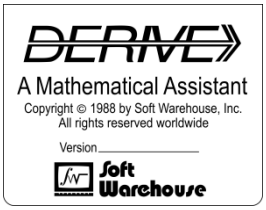
A Brief Derive Version History

Martin Hepperle - 2022-2025

1980



1985

The following pages present a tabulation of versions of Derive and associated products like muLISP, muSIMP and, muMath. Derive was implemented in muLISP.

Unfortunately, most printed manuals for these software products seem to be unavailable in scanned form, which is a pity. For example, scans of the following manuals would be very welcome to preserve this piece of software history:

- “muLISP-81 Reference Manual”
- “muLISP-82 Reference Manual”
- “muLISP-85 Reference Manual”
- “muLISP-86 Reference Manual”, The Soft Warehouse, 408 p., 1986, Honolulu, Hawaii
- “muLISP-87 Reference Manual”, The Soft Warehouse , 439 p., 1987, Honolulu, Hawaii

Albert D. Rich, the main author of muLISP, died at age 74 in 11 August 2023. Together with David Stoutemyer he founded Soft Warehouse in 1979, which was active until 1999. He was the main author of muLISP. Using muLISP, both developed muMATH, followed by Derive.

The first versions ran on 8-bit CP/M systems and were later ported and further developed under 16-bit MS-DOS and MS-Windows. The development finally ended up at Texas Instruments. Here, it was the starting point for computer algebra systems for TI's graphing pocket calculators.

The following table highlights the growth of primitives implemented in muLISP systems (MS-DOS version, if not noted otherwise, without extensions loaded). Additional functions were included through external files, as needed.

Table 1: Number of LISP primitives available in the various muLISP versions.

muLISP-80 (CP/M)	89 primitives (8080 version before Microsoft licensing)
muLISP-80 2.0 (CP/M)	88 primitives (version licensed to Microsoft)
muLISP-83 4.11 (CP/M)	118 primitives (version licensed to Microsoft)
muLISP-83 4.11	121 primitives
muLISP-85 5.01	303 primitives
muLISP-86 5.10	354 primitives
muLISP-87 6.00	411 primitives, irrational and transcendental functions: IRRATNAL.LSP
muLISP-87 6.10	415 primitives, irrational and transcendental functions: IRRATNAL.LSP
muLISP-90 7.20	421 primitives, irrational and transcendental functions: IRRATNAL.LSP

DOS Extender (XM) Versions

These versions became available with muLISP-90 and use Extended Memory. The following numbers were obtained in DOS-Box.

muLISP-90	(RECLAIM) gives 340’467 bytes free
muLISP-90 XM	(RECLAIM) gives 15’002’227 bytes free

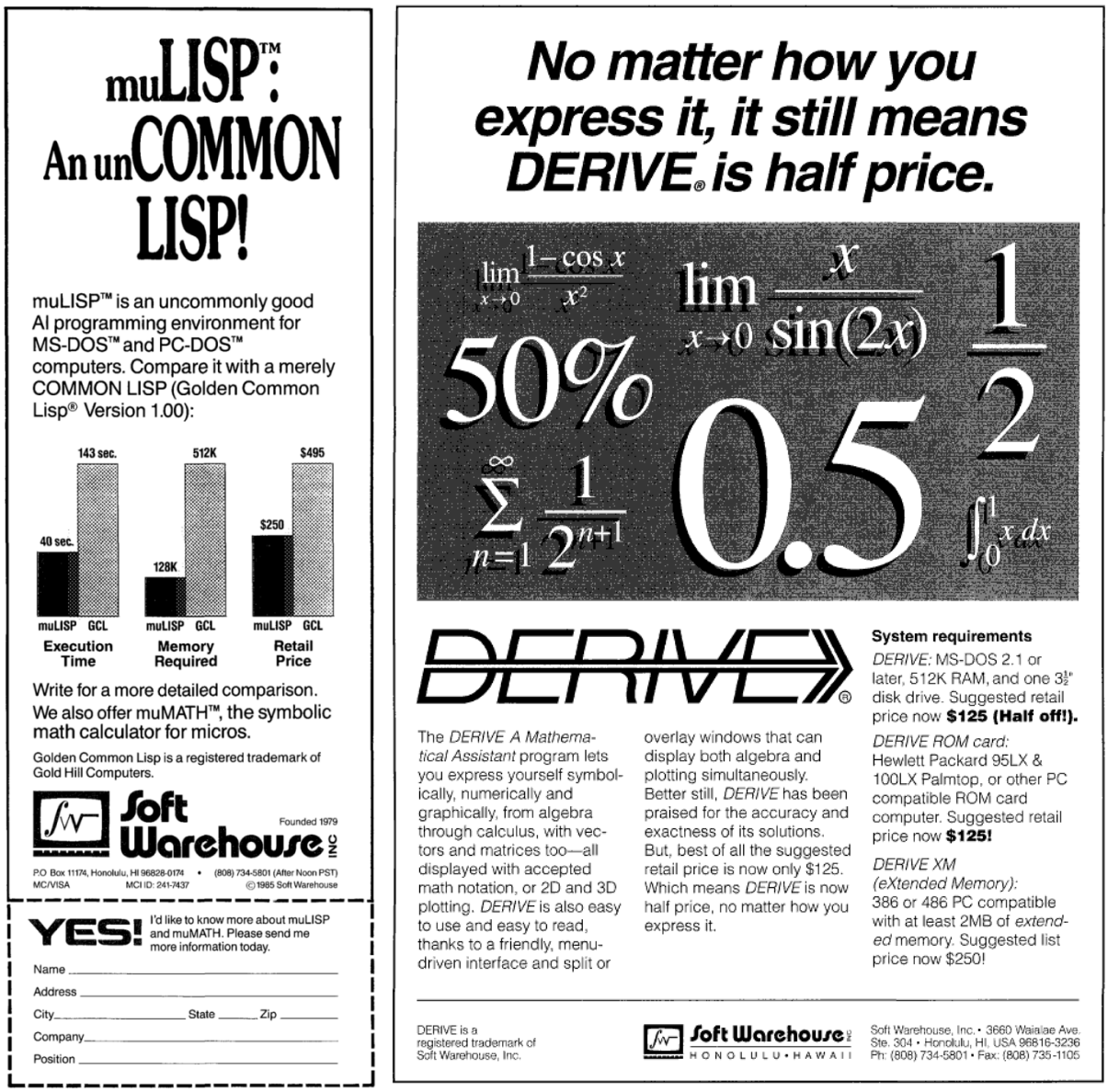


Figure 1: Advertisements for muLISP and muMATH in 1985 and Derive in 1994.

Figure 2: Derive was also available as a PCMCIA ROM card for the HP 95LX Palmtop.

Year	Product/Version	Operating System and Comments
1977	muLISP-77	"micro LISP", implemented on IMSAI 8080
1977	muSIMP-77	"microcomputer Structured Implementation Language", written in muLISP-77
1979	January 1	*The Soft Warehouse* founded by Albert D. Rich, David R. Stoutemyer
1979	muMath-79	CP/M (8080, Z80), TRS-80 DOS, written in muSIMP-77
1980	muLISP-80	CP/M, with muStar, (8080), 10/06/80, before licensing to Microsoft
1980	muMath-80	Apple II (ADIOS-80?, native 6502), Apple II (Z80 card with CP/M), and TRS-80
1980	muLISP-80	CP/M, Version 2.0, licensed by Microsoft
1980	muLISP-80	CP/M, Version 2.03, licensed by Microsoft
1980	muMath-80	CP/M, written in muSIMP-80 2.02 (Microsoft)
1980	muMath-80	CP/M, written in muSIMP 2.03, licensed by Microsoft
1981	muMath-80	CP/M, written in muSIMP 2.10, 04/25/81, licensed by Microsoft
1981	muMath-80	CP/M, written in muSIMP 2.12, 07/09/81, licensed by Microsoft
1981	muMath-80	CP/M, Osborne 1, written in muSIMP-80 2.14, 12/19/81 (Microsoft)
1981	muLISP-80	CP/M, Version 2.15, licensed by Microsoft
1981	muLISP-81	IBM PC and CP/M
1982	muLISP-82	IBM PC and CP/M, see Micro/Systems Journal Review, May/June, 1985
1982	muMath-82	IBM PC, see PC-Magazine Review, December, 1983
1982	muMath-80	Apple II/ADIOS-81, 01/29/82, written in muSIMP 2.15, 03/01/82 (Microsoft)
1984	muLISP-83	CP/M-80, Soft Warehouse Version 4.11 03/22/84, licensed by Microsoft
1984	muLISP-83	IBM PC, Soft Warehouse Version 4.11 03/22/84, licensed by Microsoft
1984	muMath-83	IBM PC, Version 4.12 (8088), probably the last version of muMATH
1985		company name changed to *Soft Warehouse Hawaii*.
1985	muLISP-85	IBM PC MS-DOS, Microsoft LISP Version 5.01 09/15/85
1986	muLISP-86	IBM PC MS-DOS, Microsoft LISP Version 5.10 01/06/86
1987	muLISP-87	IBM PC MS-DOS, Soft Warehouse Version 6.01 06/17/87
1988	muLISP-87	IBM PC MS-DOS, Soft Warehouse Version 6.03, 07/12/88
1988	muLISP-87	IBM PC, MS-DOS, Soft Warehouse Version 6.10, 12/07/88
1988	Derive 1.00	MS-DOS, implemented in muLISP, released on October
1988	Derive 1.02	MS-DOS, written in muLISP-87 (© 1983, 1985, 1986, 1987)
1988	Derive 1.51	MS-DOS, written in muLISP-87 (© 1983, 1987, 1989)

Year	Product/Version	Operating System and Comments
1988	Derive 1.53	MS-DOS, written in muLISP-87 (© 1983, 1987, 1989)
1988	Derive 1.56	MS-DOS, written in muLISP-87 (© 1983, 1987, 1989)
1988	Derive 1.60	MS-DOS, written in muLISP-87 (© 1983, 1987, 1989)
1988	Derive 1.61	MS-DOS
1988	Derive 1.62	MS-DOS, written in muLISP-87 (© 1983, 1987, 1989)
1989	Derive 2.00	MS-DOS, price $200
1990	muLISP-90	IBM PC, Version 7.10, $150, up to 640 KB
1990	muLISP-90 XM	IBM PC, Version 7.10, $300, up to 16 MB with PharLap DOS-Extender
1990	muLISP-90	IBM PC, Version 7.20 (02/07/94)
1990	Derive 2.013	MS-DOS, written in muLISP-87 (© 1983, 1987, 1989)
1990	Derive 2.033	MS-DOS, written in muLISP-87 (© 1983, 1987, 1990)
1990	Derive 2.05	MS-DOS, written in muLISP-90
1990	Derive 2.053	MS-DOS, written in muLISP-90 (© 1983, 1987, 1990)
1990	Derive 2.083	MS-DOS, written in muLISP-90
1991		Derive User Group (DUG) founded, newsletter published up to 2024
1992	2.50	MS-DOS, written in muLISP-90 (© 1983, 1987, 1990), HP 95LX Card
1992	Derive 2.54	MS-DOS, written in muLISP-90
1992	Derive 2.55	MS-DOS, written in muLISP-90
1992	Derive 2.55 XM	MS-DOS, uses EMS, written in muLISP 90 XM Version 7.16 (02/10/93)
	Derive 2.58	MS-DOS, written in muLISP-90
1993	muLISP-90 XM	IBM PC, Version 7.16 (02/10/93)
1993	Derive 2.60	MS-DOS, written in muLISP-90
1993	Derive 2.60 XM	MS-DOS, uses EMS
1994	muLISP-90 XM	IBM PC, Version 7.20 (02/07/94)
1994	Derive 3.00	MS-DOS, first version to support Acrospin for 3D graph visualization
1994	Derive 3.00y	MS-DOS, written in muLISP-90
1994	Derive 3.00y XM	MS-DOS, written in muLISP-XM 7.21, uses PharLap extender for EMS
1994	Derive 3.02	MS-DOS
1994	Derive 3.05	MS-DOS, written in muLISP-90
1995	Derive 3.06 XM	MS-DOS, written in muLISP-XM 7.21, uses EMS
1995	muLISP-90 XM	MS-DOS, Version 7.30 (10/13/95)
1995	Derive 3.10	MS-DOS
1995	Derive 3.10	MS-DOS, written in muLISP-XM 7.30 (10/13/95), uses EMS
1995	Derive 3.10 G	MS-DOS, written in muLISP-XM 7.30 (10/13/95), uses EMS, German
1995	Derive 3.10 XM	MS-DOS, written in muLISP-90 (© 1983, 1987, 1990), EMS
1995	Derive 3.10 XMG	MS-DOS, written in muLISP-90 (© 1983, 1987, 1990), EMS, German
1995	Derive 3.11 XM	MS-DOS, uses EMS
1995	Derive 3.12	MS-DOS
1995	Derive 3.13	MS-DOS, written in muLISP-90 (© 1983, 1987, 1990)
	Derive 3.14	MS-DOS
1996		new versions for Windows written in “muLISP for Derive”
1996	Derive 4.00	MS-DOS; first Version for Windows released in October
1996	Derive 4.01	MS-DOS; Windows, but not for Windows XP
1996	Derive 4.02	MS-DOS; Windows, but not for Windows XP
1996	Derive 4.03	MS-DOS; Windows, but not for Windows XP
1996	Derive 4.04	MS-DOS, written in muLISP 7.40 (08/28/96), 16/32-bit; Windows
1996	Derive 4.05	MS-DOS, 16/32-bit (muLISP Version 7.40 (04/15/97)); Windows

Year	Product/Version	Operating System and Comments
1996	Derive 4.05a	MS-DOS, 16/32-bit; Windows 3.x
1996	Derive 4.06	MS-DOS, written in muLISP-XM 7.40 (06/25/97), 16/32-bit; Windows
1996	Derive 4.07	MS-DOS, written in muLISP-XM 7.40, 16/32-bit; Windows
1996	Derive 4.09	MS-DOS, 32-bit Extender; Windows (have update only)
1996	Derive 4.10	MS-DOS, 32-bit Extender; Windows (have update only)
1996	Derive 4.11	MS-DOS, written in muLISP 7.40 (06/04/98); Windows
	Derive 4.13	MS-DOS; Windows, but not for Windows 2000
1999		takeover by Texas Instruments, MS-DOS dropped
2000		rewrite in "C" for TI-92 and future calculators
2000	Derive 5.00	Windows 3.x
2000	Derive 5.01	Windows 95, 98, NT (16 June 2000)
2000	Derive 5.02	Windows 95, 98, NT (30 June 2000)
2001	Derive 5.03	Windows 95, 98, NT, 2000 (15 January 2001)
2001	Derive 5.04	Windows 95, 98, NT, 2000 (11 April 2001)
2001	Derive 5.05	Windows 95, 98, NT, 2000 (5 December 2001)
2002	Derive 5.06	Windows 95, 98, ME, NT, 2000, XP (10 October 2002), written in muLISP for DERIVE 7.43 (03/06/01)
2003	Derive 6.00	Windows 98, ME, 2000, XP
2004	Derive 6.01	Windows (not: 98, ME) 2000, XP (1 March 2004)
2004	Derive 6.10	Windows 98, ME, 2000, XP, written in muLISP for DERIVE 7.45 (08/17/04), connects to TI-89, TI-89 Titanium, TI-92+, TI Voyage 200
2007		Texas Instruments ends development and distribution of Derive

Notes:

- red: I have archived a copy of the files (which may be incomplete).
- black: must exist "somewhere", I found references to or screenshots of these versions.
- The prefix "mu" stands for "micro".
- There are probably more intermediate versions not listed here, as Soft Warehouse often provided small updates to fix problems reported by users.

Companion Programs

The Derive versions for MS-DOS since Derive 3.0 supported the external program *Acrospin*. *Acrospin* could display 3D line meshes of three dimensional graphics. The data was transferred from the Plot menu via a *.ACD text file which contains lists of coordinates and straight line connectivities.

Localization

Most messages from Derive versions since 2.053 can be localized by adding a language file "DERIVE.LAN". This file contains pairs of English and foreign translations for the Prompt and Message Lines, but not for the menus. The menu bar is still in English and some of the prompts are not fully translated, for example the yes/no question prompt "Y/N" which expects a 'Y' or 'N' key to be pressed.

Derive versions since 3.05 allowed for localization of the menus by adding a menu file "DERIVE.MNU" which contains a hierarchical LISP list of the translated menu structure and the English commands to execute.

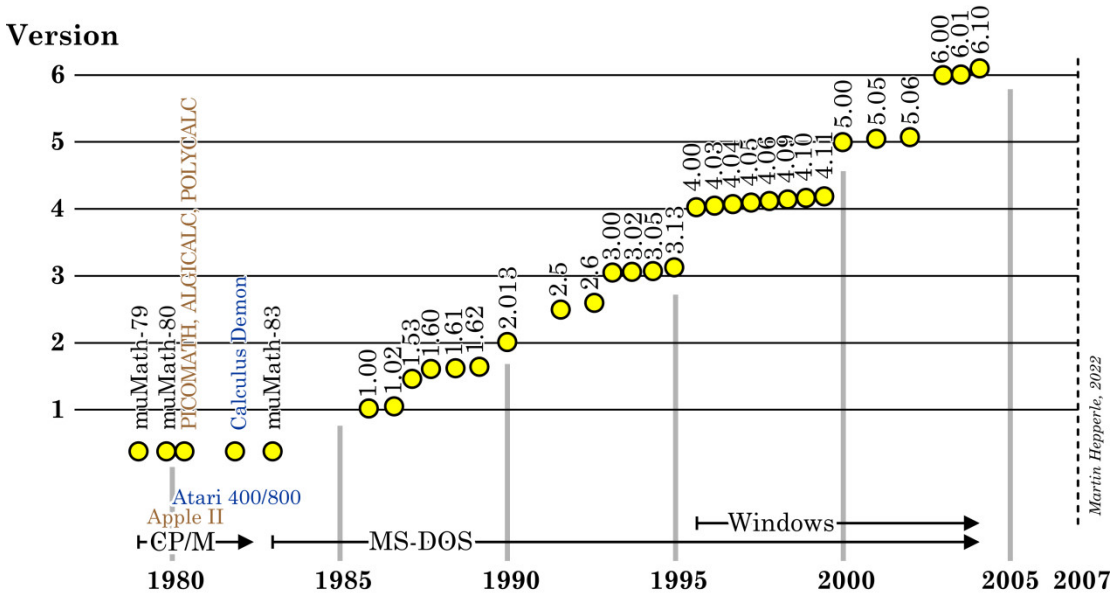


Figure 3: Derive version numbers versus publication year.

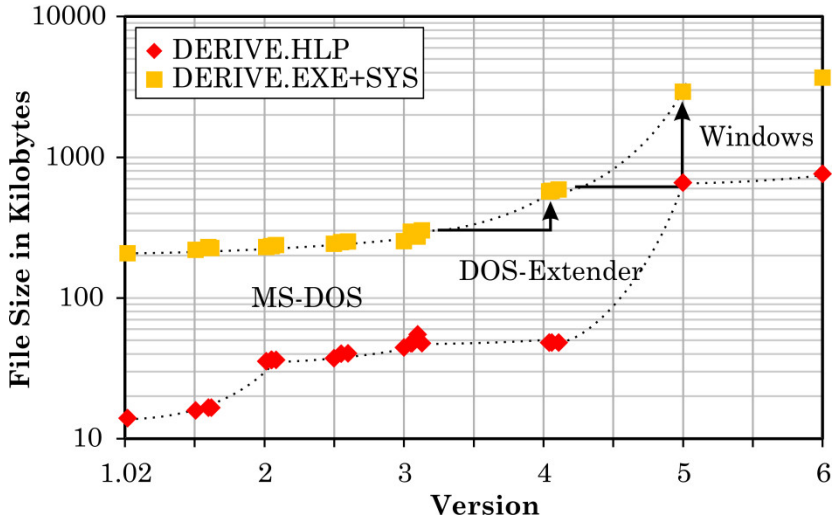
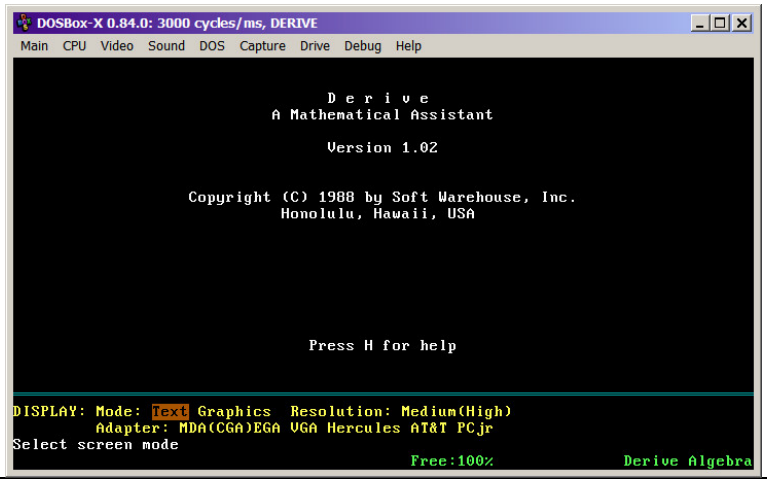
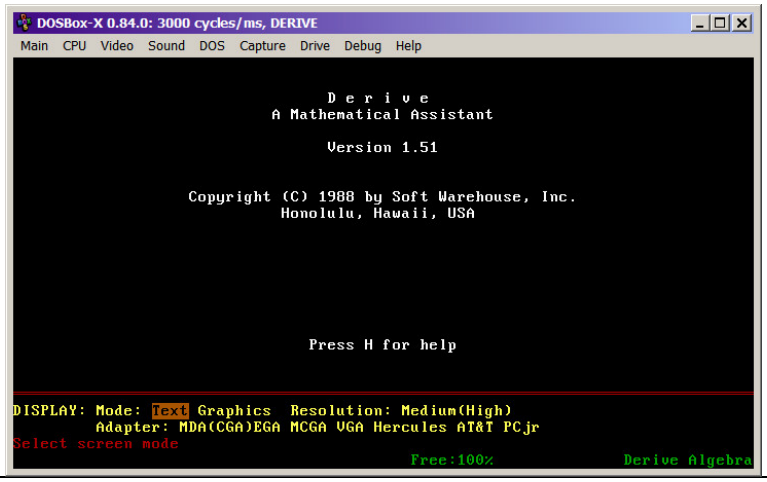
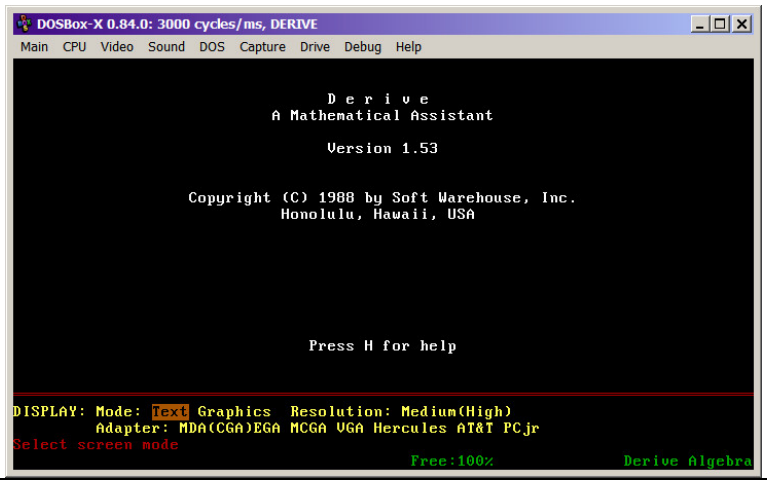
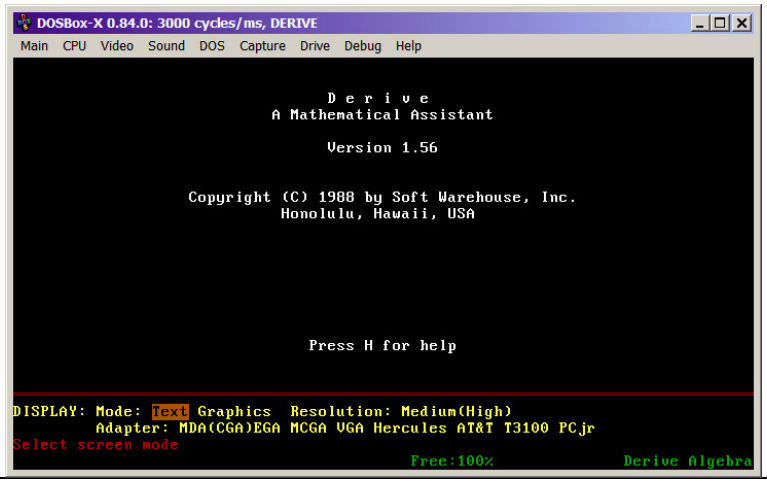
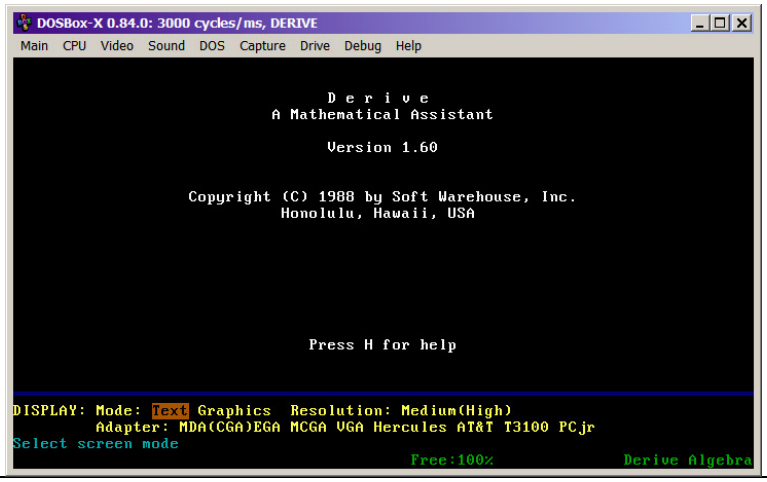
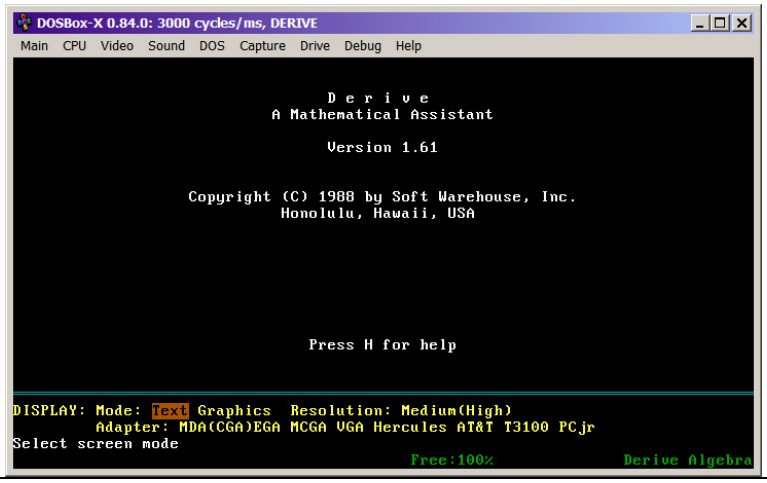


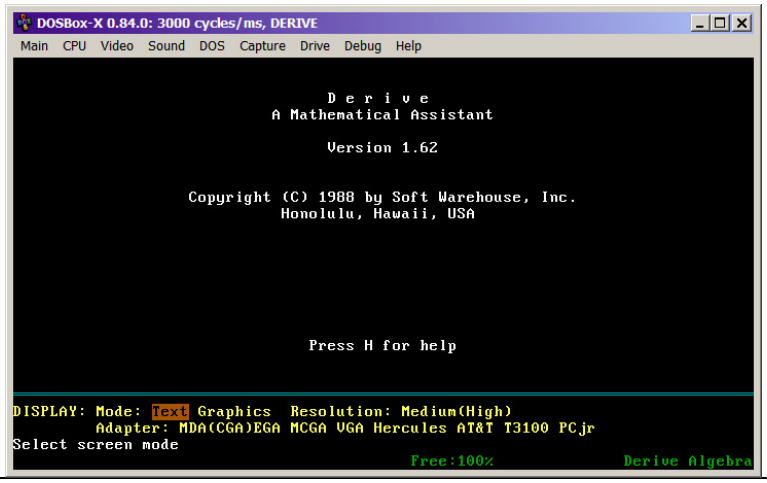
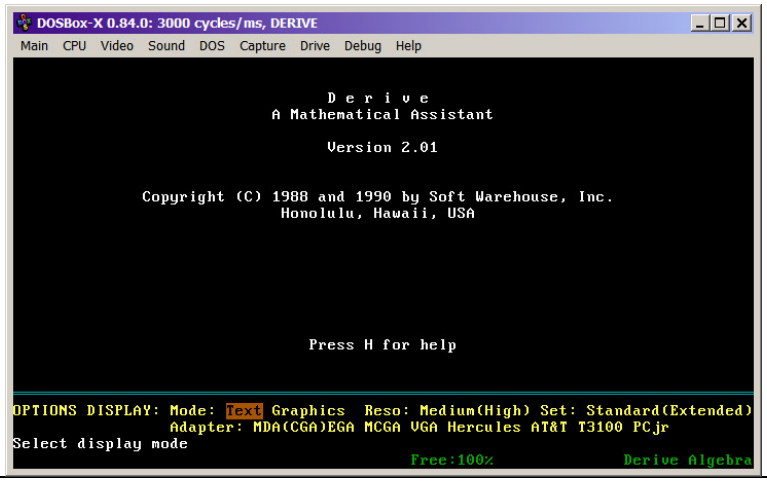
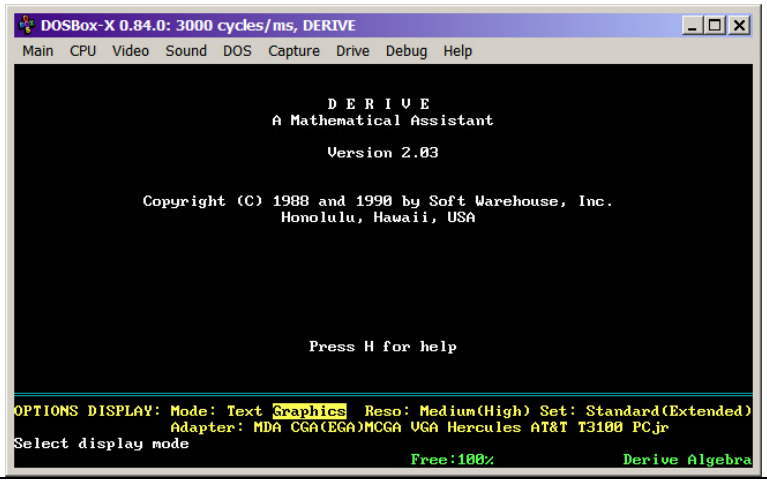
Figure 4: Growth of the main Derive files versus publication year.

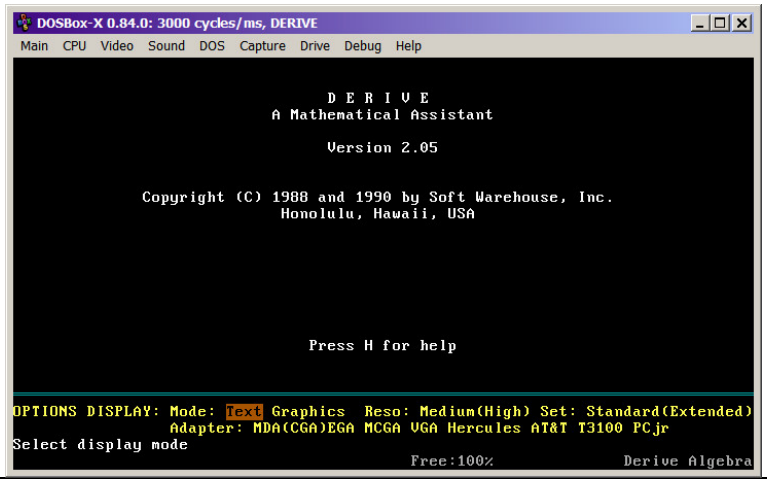
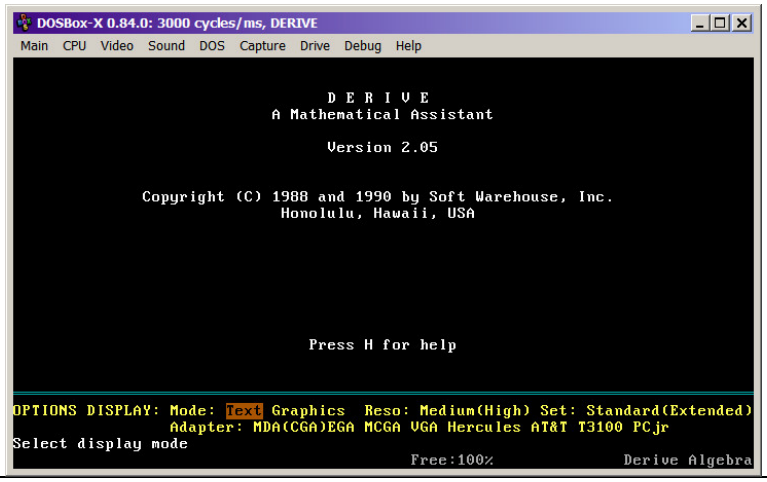
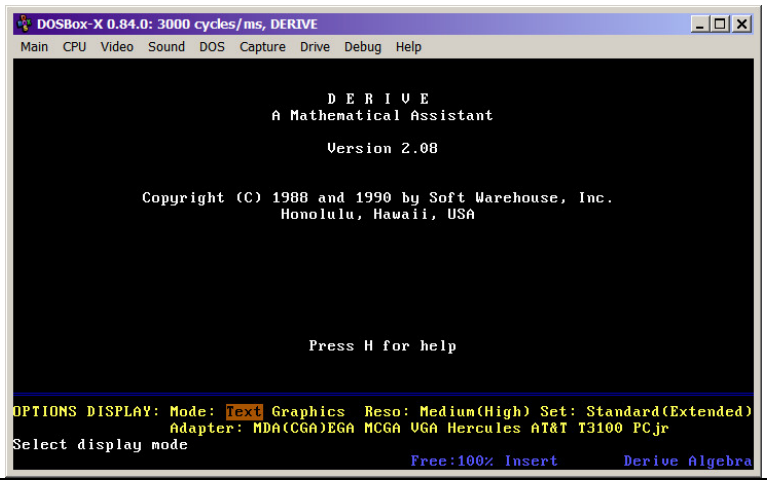
Derive Opening Screens

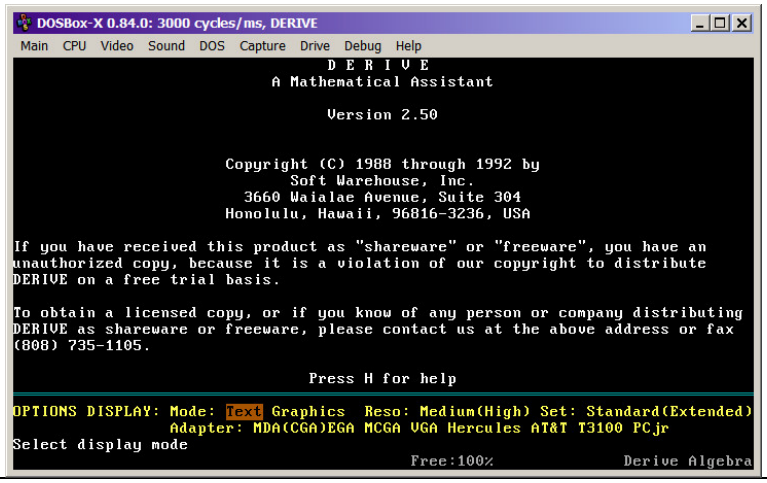
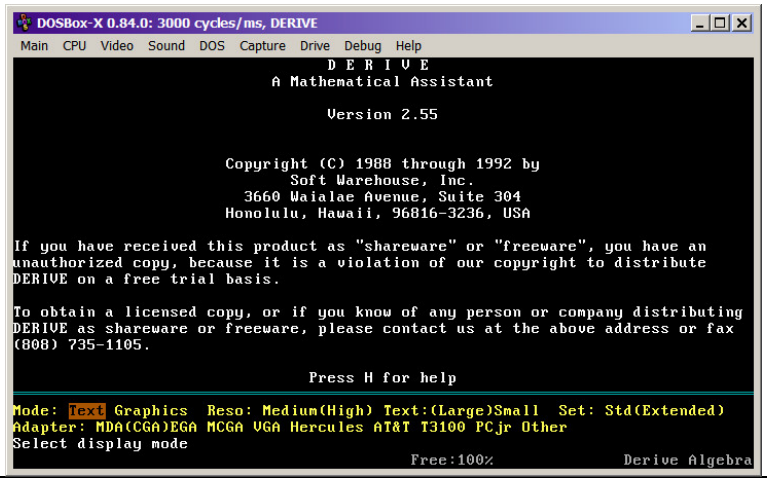
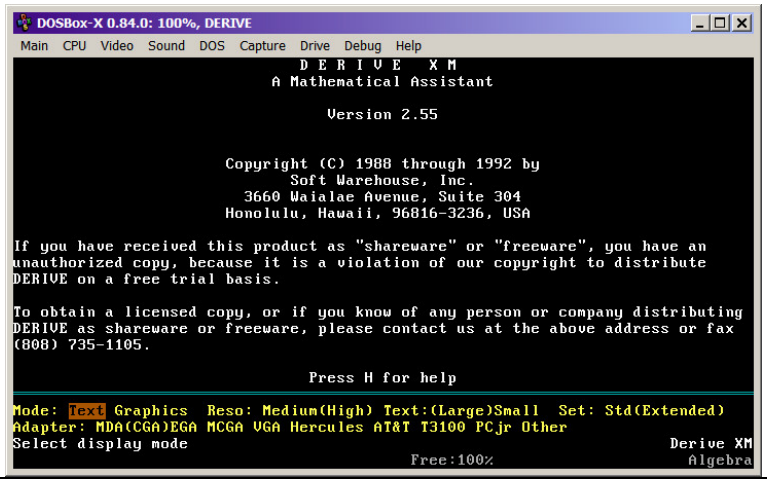
Derive can be installed and run on modern systems using the a DOSBox simulation environment. The following screenshots were taken with Options / Display active to show the graphics cards supported by each version.

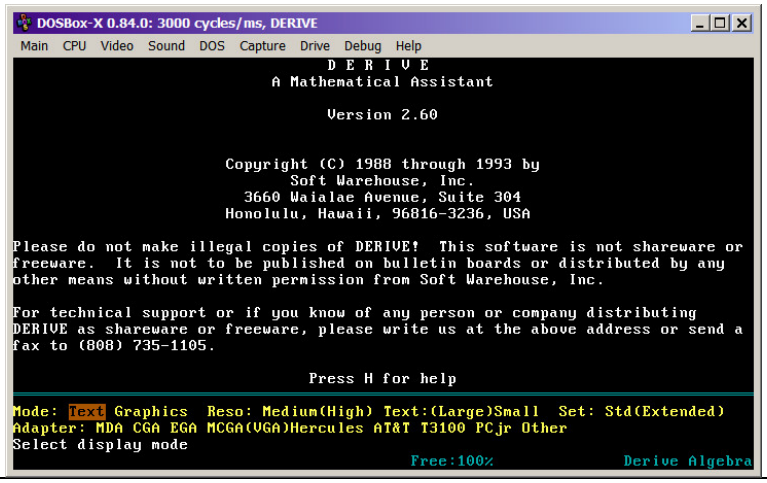
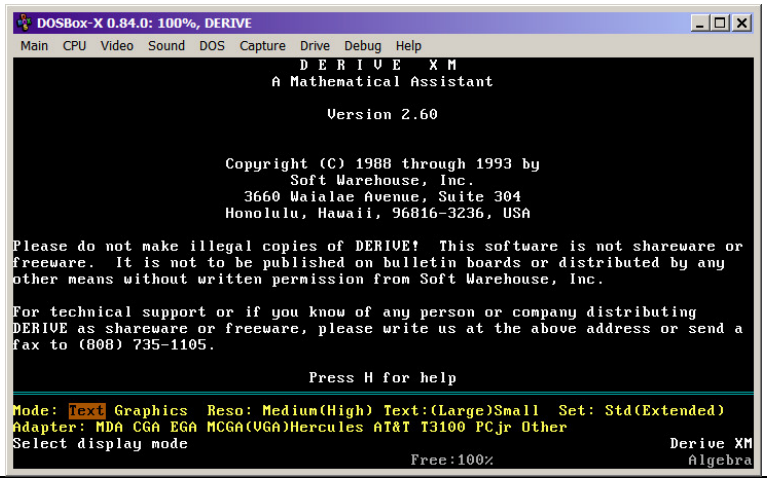
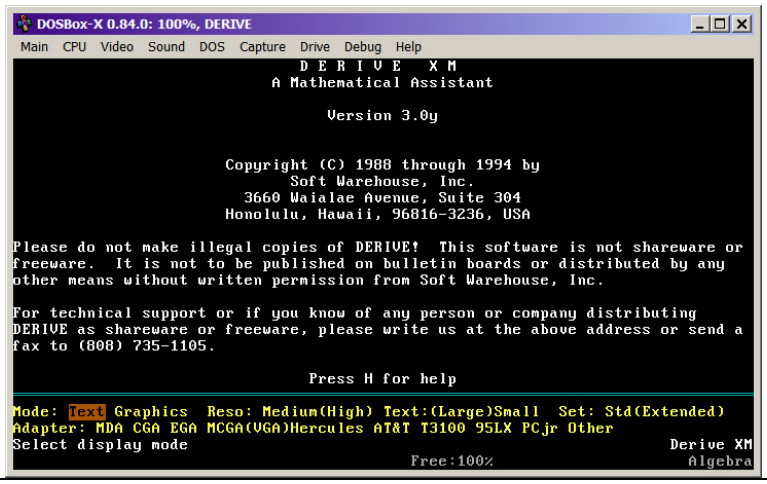
	1988 Version 1.02 This version supports most graphics adapters of that era including VGA.
	1988 Version 1.51
	1988 Version 1.53

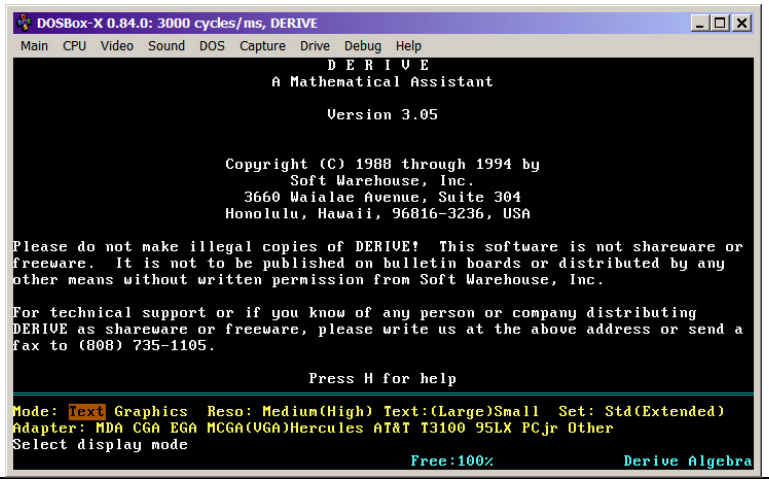
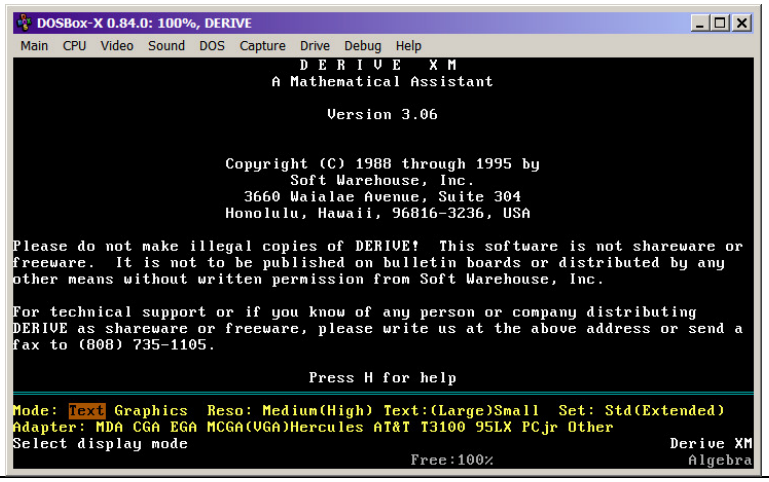
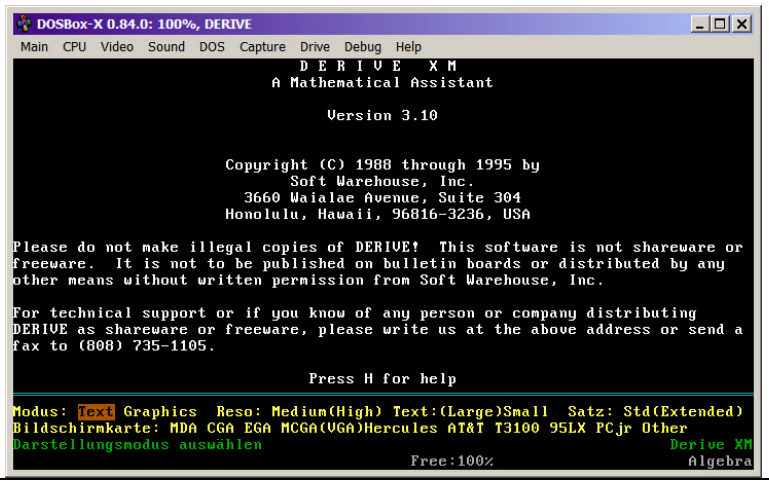
	1988 Version 1.56
	1988 Version 1.60 This version added a display driver for the Toshiba T3100 laptop computer (which btw. as the same 640 x 400 pixel screen memory organization as the AT&T 6300/Olivetti M24/HP Vectra).
	1988 Version 1.61

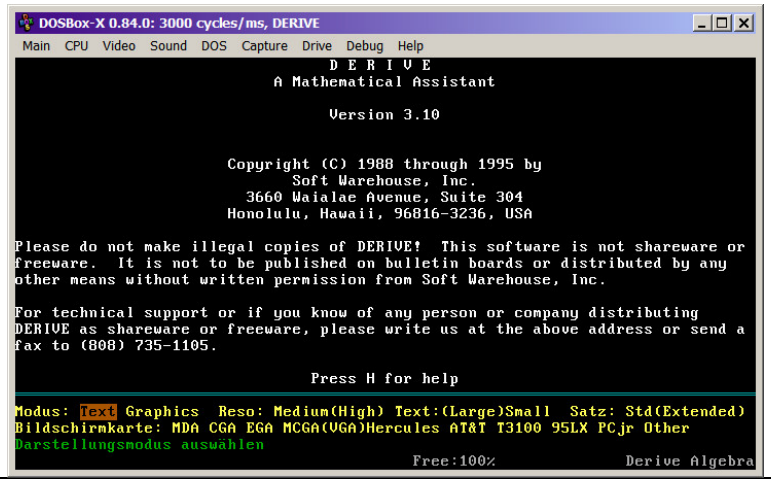
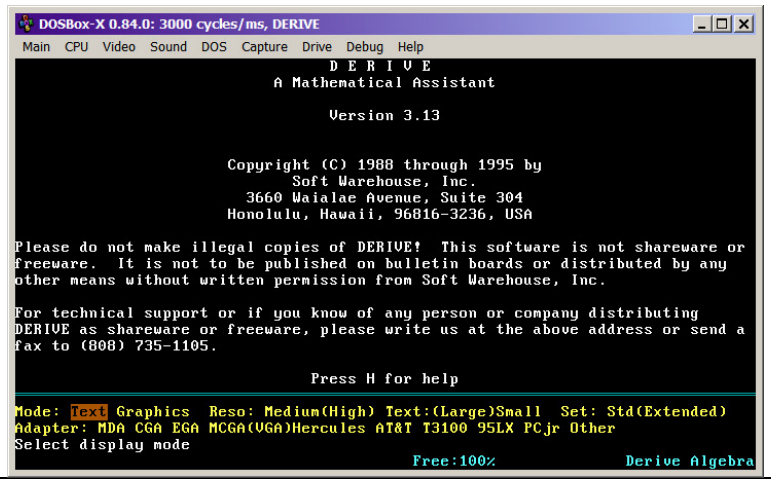
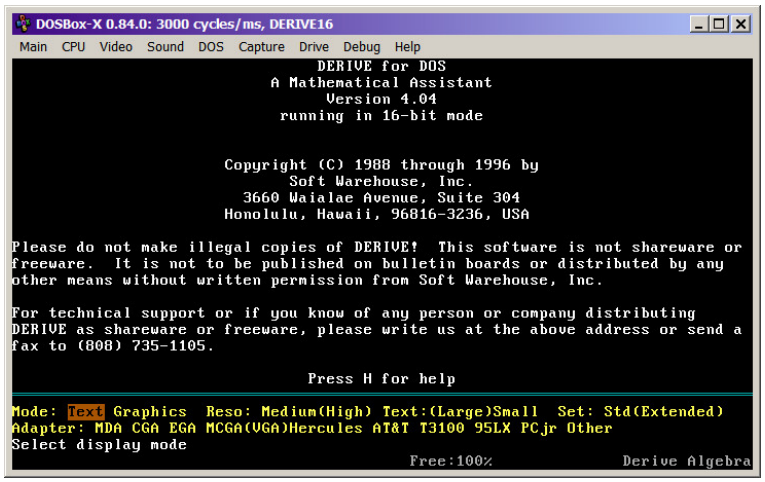
	1988 Version 1.62
	1990 Version 2.013
	1990 Version 2.033

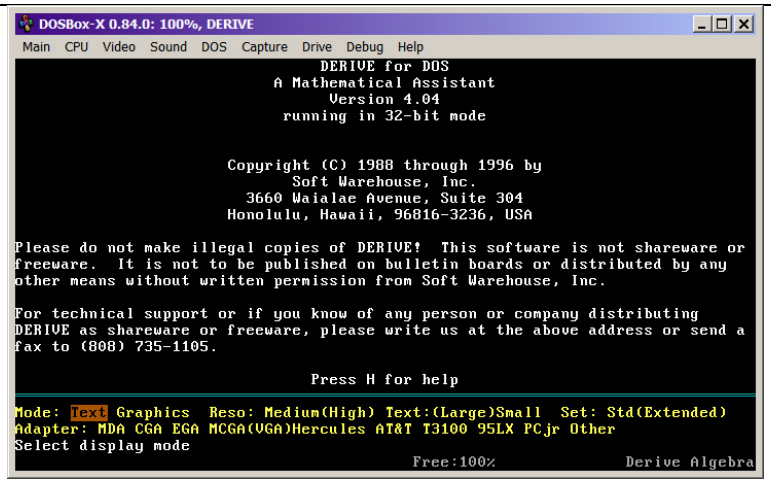
	1990 Version 2.05
	1990 Version 2.053
	1990 Version 2.083

	1992 Version 2.50
	1992 Version 2.55
	1992 Version 2.55 XM

	1993 Version 2.60
	1993 Version 2.60 XM
	1994 Version 3.0y XM This version used a so called DOS Extender and added support for the display of the HP 95LX palmtop computer.

		1994 Version 3.05
		1995 Version 3.06 XM Version using a DOS Extender.
		1995 Version 3.10 G User interface translated into German.

	1995 Version 3.10 XMG This version used the DOS extender and also came with the user interface translated into German.
	1995 Version 3.13
	1996 Version 4.04 This version came with executables for a 16-bit and a 32-bit DOS Extender variant. The 32-bit option required a 32-bit processor like the 80386.

<table>
<tr>
<td></td>
<td> 
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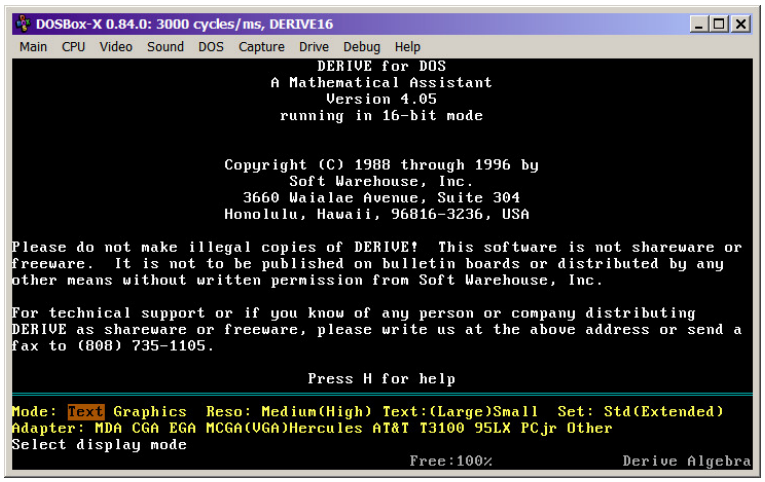
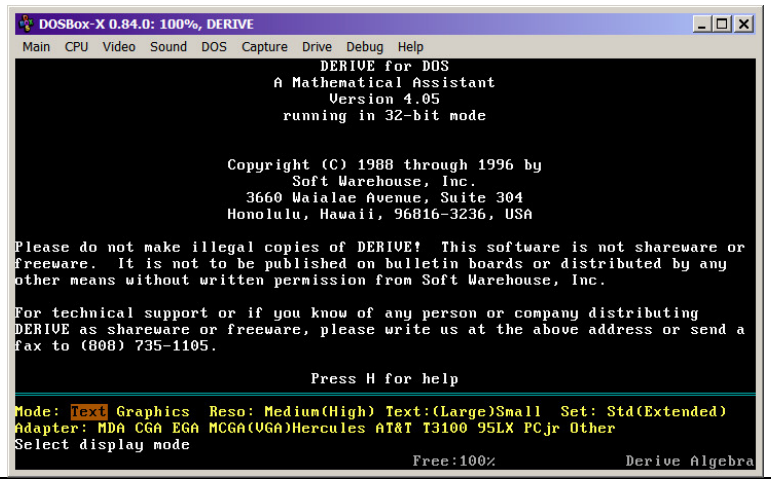
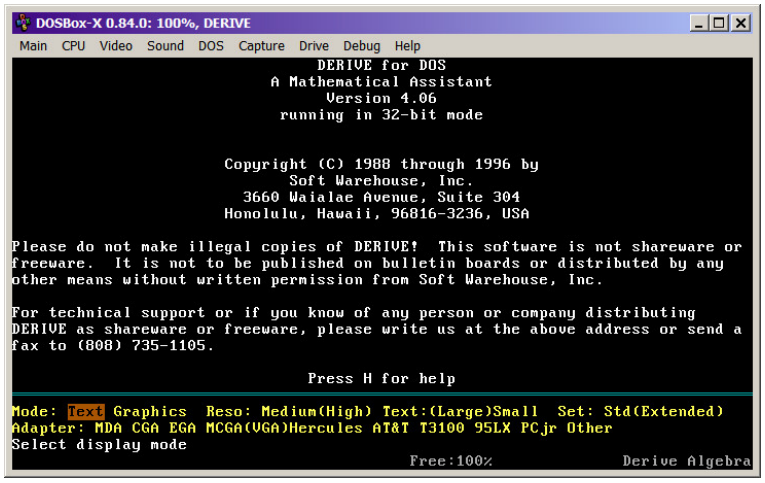
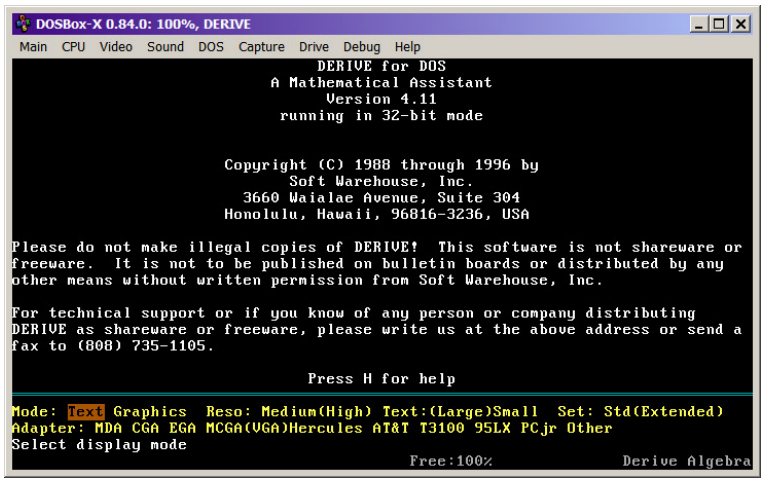
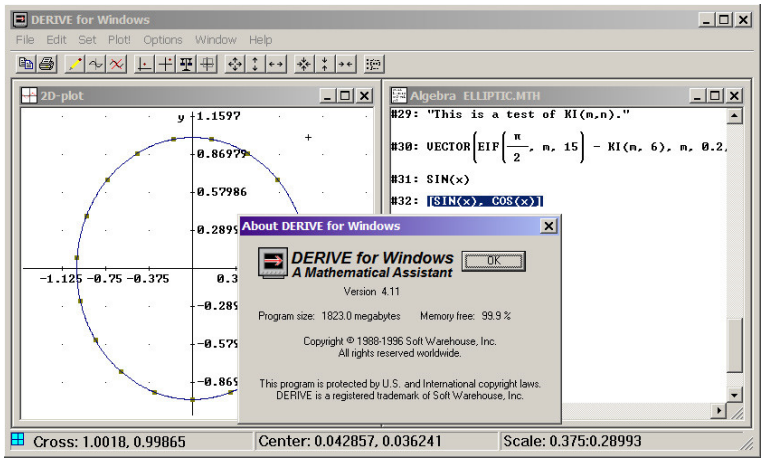
<td> 


</td>
<td>1996
Version 4.05

This version came with executables for a 16-bit and a 32-bit DOS Extender variant.</td>
</tr>
</table>

	1996 Version 4.06 This version also used the 32-bit DOS Extender.
	1996 Version 4.11 This version used also used the 32-bit DOS Extender. It still supported the HP 95LX palmtop computer.
	1996 Version 4.11 Windows This version did not yet have the edit bar at the bottom but used a dialog to author equations.

Terminal Installation for muLISP and Derive

The early versions of muLISP up to version 6.10 and Derive up to version 2.083 can be installed for different terminal types.

I don't know whether there was a Wordstar-like installation program for selecting preconfigured terminals or even defining your own escape sequences. The list found in the program code suggest so.

Today I can only patch the code to select different terminals.

The terminal list also includes the HP-110 and HP-150. Therefore, Derive versions up to 2.083, which have been built with these muLISP versions, can be patched to work with the HP-150 and HP-110. However, graphics mode and equation displays are not properly supported (axes and points use incorrect characters).

The *.COM files contain a list of terminals.

```
1 = Other generic MS-DOS computer
2 = IBM PC compatible computer
3 = ANSI.SYS screen or VT-100 Terminal
4 = TI Professional Computer
5 = Zenith Z-100 Computer or VT-52 Terminal
6 = Hewlett-Packard HP-150 Computer
7 = Hewlett-Packard HP-110 Computer
8 = NEC Advanced PC or ADM-3A Terminal
9 = NEC PC-9801 Computer
A = Fujitsu Computer
```

The terminal byte or word in the following context contains the terminal number. Here it has been changed to “06”, the HP-150 Computer.

```
00000440 00001E1E 04000300 00004F00 0000FF07 .........O.....
00000450 5C7C64FF FF1A0006 00000000 00242000 \|d.........$ .
                        ^^ terminal type
00000460 0000004C 5350FF00 002E1110 FF000000 ...LSP..........
```

muMATH

Before Derive there was muMATH. It was written in the muSIMP language which itself was implemented in muLISP. muSIMP provided a simpler and more conventional user interface to muLISP.

Due to the memory restrictions of the CP/M, TRS-80 and, Apple II systems, a hierarchical set of files has to be loaded with the RDS command, depending on the problem to solve.

The figure below shows the dependency tree of these packages. For example the approximation of a function by a Taylor series requires reading the sequence of files ARITH.MUS, ALGEBRA.ARI, DIF.ALG and, TAYLOR.DIF. Note that the file extensions indicate the required package.

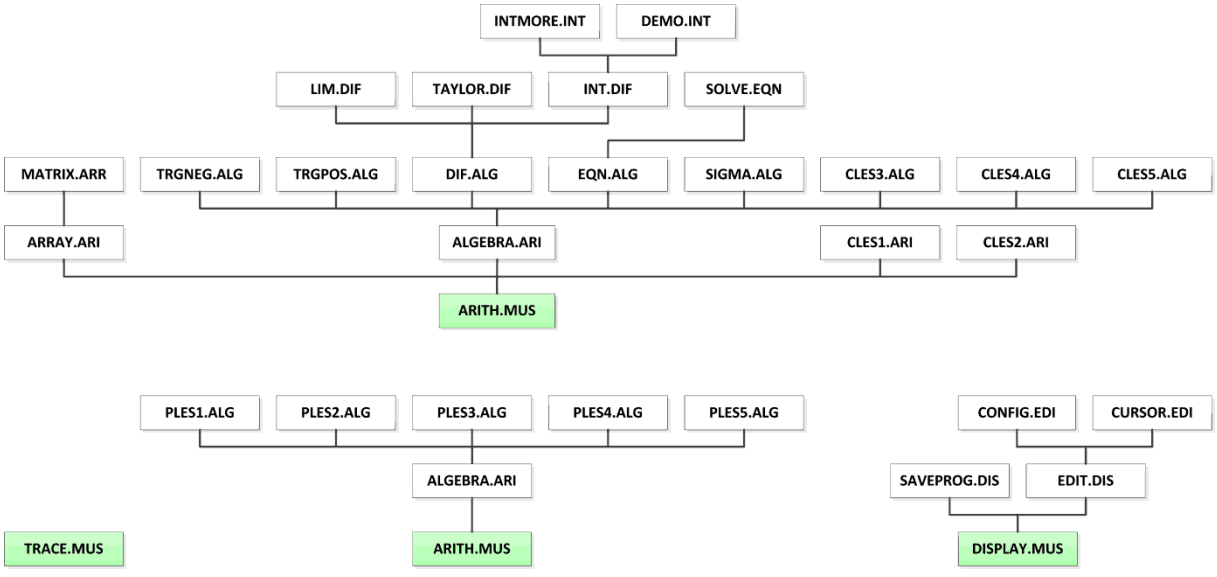
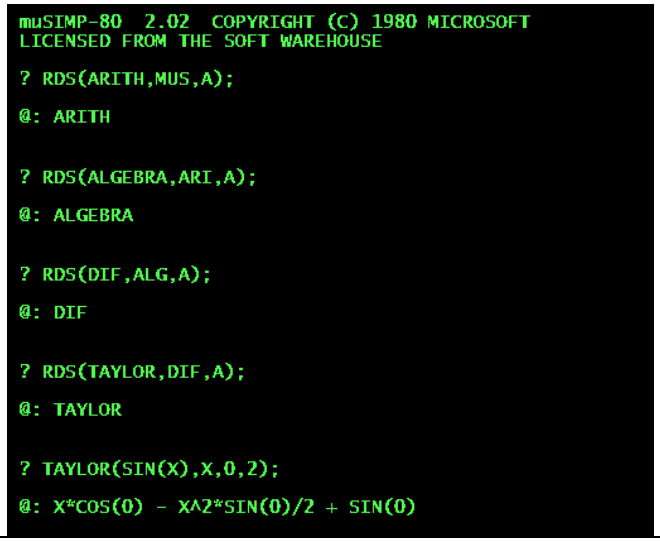


Figure 5: Dependency tree of muMATH 2.15 for CP/M modules. Start loading at the green nodes. Versions for MS-DOS included additional modules and preloaded combinations in SYSTEM files.

Following the generic 8080 CP/M, native TRS-80 and native Apple II versions, at least two versions for MS-DOS (muMATH-82 and muMATH-83) were developed. These seem to be missing in the internet archives.

Similarly, the initial version muMATH-79 for CP/M seems to have been lost.



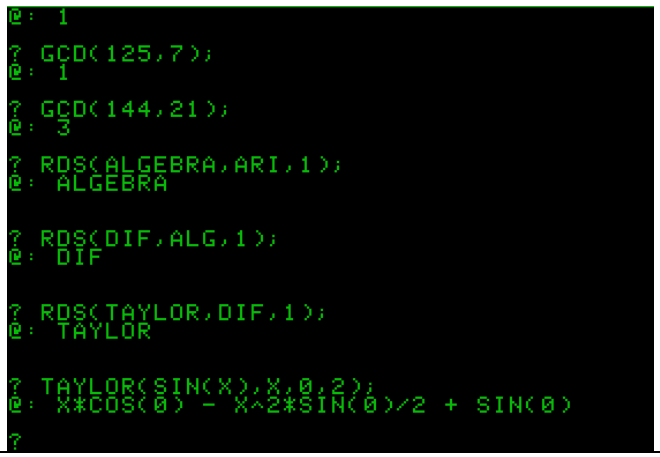
muMATH 2.02

8080

CP/M Version

This version was running on generic CP/M systems using the 8080 and Z80 processors.

.



muMATH

native Apple II

ADIOS Version

This version came with its own ADIOS operating system to maximize the memory available for muMATH.

The code was probably a semi-automatic translation of the 8080 code to 6502 and not very fast.

Literature related to Derive

(There is a large number of books about Derive and its application and many of them have been listed in the Derive Users Group Newsletters, many can be loaned from your local library or from archive.org)

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[3] Arney, David C., “Exploring Calculus with Derive", Addison-Wesley, 1992, 166 pages.

[4] Arney, David C., “The Student Edition of Derive”, Addison-Wesley, 1992, 387 pages, uses Derive Version 2.

[5] various authors, “Lab Resource Manual to accompany The Student edition of Derive”, 1992, 69 pages.

[6] Glynn, Jerry, “Exploring Math from Algebra to Calculus with Derive”, Mathware, 1992, 154 pages, uses Derive Version 2.51.

[7] Berry, J.S., Graham, E., Watkins, A. J. P., “Learning Mathematics through Derive”, Ellis Horwood, 1993, 371 pages.

[8] Koepf, W., Ben-Israel, Ben, Gilbert, Robert P., “Mathematik mit Derive”, Vieweg 1993 (German).

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[10] Townend, M. Stewart, Pountney, David C., “Learning Modelling with Derive”, Prentice Hall, 1995, 244 pages.

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[13] Bogess, Al, et. al., “Single Variable Calculus with Derive”, Brooks/Coole Publishing Company, 1999, 208 pages.

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[1] Rich, A.D., Stoutemyer, D. R., “Capabilities of the muMATH-79 Computer Algebra System for the Intel-8080 Microprocessor”, in “Symbolic and Algebraic Computation, EUROSAM 1979”. Lecture Notes in Computer Science, Vol 72. Springer, 1979.

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[3] Wyant, James C., "Use of a Symbolic Math System to Solve Polarized Light Problems", Applied Optics, Vol. 20, No. 19, 1 October 1981, pp.3321-3326. [uses muMATH-79]

[4] Shochat, David D., “Experience with the muSIMP/muMATH-80 Symbolic Mathematics System”, ACM SIGSAM Bulletin #3, August 1, 1982, pp. 16-23. [refers to muSIMP/muMATH-79]
[5] McClennan, David T., “LISPing with your PC”, (review, includes muLISP-82), PC Magazine, December, 1983.
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[7] Wong, William G., “The PC Speaks LISP”, (review, includes muLISP-82), PC Tech Journal, April, 1984, pp. 112-148.
[8] Bortz, J., Diamant J., “LISP for the IBM Personal Computer”, (review, includes muLISP-83), BYTE Magazine, July, 1984.
[9] Stoutemyer, D.R., “A preview of the next IBM-PC version of muMATH”, in “EUROCAL '85”, Lecture Notes in Computer Science, Vol 203, Springer, 1985.
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[1] “muSIMP/muMATH-79 Reference Manual”, 135 pages, 1979.
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[3] “muMATH/muSIMP”, for TRS-80, software manual, Microsoft, 76 pages, 1980.
[4] “The muMATH/muSIMP-80 Symbolic Mathematics System”, Reference Manual, 195 pages, 1980. [covers TRS-80, Cromenco Z1&Z2&Z3, Imsai VDP IMDOS, Apple II CP/M with Z80 card, Heath H89 with CP/M board, 8080, 8085, Z80 CP/M systems]
[5] “The muMATH/muSIMP-80 Symbolic Mathematics System for the Apple II with SoftCard”, Reference Manual, 210 pages, 1981. [covers Apple II CP/M with Z80 card]
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[7] “Microsoft muLISP Artificial Intelligence Development System”, Reference Manual for muLISP-83, 1983. [covers versions for CP/M, IBM PC, Apple II with Z80 card]
[8] “muLISP-90 LISP Language Programming Environment”, Reference Manual, 1990.

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