DVIview

by

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Documentation for
DVIview version 1.00

November 2, 1995

DVIview allows you to view and print dvi files such as those generated by TEX and LATEX. It allows the inclusion of Draw and Sprite files in TEX and LATEX documents.

Despite incorporating a vast array of complicated features, DVIview is completely free.

1 Version 1.00?

This brief section is intended to satisfy the curiosity of those who are upgrading from version 0.94 (or earlier) and are wondering where versions 0.95-0.99 went.

In the beginning, DVIview was rather hacked together. The code it used to load the dvi files came from a command-line based program and various parts of DVIview had to be designed with this code's limitations in mind. For example, error recovery tended to mean program termination — not an acceptable approach for a Wimp program — and some features were very unfriendly: page offsets needed to be specified before a file was loaded and a 'start page' facility was the only way to handle large documents. This old dvi loading code also had rather unfortunate implications for loading speed and memory requirements.

These problems, combined with limitations of the outline fonts at the time, led me to number the first DVIview as version 0.90 i.e. not really up to a version 1.00 :-) The idea was that version 1.00 would be the program that I actually wanted to write and would be proud to release. At the time, I never really expected to reach version 1.00 but here we are.

2 Version 1.00!

Version 1.00 is the first version of DVIview that I'm really proud of. So, what's all the fuss about? Well, for version 1.00, DVIview has been completely rewritten (bar some of the printing code) around new dvi loading code. New features include:

- A virtual memory system which means faster loading (especially of large documents) and far smaller memory requirements.
- Sprite files can now be included in documents.
- Scaling and cropping of sprites and Draw diagrams.

Figure 1: The view menu

- Support for RISC OS 3 Draw files.
- Page offset adjustment of loaded documents.
- The ability to apply a paper size to documents.
- Editing and saving of paper sizes.
- Saveable options for the document displays and for printing.
- Support for interactive help.
- TOYWWSLOSO[1] (tm) printing facilities :-)

3 Loading a file

A `dvi` file can be loaded by double-clicking it or by dragging it or the directory in which it resides onto the `DVIview` icon on the icon bar. In the latter case, the file *must* be called `dvi`.

`DVIview` scans the document (which may take a few seconds for large documents) and then loads and displays the first page. Because of `DVIview`'s new virtual memory system, only pages which are being viewed on screen are loaded into memory and so you can preview very large documents without needing that 256Mb Risc PC you had your eye on.

4 Viewing a document

Once loaded, the first page of the document is displayed in a window. You can move to different pages using the **Next**, **Previous** and, for larger jumps, **Goto page** items from the window's menu (see figure 1).

The scale of this window can be altered using by choosing **Scale** and using the standard 'scale view' dialogue box.

The other items in the menu are **New view** which, unsurprising, spawns a new view on the document, and **Save page** which saves the page being viewed as a Draw file.

At the top of the menu is the **Document** item which leads to a submenu whose items concern the document as a whole rather than the page currently being viewed (see figure 2). **File info** leads to the standard file information dialogue box. **Save** allows a range of pages to be saved as separate Draw files in a directory and it will come as a great shock to discover that **Print** allows pages to be printed[2]. **Paper size** allows you to choose the size of the paper

[1] The output you want without setting loads of stupid options.

[2] I was being sarcastic, but it *will* be a shock to long-time users who had probably given up hope of ever seeing a working print option in `DVIview`.

Figure 2: The document submenu

Figure 3: The choices dialogue box

for your document (more on this in sections 7 and 9) and choosing **Landscape** toggles the orientation of the paper. Finally, **Page offsets** allows you to alter the position of the document pages on the paper: negative values are allowed. Try spawning several new views of a document and then changing the page offsets — whee!

5 Keyboard shortcuts

There are various keyboard shortcuts available for moving around your document:

Page Up	Move to previous page
Page Down	Move to next page
←→↑↓	Scroll around current page
Print	Guess :-)
F3	Save the page as a Draw file
⇑F3	Save a range of pages as Draw files
F11	Scale the page
F5	Goto page

If you would like other keyboard shortcuts then please ask.

6 Choices

The choices dialogue box (see figure 3) is available from the icon bar menu. It allows you to set the default page magnification and positioning applied to documents when they are loaded.

There are four action buttons: **Set** implements the choices for the current session, **Save** implements the choices for this and future sessions, **Cancel** resets the choices displayed to those currently in use and **Default** sets the choices displayed to the last saved set of choices.

The choices are saved in a file called `Choices` in the `DVIview` directory. However, this is not particularly useful for those of you wanting to use `DVIview` on a network or from a read-only medium such as CD. So, `DVIview` can read

Figure 4: Editing paper sizes

a choices file from elsewhere. To enable this feature, simply define the environmental variable `DVIview$OptionsFile` to contain the filename of the choices file you want to use, before you run `DVIview`.

7 Editing paper sizes

Choosing **Edit paper sizes**... from the icon bar menu opens a dialogue box that allows you to define paper sizes for your documents (see figure 4).

To create a new paper size, enter the name in the icon at the top of the window, set the width and height and click on **Set** or **Save**.

To edit a paper size, either type its name into the icon at the top of the window or choose the size from the pop-up menu, then alter the width and height and click on **Set** or **Save**.

To delete a paper size, enter its name (or use the pop-up menu) and then click on **Delete paper size**. If **Delete paper size** is greyed out it is either because a document is currently using that paper size or else it is the only paper size defined.

The difference between **Set** and **Save** is that **Set** stores the paper size for the current session whereas **Save** stores all the paper size (and all the others currently defined) for use in future sessions.

`dvi` files do not contain page size information and so `DVIview` has to guess the page size and orientation of a document when it loads it. If you define similarly sized paper sizes then `DVIview` may pick the wrong one for your documents. Obviously, you can change a document's paper size but it can be annoying to do so on a regular basis so it's best to only define the paper sizes that you regularly use.

8 Fonts

The TEX and LATEX fonts are automatically installed when the !TeXFonts application is seen by the Filer. This means that other applications will have these fonts available to them, which is handy if you are exporting pages as Draw files and want them to be displayed properly. Note that the TEX fonts have letters in different places to standard fonts and so you'll have to use !Chars to select characters if you want to use TEX fonts in, say, Impression or TechWriter.

If `DVIview` cannot find a particular font then it will (do something that I haven't implemented yet :-))

Figure 5: The print dialogue box

9 Printing

9.1 TOYWWSLOSO printing — the hype :-)

As of version 1.00, `DVIview` has real TOYWWSLOSO printing (get ready for the hype :-)).

Fed up with setting loads of stupid options when you want to print a pamphlet or use a paper size that's different to your document's? Fear not! Unlike lesser programs (i.e. everyone else's :-)) `DVIview` features the amazing TOYWWSLOSO printing system. All the complicated printing options you could want without setting up loads of stupid options!!!!!![3]. Look at how it works:

- **Printing A4 pages on A4 paper**
  Simply click on **Print**.
- **Printing A5 pages on A4 paper**
  Simply click on **Print**.
- **Printing A4 pages on A4 paper as an A5 booklet**
  Click on **Two-up** then click on **Print**.
- **Printing landscape A5 pages on upright A4 paper as a landscape A5 booklet**
  Click on **Two-up** then click on **Print**.
- **Printing four landscape A5 pages on each upright A4 paper to form a landscape A6 booklet**
  Click on **Four-up** then click on **Print**.

Whatever your document paper size, your printer paper size and your printing requirements, TOYWWSLOSO printing automatically works out what you want your output to look like without you having to set loads of stupid options.

9.2 Printing from `DVIview` — the fine print

Printing from `DVIview` has several advantages over other TEX printing systems. Firstly, `DVIview` prints via the !Printers application which means that it can

[3] All the best features have at least six exclamation marks.

print to a very wide range of printers. Secondly, you can include Draw files and sprites in your documents. Finally, `DVIview` has a number of printing options so you can print documents just as you want them: double sided, as a pamphlet (2-up or 4-up) or as a 'thumbnail' print to get an overview. You can also print multiple copies and have them collated if you wish. The printing interface doesn't include scaling or orientation options because `DVIview` chooses the most sensible choices for these based on the printer's paper size, the document paper size and the other options you have selected.

Figure 5 shows the print dialogue box. The various options are:

From sheet, to This specifies the range of sheets to print. When you first open the dialogue box the values default to the whole document. Sheets correspond to the physical sheets that pass through your printer whereas pages correspond to the pages in your document. For simple printing ('All pages') the two are the same but, for example, in two-up printing there will be half as many sheets as there are pages. The reason for specifying the printing in terms of sheets is because it makes things easier when you want to print only a few of the sheets from, say, a pamphlet print. You might do this if the printer messes up some of the sheets. The fields underneath the sheet numbers show the number of the smallest-numbered page on that sheet.

Copies Guess :-)

Print in reversed order Basically, if your printer outputs paper face up then select this for the pages to be ordered correctly in the printer's output tray.

Collate sheets Select this if you're printing multiple copies but think twice if you're using a Postscript printer. When selected, pages are printed in the order 1,2,3... 1,2,3... which is usually what you want. Without it selected, pages are printed in the order 1,1,1,1... 2,2,2,2... which might seem silly, but it's much faster for a Postscript printer to print like this.

Pause between sheets Left as an exercise for the reader :-)

Print types There are three main styles of printing:

1 page/sheet This is the usual print type. If you want to do double sided printing then use 'odd pages' to print one side of the sheets, feed the sheets back into the printer and print using 'even pages'. You might have to print in reversed order the second time round depending on what your printer does with the paper. Be careful if you try this on an odd number of pages: 'odd pages' will print one more sheet than 'even pages'. This will mean that you'll have a sheet left in the printer or, if you use reverse, the pages will be printed on the wrong sheets. If someone asks me nicely, I might change the code to produce a blank sheet in the appropriate circumstances and so avoid these problems.

Thumbnail This print type gives you an overview of your document. It simply fits the number of pages that you specify on each sheet. So, you might get pages 1,2,3,4 on the first sheet and 5,6,7,8 on the next.

Pamphlet This print type prints pages on sheets in such a way that the sheets can be folded up to produce a booklet. Two-up printing puts 2 pages on each sheet so, by folding the sheet in half, you can make, say, A4 sheets into an A5 booklet. Two-up printing is designed to allow double-sided printing. There are always an even number

of sheets (the last might be blank) and to print double-sided you should print the first half, re-load the paper and then print the second half (possibly in reverse order, depending on your printer). Four-up printing puts 4 pages on each sheet. Sheets are folded into quarters to make a booklet (and it's great fun working out how to fold the sheets :-)).

9.3 Hints and tips for printing

This section has a few hints and tips for successful printing using `DVIview`.

9.3.1 How can I print an A5 page on A4 paper without it being scaled?

`DVIview` automatically scales your document pages to fit on the paper size you're actually using in your printer. If you don't want scaling then select the same paper size for your document as is selected for the printer and use the page offset dialogue to position your pages on that paper. When you print, `DVIview` will see that the pages and the printer paper are the same size and so won't scale.

9.3.2 I'm losing the edges of my pages when I print pamphlets

Some printers (especially inkjets) have quite large paper margins and pamphlet printing tends to bring pages close to the edge of the paper. In four-up printing you can avoid losing the tops of your pages by moving the pages down using the page offsets dialogue. However, losing pages edges with other print types cannot be solved like this[4].

The alternative way to avoid the problem is to reduce the scale of the pages slightly. To alter the scaling, create a new paper size that is slightly larger than the printer paper you're using and select that paper size for your document, positioning the pages using the page offset dialogue. `DVIview` will scale the pages to fit the printer paper and so will scale them down (hopefully enough to avoid the margins).

9.4 Turbodrivers :-(

Computer Concepts' Turbodriver software does not like the TEX outline fonts. It is very slow at rendering the fonts (slower than the Acorn font manager) and it tends to miss out small characters.

Computer Concepts didn't seem to care when I informed them of the problem so it probably won't be fixed in future releases unless large numbers of people pester them. Fortunately, there is a fix. You can disable the CC font system (and use the Acorn system instead) by turning off text halftoning. Do this by opening the printer configuration window (Shift-Select on the printer icon), clicking on the **Set** button next to the halftone field, then un-ticking the 'Halftone: text' option and clicking on **OK**.

10 Including diagrams in your documents

`DVIview` can include draw files and sprites in your TeX and LaTeX documents. To include a diagram simply put the line

[4] I may add an automatic system for positioning pages in order to avoid the paper margins — please pester me if you'd like this feature.

Figure 6: The author — A self portrait

`\special{DVIview_diagram =` *filename*`}`
at the point where you want the top-left of the Draw file to appear. You can use the symbol '@' to represent the directory that the `dvi` file is in i.e.
`\special{DVIview_diagram = @.Diagrams.Picture}`
in the file `$.Report.dvi` would include the file `$.Report.Diagrams.Picture`.

`DVIview` allows you to scale and crop your diagrams. To do so, simply add one or both of these commands to the end of the `special` command above:

crop *left right top bottom* This crops an amount from each edge of the diagram. The amounts are specified in draw units (there are 46080 draw units in an inch, 18142 in a centimetre) and may be negative in which case extra white space is added to the edge of the diagram.

scale *x-scale y-scale* This scales the diagram in the x and y directions. The scales are numbers representing percentages.

Note that scaling is performed before cropping, so if you crop 2cm from the left-hand edge of a diagram scaled to 50%, it will remove 2cm from the diagram you see on screen rather than 1cm.

Also, for compatibility with TechWriter, a border of 512 draw units is placed around each diagram. You'll need to take this into account for precise cropping.

In `DVIview.tex`, there is a macro `\drawfile{`*width*`}{`*height*`}{`*filename*`}` that will make space for and include a diagram in a LaTeX document if you give it the size of the diagram. As an example see figure 6.

It would make life much easier if this macro could read the bounding box of the Draw or sprite file. Unfortunately, I don't know if this is possible so if there are any wizards out there who can help me then please get in contact.

11 Diagrams — hints, tips and limitations

If you'd like to use the TeX fonts in your Draw diagrams then you can but you'll have to use !Chars to input the characters. The characters in the current set of outline fonts are not laid out according to the ASCII character set.

Currently, there is only tentative support for text areas in Draw diagrams. They should be drawn correctly but they will not save correctly and they may not print correctly on Postscript printers. Please let me know if you'd like text areas to be better supported.

The Draw file format has no provisions for cropping objects which means that saving a `dvi` page as a Draw file is difficult if the page includes cropped diagrams. `DVIview` attempts cropping by obscuring the diagrams with white rectangles, however, this cannot deal with all cases. `DVIview` will never obscure

part of a diagram that it should be possible to see but it may allow cropped parts of the diagram to be visible (and these may obscure other diagrams). In general, this is not likely to be a problem unless you crop off large areas and have several diagrams to a page. Remember, this is only a problem for saving pages: on-screen viewing and printing will be fine.

12 Remarks

A few things are worth noting about version 1.00 of `DVIview`:

- TEX uses a different font for each font size because fonts should look different at different sizes; they shouldn't just be scaled up. This is why there are so many fonts in the !TeXFonts directory. Remember to set a large font cache to speed up screen redraws.
- `DVIview` uses RISC OS outline fonts to draw characters. The advantage of using outlines is that they only take about 20% of the disc space needed to store a full set of `pk` files and they can be plotted at any point size. The disadvantage is that you are limited to the fonts provided (although for most people that won't be a problem). There is (currently) no automated way of generating outline fonts from metafont files.
- When viewing a document, `DVIview` keeps the `dvi` file open. If you need to re-create the `dvi` file then you must first close all the windows displaying that document otherwise TEX will not be able to write to the `dvi` file. I have some ideas about doing this automatically but the implementation will have to wait for a future release.

13 Fonts — the future?

`DVIview`'s reliance on outline fonts is a pain. The current outline fonts are not that good and you're limited to the fonts that are supplied. There are two features that could be added to DVIview and would improve matters.

13.1 Virtual fonts

The virtual font system is an ingenious system of font substitution that would allow `DVIview` users to use the normal Acorn fonts in their documents and to replace missing TEX fonts with other fonts (either TEX or outlines). Implementing virtual fonts in `DVIview` doesn't look particularly hard, the problem, however, is creating the virtual font files (`vf`) and TEX font metrics (`tfm`) files for the RISC OS fonts. These can be created by hand in the form of human-readable `vp` files which can be converted to and from `vf` and `tfm` files using the `vftovp` and `vptovf` programs which are supplied in Robin Watts' TEX distribution.

I suspect that the `vf` and `vp` files could be partly (and maybe fully) created automatically from the RISC OS `IntMetrics` files but this would require someone to write the conversion program.

Another option is to try to find the `vf` and `tfm` files for the equivalent postscript fonts (at least the Courier, Helvetica and Times families) and modify these.

If someone has the relevant `vf` and `tfm` files or is prepared to attempt a conversion program (I can provide details of all the relevant file formats) then let me know.

13.2 Support for pk fonts

TEX previewers on other platforms use bitmapped versions of the TEX fonts stored in pk files. It would be possible to add support for these files to DVIview. The advantages of pk file support are that you'd be able to use any TEX font and the output quality of documents (both on screen and printed) would be better. The disadvantages would be disc space (pk files take a lot of space) and speed of loading and scaling new documents (pk files need to be created if they don't already exist). In particular, DVIview supports arbitrary scaling factors which could cause large numbers of different-resolution pk files to be produced over time. DVIview would also support anti-aliased pk fonts which would mean that the pk files need to be generated at higher resolutions which means more disc space :-( ). Postscript output via !Printers would be horrendous (and probably unusable) because it wouldn't be possible to declare pk fonts in the Postscript header. Finally, Draw file output would be horrible because characters would have to be represented by sprites: printing or scaling the diagram would give a poor-quality result and the diagram would be extremely large.

Given this list of disadvantages and the effort that implementation would involve, I'm inclined not to bother with pk support. However, if there were enough demand I might reconsider.

14 Copying and altering the program

You may freely distribute this software (i.e. DVIview and !TeXFonts) provided that:

1. No charge is made for it.
2. It is not distributed as a 'freebie' with commercial software.
3. *All* the files are distributed unchanged.
4. *All* the files are distributed unchanged.[5]

You may modify the software, provided that you do not distribute the modified program. In particular, you must ask my permission to distribute a modified !TeXFonts or to distribute a program that modifies !TeXFonts. (This clause is only to protect you from changes I make to !TeXFonts. If you alter the directory, especially the !Boot file, and I don't know what you've done then I may well make incompatible changes in a future release. To make life easy, simply tell me what changes you need made and I'll accommodate you).

15 Registering

In previous releases, I asked users with email addresses to register. There are a lot of people using DVIview now and using the register for announcements was become a burden so you don't have to register any more. You can still email me and say "hi" if you like.

I will make announcements of new versions on the comp.sys.acorn.announce newsgroup but please feel free to email or write to me if you want to know the latest version or if you have complaints, praise, features you want added or whatever.

[5] You might think that this is the same as the last point and you'd be right. However, I have found variants floating about and I'd prefer to know what's going on. If you want to change something and distribute the files then just ask.

16 Newsletter for Acorn TEX users

Dick Smith, a `DVIview` user, is fed up with the lack of support of TEX on Acorn machines from groups such as the UK and Worldwide TEX Users' Groups and was thinking of publishing an occasional newsletter for Acorn TEX users. It wouldn't be flash but would keep people up-to-date. If you think this is a good idea then let me know and I can tell Dick whether their appears to be a demand for it.

I added this section in the last release and there has been no response whatsoever. If you think a newsletter is a good idea let me know *now* or it just isn't going to happen.

17 Contacting the author

My email address is: paulf@dcs.qmw.ac.uk (Until 1996)
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18 Versions

1.00
- Complete re-write.

19 Acknowledgements

Thanks to Chris Taylor for his work on the TEX fonts and to Robin Watts for maintaining his TEX distribution. Hi to my Ph.D. supervisor Don Beal who, if he ever sees this, will know why I never have any work to show him. Hi also to Andy and Jules and finally to Dunc, without whom the C Acorn User Group journal would be considerably smaller.

Finally, thanks to everyone who has contacted me with ideas, praise and bug reports for past versions of `DVIview`. Without their support, I would probably not have bothered to develop `DVIview` to the extent I have (I very rarely use TEX or LATEX myself).