CSCI 1301 Book

Contents

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 }