

Abstraction

Syntax

Object-oriented programs with C?

Object-oriented programming (OOP):

- using class hierarchies and virtual functions
- manipulation of objects through well-defined interfaces
- allow a program to be extended incrementally through derivation.

C++, Smalltalk, Simula, Java

“One language is not necessarily better than another because it possesses a feature the other does not.”

Operating systems: C, C++

Applications: C++, Java

Administration programs: Python, Perl, Ruby

Text processing: Perl, Python

1960:

Algol 60: block structure, static typing

1967

Simula: Algol plus object-orientation (for simulation)

1970

C: statically typed procedural language with low-level features

1972

Smalltalk: object-orientation (for graphical interfaces), no static types

1985

C++: C plus object-oriented features and (later) genericity

1995

Java: C++ greatly simplifiedeately

What can be done with C++?

- Multi-paradigm
- Object-oriented programming

Traditional C programming techniques

Data Abstraction

- The ability to create types that suits our needs

Generic Programming

- programming using type parameterization of both data types and algorithms

Class

Object

Method

Class defines two aspects of the objects

- the data they contain
- the behavior they have

Object: an instance of a class

Method: behavior of the object