

TEXAS v1.0a

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## 1 Overview

TEXAS is a 32-bit protected mode version of big T<sub>E</sub>X 3.14 compiled for MS-DOS 386/486 computers. It uses a royalty-free distribution version of Rational Systems Inc. DOS Extender which is XMS, VCPI, and DPMS compatible. TEXAS.ZIP is an executable distribution only. It is intended to complement any existing 16-bit T<sub>E</sub>X setup or as an alternative to 32-bit T<sub>E</sub>Xs like PCT<sub>E</sub>X/386 or emT<sub>E</sub>X/386.

TEXAS is completely free and you are welcome to use it in any way you see fit (producing beautiful documents of course).

## 2 Manifest

1. README — stop press information
2. TEXAS.EXE — the T<sub>E</sub>X executable
3. TEX.PO0 — the pool file used by TEXAS.EXE

4. DOS4GW.EXE — the royalty-free distribution version of RSI's DOS Extender
5. RMINFO.EXE — two programs from RSI to test protected mode
6. PMINFO.EXE — operation (distribution permitted by RSI)
7. TEXAS.DVI — TEXAS documentation
8. TEXAS.PS — TEXAS documentation in PostScript format

### 3 Changes from v1.0

- (a) Minor optimisations have been made so that TEXAS 1.0a runs 5–10% faster than TEXAS 1.0.
- (b) TEXAS now responds to `<ctrl>-C` and `<ctrl>-<break>`.
- (c) If the TEXINPUTS environment variable is set, then TEXAS 1.0 does not search for files in the current directory and files given by relative path names (other than files starting with `“./”` and `“../”`) unless the current directory is explicitly included in TEXINPUTS. This has now been changed. TEXAS 1.0a now searches the current directory for files (including relative path names) before trying the paths listed in the TEXINPUTS variable. This also applies to TEXPOOL, TEXTONTS, and TEXFORMATS.

### 4 Getting Started

- (a) Copy TEXAS.EXE and DOS4GW.EXE to a directory which is on your DOS path. TEXAS.EXE uses DOS4GW.EXE and searches for it using the PATH variable.
- (b) Create a new directory to put TEX.PO0 and the format files. Remember that \*.FMT files and TEX.PO0 are not interchangeable between different implementations of T<sub>E</sub>X.
- (c) Set the following environment variables so that TEXAS can find all its auxiliary files. The value of the variables can be a list of directories separated by semi-colons, exactly like the DOS PATH variable.

```
set TEXPOOL=<directory list to find TEX.PO0>
set TEXFORMATS=<directory list for *.FMT files>
set TEXTONTS=<directory list for *.TFM files>
set TEXINPUTS=<directory list for input files>
```

E.g.,

```
set TEXPOOL=c:\tex\formats
set TEXFORMATS=c:\tex\formats
set TEXTONTS=c:\tex\fonts
set TEXINPUTS=c:\tex\inputs;c:\tex\myinputs
```

(d) `TEXAS` needs about 5 MB of memory (conventional and extended). If you do not have enough memory installed `TEXAS` will use your hard disk as virtual memory but you will first have to set additional environment. Refer to section 5 if you do not have 5 MB of RAM.

(e) Create your format files and put them into the `TEXFORMATS` directory. `TEXAS -i` starts `TEXAS.EXE` up in `INITEX` mode which is used for creating format files.

E.g., the command `TEXAS -i plain` will create the file `PLAIN.FMT` (after typing “\dump” at the \* prompt). You should now move this file to the `TEXFORMATS` directory.

## NOTES

- It is not necessary to include the current directory “.” in the environment variables. When looking for file `myfile` (which may be a relative path name) `TEXAS` will always try `./myfile` before using the directories listed in the appropriate environment variable.

## 5 Virtual Memory

This information is for users of `TEXAS` who have less than 4 MB of extended memory available. It documents environment variable settings which enable the DOS Extender to control virtual memory. This information is taken from the manual ‘DOS Programming Guide for 32-bit Applications’ by G. Coschl and J. B. Schueler of WATCOM. (I’m assuming they won’t mind me reproducing the relevant information here — after all the DOS Extender is meant for distribution and it is not much use without this information.)

`DOS4GW.EXE` is a 32-bit Rational Systems’ DOS Extender that is provided with WATCOM C/386. It is a subset of Rational Systems’ DOS/4G product and only works with WATCOM C/386 programs. The virtual memory manager is restricted to 32 MB of memory.

### 5.1 How to use virtual memory

To enable the virtual memory manager (VMM) just set the `DOS4GVM` environment variable.

Syntax: `set DOS4GVM= [option[#value]] [option[#value]] ...`

Option	Purpose [default value in K]
<code>MINMEM</code>	Minimum amount of RAM managed by VMM [512]
<code>MAXMEM</code>	Maximum amount of RAM managed by VMM [4096]
<code>SWAPNAME</code>	Swap file name [ <code>\DOS4GVM.SWP</code> ]
<code>DELETESWAP</code>	Delete the swap file on program exit
<code>VIRTUALSIZE</code>	Size of virtual memory space [16384]

E.g.,

```
set DOS4GVM=deleteswap virtualsize#4096
```

NOTES

- VIRTUALSIZE = Swap file + allocated memory
- TEXAS only needs a virtual size of about 4 MB

## 5.2 Alternative method

Create a file with extension “.VMC” e.g. MYFILE.VMC and use the file name (preceded by @) as an option to DOS4GVM.

```
set DOS4GVM=@MYFILE.VMC
```

Put your settings in MYFILE.VMC as follows (reproduced from the WATCOM manual):

```
=====A Sample VMC file=====
```

```
!Sample .VMC file
!This file shows the default parameter values
minmem = 512 At least 512 bytes of RAM is required
maxmem = 4096 Uses no more than 4MB of RAM
virtualsize = 16384 Swap file plus allocated memory is 16MB
!To delete the swap file automatically when the program exits, add
!deleteswap
!To store the swap file in a directory called swapfile add
!swapname = c:\swapfile\dos4gvm.swp
```

```
=====End of Sample VMC file=====
```

NOTES

- Comments are permitted. Comments on lines by themselves are preceded by an exclamation point (!). Comments that follow option settings are preceded by white space.
- Do not insert blank lines; processing stops at the first blank line.

## 5.3 Sample Setting

The following is a sample setting which is appropriate for TEXAS,

```
set DOS4GVM=swapname#c:\tmp\dos4gvm.swp virtualsize#4096
```

but you may need to fiddle with virtualsize.

## 6 Command line options

Usage: TEXAS [-iv?] [&format\_file] [tex\_command\_line]

- i starts TEXAS in INITEX mode which is used for creating format files. To use another format file besides the default PLAIN.FMT use the & method.

-v prints the current version of TEXAS.EXE.

-? will print a help message.

E.g., `TEXAS &lplain myfile` starts TEXAS with LPLAIN.FMT instead of the default PLAIN.FMT.

## 7 Technical Notes

- (a) TEXAS is an implementation of big T<sub>E</sub>X 3.14. Main memory size is 256K, font memory size is 100000, and the pool size is 72000. TEXAS also incorporates the changes in the UNIX T<sub>E</sub>X C distribution which allows large hyphenation patterns of European languages; hence the banner line reads “...C Version 3.14t3”. In fact TEXAS was compiled from the UNIX C distribution. Modifications to the source code were made to combine INITEX and VIRTEX into a single program and to account for the differences between UNIX and DOS file handling. TEXAS was compiled using WATCOM C/386.
- (b) TEXAS has passed the TRIP test for T<sub>E</sub>X 3.0. The TRIPIN.LOG, TRIP.FOT, and TRIP.LOG files are available on request. Source code and diffs from the UNIX T<sub>E</sub>X C distribution are also available. The source code was also compiled successfully with the DJGPP port of the GNU C compiler.
- (c) The DOS Extender is both VCPI and DPMI compliant. TEXAS has been tested in DESQview and Windows 3.0 (386 Enhanced mode) DOS boxes. I'd be interested to find out if it works in the OS/2 v2.0 DOS box.
- (d) PMINFO.EXE measures the performance of protected/real-mode switching and extended memory (quoted from the WATCOM C/386 manual).  
RMINFO.EXE supplies configuration information and the basis for real/ protected-mode switching in your machine (quoted from the WATCOM C/386 manual).

## 8 Bugs

- (a) TEXAS is a T<sub>E</sub>X 3.0 so it should be able to handle 8-bit input. However it opens all input files in text mode so it might well choke if your input files contain  $\text{^Z}$  or ASCII 26. An example of such a file is TEXINFO.TEX that comes with some of the GNU manuals. A work around is to replace all occurrences of  $\text{^Z}$  with the string “ $\text{^^Z}$ ”.
- (b) Full path names should follow the UNIX convention of having ‘/’ as the directory separator. However both ‘/’ and ‘\’ can be used in the setting of environment variables. E.g.,

```
\input c:/tex/inputs/plain.tex
```

TEXAS will try, however, to display file names using UNIX conventions. This is a change over TEXAS 1.0.

- (c) TEXAS has problems finding files under PC-DOS 4.01. There is no workaround yet.

## 9 Acknowledgments

- (a) DOS4GW.EXE, RMINFO.EXE, and PMINFO.EXE are solely products of Rational Systems Inc.. Their distribution is permitted and encouraged by WATCOM and RSI. I have had nothing whatsoever to do with these programs.
- (b) The UNIX T<sub>E</sub>X C distribution (without which TEXAS would have been impossible) is the work of Tim Morgan, Tomas Rokicki, Pierre Mackay, and Karl Berry (and I've probably left out a few names here). It is available for anonymous ftp on `byron.u.washington.edu`.
- (c) Thanks to Helmer Aslaksen, James McKinnon, and Eberhard Mattes for bug reports.

## 10 Change History

1. 1.0a — internal changes; `-v?` switches added; documentation available in T<sub>E</sub>X form; removed bug in interrupt handling; search current directory/relative path names first.
2. 1.0 — initial release

## 11 Authorship

TEXAS was compiled by

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All bug reports and comments for improvement are welcome and may be sent to `matcsp@nuscc.nus.sg`.