

## Only Differences in Behavior Must be Added or Modified

### simplify extensibility

- To create a new derived type
- one need **specify only the differences** from the base type:
  - any **new data** needed,
  - any **new behavior** needed, and
  - any **existing behaviors that must be modified**.
- Everything else is automatically inherited.

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## Modules and Object-Oriented Concepts 50+ Years Old

A little more background...

### 1960s:

- **software systems** become large enough
- that they are **divided into modules**
- to make reasoning about them easier.

### Late 1960s, 1970s:

- **object-oriented languages**
- such as Simula and Smalltalk **emerge**

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## Information Hiding Introduced in 1972

### 1972:

- David Parnas defines **information hiding**:
- a module defines an **interface** (functions),
- but **how**
  - **functions are implemented** and
  - what **information** (fields, data structures) are **used**
  - **should be hidden** from other modules

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## C++ Evolved in the 1980s

### 1979: C with Classes

(Bjarne Stroustrup's early name for C++)

### 1980s: C++ takes off

- blends **benefits of object-oriented design**
- with **clarity and performance of C**.

### C++ design philosophy:

- **pay only for what you use**
- features that aren't used incur no overhead (no space, no time)
- ... works well if you understand the language ...

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