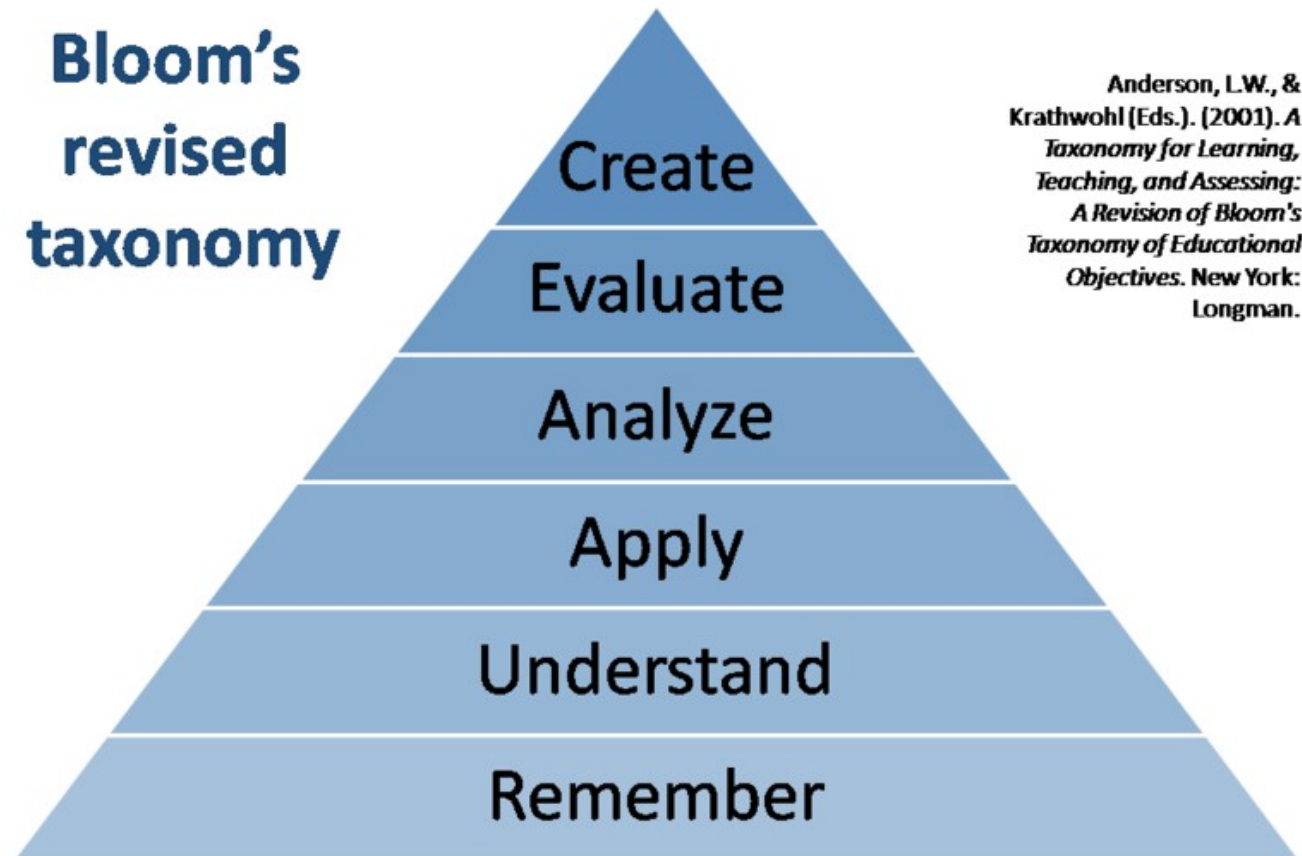


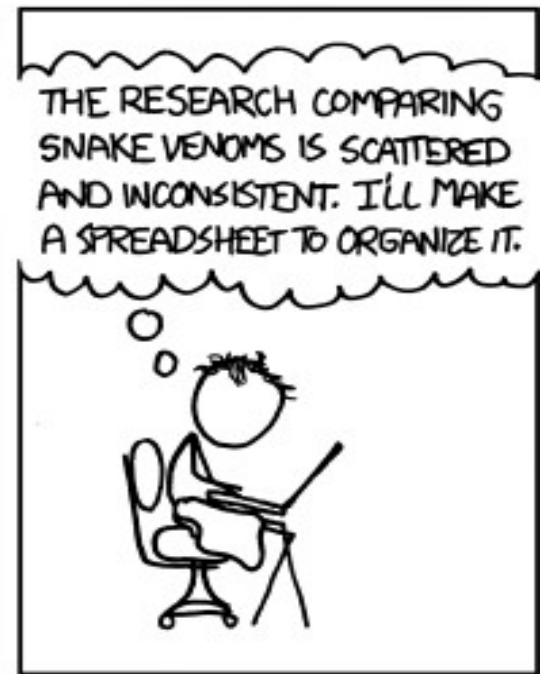
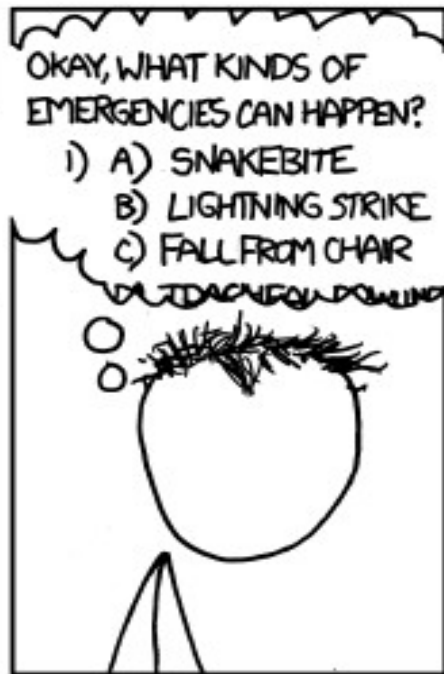
# Exam Format

- 39 multiple choice
- 2 short design problems
- feedback

**Bloom's  
revised  
taxonomy**



Anderson, L.W., & Krathwohl (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.



Study Hint:  
***breadth-first***



I REALLY NEED TO STOP USING DEPTH-FIRST SEARCHES.

Topic	Source	#?
UML Class Diagrams	Previous courses, web, etc	5
Design Patterns	Gamma et al. slides	5+2
Architectural Styles	Garlan & Shaw slides	6
Architecture Types	Hassan + Bowman slides	3
4+1 Views	Kruchten	4
Web/Enterprise	slides	11
Creativity	slides	5

# Topics Not on Midterm (may be on final)

- Guest Presentation
  - Ian Davis (LSEdit)
- Design Processes
  - normal vs radical design
  - agile, RUP
- Case Studies
  - Linux, web servers, seL4 microkernel, KWIC, styles/compilers, styles/oscilloscopes
- Invariants, properties, verification, etc.
  - Alloy + Spin

# Architectural Styles

- Styles
  - pipe & filter
  - data abstraction
  - implicit invocation
  - layered
  - repository
  - interpreter style
- For each
  - know the intent, advantages, disadvantages, variations, applications

# Design Pattern

- Patterns
  - Singleton, Adapter, Bridge, Façade, Command, Iterator, Observer, Strategy, Composite, Visitor, Interpreter
- For each
  - intent, class diagram
  - applicability
    - given a scenario, which and why
  - discussion in the class

# Types of Architectures

- Reference, Conceptual, Concrete
  - definition & differences
    - The role of each in the software design process
  - drift / erosion
    - definition

# Architectural Views

- 4+1 View
  - Kruchten
- For each view
  - definition
  - diagram
  - purpose
  - usage
    - what views are required and what views are not and when



# Enterprise Architecture

- Types of Architectural Styles
- Evolution
  - know the differences between
    - first, second, & third (gwt) generation
    - improvement & weaknesses
  - draw the diagrams
    - identify components & connectors clearly
    - request-response cycle

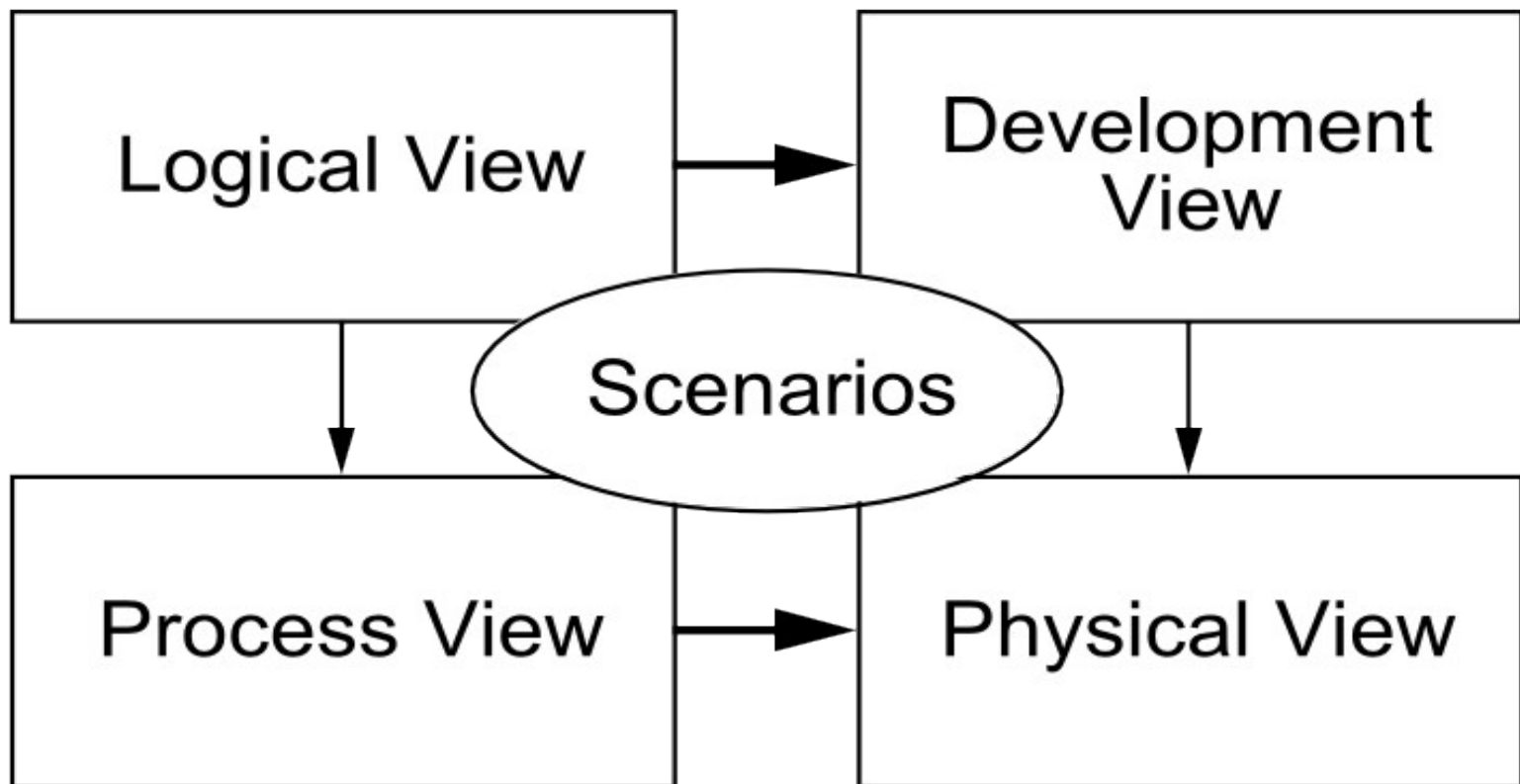
# Enterprise Architecture

- Synchronous & asynchronous
- Separation of concerns
  - responsibility of each tier
- Functional vs. non-functional requirements
  - know the difference
  - which ones are
    - honoured (& why)
    - violated (& why)

# 4+1 Views of SW Arch. [Kruchten]

End-user  
Functionality

Programmers  
Software management



Integrators  
Performance  
Scalability

System engineers  
Topology  
Communications

# Kinds of UML Diagrams used in 4+1

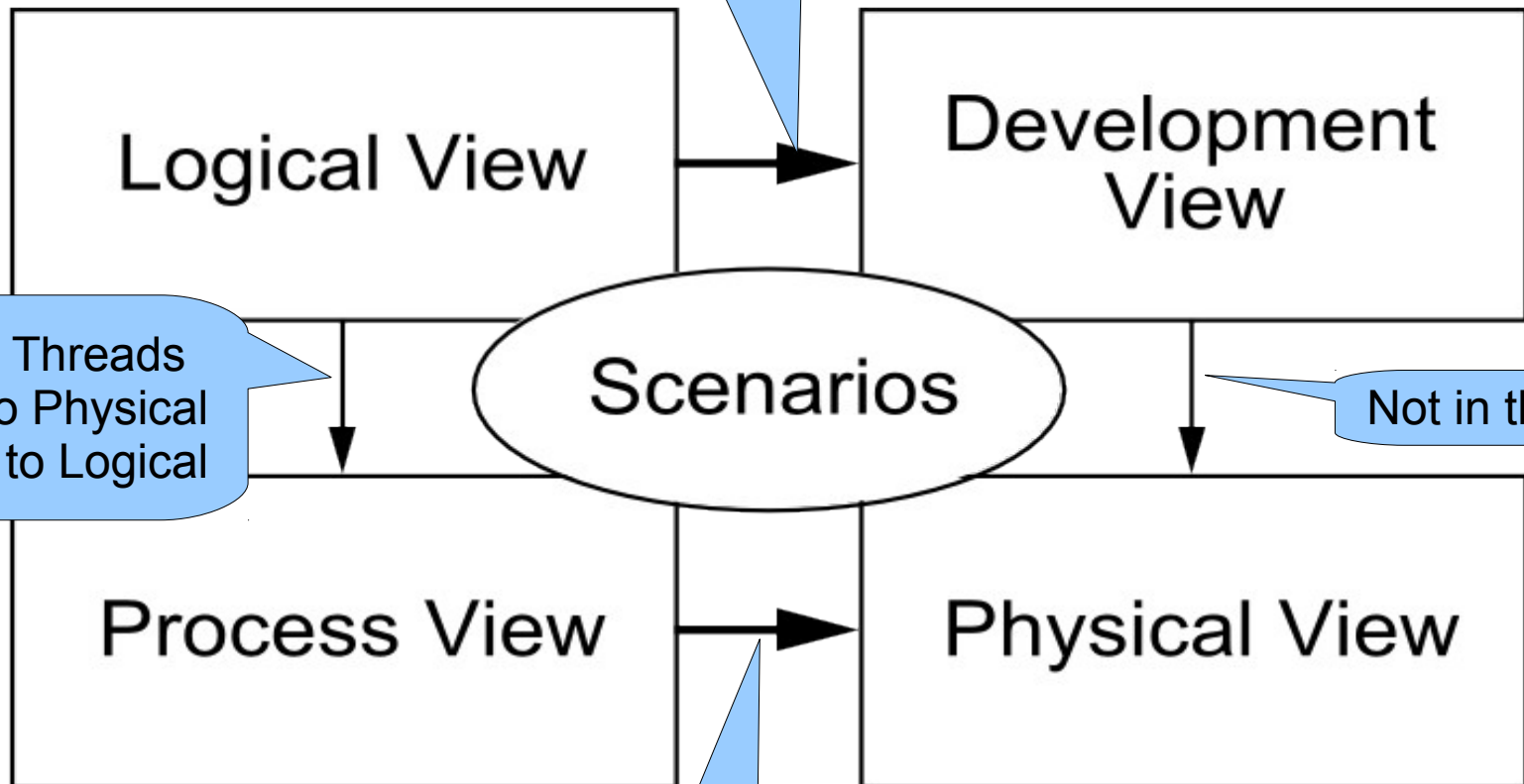
- Logical View
- Development View
- Process View
- Physical View
- +Scenarios
- Class Diagrams
- Sequence Diagrams
- Communication Diag.
- Component Diagrams
- Package Diagrams
- Activity Diagrams
- Deployment Diagram
- Use Case Diagrams

# 4+1 Views of SW Arch. [Kruchten]

End-user  
Functionality

Classes into Packages

Programmers  
Software management



Objects to Threads  
1. Logical to Physical  
2. Physical to Logical

Not in the paper.

Defers to Birman