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**Ann Nicols Lomuto
Nico Lomuto**

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PRENTICE-HALL SOFTWARE SERIES

Brian W. Kernighan, *advisor*

To Kiki and Christian

PREFACE

Why isn't there a good beginner's book about UNIX? Surely not for lack of experts! What's needed here, we suspect, is rather the opposite: someone sufficiently ignorant of the system to have sympathy for the beginner.

This book was born in a peculiar way when one of us, a language teacher, became curious about the occupation of the other, a computer scientist. In many ways UNIX is an ideal system for a beginner. Its elegant and simple structure makes it possible to present the concepts in a logical sequence. But to the layman the world of computers is mysterious and forbidding; its language is highly technical and its hardware is threatening. A proper introduction should therefore have three goals: get students generally acquainted with the computer; teach them to do some useful work; show them how and when to use the available reference manuals.

We will now try to address a few of the questions that you might have at this point.

What is the intended audience? We have written the book explicitly for readers without any technical background. In our opinion, it is a mistake (and an injustice to UNIX) to think that the sophistication of the system can only be appreciated by users with programming knowledge. The material is organized in increasing levels of expertise. Our concept is that from the very beginning you should be able to do real work, although in a rather unsophisticated way. Learning more will not be a matter of learning how to do more, but of learning how to do the same work more efficiently by letting the machine do most of it. Further study will then be fun because you know that you are learning for *your* convenience.

What is the application? UNIX is a general-purpose system. Our goal is not to give step-by-step instructions for a particular application, but to illustrate the concepts common to all applications. As a concrete basis for our book we have chosen the use of UNIX for text processing. Virtually all users spend most of their time manipulating some form of “text,” be it technical documentation, correspondence, or programs.

Which version? UNIX comes in an ever-growing number of “versions,” and few installations escape the zealous hands of programmers who, with or without a good reason, modify the local copy of the system. Having decided to emphasize concepts over step-by-step instructions, we have not found this proliferation of versions an unsurmountable obstacle. For consistency, we have used throughout the book the notation of the standard “Version 7,” but we have made it a point to alert you whenever other versions differ or local variations are likely. In some cases we have designed exercises to help you in sorting things out.

Which editor? An essential element of any system like UNIX is something called the editor. Despite the increasing popularity of “screen” editors, we have chosen `ed`, a “line” editor, as our workhorse. We are driven by two considerations. First, UNIX has no standard screen editor. Second, we think every serious user should have a line editor in his or her mental toolbox, for use with portable terminals or with low-speed connections.

What terminology? In general we have scrupulously followed the terminology used in the UNIX literature; when in doubt, we have followed the author that we consider the greatest authority on the specific issue. Few exceptions have been necessary. One that comes to mind concerns the use of uppercase letters in program names. For example, is the text formatting program called `NROFF` or `nroff`? (or maybe `Nroff`?) An initial attempt to adopt the spelling used by the author of each program (after all, a name is the parents’ responsibility!) proved unsatisfactory. Since the user has to type “`nroff`” to execute the program, referring to it in any other way is a potential source of confusion. We have continued to follow the “folklore” for names such as UNIX or C, which do not correspond to user commands.

ACKNOWLEDGMENTS

We are indebted to Brian Kernighan for his encouragement, numerous contributions, and patience throughout. Bill Plauger also provided suggestions and, where necessary, merciless criticism. Bill Joy was an equally valuable source of ideas. We are at a loss for words to thank adequately Ed Yourdon for his ego-inflating review. Thanks also to Doug Ross for his positive comments, and to Joan and Clem McGowan for their moral support.

In the history of every book, there comes a time when the authors are ready to scrap the project and junk their typewriter. To save the manuscript, there is nothing like an emergency vacation; endless thanks to the people of Puerto Rico for a delightful escape.

But by far the most pleasant aspect of this entire project has been the interaction with our genial editor, Karl Karlstrom, his gracious assistant, Rhoda Haas, and the Production Editor, Nancy Milnamow. To them, our deepest bow and our loudest applause.

Ann Nicols Lomuto
Nico Lomuto

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Part 1

BASIC SKILLS