

CHAPTER 0

WINDOWS PROGRAMMING USING C#

12/04/2025

Chapter 0: Course outline + Basics

- **Instructor Information**
  - Andargachew A. (M. Sc.)
- **Class Schedule**
  - Section A
    - Tuesday 10:00AM– 12:00PM ---- 201
    - Friday 10:00AM– 12:00PM ---- 303
  - Section B
    - Tuesday 8:00AM– 10:00AM---- 201
    - Friday 8:00AM– 10:00AM---- 303

Course Description

- This course aims to providing the students with an understanding of
  - **Visual programming** concepts, principles and techniques involved in developing applications using **C#** as one of the windows programming tools.
- The students will become familiar with
  - The **C# design environment** and the **development of windows applications**.

Objectives

- At the end of this course students are expected to:
  - **Understand the.NET Framework and its components** –
    - Common Language Runtime (CLR),
    - .NET Framework Class Library (FCL),
    - .NET Common Language Specification (CLS),
    - Assemblies,
    - Assembly meta data and Global Assembly Cache (GAC)
  - **Create**, **compile** and **run object oriented C# programs** using Visual Studio
  - **Write and understand C# language constructs**, syntax and semantics

- Produce **programs for the desktop** using solid multilayer architectures
- Develop **reusable .NET components** via inheritance and interface realization
- Leverage the major namespaces and classes of the .NET Framework

Reference

- No textbook
- Other Books
  - Fundamentals of Computer Programming with C#, SvetlinNakov& Co., 2013
  - The Complete Reference C# 4.0,the McGraw Hill, April 2010
  - Professional C# 5.0 and .NET 4.5.1, Christian Nagel, Jay Glynn, Morgan Skinner, Wrox Programmer to Programmer, 2014
  - A Programmer's Guide to C# 5.0, A. Eric Gunnerson and Nick Wienholt, 4thEd.

Assessment [Methods]

Assessment Type	Weight
Assignments/Quiz	15%
Mid Exam	20%
Final Exam	40%
Lab/Project	25%

Contents

1. Introduction to .NET and C#
2. Components of a .NET program
3. OOP Concepts in C#
4. Windows Programming in C#
5. Error Handling Mechanisms / Exception Handling
6. Files and Stream in C#
7. Standard and Generic Collections
8. Delegates, Lambdas and Events
9. Database Programming in C#



CHAPTER 0

BASICS

- Nowadays computers have become **irreplaceable**.
  - It is difficult to imagine its existence without them.
- Despite the fact that computers are so wide-spread, few people know **how they really work**.
  - In reality, it is not the computers, but the programs (the software), which run on them, that matter.
    - It is the software that makes computers valuable to the end-user, allowing for many different types of services that change our lives.

- The **essence of programming** is to control the work of the computer on all levels.
  - This is done with the help of "orders" and "commands" from the programmer, also known as programming instructions.
- To "**program**" means to organize the work of the computer through sequences of instructions.
  - These commands (instructions) are given in written form and are implicitly followed by the computer (respectively by the operating system, the CPU and the peripheral devices).

- A sequence of steps to achieve, complete some work or obtain some result is called an **algorithm**.
  - This is how programming is related to algorithms.
- Programming involves describing what you want the computer to do **by a sequence of steps, by algorithms**.

- In addition to the basic knowledge in programming proper **algorithmic thinking** and **using basic data structures** in programming.
  - DSA are a programmer’s most important fundamental skills!
  - If you have a good grasp of them, you will not have any trouble becoming proficient in any software technology, development tool, framework or API.

- Numerous programs exist, and they are created using different **kinds of programming languages**.
  - Each language is oriented towards controlling the computer on a different level.
    - There are languages oriented towards the **machine level** (the lowest) – Assembler for example.
    - Others are most useful at the **system level** (interacting with the operating system), like C.
    - There are also **high level** languages used to create application programs. Such languages include **C#**, Java, C++, PHP, Visual Basic, Python, Ruby, Perl, JavaScript and others.

Stages in Software Development

- Gathering the requirements for the product and creating a task;
- Planning and preparing the architecture and design;
- Implementation (includes the writing of program code);
- Product trials (testing);
- Deployment and exploitation;
- Support.

Questions?

Thank You