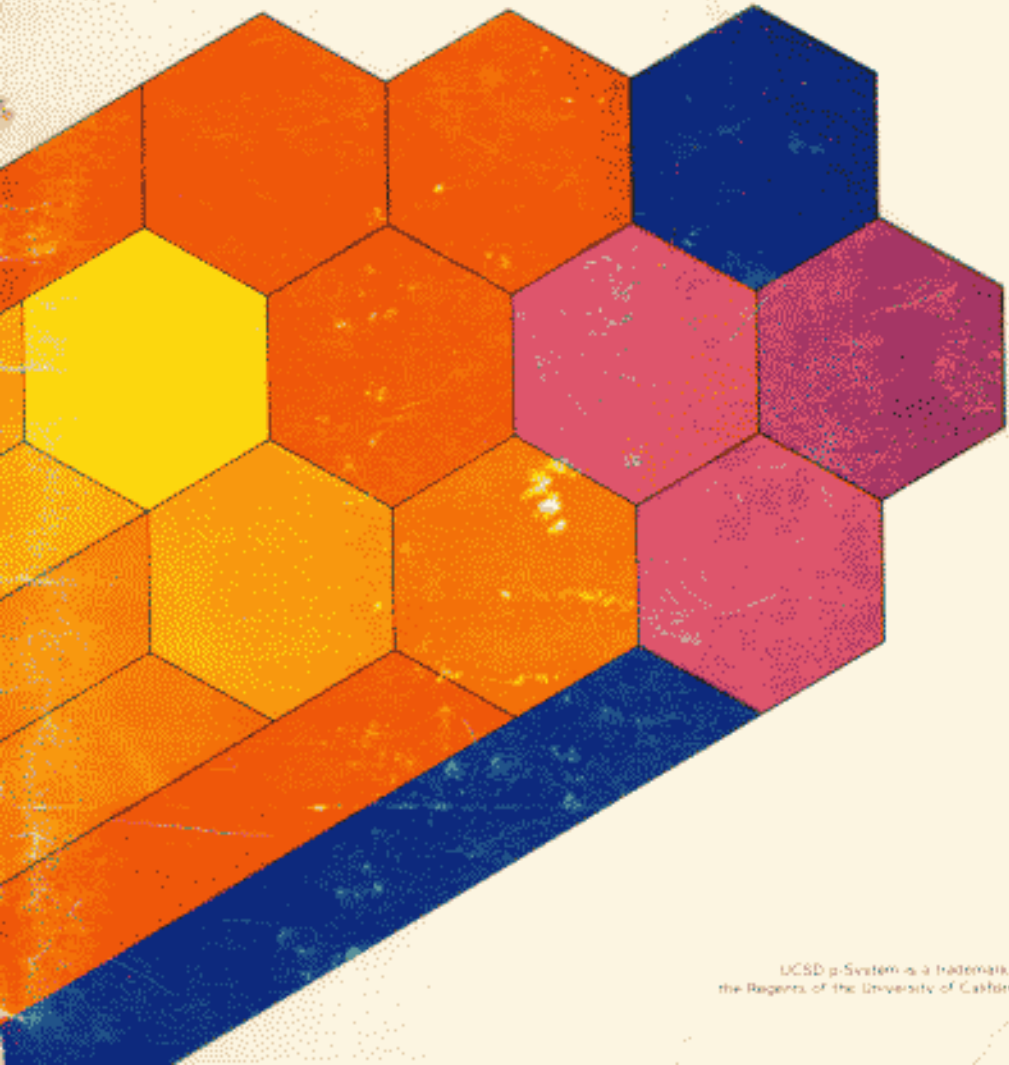
UCSD p-System™
Version IV

Users' Manual Supplement



UCSD p-System is a trademark of the Regents of the University of California

TABLE OF CONTENTS

Section		Page
I	INTRODUCTION	I-1
I.1	New and Upgraded Standard Facilities	I-1
I.2	New Optional Facilities	I-3
I.3	Installation Guide Supplement	I-4
II	NEW AND UPGRADED STANDARD FACILITIES	II-1
II.1	The Symbolic Debugger	II-1
II.1.1	Entering and Exiting the Debugger	II-1
II.1.2	Using Breakpoints	II-2
II.1.3	Viewing and Altering Variables	II-3
II.1.4	Viewing Text Files from the Debugger	II-4
II.1.5	Displaying Useful Information	II-5
II.1.6	Disassembling P-code	II-6
II.1.7	Example of Debugger Usage	II-6
II.1.8	Symbolic Debugging	II-7
II.1.9	Symbolic Debugging Example	II-9
II.1.10	Interacting with the Performance Monitor	II-11
II.1.11	Summary of the Commands	II-12
II.2	Event Handling	II-14
II.3	New File Handling Facilities	II-17
II.3.1	Subsidiary Volumes	II-17
II.3.1.1	Creating and Accessing Subsidiary Volumes	II-18
II.3.1.2	Mounting and Dismounting Subsidiary Volumes	II-19
II.3.1.3	Installation Information	II-21
II.3.2	User-Defined Serial Devices	II-21
II.3.3	The Flip Swap/Lock Command	II-22
II.3.4	The V(olumes Command	II-23
II.3.5	Filer P(refix Notes	II-24
II.3.6	File Management Units	II-24
II.3.6.1	Directory Information (DIR.INFO)	II-25
II.3.6.1.1	Notation and Terminology	II-25
II.3.6.1.2	Wild Cards	II-26
II.3.6.1.3	File Name Arguments	II-27
II.3.6.1.4	File Type Selection	II-27
II.3.6.1.5	File Dates	II-28
II.3.6.1.6	Error Results	II-29
II.3.6.1.7	DIR_INFO Interface	II-30
II.3.6.1.8	Detailed Description of Functions	II-32
II.3.6.2	Wild Cards (WILD)	II-58
II.3.6.2.1	Special Wild Card Characters	II-59
II.3.6.2.1.1	Question Mark Wild Card	II-60
II.3.6.2.1.2	Equals Sign Wild Card	II-60

II.3.6.2.1.3 Subrange Wild Card II-61
II.3.6.2.2 Function D_Wild_Match II-62
II.3.6.2.2.1 Pattern Matching Information II-63
II.3.6.3 System Information (SYS_INFO) II-67
II.3.6.4 File Information (FILE_INFO) II-71
II.4 Error Messages II-75
II.4.1 Format of Error Messages II-75
II.4.2 User Control of Error Messages II-76
II.5 Pascal Compiler Enhancements II-78
II.5.1 Selective Uses II-78
II.5.2 Enhancements to the Compiled Listing II-83
II.5.3 Pascal Compiler Back-End Errors II-84
II.6 Extended Memory II-88
II.7 Echoed Characters II-89
II.8 Editor Enhancements II-90
II.8.1 Setting Tab Stops II-90
II.8.2 Editing Line in Set Environment Display II-90
II.8.3 Byte Sex Independent Environment Information II-91
II.8.4 Editor Control Characters II-91
II.9 The 8086 and 68000 Assemblers II-93
II.9.1 The 8086 Assembler II-93
II.9.1.1 Notational Conventions II-93
II.9.1.2 8086/88/87 Error Messages II-96
II.9.1.3 Sharing Resourses with the Interpreter II-98
II.9.1.3.1 Calling and Returning II-98
II.9.1.3.2 Accessing Parameters II-98
II.9.1.3.3 Register Usage II-99
II.9.2 68000 Assembler Syntax Conventions II-99
II.9.2.1 Miscellaneous II-100
II.9.2.2 68000 Error Messages II-100
II.10 Turnkey Applications Facilities II-102
II.10.1 SYSTEM.MENU II-102
II.10.2 Turnkey Packages II-102
II.10.3 System Initialization II-103
II.11 Performance Monitor II-104
II.12 REALCONV Utility II-106

III NEW OPTIONAL FACILITIES III-1

III.1 Native Code Generator III-1
III.1.1 Native Code Directives and Pascal III-1
III.1.2 Native Code Directives and BASIC III-2
III.1.3 Native Code Directives and FORTRAN III-2
III.1.4 Running the Native Code Generator III-3
III.1.5 Limits of Native Code Generation III-9
III.2 Print Spooling III-10
III.3 XenoFile III-12
III.3.1 Configuring the XenoFile Package III-12
III.3.2 The CP/M Filer III-13
III.3.3 Using XenoFile CP/M Via UCSD Pascal III-14
III.3.4 The File Control Block III-14
III.3.5 File Control Block Intrinsics III-17
III.3.6 CP/M Interface Entry Points III-20
III.3.7 Summary: CP/M Interface--Calls to CPM2_Unit III-43
III.3.8 FORTRAN Interface to XenoFile III-47
III.3.9 BASIC Interface to XenoFile III-51
III.4 Turtlegraphics III-57
III.4.1 Using Turtlegraphics III-58
III.4.1 1 The Turtle III-58
III.4.1.2 The Display III-61
III.4.1.3 Labels III-62
III.4.1.4 Scaling III-62
III.4.1.5 Figures and the Port III-64
III.4.1.6 Pixels III-66
III.4.1.7 FotoFiles III-67
III.4.1.8 Routine Parameters III-68
III.4.1.9 Sample Program III-70

IV INSTALLATION GUIDE SUPPLEMENT IV-1

IV.1 Installation of Adaptable Systems IV-2
IV.1.1 Release Disk Format IV-2
IV.1.2 Installing Events IV-2
IV.1.3 Required New SBIOS Routines: QUIET and ENABLE IV-3
IV.1.4 New Definition of PRNSTAT and SETTRAK IV-4
IV.1.5 Floating Point Number Configuration IV-5
IV.1.6 Installing GOTOXY IV-7
IV.1.7 p-System Support for ANSI Terminals IV-9
IV.2 The 8086 Adaptable System IV-11
IV.2.1 Bootstrapping the p-System IV-13
IV.2.2 SBIOS Interface IV-13
IV.2.3 BIOS Routines Accessible to the SBIOS IV-17
IV.2.4 The Primary Bootstrap IV-17
IV.3 SETUP IV-18
IV.4 Installing Turtlegraphics IV-26
IV.4.1 Introduction IV-26
IV.4.2 Graphics I/O Routines IV-28
IV.4.3 Graphics System Initialization IV-35
IV.4.4 Turtlegraphics Character Fonts IV-36
IV.4.5 Linking and Librarying Turtlegraphics IV-37
IV.5 Adaptable System Release Disk Directories IV-42
IV.5.1 Z80 Adaptable System Release Disks IV-42
IV.5.2 8080 Adaptable System Release Disks IV-45
IV.5.3 CP/M Adaptable System Release Disks IV-46
IV.5.4 8086 Adaptable System Release Disks IV-47
IV.5.5 6502 Adaptable System Release Disks IV-49