



Technology + Knowledge = Innovation

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Vivasoft

Consulting & Training



Vivasoft is a leading company in the technology sector, specializing in offering innovative solutions based on Microsoft. With years of experience in the market, we are proud to be certified Microsoft partners, committed to supporting the digital transformation of businesses. We provide a comprehensive range of Microsoft products and highly qualified training courses, designed to help companies optimize their processes, enhance productivity, and acquire advanced skills in the world of technology.



Module 1: Introduction to C# and .NET

What is C# and what is it used for
Overview of the .NET framework
Installing and configuring the development environment (Visual Studio, Visual Studio Code, etc.)
First program in C# (Hello World)
Basic C# syntax (variables, data types, operators)
Compiling and executing a C# program

Module 2: Fundamentals of Programming in C#

Primitive data types and variables
Mathematical, logical, and comparison operators
Flow control: if, else, switch, for, while, foreach
Error handling with try-catch
Handling user input and output (Console I/O)
Functions and methods
Working with strings in C#

Module 3: Introduction to Object-Oriented Programming (OOP)

What is object-oriented programming
Classes and objects
Properties, methods, and constructors
Inheritance: concept of base and derived classes
Polymorphism: overridden and overloaded methods
Encapsulation: accessing members via getters and setters
Abstract classes and interfaces
The Object class and the ToString() method



Module 4: Working with Collections and Data Structures

Arrays and multidimensional arrays
List, Dictionary, Queue, Stack
LINQ (Language Integrated Query) for collection management
Sorting and searching methods in collections
Using foreach and other iterations on collections
Filtering and projection with LINQ

Module 5: File and File System Management in C#

Creating, reading, and writing files (FileStream, StreamReader, StreamWriter)
Exception handling in file operations
Reading and writing JSON and XML files
Using Directory and FileInfo
Manipulating configuration files (appsettings.json)

Module 6: Advanced Programming in C#

Delegates and events
Lambda expressions
Memory management with Garbage Collection
Asynchronous programming with async and await
Task Parallel Library (TPL)
Multithreading in C#
Implementing and managing unmanaged resources



Module 7: Databases and C#

Introduction to ADO.NET

Connecting to an SQL Server database with C#

Executing SQL queries in C# (INSERT, SELECT, UPDATE, DELETE)

Reading data using SqlDataReader and DataSet

Using ORM: Entity Framework Core

Managing transactions and connections

Module 8: Desktop Application Development with C#

Creating user interfaces with WinForms

Using advanced controls in WinForms

Introduction to WPF and XAML

Event handling and data binding in WPF

MVVM (Model-View-ViewModel) architecture

Applications with multiple windows and dialogs

Module 9: Building Web Applications with C#

Introduction to ASP.NET Core MVC

Creating controllers, models, and views

Managing routes and URL parameters

Authentication and authorization with ASP.NET Core

Identity Building RESTful APIs with ASP.NET Core Web API

Using Entity Framework for database integration in web applications

Integrating JavaScript, HTML e CSS in views



Module 10: Testing and Debugging in C#

Debugging techniques in Visual Studio
Unit testing with MSTest and NUnit
Mocking with Moq
Integration and system testing
Using profiling tools to optimize performance
Creating automated tests for code

Module 11: Publishing and Deploying C# Applications

Creating a deployment package (EXE, DLL)
Configuring an application for production deployment
Deploying to Azure, IIS, and other hosting environments
Setting up CI/CD for C# applications
Updating and maintaining applications in production

Module 12: Final Project

Developing a complete project in C# (e.g., a simple desktop or web application)
Planning and designing the architecture
Writing code, testing and debugging
Project presentation and review