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A Sun User's Guide

David England (Editor)

Peter Hurley

John Mariani

Nick Nei

Jim Rudolf

Second Edition

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MACMILLAN

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Preface

High-performance, high-resolution graphics workstations have been available for over ten years in specialist areas such as Artificial Intelligence and Computer Aided Design. However, the recent developments in powerful 16 and 32 bit microprocessors have led to the development of more general purpose machines. The Sun range of workstations is one example of this trend. These machines are bringing powerful computers out of the traditional machine room and into the offices of researchers and software developers.

Workstations provide new opportunities in addition to providing the individual user with more computing power. These opportunities require new skills. Window management can provide more "user-friendly" interfaces but requires knowledge of human-computer interaction. High-speed networking allows data distribution and rapid communication. It is hoped this book will help the user to realise the possibilities presented by Sun workstations.

About this book

A Sun User's Guide aims to be general and practical, being based on the authors' own experiences. As well as concentrating on the strengths of the Sun workstation, such as window management, graphics and networking, we also introduce machine administration which the general user may not have met before. SunOS is introduced and references to introductory UNIX books provided. It is expected that the reader will have had some exposure to C language programming and again introductory texts are recommended. Most of the programming-based chapters include some complete C programs which the reader can enter and compile. It is also assumed that the reader will have had some previous exposure to personal computers and will know how to use a keyboard and how to type in commands.

A Sun User's Guide is not meant to be read sequentially. It is possible to dip into a chapter of particular interest without reading the whole book. However some chapters are naturally linked, such as Chapter 1 on using windows and Chapter 3 on writing window-based programs. The reader should note that this book is based on release 4.1 of Sun software.

Chapter 1, *An introduction to OpenWindows*, aims to teach the basics of using window and mouse-based tools. Not every possible tool is introduced. Instead the aim is to describe the common elements of all tools. Chapter 2, *SunOS*, introduces the SunOS operating system with many examples and particular references to the use of windows and networking. Chapters 3 and 4 introduce programming in the XView toolkit showing how window based programs can be constructed. Chapter 3 shows how Frames and Panels can be constructed, while Chapter 4 considers the lower, and more flexible, Canvas object of XView. Chapter 5 then looks at interactive PostScript imaging facilities. Chapter 6 describes the *NeWS* windowing system. *NeWS* is based on

PostScript and provides an alternative, though complementary model to XView for building interactive, graphics applications. In Chapter 7 machine administration is introduced and includes topics such as tape backups and adding users to UNIX. Networking is one of the Sun's strengths and Chapter 8 looks at the support available. Finally Chapter 9 looks at the support available for software development on Sun Workstations.

We have endeavoured to remove any technical and typographical errors and are grateful to the various reviewers who have helped us in this task. Any errors which still remain are the responsibility of the authors. We would be grateful if readers could bring them to the attention of the editor or publisher for correction. This book was produced on various Sun SparcStations and a Sun laserwriter using p_{troff}, plus the occasional Macintosh diagram.

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Much of the experience on which this book is based was gained on research projects supported by the Science and Engineering Research Council and the Alvey Directorate of Great Britain. The directory browser software was developed as part of the Alvey ECLIPSE Software Engineering project for an earlier release of Sun Windows. We would like to thank Susan Armitage, Andrew Howes, David Hutchison, Peter Sawyer, Stuart Borthwick, Ian Sommerville, Catherine Taylor and Michael Twidale for their help with the first edition. The second edition contains additional material from staff at Glasgow University and the Turing Institute. We would like to thank Naveed Khan, David Coffield and Gilbert Cockton for their feedback on the second edition.

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David England, Glasgow, 1992