Boardplan lec 1 (2/7/00)

6.001: software
6.004: hardware
6033: systems

Systems

- set of interconnected components
- specified behavior w.r.t environments

http://web.mit.edu

- fill out sign up
- tue 2/8: one pager
- section assign. after 10p tonight.

Examples

Web — e-commerce, distributed } different purpose
Athena
Linux
PC board
processor.

Problem: controling complexity

1) Problems
2) sources
3) copy

} ⇒ today

(many connection with other disciplines)

Problems

- Emergent properties (surprises) → 3 Mbits ⇒ 10 Mbits. ⇒ min plot size ⇒ bridges ethernet
- Propagation of effects (there is no small change)
- Incommensurate scaling

group discussion

10% ⇒ fine tuning
10 x ⇒ redesign
person → giant
mouse → elephant
volume ~ $O(n^3)$
cross-section ~ $O(n^2)$.

tradeoffs

Gigabit Ethernet
Megabit Ethernet

IP v6 / not address — IP v6, MATS

Complexity signs

1) large # of components
2) large # of connections
3) Irregular
4) No short descript
5) > person.

⇒ difficult to comprehend.

U, stat

~~Windows~~ XP: 50 million lines
1 bug/1000 lines ⇒ ? bugs

avoid excessive generality

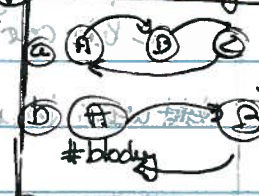
Sources

1) New goals/requirements
2) Interacting
3) performance target

→ OS. — graphics
— network
— security
— firewall
— wireless

→ phone system.

7 call forwarding ⇒ loop

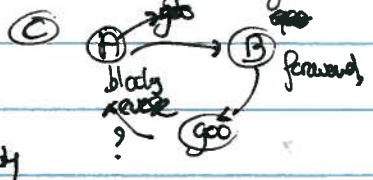


- Automatic call back
- Itemized billing phone # + time

~~other features~~:

~~reverse billing~~
~~call waiting~~
~~auto call reject~~

reverse billing



7 3

throughput
waiting time

1) schedule.
2) semaphores
3) failures
4) limit length of train.

law of diminishing returns.

complexity

New york airports