Practical Kernel Development

Course Number
4.0
Fall 2015
Meeting Days
Room Location
Lab / Discussion Session Location
RPILMS course site or Website URL (if existent)

Pre Requisites

Operating Systems class, as well as some experience experimenting with operating systems. Strong fluency in C.

Instructor

Mukkai S. Krishnamoorthy
Office location
Office Telephone Number
TF 2-3:30
moorthy@cs.rpi.edu

Course Description

An undergraduate level study in kernel development, this course aims to teach students the inner mechanics and workings of a monolithic kernel. Students will immerse themselves in operating systems development at the lowest software level, and through this come to understand the intricacies behind what makes every modern computer tick.

Student Learning Outcomes

After completing this course, students will be able to:

- Effectively use toolchains for cross compiling and build systems
- Understand the workings of monolithic kernels
- Implement task scheduling algorithms on custom code
- Create a bridge between user land software and hardware
- Virtualize memory to isolate user space programs

Course Assessment

Assessment will be based on two major factors: 1) The students understanding of kernel concepts and ability to communicate them, and 2) The tangible results of the course i.e. the kernel

Schedule

The students and professor will hold weekly meetings to review and improve architecture and software design, discuss hurdles and next steps, and ensure that project is on schedule.

Grading Criteria

As this is a practical class, grading should be based both on understanding and the quality of the implementation
50% - Student demonstrates understanding of kernel concepts
50% - Student has demonstrated concerted effort in creating working parts of the kernel

Academic Integrity

Participants in this program are required to comply with the requirements outlined in The Rensselaer Handbook of Student Rights and Responsibilities. Violations may result in penalties outlined in The Handbook.