UkaTarsadiaUniversity

M.Sc. (C.A.)

Visual Programming (040020109)

1stSemester

EFFECTIVE FROM JUNE-2014

Course Code: 040020109   Course Title: Visual Programming
Course Credits: 4   Total Hours: 48   [Lectures: 04, Tutorial: 00, Practical: 03]
Prerequisites: Knowledge of programming
Prerequisites By Topics:
Objectives: To make the students to understand the visual programminglanguage concepts and building windows application

1   Introduction to .NET Platform   [08 Hours]

1.1.   Technology Before .NET, .NET Solution
1.2.   The .NET Architecture: Building Block of .NET Platform
1.3.   The .NET Assemblies: Single File and Multi-File Assemblies, Role ofCIL, .NET Type Metadata and Assembly Manifest
1.4.   The Common Type System (CTS)
1.5.   The Common Language Specification (CLS)
1.6.   The Common Language Runtime (CLR)
1.7.   Console Application: I/O In Console, Creating Console Application
1.8.   Data Type in VB: Variable Declaration and Definition, Intrinsic Data Type and new Operator, Data Type Class Hierarchy, Members of Data Type, Data Type Conversion

2   VB.NET Programming Construct   [07 Hours]

2.1.   The Module and Anatomy of Simple VB Program: Role of Module Type, Project with Multiple Module, Initial Module and Membersof Module, main Method, Processing Command Line Arguments,Members of System.Environment Class
2.2.   String Data Type: Basic String Manipulation, Stringbuilder Class
2.3.   Control Structures: Iteration Construct and Decision Construct
2.4.   Method and Parameter Modifiers: Byval and ByRef ParameterModifier, The <Out()> Attribute, PramArray Modifier, Optional Parameter and Named Parameter, Method Overloading
2.5.   Array, Enum& Structure: Array Initialization, Array of Object,Multidimensional Arrays, Array As Argument or Return Type,System.ArrayBase Class, Storage for Enum, Enum Type,Structure Type
2.6.   Value Type and Reference Type: Assignment Operator, Conversion from Value Type and Reference Type
2.7.   Exception Handling: Error, Bugs and Exceptions, State of Exception, System-Level Exception and Application-LevelException, Processing Exception

3   Object Oriented Programming   [09 Hours]

3.1.   Defining Pillar of OOP: Role of Encapsulation, Inheritance andPolymorphism
3.2.   Class Type: Defining Class Type, Creating Object, AccessModifiers, Constructor, Me and Shared Keyword
3.3.   Encapsulation Services: Encapsulation Using Accessors, Mutatorsand .NET Properties, Using Properties Within Class Definitions,Internal Representation of Properties, Controlling Visibility ofProperty, Readonly, Writeonly and Shared Properties,Automatic Properties, Object Initialize Syntax, Constant FieldData
3.4.   Understanding Object Lifetime: Basics of Object Lifetime, GarbageCollection, System.GC Type, Finalizableand Disposable Objects,Lazy Object Instantiation
3.5.   Inheritance: Basic Mechanics of Inheritance, Mybase Keyword,Protected Keyword, Notinheritable Class, Containment andDelegation
3.6.   Polymorphism: Overridable And Overrides Keyword,Notoverridable Members, Abstract Class and MustinheritKeyword, Polymorphic Interface, Member Shadowing, Base Classand Derived Class Casting Rules, System.Object

4   Advanced VB Programming Constructs   [07 Hours]

4.1.   Working with Interface Type: Interface Type Vs. Abstract BaseClass, Defining and Implementing An Interface
4.2.   Interface as Parameters and Return Values, Array af InterfaceType, Building Enumerable, Cloneableand Comparable Types

4.3. Generic: Issues With Non-Generic Collection, Role of Generic TypeParameter
4.4. System.Collections.GenericNamespace, Creating Custom GenericMethods, Structures and Classes
4.5. Delegate: .NET Delegate Type, Generic Delegates

5 Understanding Events, Lambda and .NET assembly [07 Hours]

5.1. Events and Lambda: Understanding Events, Event Keyword,Events Under The Hood, Generic EventHandler(Of T) Delegate,Lambda: Understanding Lambda Expression
5.2. Advance Language Features: Indexers Methods, OperatorOverloading, Custom Type Conversion
5.3. .NET Assemblies: Role Of .NET Assemblies, Building andConsuming Single File Assembly and Multi-File Assembly
5.4. Private and Shared Assembly
5.5. Publisher Policy Assemblies and System.ConfigurationNamespace

6 FILE I/O and ADO.NET [10 Hours]

6.1. File I/O and Object Serialization
6.2. The Connected Layer
6.3. The Disconnected Layer
6.4. The Entity Framework

Modes of Transaction (Delivery):

❖ Lecture method along with various appropriate audio-visual aids and hands on.
❖ Small practical can be given to exercise uncovered feature of .NET and then demonstrate

Activities/Practicum:

The following activities shall be carried out by the students.
❖ A group (Team size 2) of student will prepare a project in VB.NET and submit it to teacher.
❖ Practically implement recent technological development (ornamespaces, which are not covered in the curriculum) in course anddemonstrate to class.

The following activities shall be carried out by the teacher.
❖ Project should be given to explore student's creativity in visual programming.
❖ Assist students in project problem solving.
❖ Small creative projects can be given as an assignment work.

Text Book:

1. Petroutsos E., Mastering Microsoft Visual Basic 2010, Willey

Reference Books:

1. Troelsen A., VidyaVrat A., Pro VB 2010 and the .NET 4.0Platform(Paperback), Apress
2. Stephens R., Visual Basic 2010 Programmer's Reference (WroxProgrammer to Programmer) [Paperback], Wrox
3. Foxall J., Sams Teach Yourself Visual Basic 2010 in 24 Hours CompleteStarter Kit, Sams Teach Yourself 24 Hours
4. Boehm A., Murach's Visual Basic 2010 [Paperback], Murach