

**Selected Project Reports, Spring 2005**  
**Advanced OS & Distributed Systems (15-712)**  
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## Abstract

This technical report contains four final project reports contributed by participants in CMU's Fall 2005 Advanced Operating Systems and Distributed Systems course (15-712) offered by professor Garth Gibson. This course examines the design and analysis of various aspects of operating systems and distributed systems through a series of background lectures, paper readings, and group projects. Projects were done in groups of three and four, required some kind of implementation and evaluation pertaining to the classroom material, but with the topic of these projects left up to each group. Final reports were held to the standard of a systems conference paper submission; a standard well met by the majority of completed projects. Some of the projects will be extended for future submissions to major system conferences.

The reports that follow cover a broad range of topics. While not all of these reports report definitely and positively, all are worth reading because they involve novelty in the systems explored and bring forth interesting research questions. These reports present methods for detecting the presence of a virtual machine monitor (VMM) by malware being analyzed using slight ways that a VMM differs from a real machine; the design and implementation of software transactional memory library for the O'Caml programming language which allows transactions to be used for synchronization, control flow, and shared variables; a virtual folder overlay to a filesystem combining context search techniques with traditional metadata information while also exploring indexing tradeoffs; and a proposed semantic file-system which would allow a user to search for and manipulate key-value pairs of attribute data on files using familiar file system primitives.

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