NUMBER FOUR - FALL EDITION

PIPELINES

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SEMINAR IN REVIEW

The Microware '83 Seminar was a huge success. Attending were OS-9 enthusiasts from 28 states and 9 foreign countries. The exhibit hall, with 25 exhibitors was buzzing with activity when classes were not in session. Hospitality suites and a 2nd annual OS-9 User's Group meeting rounded out the attendee's busy schedule. And again this year, the food was great.

The exhibit hall this year had grown considerably from last year. Companies represented in the hall included: Motorola, Positron, Ackerman Digital, Forum 68, JBM Group, Dragon, Micro International, Frank Hogg Labs, Fujitsu, Candid Logic, Speciality Electronics, Smoke Signal Broadcasting, Gimix, Great Plains Computer, Computer Systems Consultants, Applied Computer Technology, Hazelwood Computer Systems, Matrix, Advanced Digital Technology, Creative Micro Systems and Privac. The OS-9 User Group also had a booth and was busy organizing a software exchange.

r special guest speaker this year was the norable Terry Branstad, Governor of Iowa, who spoke about the aims Iowa has for high technology. After dinner the "First Annual Microware Special Achievement Awards" were presented. For a complete write-up on these awards see the October issue of 68 Micro Journal.

The classes, which were held Saturday and Sunday, covered topics such as OS-9; Level One and Two, Microware compilers, OS-9/68000, and new products. Our technical people were assisted by a video projection system which allowed them to display on a 12 foot screen anything that was typed on the terminal screen. The classes were well attended and excellent questions were asked. Again this year we taped the sessions and are planning to make cassettes available to those who wish them (please call Microware for more information).

Hospitality Suites were hosted this year by Microware, Gimix, Smoke Signal Broadcasting, Advanced Digital Technology and Ackerman Digital. The bathtub full of food in the Advanced Digital Technology suite was a great conversation piece. These after-hour "strategy sessions" were a smash success and many of the participants elected to sleep late the next morning; ostensibly compiling data exchanged the previous night.

The OS-9 User Group met on Saturday evening. New officers were elected and general discussions on the goals of the group were held. For further information on the outcome of this meeting, call bulletin board system which the group ..nsors.

Monday was set aside for smaller discussion groups on special topics. Microware staff members were kept busy with these groups. In the afternoon, we hosted an open house at Microware's offices.

ANNOUNCING FOUR NEW PRODUCTS

SEE INSIDE

EXORBUS LEVEL II NOW AVAILABLE

At long last, you Exorcisor Bus fans can run OS-9 Level Two! Creative Micro Systems, a company long known for its high quality Exorcisor Bus- compatible equipment has designed and released the new 9639 CPU module which supports OS-9 Level Two Version 1.2.

The 9639 has advanced features tailored to OS-9 Level Two such as memory-to-memory DMA and automatic task switching. It also contains a 2K x 8 bit mapping RAM so that up to 127 tasks may be run without the mapping RAM being continually rewritten. Perhaps its most unique feature is a hardware system that automatically reads the SWI2 function code byte for OS-9 system calls then increments the program counter before pushing it on the stack!

The advent of this CPU brings the first commercially available version of OS-9 Level Two to the Exorcisor Bus. For more information contact Creative Micro Systems at (213)-493-2484.

A BASIC BOOK FOR BEGINNERS

A new book about Basic09 for non-programmers titled The Offical Basic09 Tour Guide will be published soon by Microware. This book was designed with educators and beginning programmers in mind.

Written in a casual and easy to understand format, The Offical Basic09 Tour Guide takes you on a tour of the "Mercedes of Basics". As you fasten your seatbelt and take off, hold on because you'll be a crack Basic09 programmer in no time! The book starts at the beginning and includes complete programming examples, a chapter on the OS-9 interface, and a little humor thrown in for good measure.

Skillfully written by Dale Puckett for Microware, this book is one you won't want to miss if you are teaching Basic09 or are just getting started yourself.

The Offical Basic09 Tour Guide will retail for $18.95. Special pricing is available for book stores and bulk orders.

FOUR NEW PRODUCTS FROM MICROWARE

LEVEL TWO PRINT SPOOLER

This versatile package gives your OS-9 Level II a complete print spooling management capability for timesharing applications. Features of the spooling system are:

Handles up to seven independent spooling devices and queue with "print on first available device" feature.

Prints large block header pages between listings with date, time, user name and job name.

Multiple listing copy option

Complete forms change capability for each job and device

Prints formatted or unformatted listings

Status command displays print queues and status of each device

User can kill or change priority of queued jobs

The print spooling system is only available of OS-9 Level II systems and consumes 48k of memory plus 6k per print device. A hard disk system is recommended but it will work on floppy disk systems with reduced speed and listing file size capacity.

FILE HANDLERS TOOLBOX

Microware now offers a new utility command toolbox specially designed for OS-9 users who do a lot of file manipulation. The package is a collection of twelve OS-9 command programs, including equivalents of some of the most popular UNIX utilities that are not included in the basic OS-9 command set. Most of the programs are useful as "filters" using the OS-9 pipeline facilities.

Programs included are: "tr" which transliterates all occurances of simple or complex text patterns within a file to a specified substitution pattern; grep which searches a text file for a pattern and prints matching lines; "count" which counts words, lines, or characters within a text file; and "d", an unformatted directory listing with "wild card" matching.

Also included are "expand" and "compress", which are character compression and decompression utilities that can reduce the size of text files; "split" which breaks a file into smaller files; "space" which indents lines and spaces lines in a text file; "code" which decodes terminal keys to hex notation; "qsort" which is a quick sort for small files, directories, etc.; "pr", a versatile formatted file printing utility; and "xmode" which is used to alter terminal port operational mode.

ENTERTAINMENT PACK I

Announcing "Entertainment Pack I, a collection of programs written in Basic09 for the OS-9 Operating System. The package consists of games and other interesting programs that are not only entertaining but serve as excellent instructional examples of Basic09 programming techniques. All programs include complete Basic09 source files and can be easily edited to run on standard alphanumeric or graphics terminals.

The programs included in the package are:

Blkjak - A Vegas-rules blackjack game.

Clk - graphical display of a wall clock on your terminal.

Dogs - Greyhound racing with simulated graphics on standard terminals.

Eliza - Basic09 version of the famous arificial intelligence simulation of natural language dialogue with a psychiatrist.

Haiku - Program that creates original "haiku", flowing Japanese prose.

Quest - a mini-"Adventure" game

Rats - find you way out of a computer-generated maze - from a rat's point of view.

Towers - a graphical display of the solution to the "Tower of Hanoi" puzzle.

RELOCATABLE MACRO ASSEMBLER

At last - a full feature relocatable macro assembler and linkage editor for OS-9. RMA permits sections of assembly language programs to be independently assembled to "relocatable object files". The linkage editor takes any number of program sections and/or library sections and combines them into a single executable OS-9 memory module. Global data (including indexed and direct addressing modes) and program references are automatically resolved in the process. The macro facility permits commonly used statement sequences to be defined, then used within the program with appropriate parameter substitution. RMA also supports conditional assembly and library source files. RMA requires disk-based OS-9 Level I or Level II system with 56k user memory.

NOTE: RMA is furnished at no additional charge with each copy of the Microware C Compiler package.

SEMINAR TAPES

The 1983 Microware User seminar was recorded on audio cassette tape. We cut out everything from the hotel bar, but all of the classroom sessions have been preserved on magnetic media. We would like to make these tapes available if there is enough interest to warrant a production run of 50 sets. We estimate that the cost per set will be approximately $35.00. If you are interested please contact Jeanne Kaplan or Andy Ball.

TELL THE WORLD - CLARIFIED

There have been some questions pertaining to the rules of Microware's Tell The World Contest so hopefully this article will help to clarify the rules. Actually, the rules are very simple.

1) The article's main thrust and emphasis must be about Microware software product(s).

2) The article must be at least 1500 words long NOT COUNTING PROGRAM LISTINGS.

3) The article must be printed in a magazine with a paid circulation of 5000. To obtain this information you can check the **Standard Rate and Data** book at your local library.

4) You must send a copy of your original text and the printed article to Microware via Registered Mail.

5) You may enter the contest as many times as you wish but only one $400 gift certificate will be issued per author.

6) Microware's decision on accepting or declining articles is final. The decision by the judges on the winning article is also final.

7) Employees of judges, employees and relatives of Microware and employees of Microware's advertising agencies are not eligible to enter.

Due to the numerous requests we have received, Microware is extending the deadline of the contest to August 31, 1984. This should give everyone a better chance to enter as many magazines have quite a bit of lead time before the actual publication of the article.

WHAT'S NEW AT MICROWARE

Ken and Jeanne Kaplan gave birth to a child process on September 1st. The process ID is Aaron Joseph Kaplan; original mass: 8 pounds, 8 ounces.

In a related story, Ken Kaplan was overheard ordering a terminal, desk, and chair for Aaron. When asked, Mark Hawkins of Microware's Software Support Group said that he was looking forward to the additional help on the hotline. Jeanne was busy researching child labor laws and unavailable for comment.

Microware welcomes four new staff members. Todd Earles is an expert C and assembly language programmer who was rescued from the scrap heap - literally. He previously had worked at the data processing department of a scrap metals brokerage firm.

Carmen Stone, whose voice you may have heard answering our telephones, was previously employed at a local small business where she was an office manager.

The editors of the Pipelines would also like to welcome back Doug Nicholson, who worked at Microware back in the early days. Doug has been on sabbatical in Houston, Texas where he perfected his suntan and wrote a book on local hot-spots.

Dr. Ken Tracton has joined our staff after an extended stint in Hong Kong. As well as being a long-time OS-9 fanatic, Ken has written a number of popular microcomputer books (maybe he can have a look at our manuals???).

A FRESH START

Saturday October 9, 1983 was a date that will go down in microprocessor history! The staff of Microware held an informal ground breaking ceremony to mark the beginning of a new era for the company.

A new 7,500 square foot building, designed with special software development labs, demonstration areas and offices is now under construction in Des Moines with a planned occupancy of March, 1984.

The first shovel of dirt was dug by Ken Kaplan, President of Microware, to usher in the "coming of age" of the company. The programming staff took the honors of the second shovel followed by the marketing department.

"This marks a landmark in the history of Microware. The growth of the company has been strong and steady since its inception. We intend to keep up this momentum and this building is proof of our commitment to the future," Ken Kaplan said as the champagne glasses were lifted.

SUPPORT CARDS

As part of our ongoing policy to provide the best possible support and service to OS-9 users, Microware has introduced Support Service Registration Cards which are provided free with each copy of OS-9 family software purchased from Microware and participating Microware licensed manufacturers. The Support Service gives users direct access to the Software Hotline for technical advice and consultation. The registration cards when filled out and returned entitle the customer to 90 days of free Hotline support.

Microware and participating computer manufacturers are distributing two types of registration cards. The cards are color coded, blue for the OS-9 operating system and brown for languages and software tools. Both types of cards give complete information about the Hotline service (hours, phone and telex number, etc.) and a customer serial number.

After the free initial 90-day support period, users can obtain the "Yearly Support Service", which provides an additional full year of Hotline service at a cost of $75.00 per single product or $150.00 for all Microware products owned. Call Irene Coffman for more information.

TECHNICAL TOPICS

THE LATEST EDITIONS

We have had several requests to print a list of the current edition numbers for OS-9 Level One, Edit, Asm, Debug and our compilers. The hardware dependent modules such as the kernel and clock have not been included. You can use the ident utility to check your software against this list. If you don't have the latest edition, give us a call for information on updating your software.

OS-9 Level One Version 1.2

Module	CRC	Edition Number
IOman	$BD0579	#4
RBF	7D932A	14
SCF	04D9E6	7
PIPEman	5F721D	3
SysGo	A6E9CD	4
ACIA (6850)	A639E1	4
PIA	C90675	5
Shell	59ECC8	20
Attr	E280B3	8
Backup	1F1A5D	7
Binex	D250BD	*
Build	07552F	5
Cobbler	F6B802	4
Copy	C75D81	7
Cmp	4B6613	*
Date	F07071	4
Dcheck	561AEA	3
Del	8F70C4	5
Deldir	16BD56	3
Dir	8613FB	4
Display	5FE04A	2
Dsave	598919	2
Dump	AE692F	4
Echo	F5FF9A	5
Exbin	14D934	*
Format	BF3143	17
Free	E71F9D	6
Ident	548BB2	7
Link	F6AD30	5
List	58BC12	5
Load	267381	4
Login	E91FC9	9
Makdir	1C6F35	4
Mdir	E8556C	4
Merge	43E356	4
Mfree	0FA0C0	4
OS9gen	078087	5
Printerr	E61370	6
Procs	06D7E7	8
Pwd	FB5CC0	1
Pxd	644025	1
Rename	836406	6
Save	8F769A	3
Setime	E79AA3	9
Sleep	FACE6E	2
Tee	070490	2
Tmode	90121D	8
Tsmon	B8E5E2	6
Unlink	9C977B	2
Verify	8A718C	5
Asm	09360F	5
Edit	C30861	5
Debug	85734E	4
Basic09	38E367	21
RunB	6AB8D2	21
CC1	B9DE47	4
CC2	6EC2B8	4
Cobol	0F2B62	6
RunC	3809E7	6
Pascal	DBC42C	5

Note: * indicates edition bytes not used in module header.

LEVEL II SYSTEM CALL CHANGES

There are three OS-9 system calls which have been modified in the Level Two version change from V1.1 to V1.2. The changes were made in order to implement the load of modules in non-contiguous memory. The module directory underwent a slight facial uplift to accomplish keeping track of a group of loaded modules and their inherent DAT image. The first entry in the module directory used to be the beginning block number of the group. From that number a DAT image could be constructed just by knowing the total size of the group. With non-contiguous memory blo used for each group this is not possibl When a group of modules is loaded under V1.2 of level two a DAT image is created and kept in the module directory area. The first entry in the module directory is now a pointer to the place where the group's Dat image is kept. The changed system calls and their new calling sequence follows:

F$VModul (Verify module)

Input: (D)=Module DAT image ptr
(was Begin block num)
(X) = Address of module
(same)

Output: (same)

F$GModDr (Get Module Directory copy)

Input: (same)

Output: (Y) = Pointer to end of ModDir entries
(U)=Start addr of ModDir in system map

F$CpyMem (Copy external Memory)

Input: (D)=Memory DAT image pointer
(was Begin block num)
(X)=Offset in block to begin copy
(same)
(Y) = Byte count
(same)
(U) = Destination buffer pointer
(same)

Output: None.

PIPE CONSTRUCTION WITH BASIC09

In this edition of "Pipelines" we present three procedures that can be used to construct pipes with Basic09. The purpose of a pipe is to allow one process to send its standard output into the standard input of another process allowing the sender to manipulate data for the receiver. The following procedures provide an elegant access to the world outside of Basic09.

```
PROCEDURE OutPipe
(* Demonstration of creating an output pipe
DIM Pipe:BYTE
RUN POpen(Pipe,0,"spl","-jn=Pipe.Test")
FOR X=1 TO 10
PRINT #Pipe,"This is test line #"; X
NEXT X
CLOSE #Pipe
```

```
PROCEDURE InPipe
(* Demonstration of creating an input pipe
DIM Pipe:BYTE
DIM Line:STRING[80]
RUN POpen(Pipe,1,"mdir","e")
ON ERROR GOTO 99
PRINT " ---executable modules in memory---"
LOOP
READ #Pipe,Line
IF MID$(Line,20,2)="11" THEN
PRINT MID$(Line,37,32), \ ENDIF
ENDLOOP
99   CLOSE #Pipe
PRINT
```

```
PROCEDURE POpen
(* Subroutine to create a pipe to or from a
(*  specified  program.  NOTE: assumes paths 0, 1,
(* and 2 are all open when called.
(* Author: Robert Doggett

(* returns pipe path number
PARAM Pipe:BYTE
(* path #0,1, or 2 to become pipe
PARAM StdPath:INTEGER
PARAM Module,Params:STRING[80]

TYPE Registers=CC,A,B,DP:BYTE; X,Y,U:INTEGER
DIM Regs:Registers
DIM Program,Parameter:STRING[80]
DIM SavePath,SysDup,SysFork:BYTE
SysFork=$03 \(* OS-9 F$SysFork system call
SysDup=$82 \(* OS-9 I$SysDup system call

CREATE #Pipe,"/pipe":UPDATE
Regs.A=StdPath
RUN SysCall(SysDup,Regs) \(* save std path
SavePath=Regs.A
CLOSE #StdPath
Regs.A=Pipe
(* make std path the pipe
RUN SysCall(SysDup,Regs)
Program=Module+CHR$($0D)
Parameter=Params+CHR$($0D)
Regs.A=0
Regs.B=0
Regs.X=ADDR(Program)
Regs.Y=LEN(Parameter)
Regs.U=ADDR(Parameter)
(* fork pipeline process
RUN SysCall(SysFork,Regs)
CLOSE #StdPath
Regs.A=SavePath
(* restore std path
RUN SysCall(SysDup,Regs)
CLOSE #SavePath
```

The procedure "POpen" creates a pipe by DUPEing one of the standard paths and then using the path as the pipe that will go to or from the FORKed pipeline process. This procedure calls "Syscall", the general purpose system call subroutine published in the last issue of "Pipelines". We have stockpiled some back issues so feel free to give us a call if you need a copy.

"Outpipe" calls POpen to create a pipe; in this example to a spooler (spl). The pipe will allow the output of Outpipe to be read and printed by the spooler.

"Inpipe" calls POpen to create a pipe. This example creates a pipe from Mdir to itself. Inpipe can then read the standard output of the process the pipe was opened to, in this case the extended module directory, and display the output.

For more information on pipes and their use with OS-9 please consult page 4-7 of the OS-9 User's Guide. As with all programs reprinted in "Pipelines", these procedures are not supported by Microware. ON ERROR do not GOTO 515-279-8898.

CONSULTANTS DIRECTORY

Do you do consulting work? Special programming? Enjoy a challenge?

Microware is putting together a Consultants Directory. We get quite a few requests for special applications programming which we do not have the time or manpower to take on. This directory will be designed to fill that gap.

To get your name in the directory, send us a brief resume of your experience with OS-9 or Microware langauges with an address and phone number where you can be contacted by the customer. We will include the information you supply in a directory which will be provided free of charge to interested parties upon request. Consultants and their potential clients will make all business arrangements directly.

Send your resume to the attention of Jeanne Kaplan.

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