OS Internals
Introduction

Seminar SS 2010

System Architecture Group, Department of Computer Science

Overview of Today's Introduction

- Seminar organization
- Remarks on preparing your
  - Seminar paper
  - Seminar slides
  - Seminar talk

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Goals of a Seminar

- Give insights on interesting problems

- Enable acquiring literacy on system architecture

- Practice
  - Presenting scientific topics
  - Discussing scientific topics
  - Writing technical reports

Goals of *this* Seminar

- Provide students with a deeper understanding of operating systems

- Explore operating system concepts and their implementation for various common operating systems

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Your Expectations

?

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Our Expectations

- You have high motivation for the topic
- You are willing to explore your assigned topic (and to look for the necessary support literature)
- You will present your topic in a report and a talk
- You will attend each talk

Seminar Topics (by OS)

- BSD UNIX
  - Inter process communication (1)
  - BSD sockets (2)
  - BSD packet filter (3)
  - 4.3 BSD virtual memory management (4)
  - Volume management (GEOM, Linux dm) (5)
- Linux
  - ext2 file system (6)
  - Process, process control block (7)
  - Modules (8)
  - Completely fair scheduler (9)
  - Memory management (10)

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Seminar Topics (by OS)

- ## Solaris
  - ### ZFS (file system) (11)
  - ### Sun OS virtual memory management (12)
- ## Windows
  - ### User account control (13)
  - ### Scheduling (14)
  - ### Windows driver model (15)
- ## TinyOS
  - ### NesC (16)

Seminar Topics

- Each topic is coupled to an advisor
  - Will appear on website

- Contact your advisor
  - Send in the slides before the presentation
  - Send in your report

Formalia

- One topic per student
  - Explore topic based on literature (books or internet articles)

- Presentation of the topic
  - 25-30 min.
  - German or English

- Report on the topic
  - ca. 10 pages

- Grading: 50% talk, 50% report

Organization

- Talks
  - Talk preparation time: >4 weeks
  - Prepare a vivid talk
  - Hand in slides at least a week before your talk
  - Schedule:
    - Weekly meetings
    - Starting on June 7th
- Technical reports / summary
  - Until the end of the term (end of July '10)

Talk Preparation

- How to prepare for a seminar talk?

- Prepare in time
- Study deeply
- Consult related work if required
- Explain your topic thoroughly and didactically
- Restrict your talk to required aspects
- Do not present every detail
- Potentially build on previous talks' contents

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Talk Preparation

■ General Approach to giving the talk

1. Understand the topic
2. Adapt it for presentation
3. Prepare the slides
4. Prepare the talk

Understanding the topic

- Read about your topic
  - Search the internet
  - Browse the KIT/CS library
- Understand the key points
  - What is the context of your topic?
  - What are the problems?
  - What are the proposed solutions?
- Take your audience into account

Adapting it for presentation

- Begin with an introduction to give the context
- Outline your talk in the beginning or after the introduction
- Summarize your topic in the end
- Give the hows and whys in between

The Audience
- Will forget most of the talk
- Should still take away the message

Adapting it for presentation

- Only present the key points
- Do not go into detail
- Details are confusing
- Motivate to read related literature instead

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Adapting it for presentation

- Common pitfalls:

- Presenting a paper from front to back
    - Paper is for the archives
    - Presentation is live
- Making presentation time proportional to your learning
    - Stress key points in the talk
    - Skip over hairy details

Adapting it for presentation

- Your own opinion matters

- You will present someone else's work

- Get an opinion on your own
    - Do you agree?
    - Do you miss anything?
- Express your opinion in the talk
- But mark it as such!

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Preparing the slides

- We ask for electronic slides
- We can provide a laptop if required

- Check up-front for compatibility
- Show us your slides before the talk
  - Prevents common mistakes
  - Helps to have an interesting talk

- Arrive early for the presentation
- Make sure the setup is working

Preparing the slides

- Do give slide numbers
    - Eases discussion afterwards
    - Helps audience to follow
- Use a large font sizes (> 20pt, sans-serif)
    - This one is obnoxious
    - This one is way too small
    - This one is still too small
    - This one may be ok sometimes
- Do not clutter your slides
- Only show important text
- Use keywords rather than sentences
- Long sentences in most cases distract the audience from the talk, since people stop listening while they read the text on your slide.

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Preparing the slides

- Only one topic per slide
- Leave slide half-empty
- More than one slide per topic is fine

Preparing the slides

- Make slides visually appealing
- Colors for emphasis are fine
- But be careful
  - Avoid certain colors
  - Red on blue
  - Pink on yellow
- Be consistent
  - Same color for same purpose
 - Same font for same purpose
  - Same layout for same purpose

Red on blue

Pink on yellow

Preparing the slides

- Avoid long lists
- Use pictures

  - Make audience curious and awake
  - Also good for structures
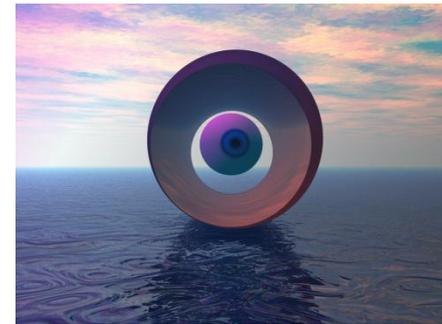
- Use animations
  - Good for algorithms/protocols/sequences
  - but be careful !!!
  - and avoid distraction
 - And do NOT animate   every   Item !!!!!

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Preparing the slides

- Example figure (really bad)

time [%]	alertness [%]
0	100
10	50
20	15
30	20
40	10
50	15
60	15
70	17
80	15
90	20
100	95

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Preparing the slides

■ Example figure (still bad)
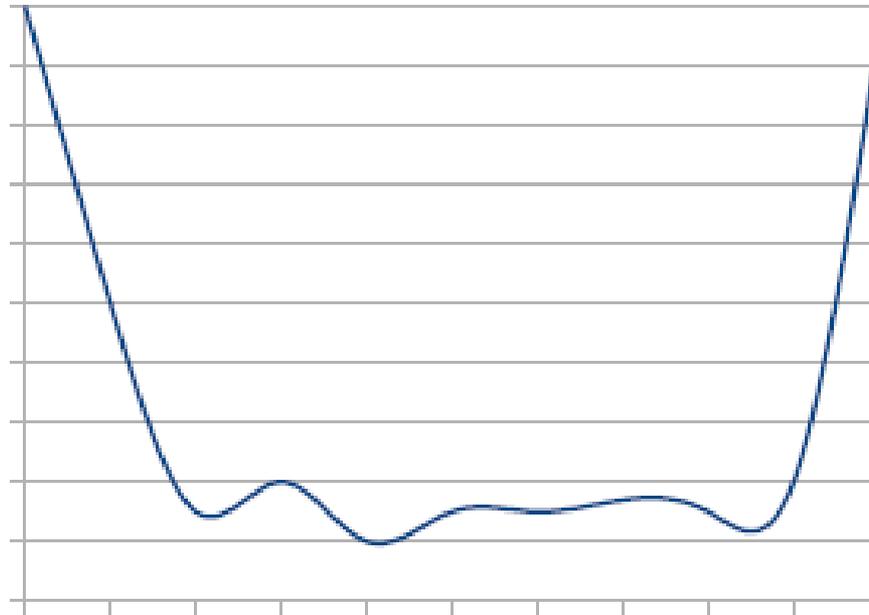
Preparing the slides

- Example figure (bad)
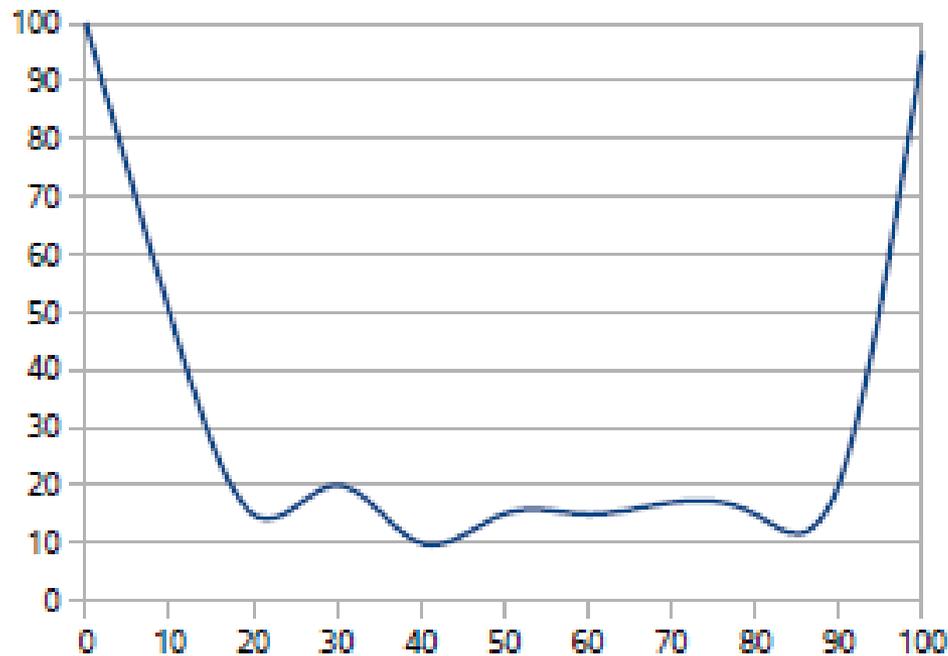
Preparing the slides

■ Example figure (ok)
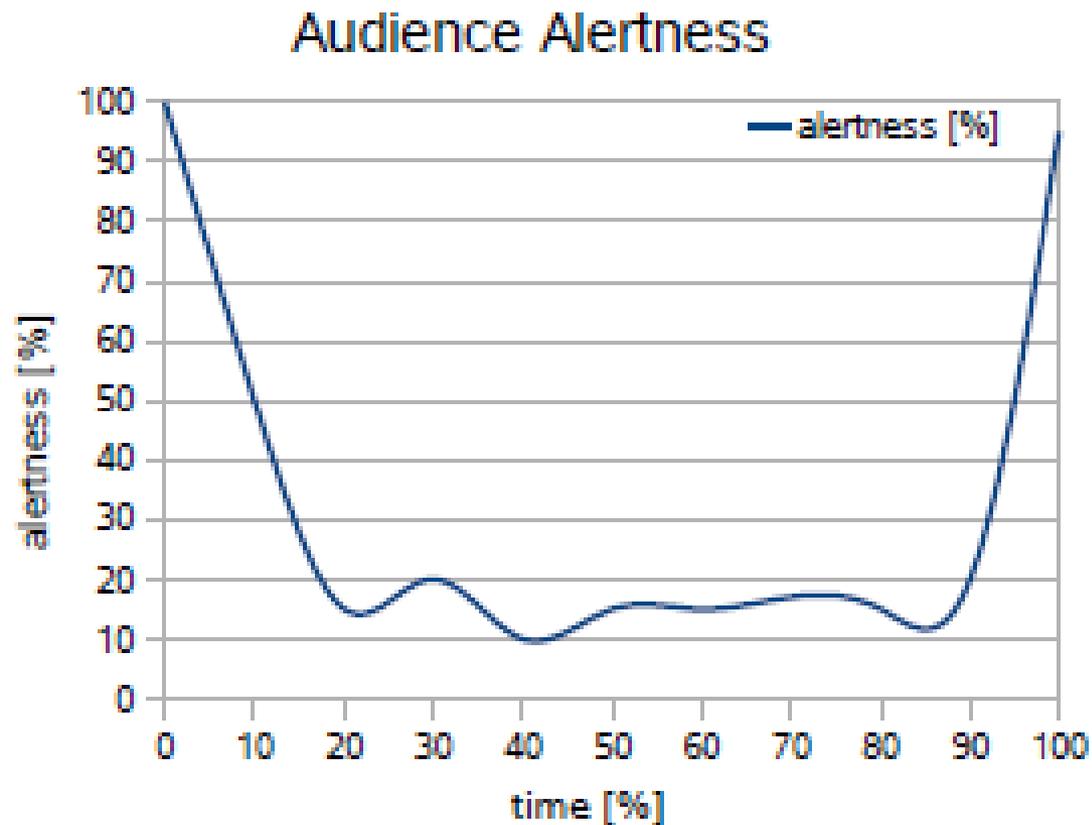
Preparing the talk

- Perform dry runs
- Make sure you time them
- About 2-3 minutes per slide
- Typically about 10-15 slides (< 20!)
- Better cut it short than going over time
- Ask friends to be the audience
- May find that all/most slides need modifications

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Preparing the talk

- Do not memorize the talk
- Do memorize the introduction
    - You are nervous at the beginning
    - Enables a smoother start
- Complicated parts are hard to explain
    - Improvising is difficult
    - Know how you want to convey them

Preparing the talk

- Check your attitude
- Be excited about the subject
- Something will go wrong
- Don't panic
- Audience is forgiving
- Enjoy yourself

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Preparing the talk

- Use a pointing device
    - Avoid hiding the slides while pointing
- Let the slides sink in
    - Do not remove them too quickly
    - Do not start talking too early
- Take pauses during complicated parts

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Preparing the talk

- Maintain interaction with the Audience
    - Keep eye contact
- Encourage questions
    - Express the audience's interest
    - Help to follow your talk
- "I don't know" is perfectly fine
- Knowing is better, though

Preparing the talk

- Do NOT go over time
- Puts you and your work in bad light
- Be prepared to cut down your talk by several slides

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Preparing the report

- About 10 pages
- 10 to 12 pt serif font
- Provide introduction and summary
- Submit as PDF

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