



OREGON STATE UNIVERSITY COMPUTER CENTER NEWSLETTER

Corvallis, Oregon
(503) 754-2494

Volume V, Number 12
Volume VI, Number 1
December 1, 1970
January 1, 1971

Director:

Larry C. Hunter

Editor: Kay Porter

VIDEOTAPES TO BE SHOWN

The videotapes, Introduction to OS-3 and Introduction to FORTRAN will be shown February 1-4 and February 8-11 at 7 p.m. in K128 and at 4 p.m. on channel 5 on the Corvallis cable. The tapes have been scheduled at night to accommodate more students and faculty.

The schedule is: Shown in K128

Intro. to OS-3 Monday, Feb. 1, 7-8 p.m.
 Tuesday, Feb. 2, 7-8 p.m.
 Wednesday, Feb. 3, 7-8 p.m.
 Thursday, Feb. 4, 7-9 p.m.

Intro. to FORTRAN Monday, Feb. 8, 7-8 p.m.
 Tuesday, Feb. 9, 7-8 p.m.
 Wednesday, Feb. 10, 7-8 p.m.
 Thursday, Feb. 11, 7-9 p.m.

Shown on Corvallis Cable TV Channel 5

Intro. to OS-3 Monday, Feb. 1, 4-5 p.m.
 Tuesday, Feb. 2, 4-5 p.m.
 Wednesday, Feb. 3, 4-5 p.m.
 Thursday, Feb. 4, 4-6 p.m.

Intro. to FORTRAN Monday, Feb. 8, 4-5 p.m.
 Tuesday, Feb. 9, 4-5 p.m.
 Wednesday, Feb. 10, 4-5 p.m.
 Thursday, Feb. 11, 4-6 p.m.

These videotape showings are open to all students and professors.

The tape series can also be selectively scheduled by instructors. Professors may contact Classroom TV (ext. 2675) to arrange the showing of any of these tapes to their classes.

USERS REMINDER

The lifetime of an unreferenced file will be 60 days. If any file is not referenced during a 60-day period, it will be automatically deleted from on-line storage.

In order to protect users, the Computer Center will temporarily store all deleted files on a backup tape. If a user wishes to recover a deleted file, he will be charged for the cost of transferring the file back into on-line storage.

STAFF CONSULTING DESK

The staff desk for programming assistance is available for all staff members. Users can call extension 2126 or go to room 211 in the Computer Center Monday through Friday between the hours of 1 and 5 p.m.

NEW YEAR'S RESOLUTION

*NEWS will be updated at least once per month in 1971.

REGIONAL COMPUTER CENTER GRANT ENDS DECEMBER 31st

The Regional Computer Center Project ended December 31st. The OSU Computer Center and 15 other colleges and universities in Oregon have submitted a new proposal to NSF for a Regional Educational Computing Activity. We do not expect to hear about funding of this proposal until February, 1971, however.

The Computer Center is dedicated to the concept of a regional education network and will continue to support and promote regional activities in the future.

We are pleased that each school participating in the Regional network has been able to provide funding for their monthly communication costs in order to support and continue regional computing in Oregon.

NEW 512 PRINTER FOR THE 3300

A new model 512 chain drive printer is scheduled to replace the 501 printer approximately January 15th. This new printer has a substantially better print quality than the 501. Its average print speed is 1200 lpm as opposed to the 1000 lpm of the 501.

NEW FORTRAN COMPILER

There will be a new version of the FORTRAN Compiler released in the near future. Current non-standard versions of the FORTRAN library will not work with the new compiler. People with non-standard library files should contact Ron Davis at the Computer Center.

OPERATING STATISTICS

For the dates November 1 to November 30, OS-3 usage was as follows:

Number of batch jobs run:	14,071
Number of console runs (LOGON-LOGOFF):	34,069
Number of console hours used:	7,531.5
CPU time used - console and batch:	213.29 hours
Total number of hours OS-3 was on the air:	
(15 1/2 hrs. Mon-Fri; 9 1/2 hrs. Sat.)	338.5 hours
Average number of console users:	22.25
Amount of CPU time used by an average user for one hour of console time:	62.20 seconds

PRE-REGISTRATION

Pre-registration ran smoothly. Class schedules were printed during the week of December 26-31. 13,755 students were pre-registered, and 75,850 course request cards were processed.

Some returning students and new students also registered January 4th.

COMPUTER GRADING

Grades were turned in the evening of Monday, December 21, and grade slips were completed by Tuesday, December 22.

70,018 grade cards were processed and 15,148 grade reports were processed on the first day.

KIDDER 128 - NOW AVAILABLE AS TV VIEWING ROOM

A TV viewing room in Kidder Hall (K128) is now available for viewing the computer videotapes. Instructors may contact Classroom TV (ext. 2675) in order to schedule class viewings of the Computer Center videotape series.

INSTRUCTIONAL COMPUTING REQUESTS FOR WINTER TERM

Instructional Computing Requests for Winter Term were received and reviewed by the Campus Computer Committee. Requests totalled almost twice the amount that had been allotted for instructional use. Consequently, these requests had to be returned to the departments for re-adjustment.

The original requests were well justified and it is recognized that the reduction was a difficult one for the departments to make. However, the funding level for Winter Term is the largest that has ever been made for this term for computer-supported instruction. Hopefully, the majority of the instructional requirements can be met.

CONTROL DATA GIVES PRESENTATION ON STAR

Control Data Corporation made a presentation on December 7, on the STAR Computer System. STAR, capable of executing more than 100 million instructions per second, has many unique features and will evidently form the basis of the new CDC computer line. Some preliminary documentation on STAR is available from the Computer Center.

TEKPLOT/CALTEK MANUAL AVAILABLE SOON

A new manual, TEKPLOT/CALTEK, ccm-70-13, will be available shortly. TEKPLOT/CALTEK is a subroutine package for the Tektronix T-4002 Graphics Display Terminal and a companion subroutine package for the Calcomp Plotter.

The Tektronix T-4002 Graphics Display Terminal utilizes a direct view storage tube. The terminal permits both graphics input and graphics output in addition to usual alphanumeric operation.

A section of the manual includes a brief description of the functional characteristics of the T-4002. The remainder of the manual describes two FORTRAN compatible subroutine packages, TEKPLOT and CALTEK. These subroutine packages are tailored to the operation of the T-4002, and they are intended to provide a basis for graphics applications written in the FORTRAN language.

HUNTER PARTICIPATES ON ACM PANEL IN PORTLAND IN NOVEMBER

Dr. Larry Hunter, Director of the Computer Center, participated in the ACM meeting on "Computer Education in the 1970's: Where is it Going" held in Portland, Tuesday, November 17. Other speakers on the panel were Mrs. Judy Edwards, Northwest Regional Educational Laboratory, Mr. Elton Chase, Director of Data Processing at Clark College in Vancouver, Washington, and Mr. Robert Young, a faculty member at Portland State University Computer Center.

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P R O G R A M M I N G T I P S

**COPY

There is an experimental version of COPY under the name of **COPY.
Changes include:

1) INPUT=LUN/REWIND or OUTPUT=LUN/REWIND

If the input or output parameter is a lun and the delimiting character is a / the next character is checked for the letter 'R'; if it is present, the file is rewound before use.

2) PARITY=VALUE

If value is non-zero the output file is written in binary.
If zero the output file is written in BCD. Normally, COPY writes the same parity as it reads.

3) FILES=NUMBER

NUMBER is the number of files to copy off of the input unit.
If number is zero, copy until end of data. Currently COPY copies to end of data on files, until the next control statement on batch or teletypewriter, and one file from TV's or magnetic tape.

The new COPY will also accept lower case letters in parameter strings.
Anyone having trouble with **COPY is asked to contact the OS-3 System Group.

*SORTMAP NOW AVAILABLE

SORTMAP reads a memory map produced by the OS-3 loader, when the MAP command is used in conjunction with loading. SORTMAP sorts the entry point names into alphabetic order, and prints the sorted map. It is called by a control statement of the following form, where L indicates output unit.

*SORTMAP,I=(lun or name),L=(lun or name)

The input and output units are rewound if file names are used, or if unit numbers in the range 50 to 59 are used. SORTMAP searches the input unit (I) for the first line of a loader map (SUBPROGRAMS), then reads in the map, sorts the entry points, and prints the map on the output unit (L). The order of subprogram names is not changed.

SORTMAP is primarily useful for large programs with many entry points. The example below illustrates a typical use of the SORTMAP command.

```
EQUIP 10=FILE
FORTRAN,I=PROGRAM X
LOAD, 56
MAP, 10
RUN
:
REWIND, 10
*SORTMAP,I=10, L=61
```

*LIBRARY

An on-line information program for the OSU Computer Center Program Library has recently been implemented. The program is stored as an overlay and is available from batch, teletypewriter, and CRT. It is called by the Control Statement:

```
*LIBRARY
```

This program lists new abstracts, deleted abstracts, and changes to abstracts of programs in the Program Library. Only those abstracts will be listed which have changed status since the last update package to the OSU Computer Center Program Library Catalog, ccm-70-21, was printed. Since the newest changes are always listed first, a Teletype user can allow only the newest changes with which he is unfamiliar to be listed, then hit the BREAK key and be returned to OS-3 Control Mode.



OREGON STATE UNIVERSITY COMPUTER CENTER NEWSLETTER

Corvallis, Oregon
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Volume VI, Number 2
February 1, 1971

Director:

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CDC 200 REMOTE TERMINAL TO ARRIVE SOON

The OSU Computer Center will soon receive, on a 6-months loan, a CDC 200 remote card reader/printer/CRT system. The Center will develop supporting software to implement this system under the OS-3 time-sharing system. The terminal is particularly useful in applications where larger amounts of I/O data are required. The card reader speed is 330 cpm. The printer speed is 300 lpm. This system operates over a regular telephone line with the use of a data set and can be used at any remote site serviced by the telephone company.

THE 3300 SYSTEM PURCHASED

The OSU Computer Center recently purchased the major components of the CDC 3300 computing system. Under the OS-3 time-sharing system, the OSU Computer Center has been able to provide an established and proven time-sharing utility to its users for instructional, research, and administrative computing activities. This purchase will establish a firm base for computing and will allow an orderly growth and expansion of OSU computing capabilities.

NEW 512 PRINTER ARRIVES

The new 512 printer is up and running. It is a chain drive printer which has an average print speed of 1200 lpm. The average user should notice no differences except an improvement in printing quality and a change in type font. However, the 512 does have 'pre-print spacing' (the old 501 printer had 'post-print spacing'), which will affect the printed output of those who use more esoteric carriage controls.

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The old 501 printer will be retired after the new 512 has been proved in the present trial period.

STAFF CONSULTING DESK

The staff desk for programming assistance is available for all staff members. Users can call extension 2126 or go to room 211 in the Computer Center Monday through Friday between the hours of one and four p.m. Note the change in hours for the consulting desk.

OPERATING STATISTICS

For the dates January 1 to January 31, OS-3 usage was as follows:

Number of batch jobs run:	10,384
Number of console runs (LOGON-LOGOFF):	27,436
Number of console hours used:	4,813.77
CPU time used - console and batch:	176.43 hours
Total number of hours OS-3 was on the air: (15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.)	373 hours
Average number of console users:	12.9
Amount of CPU time used by an average user for one hour of console time:	69.53 seconds

OSU COMPUTER CENTER INVITED TO WASHINGTON, D.C. FOR TWO-DAY CONFERENCE

Dr. Larry Hunter and Mrs. Jo Ann Baughman attended a two-day conference in January, sponsored by the National Science Foundation. The purpose of the conference was to discuss criteria and guidelines for the development of computer curriculum materials. Five regional computing networks were invited to participate: Oregon State University, Dartmouth, University of Texas, North Carolina, and Iowa. Problems associated with the development of materials, documentation and dissemination of the materials on a national scale were covered during the two-day meeting.

REGIONAL COMPUTER CENTER CONFERENCE HELD JANUARY 22

The winter meeting of the Oregon Regional Educational Computing Activity was held at the OSU Computer Center on January 22. Representatives from

the sixteen participating schools were present. The agenda included: a report on the visit to NSF in January, the dissemination of computer-related curriculum materials (CRCM), a steering committee report, proposed evaluation of computer-related curriculum materials, a discussion of the remote users handbook and the Regional Computer Center final report. Job numbers for winter term were also distributed.

OS-3 VIDEOTAPES

We have received several inquiries on the content of the Introduction to OS-3 videotape series. The tapes are shown in the following sequence:

<u>No.</u>	<u>Name of Tape</u>	<u>Instructor</u>	<u>Length of Tape</u> (minutes:seconds)
1	Tour of Computer Center	Bob Pinneo	11:10
2	TTY Operations	Bob Pinneo	17:14
3	Intro to On-Line Operations	Tom Mahan	28:28
4	OS-3 Editor from Remote Terminals	Fred Dayton	27:35
5	BASIC	Pete Murray	23:08
6	OSCAR	Gil Bachelor Mary Berryman	29:30
7	FORTTRAN from Remote Terminals	Lyle Ochs	32:07
8	*CATALOG	Keith Avery	27:45
9	Debugging with RADAR	Mark Ebersole	28:30
10	The OS-3 Time-sharing System	George Rose	47:00

BREAK KEY

Users are requested not to use the BREAK key in interrupting the computer as it is typing the line containing the date, time and terminal number after logon. This identifying information must be present on a printout for a user to later receive credit for bad runs.

SUMMARY OF INSTRUCTIONAL USE OF THE COMPUTER, FALL TERM

<u>DEPARTMENT</u>	<u>No. OF COURSES/DEPT</u>	<u>TOTAL AMT SPENT</u>
Ag Economics	(AEc 414, 505, 525)	72.66
Ag Engineering	(AE 371, 441)	44.64
Botany	(Bi 503, 503)	60.11
Business Tech	(BA 211, 238, 311, 427, 447, 458, 473, 490, 491, 499, 531)	4,937.86
Chem Engineering	(CHE 325)	1,753.23
Chemistry	(CH 443)	499.33
Civil Engineering	(CE 273, 310x, 381, 485, 503, 526, 531, 539, 561, 564, 570, CET 447)	2,249.90
Education	(Self-Instruction)	71.98
Elec Engineering	(EPT 421, EE 471, 431, 503, 505, 541, 581)	1,430.47
Entomology	(ENT 503)	65.27
Food Science	(FST 424)	45.23
Forestry	(F 220, 224, 327, 503, 503)	697.74
Forest Products	(FP 422)	311.94
General Science		3.33
Home Economics		8.00
Ind Engineering	(IE 271, 497, 503, 521, 571)	1,608.56
Mathematics	(Mth 151A, 151B, 190, 251, 351, 351, 353, 358, 451, 456, 457, 487, 503)	12,533.03
Mech Engineering	(ME 101, 410, 411, 416, 454, 453, 457, 480, 503)	2,215.13
Nuclear Engineering	(NE 421, 505, 541)	887.55
Oceanography	(Oc 503, 507)	16.65
Pharmacy	(PAd 405)	21.81
Physics	(PH 201, 203, 211, 321, 424, 501, 503, 503)	1,451.48
Mfg & Engr Tech	(TME 368)	127.61
Psychology	(Psy 321)	48.51
Statistics	(St 331, 417, 451, 456, 503, 550, 561, 571, 591)	8,015.44
Zoology	(Bi 370)	268.50
TOTALS	101	\$39,445.96

P R O G R A M M I N G T I P S

1971 CALENDAR

There is a 1971 calendar under the name *1971. If copied to the line printer, it will print on one page. Use a statement of the form:

```
COPY,I=*1971,O=<lun>,S=0
```

There is no file mark at the end of the file.

DUMP

The DUMP statement now has an abort parameter. If this parameter is present, DUMP will print the dump only if the job has been aborted. The form of the statement is:

```
DUMP,A,<LUN>,<FIRST ADDRESS>,<LAST ADDRESS>
```

The <lun> and/or the addresses can be omitted as in the usual DUMP statement.

NEW FORTRAN COMPILER SOON

There will be a new version of the fortran compiler released in the near future. Current non-standard versions of the FORTRAN library will not work with the new compiler. People with non-standard library files should contact the Computer Center.

SORT

A new SORT program has been written. When documentation is completed, it will replace the present SORT as the standard. Adequate advance notice will be published. The old SORT program will continue to be accessible, but under a different name. Unfortunately, the old and new programs are not completely compatible. The expanded capabilities of the newer SORT required some refinements in interpretation of certain parameter strings.

Here is a brief resume of changes in the new SORT:

- A) Less scratch-file space is needed for large jobs
- B) The new SORT program can be called from a FORTRAN program

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- C) Greater flexibility in parameters (with respect to input units, blocking factors, and record sizes).
- D) Better use of machine and operating system resources. (This would be visible to the user only in terms of better system response.)
- E) There is an associated MERGE program, also FORTRAN-callable, which offers great savings when adding new records to a file that is already sorted.
- F) Timing: there should be no appreciable changes in the time taken to make a sort. Numerous timing comparisons between the old and new versions have been made, and on a given job there has seldom been more than a percent or two difference.

*FORMS

A new version of *FORMS has been implemented. Whenever special forms are to be used on the line printer, a control mode statement of the following format should be used:

*FORMS,LUN,MESSAGE

OS-3 will eject to a new page on the line printer, and stop the printer. The indicated message (of up to 32 characters) will be printed on the console typewriter. *FORMS now needs to be called once only, for each file to be output to the printer.

REMINDER: If a user sends two files in turn to the line printer, they will not necessarily appear back-to-back in the output stream.

Printer Carriage Control

Column 1 of information being sent to a line printer specifies control of paper movement during printing. This character will not be printed. Listed below are the control characters and the action that will be performed before and after printing.

ACTION WITH REGULAR OS-3 CARRIAGE TAPE

<u>CONTROL CHARACTER</u>	<u>ACTION BEFORE PRINT</u>	<u>ACTION AFTER PRINT</u>	<u>COMMENTS</u>
(blank)	space 1	no action	single space, skip over bottom margin
Ø (zero)	space 2	no action	double space, skip over bottom margin
- (minus)	space 3	no action	triple space, skip over bottom margin
+	no action	no action	over print
1	eject page	no action	top of page
2	skip to level 12	no action	one inch from bottom of page
3	skip to level 6	no action	level 6 is every 6th line
4	skip to level 5	no action	level 5 is every 5th line
5	skip to level 4	no action	level 4 is every 4th line
6	skip to level 3	no action	level 3 is every 3rd line
7	skip to level 2	no action	level 2 is every even line
8*	eject page	no action	same as 1
9*	skip to level 7	no action	
0	skip to level 8	no action	
Y*	skip to level 9	no action	
X*	skip to level 10	no action	
A	space 1	eject	
B	space 1	skip to level 12	level 12 is 1" from bottom of page
C	space 1	skip to level 6	level 6 is every 6th line
D	space 1	skip to level 5	level 5 is every 5th line
E	space 1	skip to level 4	level 4 is every 4th line
F	space 1	skip to level 3	level 3 is every 3rd line
G	space 1	skip to level 2	level 2 is every 2nd line
H*	space 1	space 1	will skip over bottom margin
I*	space 1	skip to level 7	
J*	space 1	skip to level 8	
K*	space 1	skip to level 9	
L*	space 1	skip to level 10	
W	space 1	no action	will print over bottom margin
other codes	space 1	no action	same as (blank)

These codes work on the 512 printer only

ACTION WITH NON-STANDARD CARRIAGE TAPES

<u>CONTROL CHARACTER</u>	<u>ACTION BEFORE PRINT</u>	<u>ACTION AFTER PRINT</u>
(blank)	skip to level 11	no action
Ø (zero)	skip to level 11 twice	no action
- (minus)	double space, skip to 11	no action
+	no action	no action
1	skip to level 1	no action
2	skip to level 12	no action
3	skip to level 6	no action
4	skip to level 5	no action
5	skip to level 4	no action
6	skip to level 3	no action
7	skip to level 2	no action
8*	skip to level 1	no action
9*	skip to level 7	no action
Z*	skip to level 8	no action
Y*	skip to level 9	no action
X*	skip to level 10	no action
A	skip to level 11	skip to level 1
B	skip to level 11	skip to level 12
C	skip to level 11	skip to level 6
D	skip to level 11	skip to level 5
E	skip to level 11	skip to level 4
F	skip to level 11	skip to level 3
G	skip to level 11	skip to level 2
H*	skip to level 11	skip to level 11
I*	skip to level 11	skip to level 7
J*	skip to level 11	skip to level 8
K*	skip to level 11	skip to level 9
L*	skip to level 11	skip to level 10
W	space 1	no action
other codes	skip to level 11	no action

*these codes work on the 512 printer only



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Corvallis, Oregon
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Volume VI, Number 3
March/April, 1971

Director:

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COMPUTER CENTER HOURS EXTENDED TO SUNDAY AFTERNOONS

Beginning on Sunday, May 2, the Computer Center will be open from 1 p.m. to 5 p.m. every Sunday afternoon on a trial basis. This is being done to help balance the heavy computer usage Spring Term and to satisfy numerous requests for longer computer service.

FILE DIRECTORY SERVICE CHANGES

Beginning April 22, all OS-3 users may obtain a copy of their file names using a program called DIRECTORY. DIRECTORY is a program like COPY, LABEL, and DATE. DIRECTORY will print out a complete list of all file names saved on the current job user number. Since the list of files will be updated each night, files saved during one day will not appear in the DIRECTORY list until the next day.

Users who do not wish their file names to be accessible may request that their directory be withheld by contacting Milli Ames at extension 2494.

STAFF CONSULTING DESK

The staff consulting desk for programming assistance is available for all staff members. Users can call extension 2126 or go to room 211 in the Computer Center, Monday through Friday, between 1 and 4 p.m.

INSTRUCTIONAL COMPUTING MEETING TO BE HELD

The OSU Computer Center will hold a meeting Friday, May 14, at Portland State University in the use of the OS-3 time-sharing system and instructional computing capabilities. Oregon State University has developed instructional packages in Physics, Business, Education/Social Sciences, and Graphics Displays.

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Any community college, college or university in Oregon which is interested in attending this meeting should contact Jo Ann Baughman at the OSU Computer Center, 754-2494, for more information.

NCR PAPER TAPE MACHINE TO BE REMOVED

The NCR paper tape-to-magnetic tape machine is being removed in the near future. Paper tape can now be read into the PDP-8 for direct copying to OS-3 files.

The handling rates for reading paper tapes into the 3300 system include the connect charge, CPU time, number of records transferred, and a handling charge.

Handling charge - \$1.00
No. of records - 25¢/100 input blocks
(1 input block=62 characters)

Contact Ron Davis for details.

ADMINISTRATIVE SYSTEMS PRESENTATION

On Wednesday afternoon, March 10, a special meeting of representatives from the various OSSHE institutions heard a presentation on the OSU administrative systems. Over 30 interested persons were in attendance.

Tom Yates, Manager of Administrative Systems Development, gave brief overviews of currently operational systems for

- 1) Alumni Affairs
- 2) University Library
- 3) Academic and Classified Personnel
- 4) Student Data Base
 - Admissions
 - Scheduling
 - Registration
 - Reporting
 - Grade Processing
- 5) Business Office
 - Student Billing
 - General Deposit
 - Scholarships
 - Miscellaneous Reports

The question and answer portion of the meeting focused on administrative services available to other institutions, with emphasis on operation of Remote Job Entry terminals such as the CDC 200 users terminal.

CDC 200 REMOTE TERMINAL ARRIVED IN FEBRUARY

The OSU Computer Center received on a 6-month loan, a CDC 200 remote card reader/printer/CRT system. The Center will develop supporting software to implement this system under the OS-3 time-sharing system by May 1. The terminal is particularly useful in applications where larger amounts of I/O data are required. The card reader speed is 330 cpm. The printer speed is 300 lpm. This system operates over a regular telephone line with the use of a data set and can be used at any remote site serviced by the telephone company.

NEW 512 PRINTER ARRIVES

The new 512 printer is up and running. It is a chain drive printer which has an average print speed of 1200 lpm. The average user should notice no difference except an improvement in printing quality and a change in type font. However, the 512 does have 'pre-print spacing' (the old 501 printer had 'post-print spacing'), which will affect the printed output of those who use more esoteric carriage controls. The old 501 printer has been returned to CDC.

OPERATING STATISTICS

For the dates February 1 to February 28, OS-3 usage was as follows:

Number of batch jobs run:	12,964
Number of console runs (LOGON-LOGOFF):	32,376
Number of console hours used:	5,998.37
CPU time used - console and batch:	172.17 hours
Total number of hours OS-3 was on the air:	
(15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.)	348 hours
Average number of console users:	17.24
Amount of CPU time used by an average user for one hour of console time:	59.07 seconds

For the dates March 1 to March 31, OS-3 usage was as follows:

Number of Batch jobs run:	13,897
Number of console runs (LOGON-LOGOFF):	32,909

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Number of console hours used: 6,367.43
CPU time used - console and batch: 226.42 hours
Total number of hours OS-3 was on the air:
(15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.) 394 hours
Average number of console users: 16.2
Amount of CPU time used by an average user for
one hour of console time: 67.67 seconds

VIDEOTAPES TO BE SHOWN

The videotape series, Introduction to OS-3 and Introduction to FORTRAN will be shown in April. The tapes may be viewed by any student or faculty member. The schedule is as follows:

<u>Tape Series</u>	<u>Tape No.</u>	<u>Room</u>	<u>Time</u>	<u>Room</u>	<u>Time</u>	<u>Date</u>
Intro. to OS-3	1,2,3	K278	4-5 p.m.	K20	7-8 p.m.	M 4/19
	4,5	"	"	"	"	T 4/20
	6,7	"	"	"	"	W 4/21
	8,9,10	"	4-6 p.m.	"	7-9 p.m.	Th 4/22
Intro. to FORTRAN		K278	4-5 p.m.	K20	7-8 p.m.	M 4/26
		"	"	"	"	T 4/27
		"	"	"	"	W 4/28
		"	4-6 p.m.	"	7-9 p.m.	Th 4/29

Both series will also be shown on Channel 5, 4-5 p.m. during these two weeks in April.

The Introduction to OS-3 tapes are shown in the following sequence:

<u>No.</u>	<u>Name of Tape</u>	<u>Instructor</u>	<u>Length of Tape</u> (minutes:seconds)
1	Tour of Computer Center	Bob Pinneo	11:10
2	TTY Operations	Bob Pinneo	17:14
3	Introduction to On-line Operations	Tom Mahan	28:28
4	OS-3 Editor from Remote Terminals	Fred Dayton	27:35
5	BASIC	Pete Murray	23:08
6	OSCAR	Gil Bachelor Mary Berryman	29:30
7	FORTRAN from Remote Terminals	Lyle Ochs	32:07
8	*CATALOG	Keith Avery	27:45
9	Debugging with RADAR	Mark Ebersole	28:30
10	The OS-3 Time-Sharing System	George Rose	47:00

DIGITIZER RATES

The rates of the digitizer have been:

\$5.00/hr without operator
7.50/hr with operator

As of April 1, the rates will be changed to:

\$7.50/hr without operator
10.00/hr with operator

PROGRAM LIBRARY TAPE

Source decks and sample problems of programs in the Program Library are no longer available on magnetic tape #1376. They are now available in exactly the same form as previously, but on magnetic tape #1384. See the OSU Computer Center Program Library Catalog, ccm-70-21, for complete details on accessing the tape.

NEW VERSION OF OSCAR

Version 58 of OSCAR was released February 16, and a revised manual "Brief Description of OSCAR" is now available. The new features include:

- 1) Format-controlled output
- 2) Program editing
- 3) New array functions
- 4) New string functions
- 5) New commands

Three features that were added, too late to be included in the manual are:

- 1) &PROGDUMP,LUN/NAME,TTY
Prints program on (LUN) or (NAME) and also on teletype.
- 2) &SCOOP
Prints a line of the form:
SFBLKS 230/400 MAX \$4628.75
(400 is the SFBLKLIM).
- 3) FACT(N)
An external function. If N is a non-negative integer, FACT(N) is factorial of N.

A 'sort' function has also been added to OSCAR. If A is a (vector) array of numbers or character strings (not mixed), SORT(A) is the array sorted in increasing order. SORT(A,1) is the array sorted in decreasing order.

6.

These functions can be used in expressions, for example:

```
B:=SORT(A)
```

To sort A and put result back into A, use SORT('A') or SORT('A',1).

ARAND

Recent additions to the ARAND system, a programming system for the analysis of time series, include a digital filter design routine and a group of plot programs for the Tektronix model T-4002 graphics terminal. These graphics routines were modeled after existing Calcomp plotter routines and allow for displays of such things as frequency response functions, power spectra, coherence and phase spectra. A frequency domain test for white noise or a purely random series has also been implemented, with versions producing either a plot on the Tektronix terminal or on the Calcomp plotter. Lastly, the adaptations of existing conversational routines for the estimation of coherence and phase spectra for use with the Tektronix terminal are now complete.

A report (Volume II) documenting the ARAND system is nearing completion and should be ready for printing early in April. All developments since the appearance of Volume I on the ARAND system will be included, plus a comprehensive discussion of the analysis capabilities of the system at the present time.

An extended FORTRAN library (*ARAND) that includes FORTRAN library routines and all ARAND subprograms has been created. Thus one no longer needs to compile ARAND subroutines. Simply equip logical unit number 63 to *ARAND, compile your main program containing calls to any of the ARAND subroutines, then load and run. The *ARAND library file will be suitably modified to be compatible with the new loader to be released in March. The loading sequence will then be

```
LOAD,MAIN,L=*ARAND
```

where MAIN is a file containing user defined object programs.

Since maintenance of the *ARAND library file no longer necessitates storing source language versions of ARAND programs on disk files, these files will be destroyed soon. Anyone wishing a listing or source deck of an ARAND routine should contact Jeff Balance, Lyle Ochs, or Jo Ann Baughman.

PLOT PROGRAMS

Documentation on several new plot routines is now available at the Computer Center. This includes contouring, line printer plotting, teletype plotting and histograms.

For more information contact Jo Ann Baughman at the Computer Center, extension 2494.

The COMMON statement in subroutine LOG3 has been changed. It is now compatible with MLTIPLT, LOG1, and LOG2.

A new subroutine, LOGN, is now available to users. LOGN is similar to LOG1 but uses a natural log scale rather than a common log scale. Parameters and common storage are the same as LOG1. To use this routine load *LOGN. The call statement is CALL LOGN(XDATA,YDATA) for first plot and for additional plots use CALL LOGD(XDATA,YDATA).



OREGON STATE UNIVERSITY COMPUTER CENTER NEWSLETTER

Corvallis, Oregon
(503) 754-2494

Volume VI, Number 4
May/June, 1971

Director:

Larry C. Hunter

Editor: Kay Porter

RECYCLING PAPER

The Oregon State University Computer Center has arranged to have unwanted punched cards and output recycled. Recycling of paper helps preserve the ecology in two ways: it cuts down on disposal problems and it saves trees by re-using old paper. Collection points in the I/O room have been established where paper may be deposited in the boxes provided. Materials which include account numbers with the key words "Are to be Destroyed" are to be discarded elsewhere. The users are urged to contribute all other unwanted cards and printout. Papers thrown away in trash baskets will not be recycled.

Other departments who use large quantities of paper and cards should contact Ron Davis at the Computer Center to arrange for disposal and recycling.

OPERATING STATISTICS

For the dates April 1, to April 30, OS-3 usage was as follows:

Number of batch jobs run:	12,530
Number of console runs (LOGON-LOGOFF):	28,790
Number of console hours used:	5,121.19
CPU time used - console and batch:	177.69 hours
Total number of hours OS-3 was on the air:	
(15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.)	379 hours

2.

Average number of console users: 13.5
Amount of CPU time used by an average user for
one hour of console time: 38.93 seconds

PROPOSAL GRANTED FOR COMPUTER GRAPHICS USE IN SCIENCE EDUCATION

A grant has been made to Oregon State University by the National Science Foundation for the development of computer graphic materials which will be used to provide an enrichment of the quality of undergraduate science education.

The two-year grant will provide for the development of graphics displays to be used in undergraduate physics classes. Dr. J. Brady, Physics, and Dr. L. Hunter, Computer Center, are co-principal investigators on the project. Dr. T. Kelley is serving as project director.

SUMMARY OF INSTRUCTIONAL USE OF THE COMPUTER, WINTER TERM

<u>DEPARTMENT</u>	<u>NO. OF COURSES/DEPT</u>	<u>TOTAL AMT SPENT</u>
Ag Economics	AEC 111, 211, 567, 573, AG 568	184.86
Ag Engineering	AE 356	291.64
Atmospheric Sc.	ATS 503, 536	529.81
Biochem/Biophysics	BB 550	336.09
Botany	BOT 453, 503	256.28
Business Affairs	BA 507C	18.20
Business Tech.	BA 131, 323, 342, 422, 442, 427, 447, 455, 457, 459, 481, 499, 501, 507, 531, 542, 546	8,859.72
Chemistry	BOT 503, CHEM 421, 444, 503, 525, 528, GE 102B	3,532.43
Civil Engineering	CE 310X, 362, 382, 412, 503, 532, 537, 561, 562, 565, CET 222, 448	1,543.20
Education	Self-Instruction	65.82
Electrical Engr.	GE 102, EE 312, 322, 401, 406, 432, 452, 475, 492, 503, 539, 542, 591	4,214.45
Entomology	ENT 503	3.24

Fish & Wildlife	FS 503, 572	132.51
Forestry	F 224, 327, 503, 524, FE 222, FP 515	806.63
Forest Products	FP 314	5.61
General Engr.	GE 102E, 412	363.08
General Science	GS 407	22.04
Geography	GEOG 483, F 435	54.70
Home Economics	CT 503	1.00
Industrial Ed.	IA 471	219.11
Industrial Engr.	IE 272, 311, 498, 503, 522, 572	2,376.84
Mathematics	MTH 151, 151A, 151B, 190, 251, 351, 352, 353, 358, 359, 452, 456, 457, 458, 488, 503, 507, 551	11,359.76
Mechanical Engr.	ME 102, 412, 416, 437, 457, 458, 481, 503, 505, 506, 573	2,009.59
Modern Languages	UH 112	83.65
Nuclear Engr.	NE 312, 422, 505, 531, 541	1,415.56
Oceanography	OC 443X, 503, 507	192.60
Physics	PH 201, 203, 211, 212, 322, 405, 503, 586	1,282.08
Political Science	SS 411	184.35
Mfg. Engr. Tech.	TME 406	8.56
Psychology	PSY 322	187.68
Statistics	ST 331, 417, 435, 451, 452, 458X, 457, 462, 503, 505, 507, 551, 562, 572, 592	8,122.26
Zoology	Z 503	8.60
TOTALS	150 courses	\$48,672.13

SUMMARY OF REQUESTED COMPUTER USE IN INSTRUCTION, SPRING TERM, 1971

<u>School</u>	<u>Number of Classes</u>	<u>Number of Students</u>	<u>Funds Allocated</u>
Agriculture	10	397	\$ 1,080.00
Business & Technology	15	999	6,195.00
Education	2	12	450.00
Engineering			
Ag. Engineering	6	41	675.00
Chemical Engineering	6	132	2,112.50
Civil Engineering	19	564	3,118.50
Electrical Engineering	16	326	2,497.50
General Engineering	1	90	700.00
Industrial Engineering	5	90	3,512.50
Mech. and Nuclear Engr.	18	412	5,735.00
Forestry	9	261	1,240.00
Home Economics	4	27	395.00
Humanities & Social Sciences	1	20	100.00
Physical Education	6	920	750.00
Science			
Atmospheric Sciences	2	12	700.00
Botany	8	69	787.50
Chemistry	13	111	2,972.50
Entomology	1	20	300.00
Geography	5	0	550.00
General Science	1	2	75.00
Mathematics	12	540	8,012.50
Oceanography	4	62	400.00
Physics	14	238	2,550.00
Statistics	19	694	8,425.00
Zoology	4	186	1,150.00
	<u>200</u>	<u>6,285</u>	<u>\$54,483.50</u>
TOTAL			

INSTRUCTIONAL COMPUTING MEETING HELD MAY 14, 1971

An instructional computing meeting was held May 14 at Portland State University. The Oregon State University Computer Center presented a discussion on the use of the OS-3 time-sharing system and instructional computing capabilities. The following is an agenda of the meeting:

11:00 - 12:30	Review Campus Coordinators Handbook RCC General Business RCC No Host Lunch
12:30 - 1:30	NCR Presentation of Century Series
1:30 - 2:30	Using OS-3: Dr. Larry C. Hunter, Director Oregon State University Computer Center Remote Facilities Control Mode Editor Basic Fortran Oscar
2:30 - 2:45	Using OS-3: Jo Ann Baughman The Program Library Statistical Programs Remote Plotting
2:45 - 3:00	Coffee
3:00 - 4:00	Instructional Computer Materials GPSS, SIMULA, GASP - Simulation Languages Business Games *DRAFT (A system for mechanical drawing) SIPPS: An interpretive statistical package Social Science and the Computer IMPRESS and SPSS Graphics: For Computer Generation of Visual Aids
4:00 - 4:30	General Discussion and Questions

DATA PHONE USERS

Our data phones are wired so they will automatically search for the next available set to connect to the caller. This leaves the user with no way of knowing exactly which data phone he will reach when dialing 754-1111 or 754-3536. However, after logging on he may identify the phone number reached by comparing his terminal number with the following list:

<u>Data Phone Number</u>	<u>Terminal Number</u>
754-1111	25
1112	26
1113	27
754-3536	22
3537	23
224-9871	11
9872	145
9873	146
9874	147

If the user inadvertently becomes disconnected he should first try dialing the appropriate number in an effort to get back to his job. If somebody else "lands" on his number before he is able to dial back into it he should contact the I/O room at 754-2033 and ask them to make sure his number is logged off. They will need the job number and terminal number to do this.

One common cause of disconnection is too long a break from the break key. The data phone will disconnect upon receipt of 1.5 seconds of continuous break. Most other disconnects are caused by something beyond the user's control.

ARAND PUBLICATION AVAILABLE SOON

Volume II of the ARAND Programs will be available approximately June 15 at the Computer Center Office, Room 126. OS-3 ARAND Documentation and Examples Volume II, by Baughman, Ballance, and Ochs, ccm-71-01.

NEW LOADER RELEASED

An improved loader has been released. With the new loader it is no longer necessary to equip LUN 63 to non-standard library units, instead a L=FILENAME OR L=LUN parameter should be used in the loader calling sequence. No other changes except better error messages should be

noticed by most users. Complete documentation will be in the new OS-3 Reference Manual to be printed soon.

Example: LOAD,56,L=MYLIB will load the binary decks from logical unit 56 and any required library files from MYLIB.

*DECKLIST

Version 3.0 of *DECKLIST has been released. Changes include:

1. Lists sizes of subprogram, common, and data areas on IDC cards.
2. Lists DBS cards with names of labeled common areas.
3. On a TV, displays 20 lines at a time.
4. Allows /R in parameter string to specify rewinding.

Example: *DECKLIST,I=24/R,L=5

SUMMER INSTITUTE TO BE HELD SEPTEMBER 7-10

An instructional institute will be held at the Oregon State University Computer Center for a week in September. This institute is designed to develop the computer skills of faculty and graduate student personnel who are using or will be using the OS-3 system. Classes will be held in FORTRAN, BASIC, OSCAR, EDITOR, Simulation Languages, Statistical Programs, and Plotting.

If you are interested in attending, please return the attached form to the Computer Center.

FILE DIRECTORY SERVICE, REMINDER

Users may now obtain a copy of their file names by using a program called DIRECTORY. DIRECTORY is a program like COPY, LABEL, and DATE. DIRECTORY will print out a complete list of file names saved under the job user number. Since the list of files will be updated each night, files saved during one day will not appear in the directory list until the next day.

8.

More information about each file may be obtained by adding a logical unit number or file name to the DIRECTORY call. This will cause the DIRECTORY to print the file names, file length, last changed date, and last referenced date.

Users who do not wish their file names to be accessible may request that their directory be withheld by contacting Milli Wohlers at extension 2494.

SUMMER INSTITUTE

September 7-10

Date _____

NAME _____

INSTITUTE _____

DEPARTMENT _____

SUMMER MAILING ADDRESS _____

I am interested in the following areas:

- | | | | |
|---------|---------------------------------|----------------------|---------------------------------|
| FORTRAN | <input type="checkbox"/> Intro. | Simulation Languages | <input type="checkbox"/> Intro. |
| | <input type="checkbox"/> Adv. | | <input type="checkbox"/> Adv. |
| BASIC | <input type="checkbox"/> Intro. | Statistical Programs | <input type="checkbox"/> Intro. |
| | <input type="checkbox"/> Adv. | | <input type="checkbox"/> Adv. |
| EDITOR | <input type="checkbox"/> Intro. | Plotting | <input type="checkbox"/> Intro. |
| | <input type="checkbox"/> Adv. | | <input type="checkbox"/> Adv. |
| OSCAR | <input type="checkbox"/> Intro. | | |
| | <input type="checkbox"/> Adv. | | |

Return this form to: Jo Ann Baughman
Oregon State University
Computer Center
Corvallis, Oregon 97331

OS-3 VERSION 4.0

OS-3 Version 4.0 is in the debugging stage. Version 4.0 has a new strategy for allocation of disk space that should improve overall system throughput and will allow about 4K of core previously used as disk tables to be used for something else (user programs). The current strategy has one bit for each of the possible 140,000 file blocks. When most disk space is allocated (as it is most of the time) the search time looking for an available block can be significant. The new scheme will keep a linked list of file block numbers in core and on the disks. Anytime a block is needed there is virtually no search time since loading a block number out of core is all that has to be done. Some new overhead in the form of reading these tables into core and/or writing them back out will occur periodically. However, the amount of time used doing this is considerably less than with the current method.

The magnetic tape limit on remote batch jobs will also be removed. As soon as the first magnetic tape EQUIP statement is encountered in a job, the job will be removed from the batch queue it is in and placed into another queue reserved for tape jobs. This change will allow a job coming in from regular batch, task remote batch, or 200 terminal remote batch, to use all the available tape drives. This change will affect all tape users who submit a tape job and immediately follow it with a job using the results of the tape job. It will be possible under Version 4.0 that the second job may be run before the first.

*STEP

The experimental stepwise regression program *STEP1 will be deleted and will be replaced by the current *STEP as of 15 June 1971. Users should notice no significant changes other than output format.

CONSULTING DESK FOR FACULTY AND STAFF

Have you used the consulting desk? Do you want this service to be continued? Please complete the attached form and return it to us.

NAME _____

DEPT _____

Have you used the consulting desk this year?

No Yes Frequency: 1-4 times
5-10 times
More than 10 times

Would you like this service to be continued next year?

No Yes Indifferent

Did you use the telephone consultation service?

No Yes

Would you like this service to be continued next year?

No Yes

Please return this form to:

Ron Davis
Oregon State University
Computer Center
Corvallis, Oregon 97331

TEKPLOT/CALTEK (revised)

In the previous version of TEKPLOT and CALTEK, off-screen plotting was constrained to the closest point still on-screen. In the current version, off-screen plotting is suppressed entirely; only that portion of a plot that is on-screen will be plotted. The INCPLOT routine is still an exception to these rules, as noted in the manual.

With this new convention, TEKPLOT/CALTEK allows the user to think of the display screen as a 'window' into two dimensional space. The TEKPLOT/CALTEK routines allow this window to be translated to any particular area of interest, rotated any arbitrary number of degrees and used as a magnifier.

In addition to the change in off-screen plotting conventions, two new subroutines have been added. Descriptions of these are available at the Computer Center.

Finally, the conventions for loading TEKPLOT/CALTEK, as described on page 5 of the manual, have been changed. TEKPLOT and CALTEKV are now included in the standard Fortran library. CALTEK is still stored in *CALTEK.

Following the example on page 5, to load your program together with routines from TEKPLOT and/or CALTEKV, you may type:

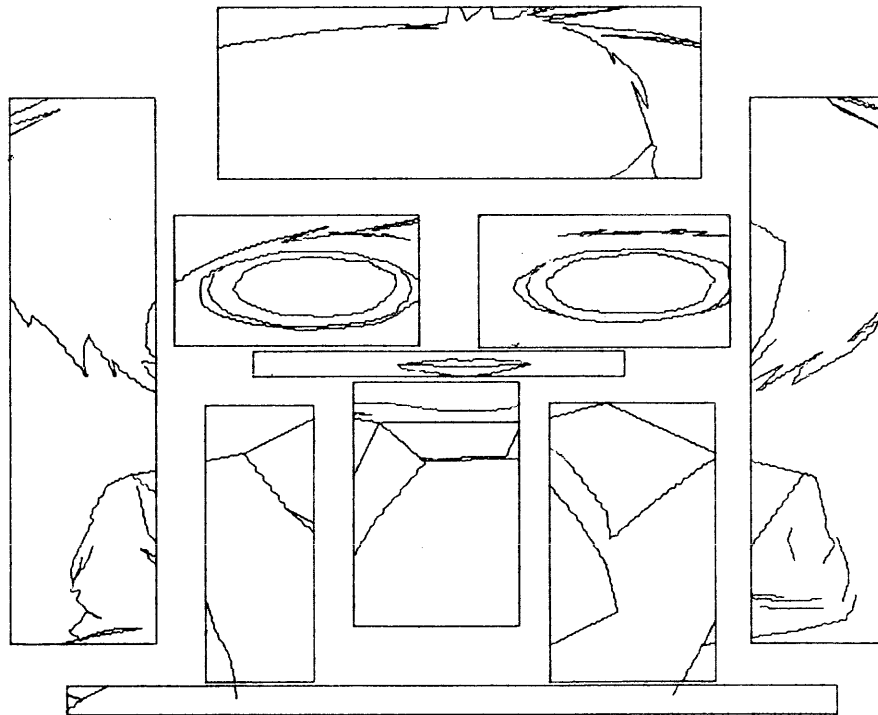
```
#FORTRAN,I=YOURPROG,R
```

To load CALTEK routines in lieu of the corresponding TEKPLOT routines, type:

```
#FORTRAN,I=YOURPROG,X
#LOAD,56,L=*CALTEK
RUN
```

NOTE:

An error has been noted on page 43 of the manual. Calling ROTATE does update the user's current graphics location. Also, calling SCALE or FSCALE will update the current location if current rotation is non-zero.



EXAMPLE OF WINDOW SUBROUTINE



OREGON STATE UNIVERSITY COMPUTER CENTER NEWSLETTER

Corvallis, Oregon
(503) 754-2494

Volume VI, Number 5
July/August, 1971

Director:

Larry C. Hunter

Editor: Kay Porter

KEELING KENNETH
OCEANOGRAPHY

OS-3 VERSION 4.0

Version 4.0 of the OS-3 Operating System will be released August 21. The following paragraphs describe new features of this release.

END OF DATA BIT

The EOD bit (bit 21) in the file status after a read operation on a FILE now is set after the user has read the last record on the FILE. Under Version 4.0 the bit will be set after the user tries to read past the end of the FILE. The file status will also indicate whether a zero length record was read. Coding changes may be required on programs that use end of data status. For example, consider the following code for Version 3:

FORTTRAN

```
IF (EOD(LUN)) CALL EXIT  
READ (LUN,FORMAT)X,Y,Z  
IF (EOD(LUN)) CALL EXIT
```

COMPASS

```
ENQ      STATUS  
CNTL     LUN      GET LUN STATUS  
SHA      2  
AZJ,LT   EXIT     EXIT IF EOD  
ENA      BUFFER  
ENQ      LENGTH  
READ     LUN  
SHA      3  
AZJ,LT   EXIT     EXIT IF EOF
```

2.

For Version 4.0 it should change to:

READ (LUN,FORMAT)X,Y,Z	ENA	BUFFER	
IF (EOF (LUN) .OR. EOD (LUN))CALL EXIT	ENQ	LENGTH	
	READ	LUN	
	SHA	2	
	AZJ,LT	EXIT	EXIT IF EOD
	SHA	1	
	AZJ,LT	EXIT	EXIT IF EOF

Another way to check for End of DATA would be:

BUFFER IN (LUN,PARITY)	ENA	BUFFER	
IF (LENGTH(LUN) .EQ. 0)CALL EXIT	ENQ	LENGTH	
	READ	LUN	
	XOQ,S	-0	
	INQ	LENGTH	LENGTH OF RECORD IS NOW IN Q
	QSG	1	SKIP IF NOT ZERO
	UJP	EXIT	LENGTH

Programs which currently handle both RAF and FILE input and work correctly for RAF end of data condition should not need changes.

TELETYPE LOGICAL UNIT INPUT

Under the current system, logical unit input from a Teletype requires that a RETURN and LINE FEED (in that order) be typed to end a record. Under Version 4.0 if a RETURN is typed the system will supply the LINE FEED and terminate the record. If a LINE FEED is typed the system will supply a RETURN (the record will not be terminated). For example, consider the FORTRAN statement;

```
      READ (LUN,FORMAT)X,Y,Z
```

where LUN is a Teletype unit. Currently the user is required to type three numbers and RETURN, LINE FEED. Under Version 4.0 he need not type

the LINE FEED. Another example would be:

```
#LOAD,56    RETURN
            RETURN  LINE FEED
```

Under Version 4.0 the LINE FEED on the RUN line is not needed.

This change will have no effect on CTI trapped instructions. If a program reads a RETURN with a CTI instruction it will still have to output the LINE FEED like it does now.

Users reading paper tapes into FORTRAN programs may have trouble since the Teletype will be reading a character while it is making the LINE FEED. This potential difficulty can be avoided by first inputting data stored on paper tape to a file.

HIGH SPEED PAPER TAPE PUNCH

Under Version 4.0 any user may use the High Speed Paper Tape Punch on the PDP-8 by EQUIPPING A LUN equal to PTP. If a user writes a record on a PTP unit in BCD the record is assumed to contain 3300 internal BCD codes and will be converted to ASCII. A RETURN and LINE FEED will be punched at the end of the record. If the record is in binary, the record is assumed to be a series of ASCII characters, one in each 3300 half word. The maximum word count is 62 words for both binary and BCD writes.

200 USER TERMINAL

Version 4.0 will support CDC 200 User Terminals. A job submitted through a 200 UT should run exactly the same as if it was turned in to the I/O Room and read through the 405 card reader.

The 200 UT user will have the option of having the line printer output come back to the terminal or come out on the 512 printer.

BATCH JOBS

Under Version 4.0 batch jobs may not be run in the same order as they were submitted. Jobs that require large amounts of time or disk scratch will always be moved into a queue reserved for large jobs. Jobs that require tapes will also be moved to a special queue and run one at a time. Remote batch will no longer be limited to one tape per job and all batch jobs, regardless of origin, will be allowed to use all the tape drives. Users who have jobs that are order dependent should tell the clerk at the I/O desk when the jobs are submitted.

USER DISK PACKS

A new hardware type will be implemented to allow a user to have his own 854 disk pack. The device will be file block addressable with up to 4,000 blocks on each disk pack. The user program will have to recover from disk errors and other hardware malfunctions. For more information, contact Ron Davis at the Computer Center.

MAG TAPE EQUIPS

In Version 4.0 the MAG TAPE EQUIP statement will require the word "at" for density specification. Due to misspelling of the word "at" or placing it in the wrong place, users have sometimes gotten a tape at 800 BPI when they wanted 200 or 556. The correct format is:

```

7
8EQUIP,LJN=MT AT 556 <comments to the operator>

```

Note spaces after MT, AT, and the density specification.

SUMMER INSTITUTE TO BE HELD IN SEPTEMBER

An instructional institute will be held at the Oregon State University Computer Center September 7 through September 10. This institute is designed to develop the computer skills of faculty and graduate student

personnel who are using or will be using the OS-3 system. Classes will be held in FORTRAN, BASIC, OSCAR, EDITOR, Simulation Languages, Statistical Programs, and Plotting.

If you are interested in attending, please return the form on page 11 to the Computer Center.

TAPE STORAGE CHARGE

As of September 1, 1971, the Computer Center will charge 50¢/month/tape for storing users' private tapes. The private tape will be given a Computer Center number and will remain in tape storage. The Computer Center number will allow for easy reference and filing by the machine operators. All private tapes held by the Center for users will be cataloged in this manner.

For more details, users may contact Ron Davis at extension 2494.

NOTICE TO THE USERS OF OS-3 PLOT ROUTINES

All subroutines described in "USING THE PLOTTER: Documentation and Examples" are now available from a library file called *POTLIB. This plotting library does not include any ARAND routines. Rather than loading *LOG1, *LOG2, *LOG3, *LOGN, *MLTIPLT, *TTYPLOT, *PLOTTP, *PLTSUBS, *PLTRTNS, *GRAPHIC, *TTYHIST, *HISTPLT, *LPCONTR, or *CONTOUR with the calling program, simply use L = *POTLIB on the LOAD statement. For example:

```
#LOAD,56,L=*POTLIB (CR)
RUN (CR) (LF)
```

NOTICE TO THE USERS OF *ART

*ART is no longer an overlay. To use *ART one must first #EQUIP,l=PLOT and #LABEL,l/NAME and then #LOAD,*ART.

SUMMARY OF INSTRUCTIONAL USE OF THE COMPUTER, SPRING TERM, 1971

<u>DEPARTMENT</u>	<u>NO. OF COURSES/DEPT.</u>	<u>TOTAL AMT. SPENT</u>
Ag. Economics	AEC 211, 231, 568	\$ 214.29
Ag. Engineering	AE 405	4.85
Animal Science	ANS 552	53.03
Fisheries & Wldlf.	FSH 569, WLD 381	62.33
Bsn. Admin.	BA 131, 231, 235, 311, 313, 331, 427, 459, 481, 499, 507, 531, 542, 546	5,800.91
Education	ED 416, Self-Inst.	314.76
Civil Engr.	CE 226, 310, 312, 362, 363, 383, 425, 483, 489, 505, 525, 566, CET 113, 223, 381, 449	1,765.51
Elec. Engr.	EE 401, 406, 416, 433, 453, 476, 493, 505, 516, 543, 558	1,303.70
General Engr.	GE 103, 413	1,380.73
Industrial Engr.	IE 273, 312, 503, 523, 573	1,221.00
Mechanical Engr.	ME 271, 291, 371, 413, 416, 441, 456, 457, 481, 482, 503, 505, 506, 573	2,416.21
Nuclear Engr.	NE 422, 423, 505, 513, 532, 541	931.22
Mfg. Engr. Tech.	TME 406	13.19
Forestry	F 220, 224, 327, 464, 503	246.74
Forest Engr.	FE 222, 223	122.89
Home Economics	CT 503	11.00
Political Science	LS 407	478.11
Psychology	PSY 322, 323, 407	94.79
Sociology	SOC 329	26.77
Pharmacy	PAD 347, 447	124.04

SUMMARY OF INSTRUCTIONAL USE OF THE COMPUTER (cont.)

<u>DEPARTMENT</u>	<u>NO. OF COURSES/DEPT.</u>	<u>TOTAL AMT. SPENT</u>
Atmos. Science	ATS 587	\$ 284.46
Botany	BOT 341, 503	18.56
Chemistry	CH 415, 421, 427, 432, 444, 445, 461, 467, 503, 505, 507, 529	1,928.16
Mathematics	MTH 151, 190, 251, 351, 352, 353, 359, 390, 453, 459, 489, 507	7,311.53
Oceanography	OC 501, 507	105.94
Physics	PH 201, 203, 212, 323, 405, 503, 563, 586	1,233.52
Statistics	ST 331, 415, 417, 426, 431, 441, 451, 458, 503, 505, 507, 552, 553, 572	3,566.53
Zoology	Z 503	8.60
	TOTAL	\$ 31,043.37

FUNCTION TO CONVERT FROM A MULTI-DIMENSIONED ARRAY (LOGICALLY) TO A LINEAR ARRAY

On occasion a programmer would like to define an array with four (4) or more dimensions. Logically it can be done now by using the function ICTSS found on public file *ICTSS in binary form. Given a logical array X(I,J,K,L) the calling sequence is:

$$M=ICTSS(I, IM, J, JM, K, KM, L)$$

where:

I current value
IM maximum I value
J current value
JM maximum J value

8.

K current value
KM maximum K value
L current value
M (value returned) linear subscript equivalent
 to the current I,J,K,L subscripts.

A minimum of three arguments may be passed for a two-dimensional array. An odd number of arguments must always be used.

At first glance it may seem that this type of an array cannot be used in an I/O list. A subset of the complete array can be used in an I/O list provided it is contained linearly in core. Merely calculate the lower and upper bounds using ICTSS (see example) and read or write that section of the linear array.

NOTE: Variable dimensioning can also be logically defined by using ICTSS.

Example:

```
PROGRAM EXAMPLE
DIMENSION XDATA(12240)
C
C ** XDATA(15,17,8,6) **
C
INTEGER XDATA
.
.
.
DO 10 L=1,6
DO 10 K=1,8
DO 10 J=1,17
M=ICTSS(1,15,J,17,K,8,L)
N=ICTSS(15,15,J,17,K,8,L)
10 WRITE (61,900) J, (XDATA(ISUB),ISUB=M,N)
900 FORMAT(I6,7X,15I7)
.
.
.
END
```

To use:

```
#FORTRAN,I=(source file),X
#LOAD,56,*ICTSS
RUN
```

If you have any questions please contact Les Richey, ext. 2494, OSU Computer Center.

CDC 200 TERMINAL

Work on the connection between the CDC 200 terminal and the 3300 system is now being completed. Beginning Fall term, demonstrations of the 200 terminal may be scheduled at the OSU Computer Center by other institutions in the state system of higher education.

For details, contact Ron Davis, ext. 2494.

DATA PHONE CHANGES

Data phone number 754-3536 has been discontinued and that equipment placed on the Teletype Speed 754-1111 sequence. Higher speed, 300 baud service, is now available on 754-3537.

TELETYPE INFORMATION

Teletype Corporation has recently raised prices on all models and added a new model, Model 38, with additional features. The latest prices are as follows:

33ASR	\$ 884.00
33KSR	633.00
38ASR	1391.00 to 1616.00
38KSR	1193.00 to 1367.00

The model 38 is basically the same as a model 33 for speed, quality and size. Additional features are lower case characters, 132 character line

10.

length, and two-color ribbon. Information is available from Al Williams, Computer Center, Room 122 or ext. 2494.

REMINDER*

SUMMER INSTITUTE

September 7-10

Date _____

NAME _____

INSTITUTE _____

DEPARTMENT _____

SUMMER MAILING ADDRESS _____

I am interested in the following areas:

FORTTRAN	<input type="checkbox"/>	Intro.	Simulation Languages	<input type="checkbox"/>	Intro.
	<input type="checkbox"/>	Adv.		<input type="checkbox"/>	Adv.
BASIC	<input type="checkbox"/>	Intro.	Statistical Programs	<input type="checkbox"/>	Intro.
EDITOR	<input type="checkbox"/>	Intro.		<input type="checkbox"/>	Adv.
	<input type="checkbox"/>	Adv.	Plotting	<input type="checkbox"/>	Intro.
OSCAR	<input type="checkbox"/>	Intro.		<input type="checkbox"/>	Adv.

Return this form to:

Jo Ann Baughman
Oregon State University
Computer Center
Corvallis, Oregon 97331

*If you have completed and returned a form previously, please disregard this reminder.



OREGON STATE UNIVERSITY COMPUTER CENTER NEWSLETTER

Corvallis, Oregon
(503) 754-2494

Volume VI, Number 6
September/October, 1971

Director:

Larry C. Hunter

Editor: Kay Porter

COMPUTER CENTER HOURS

The Oregon State University Computer Center computer hours are:

7:30 a.m. - 11:00 p.m. Monday-Friday

7:30 a.m. - 5:00 p.m. Saturday

CONSULTING DESK

The Consulting Desk will be open Monday-Friday afternoons from 1-4 p.m. It is available to all staff users. The desk is located in the staff terminal room, CC 211, extension 2126.

NEW USERS

Any new user who wishes to receive a copy of the Newsletter should contact Laurie Farmer at extension 2494 and request that their name and department be added to the Newsletter mailing list. Users with job numbers automatically receive the Newsletter.

NEW CHARGE FOR A NEW SERVICE

For using the high-speed paper tape punch, the user will be charged \$2.30/100 records. There will also be a 25¢/job service charge for the use of the high-speed paper tape punch.

OSU COMPUTER CENTER VIDEOTAPE SERIES

The Fall schedule for the OSU videotape series is as follows:

Introduction to OS-3

October 25-29 3:30 p.m. - 4:30 p.m.

Can be seen in Kidder 292 or on Corvallis TV Cable,
Channel 5.

October 25-29 8:00 p.m. - 9:00 p.m.

Available on Channel 5 only.

Introduction to FORTRAN (New series)

November 1-5 3:30 p.m. - 4:30 p.m.

November 8-12

Kidder 292 or Channel 5.

November 1-5 8:00 p.m. - 9:00 p.m.

November 8-12

Channel 5 only.

INTRODUCTION TO FORTRAN VIDEOTAPE SERIES

The new videotape series on FORTRAN has been completed. It is current and compatible with OS-3, Version 4.0. The series was prepared by Jim Sasser and consists of 10 classroom hours of instruction.

Both this series and the OS-3 series can be shown by instructors at OSU. Interested professors may contact Classroom TV, extension 2675, for further details and scheduling information.

PROBABLE LIST OF FORTRAN TAPE TOPICS

1. General Introduction to Computers
2. Bit Structure; Constants, Variables and Arithmetic Expressions
3. Bit Structure; Constants, Variables and Arithmetic Expressions, part 2
4. Arithmetic Assignment Statements; Input/Output
5. Input/Output - Format
6. Starting, Stopping and Transfer of Control
7. OS-3 Control Statements and Program Examples 1
8. Summation and Counting; Logic Concepts

9. Program Examples 2
10. Program Examples 3
11. Arrays and Subscripts
12. Other Types of Constants, Variables and FORMAT Specifications
13. DO Loops
14. DO Loops, part 2; Input/Output of Arrays
15. Two Dimensional Arrays
16. Program Examples 4
17. SUBROUTINES and FUNCTIONS
18. Other Important Non-Executable Statements
19. FORTRAN from Teletype
20. FORTRAN from Teletype, part 2

INTRODUCTION TO OS-3 VIDEOTAPE SERIES SEQUENCE

<u>No.</u>	<u>Name of Tape</u>	<u>Instructor</u>	<u>Length of Tape</u> (minutes:seconds)
1	Tour of Computer Center	Bob Pinneo	11:10
2	TTY Operations	Bob Pinneo	17:14
3	Introduction to On-Line Operations	Tom Mahan	28:28
4	OS-3 Editor from Remote Terminals	Fred Dayton	27:35
5	BASIC	Pete Murray	23:08
6	OSCAR	Gil Bachelor Mary Berryman	29:30
7	FORTRAN from Remote Terminals	Lyle Ochs	32:07
8	*CATALOG	Keith Avery	27:45
9	Debugging with RADAR	Mark Ebersole	28:30
10	The OS-3 Time-Sharing System	George Rose	47:00

UNREFERENCED FILES

Users are reminded that files which are not accessed for more than a 60-day period are copied to tape in order to free file blocks for other users. We urge users to erase unwanted or unused files which take up valuable storage space.

4.

200 USER TERMINAL

Version 4.0 now supports CDC 200 User Terminals. A job submitted through a 200 UT should run exactly the same as if it was turned in to the I/O Room and read through the 405 card reader.

The 200 UT user will have the option of having the line printer output come back to the terminal or come out on the 512 printer.

SUMMER INSTITUTE HELD IN SEPTEMBER

Approximately 75 people attended the instructional institute which was held at the Oregon State University Computer Center, September 7 through September 10. This institute was designed to develop the computer skills of faculty and graduate student personnel who are using or will be using the OS-3 system. Classes were taught in FORTRAN, BASIC, OSCAR, EDITOR, Simulation Languages, Statistical Programs, and Plotting.

COMPUTER RATES AS OF MAY 1, 1971

Minimum Charge

\$1.00 monthly minimum charge for computational services.

OS-3 Charges (prime time)

CPU time	\$300/hour
Tape	\$.50/tape (tape mount charge) + \$.03/sec (channel time)
Elapsed time at Teletype	\$2.00/hour
On-line disk storage	\$.15/block=\$.03/track/month
Punch cards	\$.25/100 records
Input cards	\$.15/100 records
Line printer	\$.125/100 records
Plotter	360 blocks/hr. @ \$10/hr.
High speed input	\$.25/100 records
**Paper tape punch (PDP-8)	\$2.30/100 records

**\$.25 machine readying charge per run.

OS-3 (non-prime time)

Special rates for volume work in non-prime time. (Non-prime time is the time when the teletypewriters are not on the air.) Special forms for volume work must be used and are available at the input desk.

CPU	\$300/hr. for the first 10 minutes CPU, then, \$200/hr for CPU time over 10 minutes
Punch cards	\$.25/100 for the first 2,000 cards, then, \$.15/100 for all cards thereafter
Input cards	\$.15/100 for the first 2,000 cards, then, \$.05/100 for all cards thereafter
Line Printer*	\$.125/100 for the first 5,000 records, then, \$.05/100 for all records thereafter

*These rates are for one-part paper only. If users want multi-part paper or special forms, they will be charged for the materials used.

Master Charges

\$240/hour hand-logged time (wall clock time)

Bulk users with unusual requirements should contact the Computer Center.

<u>Other</u>	<u>Without Operator per hr. charge</u>	<u>With Operator per hr. charge</u>
CALMA 302 Digitizer	\$ 7.50	\$ 10.00
IBM 407 Tabulator	6.00	10.00
IBM 083 Sorter	2.00	6.00
Keypunching	no charge	6.00
Verifying	not available	6.00
Interpreter		5.00
Burster & Decollator		5.00
Paper Tape Input (with operator only)		1.00 (handling charge)

No. of records-25¢/100
input blocks
(1 input block =
62 characters)

3300 Computer		\$ 30.00 (special rate for listing)
Programming	Programmer	6.00
	Sr. Prog.	9.00
	Prog. Analyst	12.00
Magnetic Tape Reels	\$ 1.00/month (\$.25 minimum)	

Industrial users charged additional 25%.

NATIONAL FOCUS CONFERENCE TO BE HELD IN PORTLAND OCTOBER 25-27

The OSU Computer Center is the host installation for FOCUS VI, the CDC computer users group. Between 130-150 participants from CDC installations throughout the United States are expected to attend the conference.

OSU Chairmen are:

Tom Yates - Conference Chairman
Tom Brantner - Registration Chairman
Kay Porter - Program Chairman

FOCUS consists of mainframe groups and special interest groups. Mainframe groups are 3000 series upper, 3000 series lower, 1700, and 1604. Special interest groups include Bio-Med, Education, Graphics, and Industrial Process Control.

Several Oregon speakers will present papers.

<u>Speaker</u>	<u>Installation</u>	<u>Title</u>
Dr. Donald Guthrie	Oregon State University Statistics Department	"Computers in Undergraduate Statistics Instruction"
Dr. Tim Kelley	Southern Oregon College Physics Department	"Interactive Computer Graphics for Classroom Presentations"
George Rose	Oregon State University Computer Center	"Interactive Graphics in a Time-Sharing Environment"

Any users interested in attending this conference should contact Tom Brantner, Oregon State University Computer Center, extension 2494 for details and registration information.

DARTMOUTH CONFERENCE ON COMPUTERS IN THE UNDERGRADUATE CURRICULA

Jo Ann Baughman of the Oregon State University Computer Center attended the Dartmouth conference, June 23-25. This was the second year of the conference, which originated at the University of Iowa in June of 1970. It provides a national forum for the presentation, discussion and dissemination of ideas in the curricular use of the computer in instruction at the undergraduate level.

OPERATING STATISTICS

For the dates July 1 to July 31, OS-3 usage was as follows:

Number of batch jobs run:	7,941
Number of console runs (LOGON-LOGOFF):	23,959
Number of console hours used:	4,813.77
CPU time used - console and batch:	166.10 hours
Total number of hours OS-3 was on the air: (15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.)	370 hours
Average number of console users:	13
Amount of CPU time used by an average user for one hour of console time:	73.5 seconds

For the dates August 1 to August 31, OS-3 usage was as follows:

Number of batch jobs run:	6,275
Number of console runs (LOGON-LOGOFF):	21,265
Number of console hours used:	4,066.65
CPU time used - console and batch:	165.40 hours
Total number of hours OS-3 was on the air: (15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.; 4 hrs. Sun.)	399 hours
Average number of console users:	10.2
Amount of CPU time used by an average user for one hour of console time:	88.90 seconds

GERRY PAULSEN MOVES OFFICE TO COMPUTER CENTER

Gerry Paulsen of the Ag Extension Service has moved his office to Room 148 in the Computer Center. He is serving as the Computer Center Coordinator of Data Processing for the Ag Extension Service. He can be reached at extension 2494.

8.

RECYCLE PAPER AND CARDS

The Computer Center recycles all used printer paper and punched cards. Users may turn in recyclable paper and cards to the I/O room in the Computer Center building.

DATA PHONE CHANGES

Data phone number 754-3536 has been discontinued and that equipment placed on the Teletype Speed 754-1111 sequence. Higher speed, 300 baud service, is now available on 754-3537.

TELETYPE INFORMATION

Teletype Corporation has recently raised prices on all models and added a new model, Model 38, with additional features. The latest prices are as follows:

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The model 38 is basically the same as a model 33 for speed, quality and size. Additional features are lower case characters, 132-character line length, and two-color ribbon. Information is available from Al Williams, Computer Center, Room 122 or extension 2494.

P R O G R A M M I N G T I P S

HELPFUL ROUTINES

The following two overlays can be used by typing the routine name.

***MM**

This routine was written to help move files forward and backward easier.

To call *MM you simply type *MM and the following parameters:

1. L=(lun) this is the logical unit to be moved
2. F=(no.) this is the number of records to be moved forward
3. B=(no.) this is the number of records to be moved backward

If no logical unit is specified, unit 1 is assumed.

If no forward or backward parameter is specified 0 is assumed.

***COUNTREC**

*COUNTREC is a simple routine that can be used to count the number of records in a file.

The call is: *COUNTREC,L=(lun)

The routine will write two lines:

- The first will denote how the file ends; end of file or end of data.
- The second contains the record count of the file.

Comments:

The routine uses a control instruction instead of reading; this makes it run somewhat faster than a FORTRAN program that reads records.

The following routines can be used from a FORTRAN program. The call is explained in each routine description.

LABELP

LABELP is a *REGLIB routine that can be used to label the card punch from a running FORTRAN program. The label is the same type generated when a "LABEL,62/NAME" is executed from OS-3 control mode.

10.

The call is as follows:

```
CALL LABELP(lun,RNAME)
```

where lun is the logical unit number of the card punch and RNAME is a two-word Hollerith constant.

XREQ and File Handling Routines

These seven routines were written to make file equipping, deleting, file protecting, etc., easier tasks.

These routines offer two things the regular FORTRAN library routines do not:

1. They will not abort the job if an error results, such as "NAME NOT FOUND" in an equip call.
2. They will return a flag concerning the requested operation. Also, a 6-word error message will be returned upon error, if specified by the user.

The routines and their calling statements are given below:

TO DELETE:

```
IF (NDELETE(LUN,NAME,IERMES))GO TO 200
```

TO SAVE:

```
IF (NSAVE(LUN,NAME,IERMES))GO TO 200
```

TO UNEQUIP:

```
IF (NUNEQUIP(LUN,IERMES))GO TO 200
```

TO EQUIP:

```
IF (NEQUIP(LUN,NAME,IERMES))GO TO 200
```

TO RFP:

```
IF (NRFP(LUN,NAME,IERMES))GO TO 200
```

TO:FP:

```
IF (NFP(LUN,NAME,IERMES))GO TO 200
```

TO ZERO PAGE:

```
CALL NZEROPGE(NPAGE)
```

where

LUN is logical unit number

NAME is file name

IERMES is a 6-word array for error message (optional)

NPAGE is page number

The routines used in the previous IF statements will return a true value if the operation is completed and a false value if an error occurs. Along with the false return, an error message will be transferred to a 6-word array (IERMES) if it has been included in the parameter string.

NDELETE, NSAVE, NUNEQUIP, NEQUIP, NRFP, NFP, and NZEROPGE are available on *REGLIB.

GET RECORD ROUTINE

GETREC is a routine that can be used as a partner to the BUFOUT routine. It will read a blocked up record, and then return each record singly to the calling routine.

GETREC consists of four main parts. Each part will be explained and related to the complete routine.

I. GINITIAL

GINITIAL is called to initialize GETREC. It will set up a number of arrays which contain input specifications for a given lun. A buffer will also be allocated for the input record.

The call to GINITIAL is:

```
CALL GINITIAL (LUN, ARRAY, REC, BLK, MODE)
```

where

LUN is the input unit those specifications apply to

ARRAY is the address of the array for the unblocked records
to be transferred into

REC is the record length of the records to be unblocked (see note 1)

BLK is the maximum number of records per physical block

MODE is the parity of the input record. 0 for BCD, 1 for binary

GINITIAL may be called for up to 15 different logical units. The specified parameters are stored in GINITIAL and are reference when GETREC or IGETREC is called for that particular logical unit.

GINITIAL allocates dynamic buffers for the unblocking process. These buffers start at an address specified by an external symbol "MEMLOW" that extend to the address specified by "MEMHIGH", another external symbol.

12.

Using "MEMHIGH" and "MEMLOW" allows GETREC to be used in conjunction with other routines that allocate dynamic buffers. This allows routines to communicate the amount of core they have used.

GINITIAL may be called more than once for a particular unit. On each additional call, the record and block counts will be zeroed (explained in GETTOT section) and the input buffer will be emptied.

II. GETREC and IGETREC

GETREC is the call that gets a record from the subroutine buffers.

The call is: CALL GETREC(LUN)
or IF (IGETREC(LUN)) GO TO

where LUN is the input logical unit.

When GETREC or IGETREC is called, the routine will check to see if it has a block of data in its buffer for the specified logical unit.

If it does, it will return a record to the address specified in GINITIAL. If the input buffer is empty, GETREC will read the next block in the specified parity from the specified LUN. The buffer is then filled so a record can be transmitted to the calling program.

If an EOF is read no record will be transmitted to the calling program, and IGETREC will be set equal to .TRUE. on return to the calling program.

III. IGETAREC or GETAREC

These two entry points have the same function as IGETREC or GETREC except that they allow the array address to be changed on each call.

The call is: CALL GETAREC (LUN,ARRAY)
or IF (IGETAREC(LUN,ARRAY)) GO TO 200

where LUN is the logical unit that input is to come from (same as GETREC or IGETREC) and ARRAY is the address of the array that the input record is to be transferred into (same as GINITIAL).

IV. GETTOT

GETTOT performs the same function as BUFTOT in that it returns the block read count and the record transferred count.

The call is: `CALL GETTOT (LUN,IREC,IBLK)`

where LUN is the logical unit count is requested on

IREC is an integer variable that the record count will be stored in

IBLK is an integer variable that the block read count will be stored in

The counts are not reset on this call.

Comments:

GETREC is available on *REGLIB.

It is a fairly fast routine, executing approximately $[36 + 4 \text{ (no. words/record)}]$ instructions per record transfer. Since instruction execution averages approximately 2.0×10^{-6} seconds, it goes fairly fast.

NOTE 1: If the input physical record size is smaller than the specified record length, blanks will be used to fill the rest of the record.

For operation examples see last page of BUFOUT write-up.

BUFOUT

BUFOUT is a relatively fast, general purpose, record-blocking subprogram. Its main use would be as a subprogram to a main FORTRAN program which writes a large number of small records. BUFOUT would then be used to block the small records into groups for faster I/O time and more efficiency. BUFOUT consists of 5 main parts. Each part will be explained and related to the complete package.

I. BINITIAL

BINITIAL is called to initialize BUFOUT. It will set up a number of arrays in the subprogram which will contain output specifications.

The call to BINITIAL is: `CALL BINITIAL(LUN,ARRAY,REC,BLK,MODE)`

where LUN is the output unit these specifications apply to

ARRAY is the address of the array to be blocked and buffered out

REC is the record length of the records to be blocked

BLK is the number of records per physical block

MODE is the mode of output. 0 for BCD, 1 for binary.

14.

BINITIAL may be called for up to 15 different logical units. The specified parameters are stored in the subprogram and are referenced when BUFOUT is called for that particular logical unit.

BINITIAL allocates dynamic buffers for the buffering out process. These buffers start at the value specified by LOWMEM and extend up to HIGHMEM. An overflow message will result if the total buffer area required is more than the remaining unused core.

BINITIAL may be called more than once for a particular unit. On each additional call, the record and block counts will be zeroed, and the blocking buffer will be emptied.

II. BUFOUT

BUFOUT is the call that actually transfers the record from the main calling program to the subprogram buffers.

The call is: `CALL BUFOUT(LUN)`

where LUN is the output unit for the process.

When BUFOUT is called, the words at the address specified as ARRAY will be moved into the subprogram buffer area. The parameters specified in the call to BINITIAL will be used to determine record length and physical block size.

When a particular logical unit's block fills up, it will be output on that unit with specified block size and I/O parity. The block size is calculated by multiplying the record length by the number of records per block. The mode is determined by the specification in BINITIAL as is the record length and number of records per block.

III. BUFDONE

BUFDONE is called to write out any uncompleted blocks that remain. Uncompleted blocks are likely since the output record count is usually not a multiple of the number of records requested per block.

The call is: `CALL BUFDONE(LUN)`

where LUN is the output unit.

This call will require the unfinished block associated with the particular LUN, to be written out as a partial block. An END OF FILE mark will also be written on the specified LUN.

IV. BUFTOT

BUFTOT is a convenience call, and will return the number of records transferred and the number of blocks written at the time of call.

The call is: `CALL BUFTOT(LUN,IREC,IBLK)`

where LUN is the output unit the count is requested on

IREC is an integer variable which the record count will be stored in

IBLK is an integer variable which the block count will be stored in

V. BUFAOUT

BUFAOUT is the same as BUFOUT, except for one thing. BUFAOUT allows the array address to be passed to BUFOUT on each call. This is different from the call to BUFOUT since for it, the array address was specified only in BINITIAL.

The call is: `CALL BUFAOUT(LUN,ARRAY)`

where LUN is the logical unit output is desired on and ARRAY is the beginning of the record to be blocked and output.

Comments:

BUFOUT is available on *REGLIB. It is a fairly fast routine, executing approximately $[36 + 4(\text{no. of words/record})]$ instructions per record transfer. Since instruction execution averages approximately 2.0×10^{-6} seconds, it goes fairly fast.

In this particular example, the person wanted output written on three files from three different arrays with different specifications.

On unit 15, it was requested that NO1's records be blocked 50 per physical block, making a physical block of 1000 words. This was to be output on unit 15 in BCD mode.

On unit 21, NO8 was output in physical blocks of 500 words: 100 5-word records, binary mode.

16.

On unit 25, NO4 was to be written in physical blocks of 270 words: 27 10-word records. Binary mode.

BUFTOT was called to find the number of records and blocks written on unit 21. This was then written on unit 61.

Example:

Program ZORCH

```
DIMENSION NO1(20),NO8(5),NO4(10)
```

```
CALL BINITIAL(15,NO1,20,50,0)
```

```
CALL BINITIAL(21,NO8,5,100,1)
```

```
CALL BINITIAL(25,NO4,10,27,1)
```

```
100  ——— Logic
```

```
CALL BUFOUT(15)
```

```
120  ——— Logic
```

```
CALL BUFOUT(21)
```

```
———  
———  
——— Logic  
———
```

```
CALL BUFOUT(25)
```

```
———  
———  
——— Logic
```

```
CALL BUFDONE(25)
```

```
CALL BUFDONE(15)
```

```
CALL BUFDONE(21)
```

```
CALL BUFTOT(21,IREC,IBLK)
```

```
WRITE(61,500)IREC,IBLK
```

```
500 FORMAT(X'THE NUMBER OF RECORDS WRITTEN ON UNIT 21 IS 'XI5,2X'
```

```
BLOCKS WRITTEN IS 'XI5)
```

```
STOP
```

```
END
```

The preceding routines are available on *HELPLIB and can be used as follows:

```

7
8FORTRAN,L,X
.
.
77
88
LOAD,56,L=*HELPLIB
RUN
↓

```

NEW *LIB

A new version of *LIB (the Standard FORTRAN Library) will be released October 23. The new Library is currently available under the name *LIB1. Users may use *LIB1 now if they wish. They should contact the Systems Programmers if different results are obtained between the new Library and the current *LIB. The new Library works with both 2.1 and 3.0 Version of FORTRAN.

*SYSNEWS

The floating point input/output subroutines FIN, FOUT, and CHOUT will be changed in the near future. Changes are listed below. Note the first one especially:

1) The codes for NEWLINE and NEWPAGE (used in calling CHOUT) will be changed to 200B and 201B, respectively. It is recommended that one use

```

EXT  NEWLINE
ENA  NEWLINE
RTJ  CHOUT

```

and similarly for NEWPAGE. This will work with either the old or the new version of CHOUT.

2) The floating point output conversion (FPOUT, used by FOUT) will be more accurate than the current version. Positive numbers will be preceded by a space instead of a plus (+) sign.

3) When input is coming from a Teletype, FIN will allow reverse slant to be used for correcting typing errors.

4) The output subroutines (FOUT, CHOUT, MESSOUT) will no longer eject a page on the first line written. Also, if the output unit is a Teletype, there will be no page ejects at all, and no page limit.

5) There will be a new subroutine, called by RTJ ENDOUT, which writes the last line (if not already printed) and then writes a file mark on the output unit (if it is not a TV).

6) There will be a new set of subroutines which can be called by FORTRAN programs, to use FIN, FOUT, and CHOUT. The FORTRAN statements and the actions they perform are listed below.

```
CALL FINUNIT(LUN)
```

This statement selects the logical unit for input, where $\neq LUN \neq$ is an integer constant or variable.

```
CALL FINPUT(A,B,...)
```

This statement allows any number of arguments, which must be real variables. It reads as many numbers as there are arguments and stores them in the specified variables.

```
CALL FOUTUNIT(LUN,IPAGES)
```

This statement selects the output unit $\neq LUN \neq$, with $\neq PAGES \neq$ specifying the maximum number of pages to be allowed. Both arguments must be integer variables or constants. If the second argument is omitted, the page limit is set to 10.

```
CALL FOUTPUT(EXPR1,EXPR2,...)
```

This statement causes the values of the expressions to be printed as decimal numbers. Any number of arguments is permitted, and all must be of type REAL. The special argument CR, if declared external, can be used to cause a carriage return (new line).

```
CALL CHOUTPUT(I1,I2,...)
```

The arguments of this statement must be integer variables or constants containing BCD character codes to be printed. (The arguments are usually Hollerith constants). Each argument causes 4 characters to be printed, unless a dollar sign (\$) occurs, which ends the string. The character slash (/) causes a carriage return (new line). The maximum number of arguments is which allows up to 80 characters to be printed with one call.

CALL CR

This statement causes a carriage return (new line).

CALL ENDOUT

This statement writes the last line of output (if any) and then writes a file mark on the output device.

*SCOOP

*SCOOP is a public file which gives the user a current list of the maximum amount of money left on his job number and validity code, the maximum time left on the number, the number of scratch file blocks actually being used and the SFBLK limit.

Example: #*SCOOP
 APR 2, 1971 2:40 PM
 MAXTIME 2940
 MAX \$ 245.00
 SFBLKS 16
 SFBLKLIM 100
 NO. USERS 21

OS-3 VERSION 4.0

Version 4.0 of the OS-3 operating system was released August 21. Users should read the July/August Newsletter for specific details.

#GFREQ

There is now available a generalized frequency distribution program on the CDC 3300. The program was designed primarily with questionnaires in mind but is applicable in other areas as well. The following capabilities currently exist in the program: up to nine (9) levels of totals, frequency distribution of individual questions, frequency distribution of one question versus another (two-way), and up to a ten-way frequency distribution. Data input must be fixed length BCD records, blocked or unblocked.

For further information contact Ron Davis or Les Richey, extension 2494.



OREGON STATE UNIVERSITY COMPUTER CENTER NEWSLETTER

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(503) 754-2494

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Director:

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Editor: Kay Porter

HOLIDAY SCHEDULE

The changes in Computer Center hours during the Christmas holidays are as follows:

Friday, December 24th	7:30 a.m. - 12:00 noon
Saturday, December 25th	closed
Friday, December 31st	7:30 a.m. - 5:00 p.m.
Saturday, January 1st	closed

During the holidays the Computer Center will be open as usual, except for the above days.

NEW SCHEDULER AND USER I/O ROUTINES

On October 30th a new version of OS-3 was released. The new system has improved code for handling I/O in and out of user core. Twenty-word records show almost a 2-to-1 speed-up over the old methods and the speed-up is more significant as the records get longer. At the same time an improved scheduler was released. The new scheduler does a better job of discriminating between different types of bogging jobs that are submitted to the system and lets short-term trouble-makers run. Long-term trouble-makers are put into a separate scheduling queue and run one at a time. Most timing checks between the new and old system show a 10% to 25% reduction in CPU time. For example, one of the test cases used for checking out new versions of *SORT took 860 seconds with the old system and 640 seconds with the new one.

2.

FORTRAN VERSION 3.0 (AVAILABLE AS *F30)

An improved FORTRAN compiler is currently available as *F30.

To compile and run a job with the new compiler use a

$\frac{7}{8}$ *F30,I=<program name>,R
control card.

At a later date, *F30 will replace the current FORTRAN compiler.

The current compiler will then be available as OLDFTN.

*F30 has all the options of the current FORTRAN compiler. *F30 compiles faster than the current version of FORTRAN and generates improved machine code.

The following are some of the new features and restrictions of OS-3 FORTRAN Version 3.0 (*F30).

*F30 FEATURES

1. MAP option By placing an M in the parameter string the compiler will produce a list of variables and statement numbers for each subprogram.

Example: $\frac{7}{8}$ *F30,L,X,M,I=ZORK
2. E option By placing an E in the parameter string the compiler will generate array bounds checking code. An array bounds error will result in a run time diagnostic.
3. COMMON/BLOCK/ *F30 allows several different common blocks beside DATA.
4. Variables Several new standard type other variables are available. In addition the user is not restricted to 1 type other variable.

Examples:

STANDARD VARIABLES

REAL A,B	defines A and B as type real
INTEGER C,D	defines C and D as type integer

NON-STANDARD VARIABLES

CHARACTER E,F	defines E and F as type character
INTEGER2 G,H	defines G and H as 2-word integer (replaces old TYPE DOUBLE(2))
DOUBLE PRECISION I,J	defines I and J as 4-word floating point (replaces old TYPE DREAL(4))
COMPLEX K,L	defines K and L as 4-word complex numbers (replaces old TYPE COMPLEX(4))

Restrictions:

Do not mix different non-standard modes. I/O with type other or non-standard variables (except INTEGER2) must be done by conversion to a standard type.

*F30 MISCELLANEOUS INFORMATION

1. Subroutines written in FORTRAN do not save and restore the index registers.
2. I**R integer to a real power is undefined and should not be used.
3. Error message "ERROR CODE NOT IN ERROR TABLE" is not a compiler error but should be brought to the attention of the systems programmers. This message is caused by a missing entry in the error table, and is usually a user problem.

TIME SERIES ANALYSIS - THE OS-3 ARAND SYSTEM

The ARAND System is a collection of programs for the analysis of time series data. While the basic component is the computational subroutine, the system also includes graphics routines (for either the Calcomp Plotter or the Tektronix graphics terminal) and interactive-type main programs.

4.

Some analysis capabilities include:

- data generation and manipulation
- a test for white noise based on the integrated spectrum
- a variety of Fourier transforms including two fast fourier transform routines
- computation of Z-transforms using a fast convolution technique
- detrending of time series
- slow and fast convolution and correlation
- power spectral estimation via four different techniques
- digital filter design
- complex demodulation
- cross spectral analysis
- multivariate spectral analysis

New additions soon to be released provide for:

- the estimation and plotting of the frequency response function of a linear system
- computation of time varying spectra, with a profile plot routine for displaying these spectra

An error in Volume I has been noted. Users of the routines FOUSPC, FOUSPC1, FOUSPC2, or FFTPS will have some difficulty in generating the necessary weights of a data window with the routine WINDOW. The WINDOW program is primarily intended for generating weights of lag windows. To overcome this problem, a new routine, WINDOW1, is now available. In addition, a routine to determine confidence intervals for the power spectral estimates produced by the above routines is nearing completion. Please contact Lyle Ochs for information or documentation.

For documentation of the entire system, Volume I and Volume II on ARAND are available at the Computer Center. Volume II was completed July, 1971, and contains a summary of analysis capabilities and the associated ARAND routine, plus a complete listing of ARAND routines. Individuals with questions concerning analysis capabilities, program usage, or individuals desiring short departmental seminars on the ARAND system should contact Lyle Ochs, extension 2494.

OPERATING STATISTICS

For the dates September 1 to September 30, OS-3 usage was as follows:

Number of batch jobs run:	4,213
Number of console runs (LOGON-LOGOFF):	21,647
Number of console hours used:	3845.11
CPU time used - console and batch:	153.46 hours
Total number of hours OS-3 was on the air: (15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.)	363 hours
Average number of console users:	10.6
Amount of CPU time used by an average user for one hour of console time:	95.5 seconds

For the dates October 1 to October 31, OS-3 usage was as follows:

Number of batch jobs run:	7,860
Number of console runs (LOGON-LOGOFF):	27,740
Number of console hours used:	4,802
CPU time used - console and batch:	150.82 hours
Total number of hours OS-3 was on the air: (15 1/2 hrs. Mon.-Fri.; 9 1/2 hrs. Sat.)	373 hours
Average number of console users:	12.9
Amount of CPU time used by an average user for one hour of console time:	73.75 seconds

CALL FOR PAPERS FOR THE 1972 CONFERENCE ON COMPUTERS IN THE UNDERGRADUATE CURRICULA

A call for papers has been announced by the Third Annual Conference on Computers in the Undergraduate Curricula. The conference will be held June 12-14, 1972, in Atlanta, Georgia. It will be sponsored by the Southern Regional Education Board in cooperation with the Department of Continuing Education, Georgia Institute of Technology.

Deadline for papers is January 15, 1972. For more information contact Jo Ann Baughman at the OSU Computer Center, extension 2494.

6.

COBOL TO BE RELEASED

OS-3 COBOL is scheduled for release the first of the year. COBOL is now in the final checkout phase. The Computer Center solicits programs that can be used for test purposes. Please contact Dave Skinner at the Center.

UNIVERSITY/COLLEGE CATALOG LIBRARY

The Computer Center has on file a nearly complete set of graduate school catalogues from 130 U.S. universities and colleges that offer graduate programs in Computer Science. These are located in the Computer Center office library area, Room 217.

For more information, contact Brian McCune, extension 2494.

P R O G R A M M I N G T I P S

CORRECTION: IT'S *GFREQ NOT #GFREQ

On page 19 of the September/October Newsletter, we announced the availability of a generalized frequency distribution program, *GFREQ. The program can be called by *GFREQ, not #GFREQ, as it is a public file.

*ASSEMBLER

A new assembler for OS-3 is available under the name *ASSEMBLER. For most programs no program changes will be required to switch from COMPASS to *ASSEMBLER. Assembly time for most programs is 1/3 to 1/2 that of COMPASS and most jobs do not require any scratch except for the listing and binary decks. A write-up about new features will be available soon.

MORE HELPFUL ROUTINES*GENFILE

This program will generate a file for testing purposes. The file may be fixed or variable length blocked or unblocked records. A maximum of 10,000 words per physical record can be written. A logical record is to be defined on successive data cards (80 columns) until the record is depleted. The next logical record is to be started on a new data card. In the case of variable length records, there must be a card before each logical record with the number of words for that logical record in columns 1-5. No padding is provided at the end of the file when the records are blocked.

Both files must already be equipped.

The calling sequence is as follows:

```
*GENFILE,INPUT=<lun>,OUTPUT=<lun>,WORDS=<number of words>,  
BLOCK=<blocking factor>,PARITY=<recording mode>,VARIABLE
```

8.

INPUT

Input lun (not rewind)

Default to 60

OUTPUT

Output lun (rewind only at the end of the
program)

Default to 1

WORDS

Number of words per logical record (see
special card mentioned above for variable
length records)

Default to 20

BLOCK

Blocking factor (maximum for variable length
records)

Default to 1

PARITY

Recording mode

zero (0) - BCD

one (1) - Binary

Default to zero (0)

VARIABLE

Presence of this parameter means the records
are variable length

Absence of this parameter means the records
are fixed length

For further information on *GENFILE contact Les Richey, extension 2494.

DECTOBIN

DECTOBIN is a decimal(BCD)-to-binary conversion routine. The routine will handle negative numbers as well as positive ones.

The calling statement for DECTOBIN is

NN = DECTOBIN(CHARAD,NO)

where

CHARAD - is the character address of the first character (high order side) of the number to be converted;

NO - is the number of characters to convert.

DECTOBIN recognizes only numeric characters, therefore, if you had a character array such as

CHARAD→bbbbbbbbbbb74bbbb,

and called DECTOBIN as

J = DECTOBIN(CHARAD,18),

J would be set equal to 74.

DECTOBIN does not check for overflow.

Be sure to declare DECTOBIN Integer.

DECTOBIN is available on *REGLIB.