Abstraction

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What is abstraction?

Textbook definition: fundamental technique for understanding and analyzing complex problems; a separation of the concerns of the important from the concerns of the less important.

Abstractions, abstractions, everywhere

- levels of abstraction in a computer
  - user-interface (user as programmer)
  - programming languages
  - operating system
  - hardware
- software documentation/project descriptions

Why do we need abstractions?

- Concentrate on the problem, not the method of solution
- You get to ignore details of lower levels
- The programs and tools we write are abstractions for the users

Examples of Abstraction

Encapsulation - “property of an object by which it interfaces with the outside world.” Hides the internal structure for simplified, standardized interaction. If an object’s internal structure is modified, other objects are not affected.

Polymorphism - same message results in different methods when received by different objects (static binding); alternatively, the method called is determined at runtime (dynamic binding).