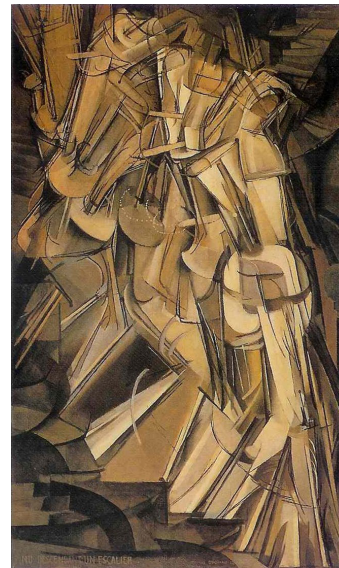


# Analysis and Design Principles

- Modularity
- **Abstraction**
- Encapsulation



Marcel Duchamp, "Nude Descending a Staircase, (No. 2)"

The Philadelphia Museum of Art

<http://www.philamuseum.org/collections/permanent/51449.html>



# Abstraction

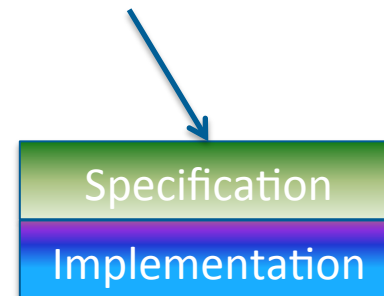
- Highlight the essential
- Suppress unneeded details





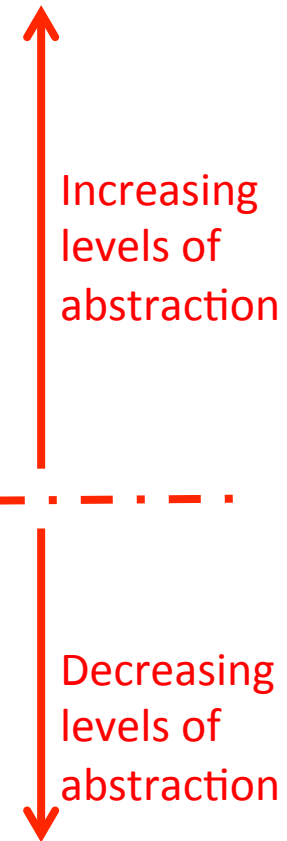
# Modules Employ Abstraction

- Specification
  - What the module behavior is
  - What information is managed by the module
  - How to invoke the services provided by the module
- Implementation
  - How all this works



# Abstract is a Relative Term

- writeDocument()
- writeChapter()
- writePage()
- writeParagraph()
- writeSentence()
- println()
- Sequential file I/O services
- I/O Control block services
- Channel control services
- I/O Controller chip commands





# Next

- Encapsulation

