Derived Types Inherit Data and Can Be Used in Functions

Data inheritance means that
- if a **base type has a field**,
- **so do all types derived from that base type**
- (a child inherits all fields of its parent).

Function inheritance means that
- if a **function operates on a base type**,
- the **function can also operate on any type derived from that base type**
- (a child inherits all functions on its parent).

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Data and Function Inheritance Simply Programming

Data and function inheritance make programming big systems easier.

How?
- avoid replicating common code
- simplify usage of existing code
- simplify extensibility

Let's discuss each point in more detail.

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Specify Common Data and Behavior Once

avoid replicating common code
- when one structure is just a special kind of another structure,
- most of the data and behavior (functions) are identical.
- With inheritance, **shared data and behavior are specified once**.

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Behavior Defaults to that Defined for Parent Class

simplify usage of existing code
- in our bibliography example, we
  - reuse functions defined for ancestor types
  - by explicitly adding them to the function table for a derived type
- Function inheritance
  - makes such behavior the default:
  - **everything that is not overridden explicitly is the same**.

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