

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 Expectation 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

<p><u>MVC 3.0 & 4.0</u></p> <ul style="list-style-type: none"> • MVC Architecture • Specifying a View • Strongly typed views☒ • Using HTML Helper Methods • Working with parameters☒ • Model-View-Controller and ASP.NET 	<ul style="list-style-type: none"> • Routing Compared to URL Rewriting • The Controller Class and Actions • Understanding Routes and URL • Working with Multiple Parameters 	<p><u>Lab:-</u></p> <ul style="list-style-type: none"> ➤ 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
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