

**Book Review:****Operating Systems: Internals and Design Principles, 5th Ed.**

William Stallings  
Prentice Hall, 2005  
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As a professor of the Operating Systems subject, I can say that for many years the book “Operating Systems Concepts” by Avi Silberschatz et al. was considered as the unquestionable number one in the subject’s bibliography. The book we are talking about now, the new edition of “Operating Systems” by William Stallings, is thought to be the possible replacement of the first one.

It starts with an introductory chapter about computers, familiarizing the student with architecture concepts which will help him to know the bases of the common vocabulary at the time to introduce himself in the specific world of operating systems. Although the book presents the common structure of operating systems books (introduction, processes, memory, I/O, files), we have to pay special attention to the chapter about threads, SMP and microkernels.

Though the comprehension of the chapter about threads, SMP and microkernels may be difficult for a beginner, it is very helpful for the professor. The assimilation of the “thread” concept is the one that carries more difficulty when teaching operating systems. I hope that the decision taken by the author of integrate that concept with SMP and microkernel architectures, contributes to understand the “thread” as an “execution unit” comparing it with the idea of “process” as a “resources assignment unit”.

When it is necessary to exemplify by codes, C language is used. That decision allows readers who do not have experience in programming to understand it easily. Other authors use Java to set an example. In that case, it becomes harder to understand the examples if the student does not have knowledge of Java at the time they are attending the Operating Systems course (which takes place in the 2<sup>nd</sup> year of the Informatics Career, after Architecture, Introduction or Organization).

This new edition includes more information about Linux and Windows (and Solaris, in a minor measure), networks, and develops de sockets API concept. The early inclusion of the SMP concept, makes the introduction to distributed processing less traumatic than if it is based on uniprocessor environments. In terms of security, the book does not present major contributions. As far as buffer cache (disk cache) is concerned, I prefer Maurice Bach’s approach in the book “The design of the Unix Operating Systems”.

Another thing to consider in Stallings’ book is the technical resource and course page material for students and professors which you can consult in the author’s web site ([WilliamStallings.com/OS/OS5e.html](http://WilliamStallings.com/OS/OS5e.html)). In fact, we are using, quoting the proceeding source, some slides in our Operating System classes. At the end of every chapter there are appendices, keywords, problems, and reviews.

I consider that this book constitute an excellent consulting material and guide for the professor. Nevertheless, at the moment of recommending an operating systems book for a student without any experience in the subject, I think that Silberstchatz’ book is more adequate.

For those who have just experienced the use and study of operating systems, this new edition of William Stallings book is a good choice to use as a bibliographic reference.

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