Advanced Operating Systems

Robert Kaiser

HTTP: http://www.cs.hs-rm.de/~kaiser
EMail: robert.kaiser@hs-rm.de

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Chapter 0: Introduction
What is it about?

Two major goals:

1. Hands-on experience with working in the area of operating systems research
2. Practical insights in the design and implementation of real operating systems

Modeled after course of the same title by Gernot Heiser / Kevin Elphinstone at University of New South Wales (UNSW), Sydney (http://www.cse.unsw.edu.au/~cs9242/)

- lecture slides from UNSW
- use an L4 family microkernel as lowlevel infrastructure
- build OS services on top
- study various seminal publications along the way
- learn to write peer reviews
... but not just a clone!

- use Raspberry Pi as hardware platform
- additional materials from TU Dresden
- use their Fiasco.OC microkernel instead of seL4
- also write scientific paper
- to be presented at a semi-real workshop:
  
  **WAMOS 2014**
  
  1st Wiesbaden Workshop on
  
  Advanced Microkernel Operating Systems

- Management via easychair.org
- You will be a member of the program committee
Practical work

- Implement a simple operating system (SOS) on top of a microkernel
  - 10 Milestones:
    - M0  Familiarisation
    - M1  Timer driver
    - M2  Memory Manager
    - M3  Pager
    - M4  System call interface
    - M5  Implement filesystem
    - M6  Demand paging
    - M7  Process Management
    - M8  ELF loading
    - M9  Documentation and final system
Resources

- **Main website (No password required):**
  

- **Git repository (need a cs account)**
  - Fiasco.OC source (adapted for Raspberry Pi)
  - U-boot source (ditto)
  - OKL4 V3.0 source

- **AOS Wiki (need a cs account)** → read it and feed it!

- **Hardware:** one Raspberry Pi kit for each group
Formalities ...

“Praktische Tätigkeit und Fachgespräch“ → register now

You will get marks for:
▶ reaching milestones on time
▶ your paper
▶ your presentation
▶ writing wiki articles