

Some perspectives in teaching Software Architecture

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Aspects for Discussion

- Background of Student community.
- Bottom-up positioning of architecture.
- Architecture definitions and QAs.
- Examples from Web-applications.
- Non-software and software examples for patterns.
- Selection of viewsets
- Design decisions with deployment view.

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Background of Student community

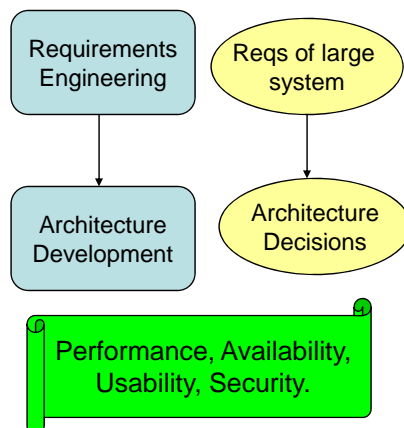
- very good programmers, but only programmers do not have much system analysis skills.
- very interested in games, chatting, multimedia.
- very familiar with Internet.
- know some quality attributes such as performance, security, and usability.

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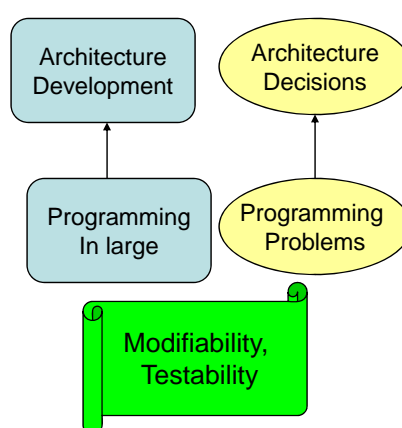
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Bottom-up as against top-down positioning of architecture?

Top-down Approach



Bottom-up Approach



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Architecture definitions and QAs

- *Bass et. al.* definition (..structures of the system...) and *Garlan et. al* definition (..beyond algorithms..) for architecture seem to be most appropriate for our audience.
- Since the students have some knowledge of *performance, security, availability, usability* attributes, we selected them.
- One of the main aims of our course is to make students appreciate *modifiability* attribute and apply patterns in their future projects.

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Examples from Web-applications.

- Google search engine for 3-tier architecture.
- Cricinfo.com (broadcasts cricket scores) for observer pattern.
- Google search engine for availability.
- GTalk/Yahoo-messenger for security.

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Discussion of Patterns through examples

- Before discussing patterns and tactics, we talk about techniques that are being applied to solve real-life problems in the *non-software engineering* world. *Duell et. al.* transparency is a big help.
- We use well known applications as direct counterparts of its non-software examples.
 - *Counterstrike* game for observer pattern.
 - *Eclipse* for Microkernel pattern.
 - *Compiler* for Pipe-and-Filter pattern.
 - *Cancel button* for Memento pattern.

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Selection of viewsets.

- The 4+1 view set is easiest to explain and appreciate.
- Later a discussion on the Zachman framework was found to be useful.

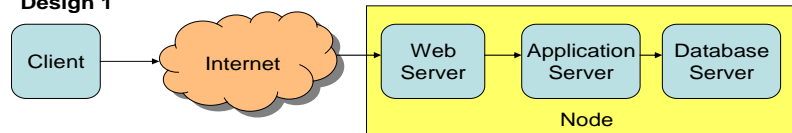
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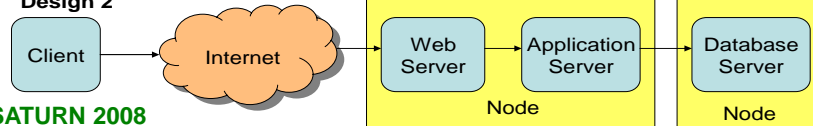
Design decisions with Deployment view.

- Among all the views, students are already familiarized with deployment view.
- We used this view to illustrate different design choices and their implications in achieving quality attributes.

Design 1



Design 2



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Thank you for ur attention

Questions

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