

C++ Types, Variables, and Arithmetic

Type: Defines a set of possible values and a set of operations (for an object).

Object: Some memory that holds a value of some type.

Value: A set of bits interpreted according to a type.

Variable: A named object.

C++ offers a variety of fundamental types. For example:

- **bool:** Boolean, possible values are **true** and **false**
- **char:** character, for example, **'a'**, **'z'**, and **'9'**
- **int:** integer, for example, **-213**, **42**, and **1066**
- **double:** double-precision floating-point number, for example, **3.14** and **299793.0**

Arithmetic Operators

- **x + y:** plus
- **+x:** unary plus
- **x - y:** minus
- **-x:** unary minus
- **x * y:** multiply
- **x / y:** divide
- **x % y:** remainder (modulus)

Comparison Operators

- **x == y:** equal
- **x != y:** not equal
- **x < y:** less than
- **x > y:** greater than
- **x <= y:** less than or equal
- **x >= y:** greater than or equal

C++ offers more specific operations for modifying a variable:

- **x += y** // **x = x + y**
- **++x** // increment: **x = x + 1**
 - **x -= y** // **x = x - y**
- **--x** // decrement: **x = x - 1**
 - **x *= y** // scaling: **x = x * y**
 - **x /= y** // scaling: **x = x / y**
 - **x %= y** // **x = x % y**

This information belongs to the book “The C++ Programming Language by Bjarne Stroustrup”