CROSSTALK Journal of Hewlett-Packard Technical Computer User Groups
SEPT./OCT. 1985

HP releases new technical workstations

A new high-performance technical workstation, the HP 9000 Series 300, is now available to OEMs and independent software vendors (ISVs) for system and software developments.

The HP 9000 Series 300 is a modularly designed system with a choice of central-processing units (CPUs), displays, systems software, programming languages and peripherals.

Product modularity and object-code compatibility provide a growth path from low to high end within the Series 300. Source-code compatibility allows the ISV to design applications software that will run on both Series 300 and 500 systems.

SOFTWARE COMPATIBILITY
Because solutions designed for the Series 300 will run on both the low and high-end module combinations without modification, the use potential for OEMs and ISVs is greatly increased.

An additional benefit of the Series 300 modular system is user-environment familiarity. As users upgrade system hardware to accommodate more powerful programming, they can continue using equipment with which they already are comfortable.

TAILORING A SYSTEM
Series 300 component modules provide a wide range of price and performance levels by their upgradeability in speed, resolution and color. A software developer can choose among several versions of CPU boards.

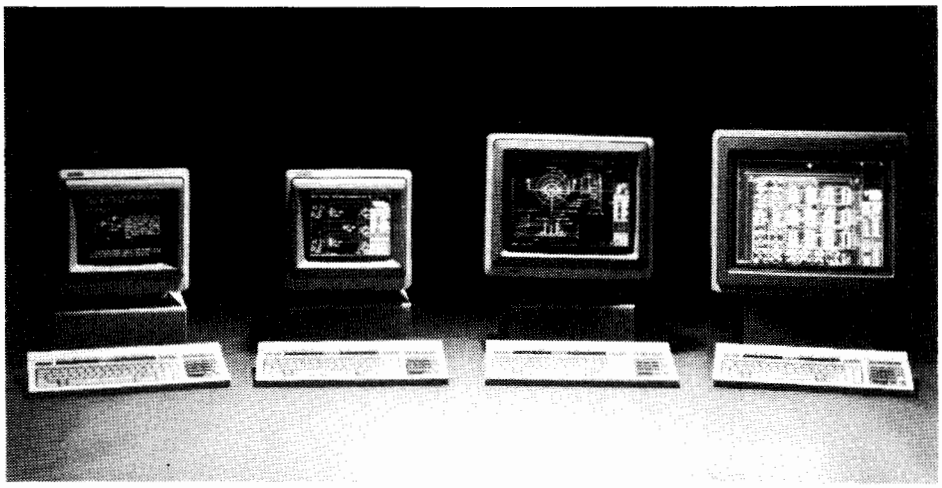
MOTOROLA 68010 AND 68020 CPUs
Series 300 features the Motorola 68010 or 68020 CPU boards. With the 68010, operating at 10 MHz, no wait states are necessary for on-board random-access memory (RAM). Thus, this CPU provides greater performance than other systems currently on the market, HP said.

In addition to the CPU, a standard entry-level Series 300 board for cost-sensitive applications includes 1-megabyte on-board RAM; a bit-mapped display interface; and HP-IB; RS-232-C, and HP-HIL (human-interface link).

The CPU board is available in multiple versions. Therefore, designers running larger programs that demand highest performance from the 68010 have the option to substitute 512 kilobytes of RAM for the standard 1 megabyte of RAM on the processor assembly. Total memory can be expanded to 7.5 megabyte by adding additional .25 megabytes or 1-megabyte memory cards.

For even greater speed, developers can choose a 16.6-MHz Motorola 68020 CPU board featuring 32-bit speed and performance, a 16-Kb high-speed on-board cache, and a 12.5-MHz 68881 co-processor for floating-point performance.

The same interfaces for the 68010 are available for the 68020.



With the HP 9000 Series 300 users may pick from a 16/32-bit processor or a 32-bit processor, color or black and white, and medium or high resolution displays.

CONTENTS

- HP releases new technical workstations
- Desktop Forum
  - — Dumping the CRT to Printer
  - — Use of the ON TIMER Statement
  - — "XREF" Program
  - — Clearing a Bit from a Number
- Focus 1000
- Puzzle Place
- Classifieds
- Coming Events

CO-ORDINATOR'S COMMENTS

Welcome to the September/October edition of Crosstalk. It is good to see that we have received some news from our friends in the N.S.W. Technical Computer Users Group. Let's hope that the other interstate groups take notice and let us know what is happening with their respective groups. Remember that CROSSTALK is a national magazine for the Technical Computer Groups all over Australia.

Keep those articles coming, especially those from interstate.

Until the next issue.

Regards,
DERRIN JOHNSON,
HP Melbourne

TAILORING A DISPLAY

In addition to a choice of CPU boards and features, the OEM or ISV also has the flexibility to meet individual programming needs with a choice of four bit-mapped display boards.

A 1,024 × 768 pixel board provides high resolution for applications such as engineering graphics. A 512 × 400 graphics pixel board gives a lower-resolution answer.

Both color and monochrome are available for these boards. Capability ranges from low-resolution monochrome display to high-resolution color display. Again, the developer can begin at the low end and build toward the high end as needs evolve.

The Series 300 also provides all other standard features required for systems and software development. These include the following:

- virtual memory for large applications software with minimal RAM
- windowing software
- device-independent graphics handlers for developing graphics routines
- networking for developers working in teams
- high-resolution graphics
- wide linear-memory addressing
- HP-UX derived from a UNIX operating system

Series 300 also features BASIC 4.0 and Pascal 3.1 integrated programming languages/operating systems.

NETWORKING CAPABILITY

As a member of the HP 9000 computer family, the Series 300 can be networked with the Series 200 and 500 systems over a high-speed, 10-megabit-per-second, local-area network (LAN). Series 300 also can be networked with the HP 3000 computer family.

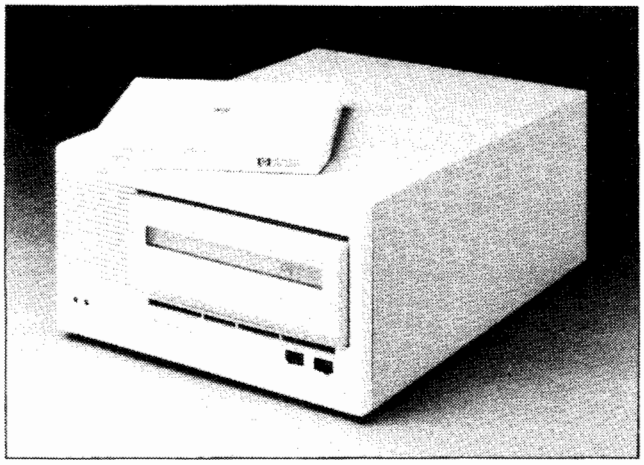
Two IEEE 802.3 standard cabling options are available. One allows as many as 30 systems to be linked over a distance of 185 metres, while the other provides connections of up to 100 computers along a distance of 500 metres.

Series 300 network software provides Network File Transfer service for transferring files among the HP 9000 systems. Remote File Access service accesses files and directories on remote HP 9000 systems. Link Level Access service also is available for users who want to write their own network protocols for multivendor communications.

NEW PRODUCTS

New mass storage alternative for HP 1000 and HP 9000 systems

Introducing the HP 7907A — a new fixed/removable disc drive that offers high performance and special features at a very affordable price. Now users of HP 1000 and HP 9000 systems have an alternative to the fixed disc ¼-inch cartridge tape solutions (HP 7942A/46A).



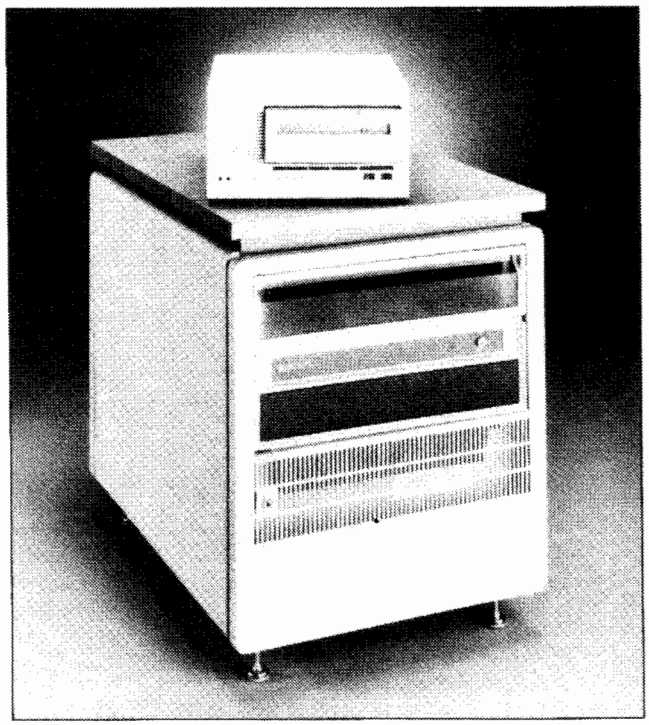
The HP 7907A disc drive has a total of 41M bytes with 20.5M bytes of removable storage on an easy-to-handle 8-inch cartridge. It's a complete mass storage subsystem with features such as a small lightweight package, off-line store/restore capability that can be completed in 2-3 minutes, and 19-inch EIA rack mount option. The drive is also capable of 22 I/Os per second and has an environmentally rugged design.

The benefits of the HP 7907A

- Twice the storage capacity of the HP 7906 and one-third the cost per megabyte.
- Offers a fixed/removable solution to HP 9000 users for the first time.
- Completely user installable.
- Complete data security due to the removability of the 8-inch disc cartridge.
- Drastically reduced system downtime for backups and data interchange, as compared to using a ¼-inch cartridge tape. The HP 7907A is up to five times faster.
- Affordable data interchange/backup alternative to fixed Winchesters with ¼-inch tape cartridges.

The HP 7907A was designed with the following applications in mind:

- Computer aided engineering and manufacturing
- Government OEMs for military intelligence/ security information
- Automatic test systems
- Data logging.



NEW PRODUCTS

Compare the HP 7907A with the HP 7906

HP 7906MR	HP 7907A
Option 102 9.8M bytes of fixed, 9.8M bytes removable storage	20.5M bytes fixed, 20.5M bytes removable storage
14" removable cartridge disc drive based on the MAC family controller	8" removable cartridge with an intelligent controller using the CS-80/HP-IB protocol
Height: 15.75" Width: 18.95" Depth: 28.00" Net weight: 267 lbs.	Height: 6.8" Width: 12.8" Depth: 18.2" Net weight: 55 lbs.

System support on the new HP 7907A

The HP 1000 A-Series and the HP 9000 will be the first two systems to support the HP 7907A, but many other systems plan support during the last half of 1985.

SYSTEM SUPPORT MATRIX

MAINFRAME	SERIES	OPERATING SYSTEM	SUPPORT
1000 SYSTEM	A600 A700 A900	RTE A	A.85 (MAY 85)
	E/F	RTE 6VM	B.85 (PLANNED)
9000 SYSTEMS	200	BASIC 3.0 PASCAL 3.0 HP-UX 2.1	AT INTRODUCTION
	500	BASIC 2.0 HP-UX 4.0	AT INTRODUCTION UNDER INVESTIGATION
	9825T 9845B/C		PLANNED 2ND HALF FY 85
SRM		SRM 2.1	AT INTRODUCTION
3000 SYSTEMS	NONE		NO SUPPORT PLANNED
250 SYSTEMS	NONE		NO SUPPORT PLANNED

MG 2/22 8507

HP 9000 support
Series 200

Basic 3.0: Both the fixed and removable discs may be used as either an add-on or boot device.

Pascal 3.0: Both the fixed and removable discs may be used as either an add-on or boot device.

HP-UX 2.1: Both the fixed and removable disc may be used as add-on discs only. Currently, the installation procedure for the boot device requires a shared controller CS/80 disc/cartridge tape device.

Series 500

Basic 2.0: Both the fixed and removable disc may be used as either an add-on or boot device.

HP-UX 4.0: Not supported at this time, but under investigation, for future release.

HP 9000 Series 200 BASIC and Pascal now on double-sided media

Hewlett-Packard is currently converting the BASIC and Pascal Language Systems (98613A and 98615B) to double-sided media recorded in single-sided format. The change is being made because single-sided discs wear quickly when used in double-sided disc drives. The new product will still run in all disc drives that the single-sided media ran in, except those without an auto-shutter mechanism. You should refer to your disc drive installation manual for specific media wear guidelines.

HP 1000 A-Series tall cabinet improved

Beginning mid-May, HP will be shipping all 291XC A-Series systems in a new and improved tall cabinet. The 29431G replaces the former 29431F cabinet as the standard HP tall systems cabinet.

The new cabinet offers enhanced racking support of the long-awaited I/O Extender and improved cable management. It allows you to mount up to two Extenders in the top portion of the cabinet while the 29431F can only support one Extender. Also, the separator panel and rear door assembly have been modified to enhance the internal routing of cables.

The 29431G cabinet will appear on the June 1 HP Price List so you can order it as an accessory. The 29431F will be removed from the HP Price List one month later in July. For further information, please contact your HP sales rep.

SELECTION OF ELECTRONIC COUNTERS

Hewlett-Packard has produced a 14-page, full colour brochure describing the company's range of electronic counters. It lists 21 products and includes a feature comparison chart to help the reader select the counter best suited to solving a particular measurement problem. For a copy of the "Counter Brochure", contact Hewlett-Packard, 31-41 Joseph Street, Blackburn, Vic. 3130. (03) 895 2895.

NEXT H.P.D.C.U.G.V. MEETING

The next H.P.D.C.U.G.V. Meeting will be held on the 3rd of October at Spectrometer Services P/L., Newlands Road, Coburg (on right hand side travelling north just beyond Davies and Baird). Contact John Hedger, phone 350 1766. Bring your problems and equipment if need be.

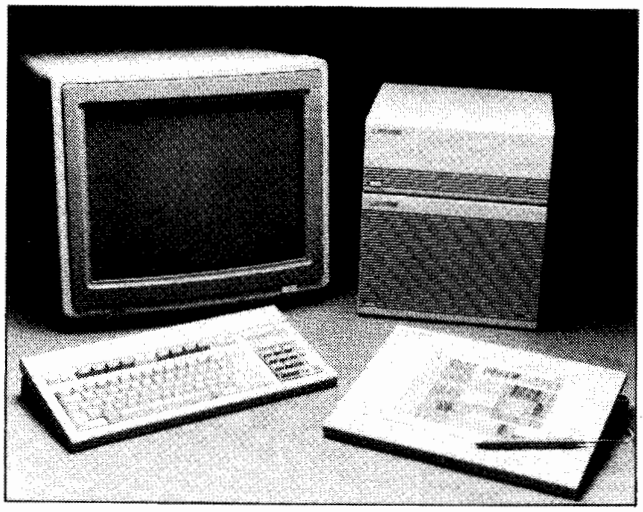
The following meeting is scheduled for the 26th of November at 4.00 p.m. This will be a combined H.P.D.C.U.G.V. and HP1000 U.G. meeting which will be attended by the Managing Director of HP, Malcolm Kerr, and Alan MacNamara from Laserform.

New high-performance graphics system introduced

Hewlett-Packard is introducing a high-performance graphics system that offers OEMs, ISVs, and end-users flexible configurations with the graphics and computational speed performance necessary for engineering applications.

The graphics system, based on the HP 9000 Model 550, can be configured with up to three high-performance graphics display stations, which, along with other terminals, provides an engineering team with a multi-user design center that responds like a single-user workstation. This powerful system, running the HP-UX 5.0 operating system, improves productivity at a per-seat cost less than comparable graphics systems.

The HP 98700H Display Station includes a 19-inch memory-mapped color monitor which is refreshed at a 60Hz non-interlaced rate and has a displayable resolution of 1024 x 768. The display controller, also part of the display station, contains the frame buffer for four or eight planes of 1024 x 1024 bits each for the chosen color map of 16 or 256 colors out of a possible 16 million.



The HP 98700H Graphics Display Station consists of the graphic processor, a new 19-inch color monitor, and the HP-HIL keyboard (the digitizer tablet is optional). The HP 9000 Model 550, needed to run the system, is purchased separately.

The display controller interface plugs directly into the memory processor bus of the Model 550, allowing the graphics to be memory-mapped into the CPU's address space. This tight coupling provides a 2M-byte-per-second data transfer rate from the CPU to the controller. The result is fast first-time picture generation, and fast modifications to an existing picture.

An optional graphics accelerator (HP 98710A) further increases performance by offloading the CPU and implementing the graphics functions in hardware. The graphics accelerator contains both a hardware scan converter and a transform engine, a bit-slice processor with writeable control store, three floating point chips, and a vector generation chip with area fill support hardware. The accelerator can improve performance tenfold, to 50,000 vectors per second.

The accelerator's transform engine contains 4,000 lines (72 bits per line) of read/write microprogram memory. At power-on, the HP-UX operating system downloads this memory with standard, HP-supplied graphical functions. This memory can give you the ability to access the functionality of the system.

Also being introduced is a new 2-D and 3-D graphics library, which is bundled into the latest release of HP-UX (5.0). This fast, flexible library offers asynchronous input and tracking, raster operation support, support for multiple input and output devices, and true device independence.

Design stations can be linked together with the enhanced LAN/9000, which includes a new LAN card and network services. LAN/9000 provides increased performance and reliability, and supports the IEEE 802.3 standard in addition to Ethernet. The new LAN product also allows for connections to HP 3000s.

The HP 98700H display station consists of the display controller, a 19-inch, high-resolution color monitor, an HP-HIL (Human Interface Link) keyboard, the HP-HIL audio, the display station buffer (interface) and the required cables.

INTERNATIONAL USERS GROUP MEMBERSHIP

At its annual meeting the Melbourne HP/1000 Users Group announced that it was about to become a full member of the International Association of Hewlett-Packard Computer Users (INTEREX). This will include a copy of the full contributed Library. The Treasurer of the Melbourne Group, Norm Kay, (03) 544 0633, will be the holder of the tape and limited copies of software will be available for members to use, without the need to join INTEREX.

HPDCUGV SITE VISIT

A visit to Interface Management Services, 1/43 Railway Road, Blackburn, has been organised for the 11th of September at 6 p.m.

Your host will be John Allison and he can be contacted on phone 877 7038.

The topic for the site visit is "Systematic" — A 4th Generation Language on MS-DOS Machines, particularly HP 150's.

DESKTOP FORUM

DUMPING THE CRT TO PRINTER

The routine below enables a HP86/87 to dump the alpha screen to a printer. It requires the AP ROM to enable screen addressing. If the display contains any inverse video characters then it is necessary to use the UNHGL$ (string) statement to convert these to printable characters. This statement is part of the BIN24 binary associated with the FILE/80 programmes.

```
10 ! STORE "DEMO2.WI"
20 DIM S$[80]
30 Pge=24 @ PAGESIZE Pge !     SET PAGE SIZE
40 Prt=701 !                   SET PRINTER ADDRESS
70 !
80 !
90 GOSUB 1000 !                GOTO PRINT ROUTINE
100 !
110 !
120 END
1000 !
1010 !                  ****   PRINT ROUTINE  ****
1020 !
1030 PRINTER IS Prt !          SET PRINTER
1040 ALPHA 0 !                 SET TOP OF SCREEN
1050 ON ERROR GOTO 1140 !      CAPTURE ERROR
1060 J=CURSROW  @ N=1 !        READ CURSOR POSITION
1070 FOR I=J TO J+Pge-1 !      SET LOOP
1080      ALPHA I,1 !          SET ROW
1090      AREAD S$ !           READ ROW
1100      PRINT UNHGL$ (S$) !  PRINT ROW
1110 NEXT I
1120 OFF ERROR
1130 RETURN
1140 LOADBIN "BIN24.WI" !      LOAD BINARY
1150 GOTO 1090
```

Use of the ON TIMER Statement

The HP86/87 contains three individual timers that can be set to interrupt a program and perform end-of-line branching after a specified time interval. The statement

100 ON TIMER# 1,1000 GOSUB 2000

once executed will cause end of line branches to subroutine 2000 every 1000 milliseconds until deactivated by

500 OFF TIMER# 1

or reset, edit, SCRATCH or CHAIN.

If your main program takes a long time to achieve a change in the display or produce an output and you need to indicate that something is happening during the running of this long segment then the ON TIMER# statement can be used to an advantage. By using this statement together with the screen addressing statements either from AP ROM or the UTIL/1 binary a flashing message can be placed on the display. The following example shows one way it can be used.

```
10 ! STORE "DEMO.WI"
20 DIM M$[50]
30 CLEAR !                      CLEAR SCREEN
40 I,ia=0 !                     INITIALIZE VARIABLES
50 M$="HANG ON, I'M BUSY !" !   MESSAGE
60 GOSUB 1000 !                 SET TIMER
70 !
80 !
90 ! TASK                       TASK
100 !                            :
110 FOR I=1 TO 20 STEP .1 !      :
120     Z=EXP (I)+EXP (-I) !     :
130 NEXT I !                     :
140 !                            :
150 OFF TIMER# 1 !              TURN TIMER OFF
160 !                            :
170 ALPHA 0 @ END !             END
180 !
190 !
1000 !                                          TURN TIMER OFF SO SUBROUTINE
1005 OFF TIMER# 1 !                                DOES NOT INTERUPT ITSELF.
1010 ALPHA 0 !                                  SET TOP OF PAGE
1020 ALPHA CURSROW +10,10 !                     SET CURSOR POSITION
1030 IF ia THEN ia=0 ELSE ia=1 !                SET TOGGLE
1060 IF ia THEN AWRIT M$ ELSE AWRIT HGL$ (M$) ! DISPLAY MESSAGE
1080 ALPHA CURSROW +2,10
1090 AWRIT "Counter = "&VAL$ (I) !              DISPLAY COUNTER (OPTIONAL)
1100 ON TIMER# 1,500 GOSUB 1000 !               RESTART TIMER
1110 RETURN
```

A. J. Stevens,
Telecom Australia
Research Laboratories
(03) 541 6532

XREF PROGRAM

Herewith a copy of our program "XREF" for the HP 9825, for HP Users Club — no charge!

This is an updated version of one that once appeared via HP U.S.A. but works! It prints out (line 14) the location of any statement you enter.

TO USE

Load in your programme then get "XREF", nal "XREF" now loaded in after your program.

Enter cont "XREF", and your statement is requested. Remember blanks are considered part of the search statement.

If you enter the statement "flgs", then all flag statements are listed — very useful.

Hardware requirements — General I/O Prom.

We load this into every program disc for ready use.

```
0: "XREF":
1: % "GEJS 26/4/84"
2: cln}L;dim A$[96],B$[80],D$[80];fxd 0
3: buf "BUF",A$,1
4: ent "ENTER STATEMENT",B$;if flg13;gto +0
5: prt "STATEMENT.  LINE";prt B$
6: len(B$)}B;if B$="flgs";3}B;sfg 1
7: for A=0 to L-3
8: on err "ERROR"
9: list #' *.',A,A
10: red "BUF",A$
11: for C=1 to 80-B
12: A$[C,C+B-1]}D$
13: if flg1;if D$="flg" or D$="sfg" or D$="cfg" or D$="cmf";prt A;gto +3
14: if D$=B$;prt A;gto +2
15: if A$[B+C]="";gto +2
16: next C
17: next A
18: spc 2
19: gto -15
20: end
   " *.":ret "BUF.1"
22: "ERROR":
23: if ern=3;if rom=83;gto -6
*18626
```

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CLEARING A BIT FROM A NUMBER

```
100'  ... Clearing a bit from a number - CRS 14/6/85 ...
110'
120   N=-21846 ' Test Number (1010101010101010)
130 I:INPUT "BIT$ (0 to 15) plus S or C (Set/Clear) ... (Eg: 3C) ...?",In$
140   ON ERROR GOTO I
150   B=VAL(In$)
160   C=(POS(UPC$(In$),"C")>0)
170'
180'
190   IF NOT C THEN A=BINIOR(N,SHIFT(1,-B))    ' Sets bit B
200'
210   IF C THEN A=BINAND(N,ROTATE(-2,-B))      ' Clears bit B
220'
230'
240   X$="Set    Cleared"
250   PRINT USING "4A,2(18A),4A,3A,K";In$,FN8$(N),FN8$(A),"Bit",VAL$(B),X$[1+7*C
260   GOTO I
270   END
280'
290   DEF FN8$(Q) ' Display the number in binary (MSbit on LHside)
300    FOR I=15 TO 0 STEP -1
310     A$=A$&CHR$(48+BIT(Q,I))
320    NEXT I
330    RETURN A$
340 FNEND

0S  1010101010101010  1010101010101011  Bit 0  Set
1S  1010101010101010  1010101010101010  Bit 1  Set
2S  1010101010101010  1010101010101110  Bit 2  Set
3S  1010101010101010  1010101010101010  Bit 3  Set
4S  1010101010101010  1010101010111010  Bit 4  Set
5S  1010101010101010  1010101010101010  Bit 5  Set
6S  1010101010101010  1010101011101010  Bit 6  Set
7S  1010101010101010  1010101010101010  Bit 7  Set
8S  1010101010101010  1010101110101010  Bit 8  Set
9S  1010101010101010  1010101010101010  Bit 9  Set
10S 1010101010101010  1010111010101010  Bit 10 Set
11S 1010101010101010  1010101010101010  Bit 11 Set
12S 1010101010101010  1011101010101010  Bit 12 Set
13S 1010101010101010  1010101010101010  Bit 13 Set
14S 1010101010101010  1110101010101010  Bit 14 Set
15S 1010101010101010  1010101010101010  Bit 15 Set

0C  1010101010101010  1010101010101010  Bit 0  Cleared
1C  1010101010101010  1010101010101000  Bit 1  Cleared
2C  1010101010101010  1010101010101010  Bit 2  Cleared
3C  1010101010101010  1010101010100010  Bit 3  Cleared
4C  1010101010101010  1010101010101010  Bit 4  Cleared
5C  1010101010101010  1010101010001010  Bit 5  Cleared
6C  1010101010101010  1010101010101010  Bit 6  Cleared
7C  1010101010101010  1010101000101010  Bit 7  Cleared
8C  1010101010101010  1010101010101010  Bit 8  Cleared
9C  1010101010101010  1010100010101010  Bit 9  Cleared
10C 1010101010101010  1010101010101010  Bit 10 Cleared
11C 1010101010101010  1010001010101010  Bit 11 Cleared
12C 1010101010101010  1010101010101010  Bit 12 Cleared
13C 1010101010101010  1000101010101010  Bit 13 Cleared
14C 1010101010101010  1010101010101010  Bit 14 Cleared
15C 1010101010101010  0010101010101010  Bit 15 Cleared
```

CHRIS SIMPSON
H.P.D.C.U.G.V.
President

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NEWS FROM N.S.W.

Following a slight lull in activity commencing around the time of the Christmas festivities, the HPTCUG (NSW) wishes it known that it is still alive and well.

A very successful all-day seminar/workshop/AGM was held last December on the general theme of "Data Acquisition in the Real World". Technical papers were presented by Peter Lucey, Fiona Buckley, Paul Leonardi, Warrick Summers, Nick King, Peter Thomas, Bill Filson and John Gwyther. The various speakers covered the full gambit of current sophisticated technology down to the very practical every-day problems encountered in unfriendly environments outside of the air-conditioned office or laboratory. All the speakers are to be thanked (again) for their efforts and assistance in making this one of the best, from both the attendees and organisers point of view.

At the conclusion of the workshop (before they could get away) we had the election for committee members for 1985. The formal part of the A.G.M. accepted the President's report, the Treasurer's good news report that a surplus of approximately $400 in 1983 had meant that fees could remain static even though a slight loss was made in 1984. The HPTCUG (NSW) is in a healthy position financially with sufficient resources to undertake more Seminars/Workshops if only we can get some feedback from our members to find out what they would like to have presented. Or should we just represent the previous functions every second year on the basis that our membership is changing too rapidly to become bored with past topics. Certainly the products coming out of HP seem to be getting updated at less than 2 year intervals — so I suppose the new 'Data Acquisition' hardware discussions will always be news to a lot of our members. Please let us know what you want.

Well, here is the NEWS of the election results (mainly uncontested):

President:	John Geremin, Megatronics, (02) 764 4855
Secretary:	John Fogarasi, Plessey, (02) 807 0619
Treasurer:	Greg Hodge, Dept. of Defence, (02) 359 3650
Committee:	Neil Crosby, Hewlett-Packard, (02) 888 4473;
	John Quigley, Hewlett-Packard, (02) 888 4451;
	John O'Brien, Dept. of Defence, (02) 359 2793;
	Dr. Warrick Summers, A.W.I. Pty. Ltd., (049) 682 311;
	with Kevin Monaghan being invited as a representative of the N.S.W. Desktop Users Group.

Significant discussion was held during the A.G.M. on the subject of merging the smaller user groups in N.S.W. and it was decided that the two groups should try to improve communications between their respective members so that we could present a united front to HP on matters of common interest or concern. Therefore we could provide an overlapping service to users who had Desktop machines communicating to HP1000 series machines. The meeting noted a prophecy that powerful 1000 computers would soon be packaged in a suitcase and be as easy to use in the field as the pocket calculator of the 1960's. Certainly in the near future it will be difficult to distinguish various ranges of machines by mere size alone. Be prepared!!! (to merge and unite — I meant). The A.G.M. was followed by a very enjoyable barbecue on the HP garden terrace at North Ryde.

We are planning another All-Day workshop. Please make a note in your diary now — Wednesday, 4th December at North Ryde. If you are not receiving notices of our meetings, etc., please contact our new Treasurer above to check your membership status. A future meeting is planned for the 2nd October.

Our last meeting was a very educational talk from Mark Hallinan of Integral Fibre Systems Pty. Ltd. on "Fibre Optics — Introduction and Application" which attracted one of our largest audiences for an afternoon meeting.

John Geremin,
President,
HP Technical Computer Users Group (NSW),
GPO Box 3060, Sydney, 2001

PUZZLE SOLUTION

Answer to last issue's puzzle is:

We want to find instances where there are n members and (n + a) members in successive years (i.e. membership increases in the second year by 'a'), such that

$$(n + a)(n + a - 1) - n(n - 1) = 330$$

This gives, after some manipulation:

$$n = \tfrac{1}{2}\left[\frac{330}{a} - a + 1\right]$$

We only need to consider values of 'a' which give integral, positive values for 'n', i.e. 'a' must be a factor of 330 and $a \leq \sqrt{330}$. Hence we can build up the table of values correspondingly:-

n	a	n + a
165	1	166
82	2	84
54	3	57
31	5	36
25	6	31
12	10	22
10	11	21
4	15	19

By comparing the 'n' and 'n + a' columns, we can see the only possible n for the years 76-78 are

1978	36
1977	31
1976	25
1975	25
1974	25
1973	25
1972	25
1971	25
1970	?
1969	?

Since membership increased every year it can have been at most 19 in 1970. Since this implies the minimum membership of 4 in 1969, we then arrive at a 1975 membership of 24.

Therefore 24 × 23 = 552 letters were sent in 1975.

— MARK MICHELL

SPECIFICATIONS FOR SUBMISSION OF ARTICLES AND ADVERTISEMENTS

All material for Crosstalk should be sent to one of the addresses listed at right, from where it will be forwarded to the co-ordinator for publication. Publication dates are subject to receipt of sufficient material. For specific details contact Glenda Patterson on (03) 895 2576.

ARTICLES: Articles should be typed with any diagrams and program listings in camera-ready form (Author's name, address and phone number should be included).

ADVERTISEMENTS: Display ads. should be in camera-ready artwork form. The printer may be instructed to layout ordinary typeface ads.

CURRENT ADVERTISING RATES:

Full page — $250
Half page — $125
Column/cm — $4

There is a 20% discount on these rates for regular advertisers. Classified ads. are free for user group members, and $10 each for non-members.

Advertisers will be billed upon receipt of ad. The user groups reserve the right to change rates, limit space availability and reject advertising which is deemed inappropriate.

ADDRESSES FOR SUBMISSION OF ARTICLES AND ADVERTISEMENTS:

HP Technical Computer Users Group, N.S.W.
Box 3060 GPO,
Sydney, 2001.
N.S.W.

Norm Kay,
HP1000 Users Group (Vic.)
C.S.I.R.O.
Box 160, Clayton, 3168, Vic.

H.P.D.C.U.G.V.
Chris Simpson,
Simpson Computer Services,
63 Hartington Street, Kew, Vic., 3101.

HP Desktop Users Group (N.S.W.)
Dr. R. W. Harris,
C/o C.S.I.R.O. Division of Mineral Physics,
PMB 7, Sutherland, N.S.W. 2232.

COMING EVENTS

11th September:	HPDCUGV visit to Interface Management Services, 1/43 Railway Road, Blackburn, 6 p.m. Host: John Allison (Director), phone 877 7038.
3rd October:	HPDCUGV Meeting, 4 p.m. at Spectrometer Services P/L., Newlands Road, Coburg. Contact John Hedger, phone 350 1766.
7th October:	Series 200 UX Sys. Admin. Course, HP Melbourne.
14th October:	Getting Started on HP150 Course, HP Melbourne.
15th October:	Wordstar on HP150 Course, HP Melbourne.
16th October:	Lotus 123 on HP150 Course, HP Melbourne.
17th October:	Advanced Use of HP150 Course, HP Melbourne.
18th October:	Programming HP150 Course, HP Melbourne.
21st October:	Datacomm HP150 Course, HP Melbourne.
28th October:	RTE-6VM Sys. Manager Course, HP Melbourne.
11th November:	HP1000 Introduction to Datacomm Course, HP Melbourne. HP9000 Introduction to Datacomm Course, HP Melbourne.
18th November:	Getting Started on HP150 Course, HP Melbourne.
19th November:	Wordstar on HP150 Course, HP Melbourne.
20th November:	Lotus 123 on HP150 Course, HP Melbourne.
26th November:	Combined HPDCUGV and HP1000 U.G. Meeting at HP, 4 p.m. Managing Director of HP, Malcolm Kerr, to talk.

NOTE: If you have requirements for training on any HP products not covered in our formal training programme, please contact Audrey May on (03) 895 2661.

Puzzle Place

A grandfather clock strikes the hour and once on the half-hour. It is wound at 10.15 a.m. Twelve hours later the weights are again level, but 720mm lower down.

What is the greatest separation between the weights, and when does this occur?

— MARK MICHELL

WANTED

Obsolete HP Computer equipment and Manuals, etc.
Please phone (02) 764 4855 to negotiate collection.

JOHN GEREMIN

FOR SALE

OR HIRE

9800 Series Computers, Peripherals & Accessories

- 9835, 9831, 9825, etc.
- Disc-drives, Printers, etc.
- HP Software PAC's
- HP Manuals and Binders
- HP Course folders
- Used diskettes (for 9885)
- Pertec Tape-drive
- 9876A fast Thermal Line-printer (new)
- 'Greyhound' controller for 7906 (new)
- 98032A Interfaces (new)
- Computer parts

MANY CONTACTS also wish to buy/sell all kinds of desktop computer equipment.

CHRIS SIMPSON — (03) 859 6643

CLASSIFIED ADVERTISEMENTS

FOR SALE

TWO HP 9111A GRAPHICS TABLETS (HP-IB)

Add Interactive Graphics Control (Cursor moving and picking) and a digitising capability to your system.

Purchased in 1983. Maintained in excellent condition since new by HP under current service contract.

AT $2050 SAVE MORE THAN 50% OFF THE NEW PRICE

Telephone David Cohn at Wilson Electric Transformers,
(03) 560 0411

FOR SALE

1 9825 A Based Audio Production Testing System

The system includes:-
3 626913 Power Supplies
1 9825A 24K
1 9885 Disc Drive
1 9878A I/O Expander
1 6940B Multiprogrammer
1 3455A Digital Voltmeter
1 5300B Measuring System
1 2131A B. & K. Digital Frequency Analyser

Software is available to connect the system to run as a horn and audio production testing system.

System components can be sold separately.

Telephone number for enquiries:
(03) 772 7968
Ask for David Butler

FOR SALE

2 × HP 150 B Touchscreen personal computers (45660BK) with 15 MB Winchester Disc with integral double-sided 3½ inch diskette. **$7,500 each.**

3 × HP 150 B Touchscreen personal computers (45650BK) with dual double-sided 3½ inch diskettes. **$5,250 each.**

Comprehensive software included in above prices. Equipment bought new January/March 1985.

Contact: A. ANTONIOU — (03) 387 2922 Business Hours.

FOR SALE

HP7970B Mag tape system including:
Tape Drive, HP13181 controller, cables, mounted in HP Bay.

HP2108A computer with 32k Words.

Visual 50 terminal.

Visual 550 graphic terminal.

WANTED TO BUY

HP2112 MX power supply or HP2112 computer.

AUST-AM GRAPHIC SERVICES
(054) 430 165