Introduction to C++

Language basics – variables: fundamental types

Language Basics - Variables

- **C++ is a strongly typed language**
  - Variables can hold only certain types of values
  - Must be declared before they're used, and can't change type
  - "the compiler is your friend"
- **Fundamental types built into the language**
  - Numbers, boolean, single characters
- **User defined types**
  - Strings, dates, business objects
  - Structs and classes
- **User defined types are full participants in the language**

Fundamental Types

- **Integers**
  - short
  - long
  - int
  - Unsigned versions of each
- **Real numbers**
  - float
  - double
- **Character**
  - char
  - Unsigned char
- **Boolean (true/false)**
  - bool

Casting

- **Compiler will convert types where they're compatible**
  - Warning if data might be lost
  - Error if they're not compatible
- **By casting, you make your intention clear**
  - And suppress the warning
- **This can backfire**
  - "it's your foot!"
- **Some safer casts are available once you know templates**

- **Suffixes to show type of a literal**
  - 0L

Summary

- **Variables have a type and must be declared before they're used**
- **Different types hold different kinds of data**
  - Have different lengths and maximum values
  - The compiler knows and will help you
- **Be aware that overflow can happen silently**
  - Avoid using very small types like char for numbers
- **To tell the compiler you know what you're doing, cast**