

As far as is possible, each module is self-contained and illustrated with relevant diagrams. It is easy to flick through the book and pick out relevant or interesting topics.

The book is divided into three parts. Part 1 is an overview of X, very much in the style of a sales presentation and tries (very effectively) to convince the reader that X is wonderful. The relationship between X and the various types of computer system it can be run on is discussed, and X is compared with other windowing systems. Part 2 describes the components that make up X, i.e. servers, clients, toolkits, window managers, 'look and feel' and inter-client communication. These are presented so as to describe their individual purposes within an X system, and detailed programming information is omitted. Part 3 is concerned with issues of interest to (say) a system administrator, such as security and performance benchmarking, together with customising applications and other miscellaneous topics.

The amount of detail presented is sufficient for the reader to understand the topics being discussed, and is not clouded by irrelevant technical information. It is a book which will clarify the concepts upon which X is built, but it is not a tutorial in X programming.

If you are not a programmer, but need to use X, this book will tell you most of what you need to know. If you intend to write programs to run under X, *The Joy of X* will furnish you with the essential understanding of how X works which you will require.

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OLIVER JONES

*Introduction to the X Window System*. Prentice-Hall, 1989, £33.50, 521 pp., softbound, ISBN 0 13 499997 5

The X Window System is defined in terms of message passing between a *server* and one or more *client* programs, the messages being referred to as *events*. The server controls the graphics terminal on which the windows are displayed, and the clients are the applications programs which use (or manage) the display. The procedures contained in the library known as *Xlib* form the most basic building-blocks for creating an X application. *Xlib* is not user-friendly.

Many applications now are written using toolkits—high-level libraries which hide from the user the tedium of explicitly handling X events (and the other low-level features of X). An X toolkit stands in relation to *Xlib* in the same way that a high-level computer programming language does to Assembler. *Xlib* is useful still, especially for system programmers, but is arguably not very relevant for general use of X.

This book has a potentially misleading title. It is not so much an introduction to the X Window System as to *Xlib*, and the concepts which are required to understand X are discussed in the context of *Xlib*. As an

introduction to *Xlib*, however, I found this to be a very useful book. It is an easy reference text and it has deservedly earned itself a place on my bookshelf.

The chapters systematically cover the main topics, including Basic Concepts, Windows, Graphics, Text, Colour, Images, Mouse and Keyboard, and each chapter includes a clear short summary at the end. The text contains many program fragments which simplify greatly the somewhat laborious task of creating one's own X program and remembering everything that has to be done.

The book is now 5 years old; *X11R4* has been superseded by *X11R5* and *X11R6*, and some of the material is out-of-date. I hope that an updated version will soon be published.

If you intend to program in X using one of the many toolkits now available, and do not need to investigate X in more depth, then this book is probably unsuitable. If, however, you require the facilities provided by *Xlib*, it provides a very clear overview both of the *Xlib* library and of the concepts necessary to understand it.

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ROGER D. HERSCH (Ed.)

*Visual and Technical Aspects of Type*. Cambridge University Press, 1993, £35, 204 pp., hardbound, ISBN 0 521 44026 2

Reviewing an edited book with individual chapters written by different authors is always a complicated task. And when we have the authors coming from highly diverse disciplines like visual communication, typography, type design and computer science the styles of presentation, writing, illustrations and also the extent and depth of coverage are all bound to differ. On the other hand this is a beautifully produced book. The typeface, fontsize and layout are really pleasing to the eye.

The book is a collection of articles based on lectures given at the First European Summer School in Digital Typography, sponsored by the EEC COMETT DIDOT project and held in Lausanne in September 1991. The book has 11 chapters written by eight authors divided into three distinct parts.

The first part of the book consists of four chapters and goes by the title of 'Letterforms: The Basics'. This part basically tries to communicate visual aspects of type and includes articles on visual communications systems as well as the historical evolution of letterforms. Individually the chapters are good and have some excellent illustrations. Overall, however, it is not clear that 55 printed pages are necessary to communicate the few concepts that are being put across to the reader.

The second part of the book with five chapters by computer scientists has been entitled 'Digital Standards and Algorithms'. This part contains material on font