practical implementation of Request and Response objects in Asp.Net

## UNDERSTANDING PAGE LIFE CYCLE

- Understanding of Application Life Cycle
- Page Life-cycle Stages
- Life-cycle Events
- Auto event wireup
- Tracing and debugging asp.net pages

### Lab:-

- Practical implementation of page life cycle

## WEB FORM CONTROL

- Textbox
- Check Box
- List Box
- Dropdown List Control
- Add Rotator Control
- File Upload Control
- Multi View Control
- Login Control
- Image control
- Radio button control

### Lab:-

- Practical implementation of registration page

- Practical implementation of login page and welcome
- Practical implementation of integration of all above page

## SERVER CONTROL FORM VALIDATION

- What is validation and describe the Advantage of validation.
- Implementation of Client and Server Side Validation
- Use Control to Validate Property
- Types of server side validation?
  - Required Field Validator Controls
  - Range Field Validator Controls
  - Regular Expression Field Validator Controls
  - Compare Field Validator Controls
  - Custom Validator Control
- Working with Validation Summary

### Lab:-

- Practical implementation of all validation in Pervious Registration page lab

## MASTER PAGES

- What is the master page in asp.net
- Introduction and Need of Master Page
- Creating a Master Page
- Default Contents and how to with content place holder
- Master page with CSS and table layout

- How to integrate nested master page
- How to integrate html and css template to master page

### Lab:-

- Practical implementation of master and nested master page in asp.net

## STATE MANAGEMENT

- What are state management and its advantage?
- Type of State management technique in asp.net.
- Client side State Management
  - Http Cookies
    - Persistence cookie
    - Non-persistence cookie
  - Query String Method
  - View State
  - Hidden Field
- Server Side State Management
  - Http Session
  - Http Application

### Lab:-

- Practical implementation with all state management technique in asp.net
- Practical implementation of Application state management technique with Global.asax

## ASP.NET CACHING

- What is Caching and Its Advantage?
- What the Need of Caching , Type of caching
- Page output Caching
- Declarative output caching
- Time duration and location setting
- Parameter caching settings

- Page fragment Caching
- Time duration setting
- Parameter caching Setting
- Parameter caching setting
- Caching with HTTPCachePolicy Class
- Post Cache Substitution & Fragment
- Data Caching
- Managing Data into cache

### Lab:-

- Practical implementation of caching with all its Types in asp.net

### DATA BINDING SERVER CONTROLS

- Use of Data Binding Control
- Type of Data Binding Control (Formatted and Unformatted)
- Describe the Grid and Working with Grid View Control
- Working with all template Fields in Grid View
- Data binding with Grid View
- Describe the All events In Grid View
- Working with Column Collection
  - Data binding with Grid View
  - Working with Column Collection
  - Using paging
  - Sort
- Working with DataList Controls
  - Working with template
  - Working with DataList Events
- Working with Detail View and repeater controls
- Working with Form View Control
  - Working with template

- Working with form view events

### Lab:-

- Practical implementation of Grid View with Wizard Technique
- Practical implementation of Grid View with Code Technique

### ASP.NET AJAX

- Introduction of AJAX
- Role of script manager
- Understanding and working with update panel
- Understanding and Working with Update progress control
- Understanding and Working with Timer control
- Creating AJAX enabled website
- Creating an AJAX enabled web service

### Lab:-

- Practical implementation of AJAX Tool Kit

### ASP.NET WEB SECURITY

- Windows
- Forms
- Passport

### Lab:-

- Practical implementation of web security

### WEB SERVICES

- Introduction of web services
- The SOAP architecture
- SOAP and Web Services
- SOAP Essentials
- Web Services attribute

- WSDL Documentations
- Disco and Disco Map file
- Transaction in web service
- Publishing a web service
- Consuming a Web service

### Lab:-

- Practical implementation of Web Services and How Its Consume on Client Side

### LINQ

#### INTRODUCTION

- Introduction of LINQ
- Understanding Automatic Properties
- Understanding Initializes
- Understanding Type Inference
- Understanding Anonymous Types
- Understanding Generics
- Understanding Lambda Expressions
- Understanding Extension Methods

### Lab:-

- Practical implementation of Anonymous method and Delegate

#### LINQ to SQL

- Performing standard Database Commands with LINQ to SQL
- LINQ to Objects Versus LINQ to SQL
- Selecting with LINQ to SQL
- Inserting with LINQ to SQL
- Updating with LINQ to SQL
- Basics of LINQ Join with Lambda Expressions (Inner Join with Linq)
- Left Right Full Outer Join and Cross join with Linq to Sql

- Connectivity Linq with Sql Server 2008 without dbml context
- Different b/w method syntax and query syntax
- Using Order by, Group By keyword in LINQ to Sql

### **Lab:-**

- Practical implementation of Insert, Delete, Update through linq to sql (through query expression and Lambda Expression)
- Practical implementation Group by, order by, like query
- Practical implementation of Joins in linq
- Practical implementation of Dbml Context in Linq
- Practical implementation of Raw to Sql in Linq

### **ENTITY FRAME WORK**

- Entity Framework Introduction
- Object Oriented VS RDBMS
- What is ORM?
- Why you need ORM
- ORM Requirements checklist
- ORM solutions
- Entities
- Insert, Update and Delete
- The Entity Data Model
- The EDM as EF Core
- Exploring the XML
- Conceptual Model
- Logical (Storage Model)
- Mapping
- Code Generation

### **lab:-**

- Practical implementation insert, delete and update with sql server database through entity framework

- Practical implementation Database First, Code first and model First techniques in Entity framework

### **WINDOWS COMMUNICATION FOUNDATION (W.C.F.)**

- The role of W.C.F
- W.C.F project template
- Understanding WCF Addressing
- Understanding WCF Bindings
- Understanding WCF Contracts
- Understanding WCF Endpoint
- Composition of basic W.C.F
- Building a W.C.F service
- Hosting a W.C.F service
- Building a W.C.F client application

### **Lab:-**

- Practical implementation WCF services consume on Client machine
- Practical implementation with end Points in WCF
- Practical implementation of services contract, data contract and message contract in WCF Techniques

### **WINDOWS PRESENTATION FOUNDATION (W.P.F.)**

- What is WPF
- Goals, Benefits & Drawbacks

- First WPF Application
- Types of WPF Application (Windows Based and Browser Based)
- XAML – Extensible Application Markup Language.
- Content Models
- Brief Introduction to Expression Blend
- Text Controls
  - TextBox, TextBlock, RichTextBox, PasswordBox
- List Controls
  - Combo Box, ListBox, Menu, StatusBar, TabControl, Toolbar, TreeView, ListView
- General Controls
  - Progress Bar, Image, Slider, ScrollBar, Rectangle, Ellipse, MediaElement
  - DataGrid View
- Panels
  - Border
  - Canvas
  - Grid
  - Stack panel
  - Wrap Panel
- WPF Data Binding
- WPF Drawing 2D
- WPF Animation

### **Lab:-**

- Practical implementation of all panels in WPF
- Practical implementation of login and registration page in a WPF



## MVC 3.0 & 4.0

- MVC Architecture
- Specifying a View
- Strongly typed views
- Using HTML Helper Methods
- Working with parameters
- Model-View-Controller and ASP.NET

- Routing Compared to URL Rewriting
- The Controller Class and Actions
- Understanding Routes and URL
- Working with Multiple Parameters

## Lab:-

- Practical implementation model view and control in MVC
- Practical implementation of Creating a registration and Login page with ASPX view engine and razor View Engine in MVC
- Practical implementation of all type of validation in MVC
- Practical implementation of Strongly type view in MVC

### HEAD OFFICE:

200 Purwavali , 2nd Floor, (Opp. Railway Ticket Agency), Railway Road , Ganeshpur , Roorkee – 247667, Ph.No.: 09219602769, 01332-270218 Fax - 1332 – 274960

### CORPORATE OFFICE:

D-58, Sector-2, Near Red FM. Noida -201301, Uttar Pradesh  
Contact Us: +91-9212172602 , 0120-4535353

### BRANCH OFFICE:

401 A, 4<sup>th</sup> Floor, Lekhraj Khazana, Faizabad Road, Indira Nagar, Lucknow-220616 (U.P.) Ph. No: +91-522-6590802, +91-9258017974

### BRANCH OFFICE:

105, Mohit Vihar, Near Kamla Palace, GMS Road, Dehradun-248001, UK  
Contact: +91-9219602771, 0135-6006070

**Toll Free- 1800-8333-999 (from any network)**

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