

CSCI 1301 Book

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General Concepts

- Programming languages types and paradigms
 - Machine language instructions
 - Assembly instructions
 - High-Level Programming Languages
 - Object-oriented paradigm and data hiding
- The difference between roles (user, tester, programmer)
- How complex piece of software *reuse* previous pieces.
- The importance of security
 - Types of attack (malware, phishing, social engineering, zero-day)
 - Types of loss (loss of integrity / availability / confidentiality)

Writing and Compiling Programs

- Understand what the “flow of development” is:
 - Having a goal
 - Writing down specifications
 - Creating the source code
 - Running the compiler
 - Reading the compiler’s output, warning and error messages
 - Looking for documentation and help on-line and off-line
 - Testing
 - Making sure the program is secure
 - Editing
 - Reusing

- Using an IDE to
 - Create a project,
 - Perform some of the steps of the “flow of development”,
 - Correctly save and re-open projects,
 - Understand basic features of break points and debugging.

Computer Usage

- How to download and install an IDE in a secure way
- How to share and zip a project
- How to use shortcuts
- How to look for on-line documentation

First Program

The students should understand all the components of a simple “Hello World” program:

```
using System;

class Program {
    static void Main() {
        Console.WriteLine("Hello, world!");
    }
}
```

- Comments (in line and block)
- **using** statements and namespace / API concepts
- blank lines and spacing
- indentation
- intro to classes and methods’ structures (body / header)
- status of **main** method
- intro to Console’s **Write** and **WriteLine**
- string literal

Rules and Conventions

- The difference between a “rule” (e.g. case-sensitivity) and a “convention” (commenting your code).
- Reserved words
- Identifiers and naming conventions
- That the distinction can vary with the programming language
- Importance and role of { and }