8 Bug List

This section is included to list some of the bugs that have been found in GoodNeWS and to give you a work around in case you run into any of them.

- You may sometimes be left with a menu up on the screen although none of the buttons on the mouse are pressed. To get rid of this suspended menu click on any of the mouse buttons.
- You may sometimes be working in the *vi* editor on a document and using the LaTeX previewer to view the document in GoodNeWS, and you may notice that the *vi* window is not redisplayed properly (some lines or words may be repeated). You may also notice that typing L9 or selecting *Redisplay* from the window menu does not redisplay the screen properly. Don't panic, just type control L from the keyboard while the mouse is in the window running *vi* and you will notice that the screen is redisplayed perfectly.
- Once in a while when you are in the drawing tool and you *Group* a set of objects and *Rotate* the group, you may notice that the objects get distorted. To work around this, simply *Undo Rotation* of the objects and you will have your original undistorted objects back. Unfortunately, this fix may not always work.

7 Editing chess positions

You can use the program *chessedit* to edit chess positions. The individual pieces and the board are all drawings which are combined into a single drawing representing a chess position. You can save the chess positions as a drawing in a file. You can then load this drawing into the drawing tool or you can include it in your LaTeX document (see Figure 11).

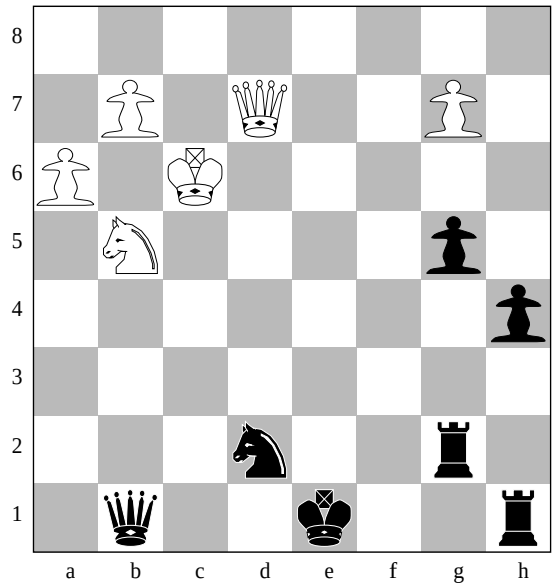


Figure 11: An example of a chess position created using *chessedit*.

6 Generating graphs

You can generate graphs given a set of data points using the *plot2* program. The format of the input file is fairly straight forward and is explained with the help of some examples which can be found in the directory: *"/usr/GoodNeWS/plot"*. The graph of Figure 10 was generated from this directory using the data file *"exam.3.data"*. Your type of graph can be:

line, thinline, bars, dots, smalldots, cross, blocks.

You can also specify the title, width, height, labels etc. of the graph. The output of *drawps* is a drawing which you can load (and edit) in the drawing tool as well as include in a LaTeX document.

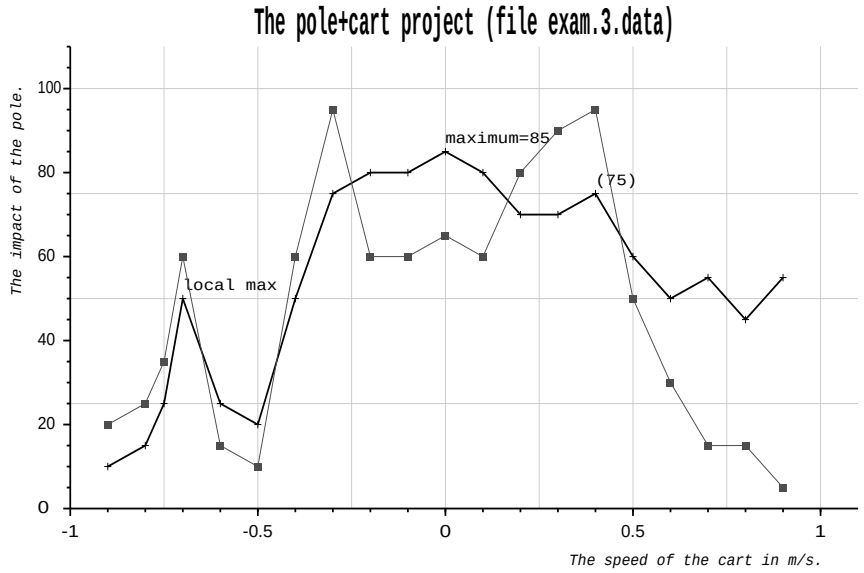


Figure 10: An example of a graph created using *plot2*.

Using these shapes you can easily create drawings which may have been very difficult or impossible with other drawing tools. These types of shapes are used in HyperNeWS to define window shapes.

5.6 Printing drawings

You can print a drawing by calling the *drawps* program which translates a drawing file into a PostScript file. The program may take the following flags:

1. -scale value. Scale the drawing.
2. -news. Generate GoodNeWS compatible PostScript.
3. -pict. Don't include images.
4. -latex. Generate PostScript which can be included in a LaTeXdocument using the *special* command with the *psfile* argument.

You can send the output from *drawps* to the LaserWriter. This command prints a drawing scaled to 0.5 times its original size:

$$drawps - scale\ 0.5 < mydrawing.draw \mid lpr$$

Fonts

This menu allows you to change the font of text objects. You can select any of the LaserWriter compatible fonts. You can also select left, right or center adjustment of the text (this only has an effect when the object contains more than one line of text).

Magnification

This menu allows you to select one of the following magnifications to view your drawing:

0.25, 0.5, 1, 1.5, 2, 3, 4, 5.

5.5 Creating shapes from groups

It is possible to make a grouped object solid (see Figure 8). This means that the path defined by the members of the group will define shape of a new object. This way you can create odd shaped objects which may even have holes in them.

The way the group members define the shape of the group is dependent on the direction and ordering of the lines or shapes in the group. Since the direction and ordering of the drawn objects is arbitrary, forming solid objects from groups of arbitrarily related objects may have very unpredictable results. The Line up Shapes item of the Special menu will alleviate this problem. It coordinates the direction and ordering of lines and arcs so that the shape they form has a single direction and it then attempts to connect them together into a solid object.

Refer to figure 9 which shows you how to create a solid shape following steps 1 to 3:

1. Draw the lines forming the object. The lines have arrow heads in this example to show the way they are lined up in step two.

2. Select all the lines and select Line up Shapes from the Special menu. The unified direction of the arrows indicates that the object is now lined up properly.

3. Group the objects and make the group solid. The result is a solid shape.

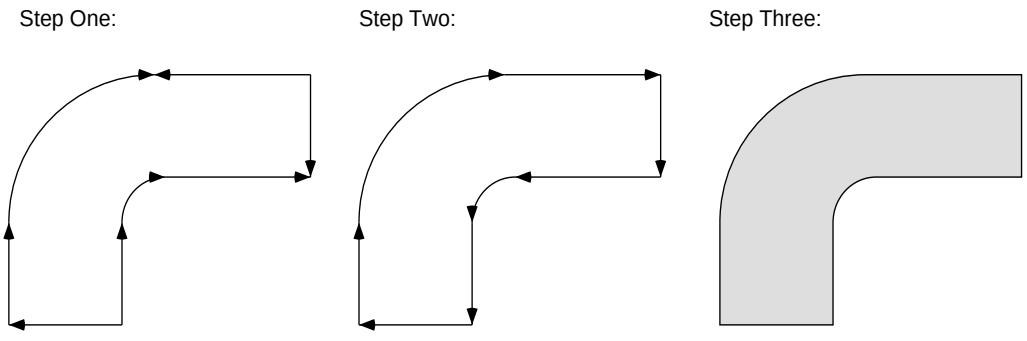


Figure 9: Step wise creating of a shape.

Special

- Line up shape. This creates shapes from objects (see section 5.5).
- Center on drawing. This centers the drawing in the window. You can use this option after reducing the magnification, since the reduction may cause the drawing to disappear outside the boundaries of the window.
- Flip poly and spline. You can use this to convert objects created using polygons to ones that use splines and vice versa.
- Undo rotation. This resets the object to its original rotation.
- Reasonable size. This resets the size of images to their original size. It also resets the size of text to its nearest full point-size.
- Convert to gray. This converts the colours of an object to gray shades. The gray shades are derived from the red/green/blue colour values. This is useful when porting a drawing from a colour terminal to a black and white terminal.
- Set gray component. This feature is only used when porting a drawing from a colour terminal to a black and white terminal. It will change the gray shade components of the current object's fill and stroke colour leaving the red/green/blue values untouched. They are set to the current fill and stroke gray shade which can be selected using the gray pallet (see Figure 4).

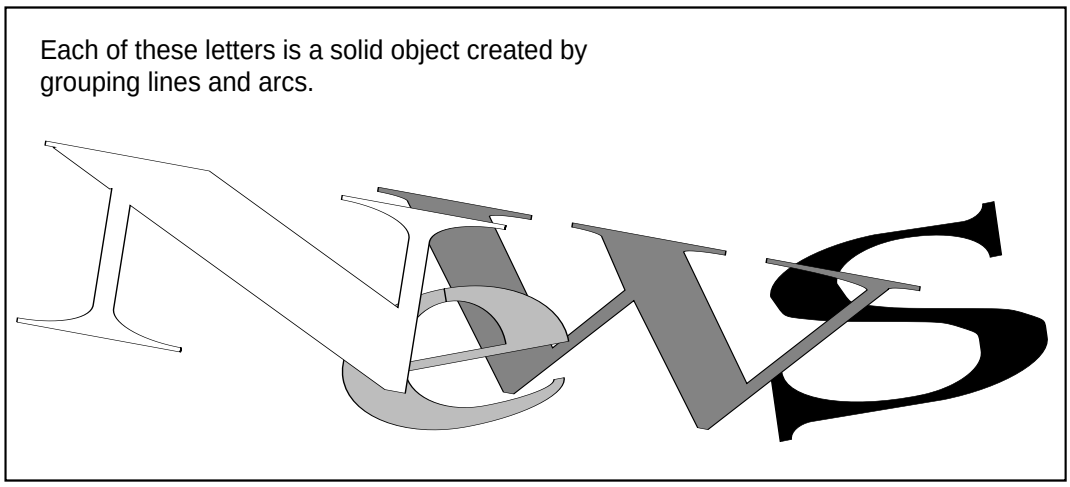


Figure 8: An example of a drawing created using shapes.

Changing the line style

You can choose the Line width and the Line type selectors to change the line style of an object. Note that only lines and arcs can have arrow heads.

5.4 The menus

You can bring up a menu of options by dragging the mouse to the drawing tool panel and clicking the right button of the mouse. Each of the menu items has a set of associated options which can also be selected by dragging the mouse to the right of the currently selected item. These items and their respective options are described below.

File

- Open. This opens a drawing from a file and erases the current drawing. You are asked to enter a filename. Note that the filename must have a *'.draw'* extension. You can try to open *"usr/GoodNeWS/draw/garfield.draw"*
- Save. This saves the current drawing in a file. Again, you are asked to specify a filename, this file name must have a *'.draw'* extension.
- New. This erases the current drawing so that you may start a new one.

Edit

- Cut. This cuts the current selection from the drawing and puts it on the clipboard.
- Copy. This copies the current selection to the clipboard.
- Paste. This pastes the contents of the clipboard into the current drawing. The new object(s) will appear in the center of the window. You can only paste text, drawings and HyperNeWS buttons into the drawing[13]
- Duplicate. This duplicates the current selection.
- Select All. This selects all the objects in the current drawing.
- To Front. This brings the current selection which is overlapped with other objects to the front of the drawing.
- To Back. This sends the current selection which is on top of other objects to the back.
- Group. This groups the current selection of objects into a single object.
- UnGroup. This ungroups the currently selected object into its component objects.

[13] See the document Introducing HyperNeWS.

drawing tool (see Figure 6).

The angle in which you are allowed to rotate objects is also restricted by a grid. This grid can be changed using the Angle grid selector.

You can scale the the drawing to any size using the Magnification menu (see section 5.4). All editing operations can be performed at any magnification.

Moving objects

You can move objects that are selected by dragging the mouse with the middle button pressed.

Changing the size of an object

When an object is selected you can change its size by clicking the right button of the mouse in one of the markers of the object and dragging the mouse.

Rounded corner rectangles have an extra marker which you can select to change the roundness of the corners. Pies have two extra markers which you can use to control the portion of the displayed pie. You can also change individual perimeter points of splines and polygons the same way.

Changing the rotation of an object

You can rotate a selected object by holding the control key down while dragging the object with the right button on the mouse. Note that you can rotate only one object at a time[12]. Rotated text does not look very nice on the screen but it is printed perfectly on the LaserWriter. Rotated images can also be displayed and printed but they take a long time to process.

Interior and exterior style

Whether an object is filled or not, is controlled using the Solid/Hollow selector in the panel (see Figure 6). Note that solid groups have special properties which are discussed in section 5.5. You can turn the stroking of an object on or off using the Stroke/No Stroke selector in the panel.

Changing colours

You can select a colour using either the *Color pallet* or the *Gray pallet* (see Figure 4). To assign a color to an object you have to click in the panel on either the Fill colour selector or the Stroke colour selector (see Figure 6). Note that the colour of a text item is controlled by the line colour.

[12]Group objects to rotate more than one object.

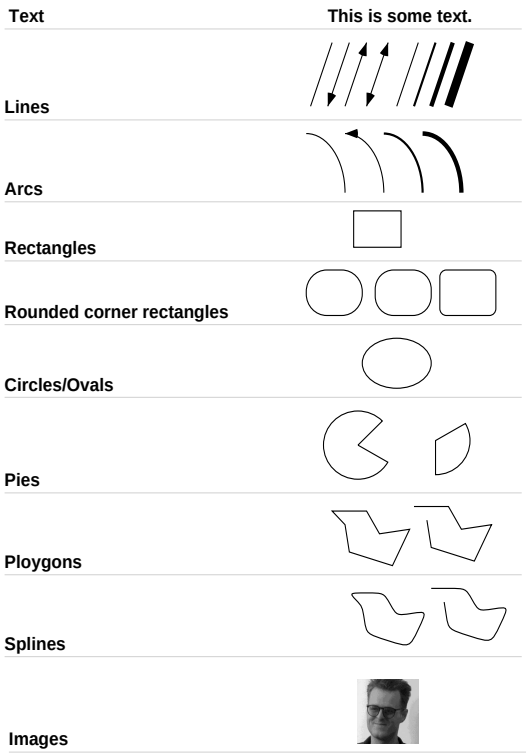


Figure 7: The object types.

When you choose the create text option, an empty text item will appear in the drawing window. After typing the text, click the mouse somewhere outside the text item and the drawing will be updated. You can resize the text by selecting it and dragging one of the markers to the desired size.

When you are adding an image you will be asked to enter a filename. Specify a filename (e.g: /usr/GoodNeWS/draw/arthur.img) and type carriage return. The image will be added at the indicated position.

5.2 Selecting objects

You can select one or more objects with the left button on the mouse if the arrow is selected in the panel (see Figure 6). You can select the lowest object of two overlapping objects by clicking repeatedly on a spot inside both objects.

You can add and subtract objects from the current selection by holding down the shift key while selecting. Holding down the shift key enables you to add existing objects rather than unselecting them when you click on them.

5.3 Editing objects

When an object is edited, every point of the object is aligned to a grid. The default size of the grid is 8 pixels. The grid size can be changed by clicking on the Grid size selector in the

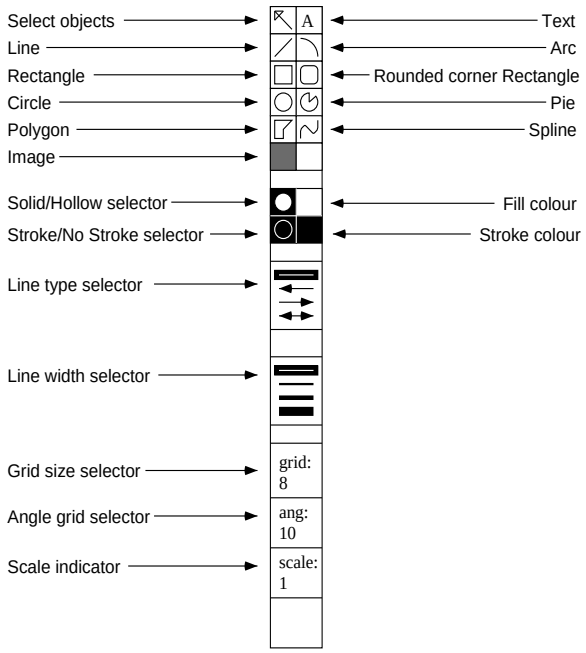


Figure 6: The drawing tool's panel.

5 Using the drawing tool

Most NeWS applications use drawings or are built using drawings. The drawing tool is called *newsdraw* and forms a major part of GoodNeWS. It is essential that you become familiar with it when you use GoodNeWS. The drawing tool can be started either from the GoodNeWS root menu or by typing:

```
newsdraw
```

The drawing tool works very much like MacDraw on the Macintosh. You can edit or create a drawing consisting of objects and images. There is no option (yet) for MacPaint type editing which would make the drawing tool most useful for technical drawings.

The drawing tool uses the PostScript imaging operators and allows you to scale or rotate any drawing. The tool is a very powerful one and it forms the basis of many other programs running under GoodNeWS.

5.1 Creating objects

To create a new object in your drawing:

- Select an object type on the panel (e.g. Rectangle).
- Click at the desired location of your drawing window and drag the object to the appropriate size using the left button on the mouse.
- When you release the left mouse button the item will be drawn in the drawing window.

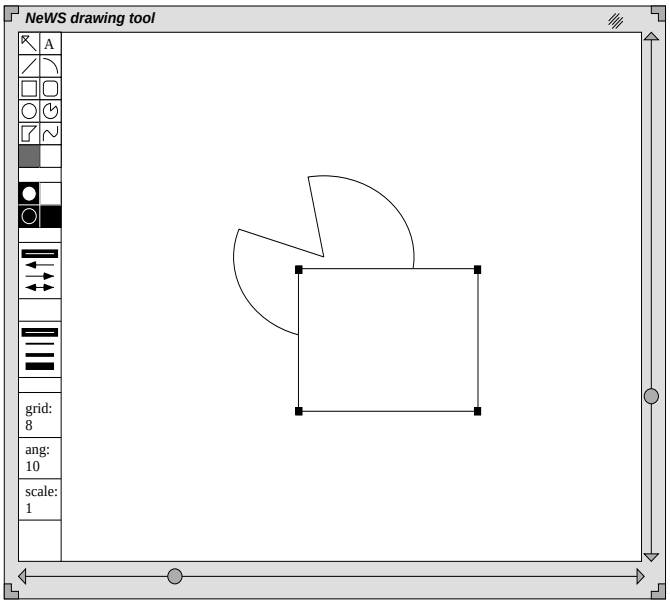


Figure 5: The GoodNeWS drawing tool.

and it allows you to move around in your document. Note that more than one page will be displayed when the magnification and the size of the window allow it. You can select a page by double clicking it when more than one page is visible.

You can move to a specific page by typing the page number followed by a carriage return. You can also move forward or backward relative to the current page by typing a number followed by '+' or '-' to move to the desired page.

You can select a drawing by clicking on it with the left mouse button. The drawing can then be resized and moved with the middle button. The corresponding *'special'* command will be shown at the top of the window. You only need to copy this command into your *'.tex'* file once you have established the correct placement of the drawing.

4.3 Printing LaTeX documents with drawings

You can again use the program *dvi2ps* to translate *'.dvi'* files into PostScript. Make sure that you are using the GoodNeWS version of *dvi2ps*. This new *dvi2ps*, unlike the old one, will automatically translate all your drawings into PostScript and insert them at the appropriate places in the resulting PostScript file[11]. To print your LaTeX document, use the command:

dvi2ps mydvifile | lpr

[11] The program *drawps* will translate individual drawings into PostScript (see section 5.6).

4 Using the LaTeX previewer under GoodNeWS

LaTeX and GoodNeWS together provide a powerful document preparation environment [10]. This environment provides a previewer called *dvinews* plus utilities to include drawings into your LaTeX documents.

4.1 Including drawings into your LaTeX documents

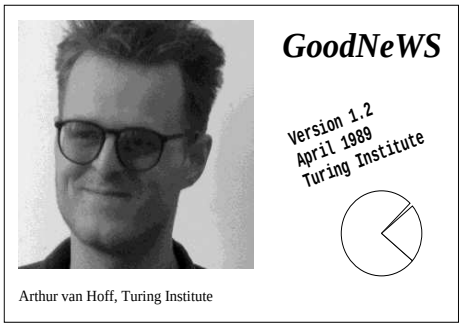
You can include drawings created by the *newsdraw* drawing tool into your LaTeX document by adding a *'special'* command, which will insert the drawing into your document at the specified point. For example:

```
\special{newsfile='arthur.draw'}
```

The drawing below was inserted using the command:

```
\special{newsfile='arthur.draw',hoffset=190,voffset=5,
vscale=0.34,hscale=0.34}
```

The *hoffset, voffset, hscale* and *vscale* arguments set the scaling and offset of the drawing. These arguments are optional and you can omit them at a first trial run. You can use the previewer to determine the correct parameter values. Click on the drawing while it is shown in the previewer and adjust its size to the size you want. (see section 4.2).



4.2 Using the previewer

To preview a document you must first produce a *'.dvi'* file. If you have produced a *'.dvi'* file successfully you can use *dvinews* to preview the document. To view your *document* you can type the command:

dvinews *document.dvi*

The first time a TeX font is used, a corresponding PostScript font is created. This will cause some messages to be printed out about the fonts which are being created. Don't worry about it.

When the window is shown it will display the first page of your document at the largest magnification. The menu of the previewer window allows you to change the magnification

[10] This document was produced using GoodNeWS

Tools

- NeWS draw. This starts the GoodNeWS drawing tool (see section 5). You can use it to create complex drawings with the advanced graphics capabilities of NeWS. Note that all of the figures in this documents were created using this tool.
- Gray pallet. You use this to select gray shades (see Figure 4). The gray shade (or colour) can be copied to the clipboard or it can be used in the drawing tool.
- Colour pallet. You use this to select colours. The colour can be copied to the clipboard or it can be used in the drawing tool. A colour consists of 4 components. The usual red, green and blue component plus a gray shade component. The gray shade component is used when you are using a black and white monitor.
- Colour triangle. You can also use this to select colours. All colours are displayed in a red-green-blue triangle. The slider allows you to move the mouse in the triangle and select the desired shade of the colour. Once you decide on a colour you can again copy it into the clipboard and use it in the drawing tool.
- Performance monitor. On a colour monitor, this program shows the *sys* (blue), *user* (orange) and *nice* (green) cpu times of your system. It uses three shades of gray to illustrate the same information on a black and white monitor. It also gives a list of all the users which are logged in to your system.

this cache.

- Show ClipBoard.This shows the GoodNeWS clipboard. You can copy and paste data and text between applications using the clipboard.
- Exit GoodNeWS. This exits from GoodNeWS.

Terminal

- Normal. This starts a vt100 terminal emulator.
- Console. This starts a vt100 console emulator.

Demo

- Pete's movie. This starts a *movie* starring Pete Mowforth. The powerful imaging operators of NeWS are used to display a sequence of digitized images. This demonstration runs on both colour as well as black and white terminals but it is very slow in black and white (approximately one frame per second).
- Cheryl's pict. This demonstrates the use of colour images by displaying a picture of Cheryl Tiegs. Note that this picture as with all other images can be displayed in black and white but is more impressive in colour.
- Scrabble. This starts a scrabble game based on the paper "the world's fastest scrabble program" (see Figure 3).

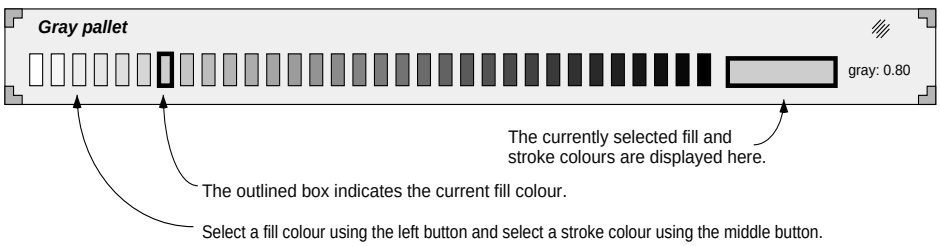


Figure 4: The gray pallet.

3 The GoodNeWS root menu

In this section I will briefly discuss the menu items of the GoodNeWS root menu. It is accessible by selecting the right button on the mouse in the main screen area . Most of the GoodNeWS software, especially that associated with the root menu, is easy to use as you will discover by reading this section. The more complicated programs are discussed in the sections which follow.

NeWS

- Cleanup. This is only used when a program has crashed. An attempt is made to remove the windows that belong to the crashed program and the background is redrawn.
- Flush images. GoodNeWS loads an image only when it displayed for the first time. The image is then stored in a cache. When the image is used again, GoodNeWS can take it from the cache instead of reading it from disk. The Flush command empties

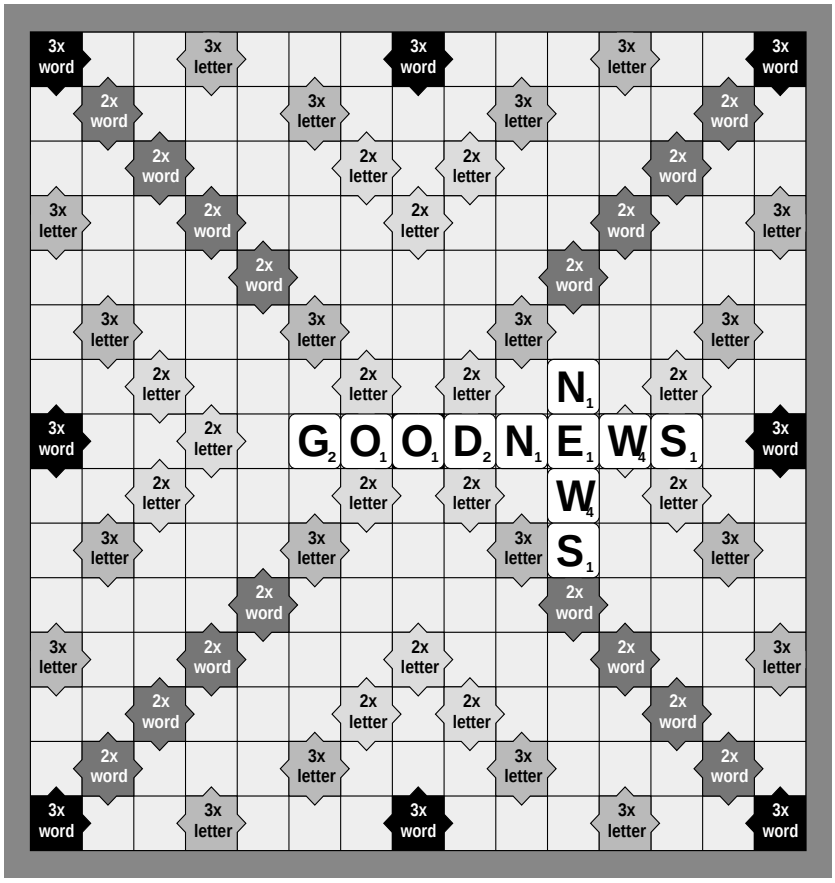


Figure 3: The Scrabble board.

- You can drag the window by clicking the middle button of the mouse in the window border.
- Windows are resized by clicking the left button of the mouse in one of the window corners.
- You can bring up the window menu by clicking the right button of the mouse in the window border. This menu defines some function keys for manipulating the window such as closing it (shrinking it into an icon) or zapping it (killing it).
- You can bring a window to the front by clicking in the window border with the left button of the mouse.
- When you close a window it is displayed as an Icon. You can open the window by double clicking on the Icon.
- You can change the font and font size of the window by clicking the right button of the mouse in the contents of the window[8]. Note that you can resize the window without changing the font size of the window.

2.3 Trouble shooting

When you are using GoodNeWS many client processes will be connected to a single server. This can cause significant overhead when the screen is being redrawn. The result is that the mouse tends to *freeze* for several seconds. There is nothing you can do about this but wait or buy a faster machine. This might also occur when the server is performing a complex operation (like saving or loading a program or drawing). The only precaution that you can take is to close some applications so that the overall overhead is reduced.

If Murphy's law strikes[9] and an error in the PostScript program occurs, a complicated and long execution trace will be printed in your console window. The windows belonging to the crashed program will be *dead* (they will no longer respond). To remove these windows from the screen and to kill the crashed program you should use the Repair option from the NeWS menu (see section 3).

[8] This applies only to the GoodNeWS terminal windows. In general an application specific menu is shown when the left mouse button is clicked in the window contents.

[9] Murphy was an optimist.

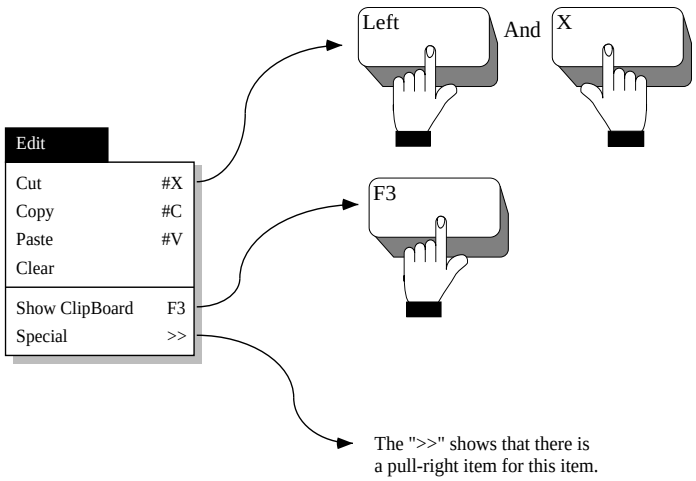


Figure 1: An example of an edit menu.

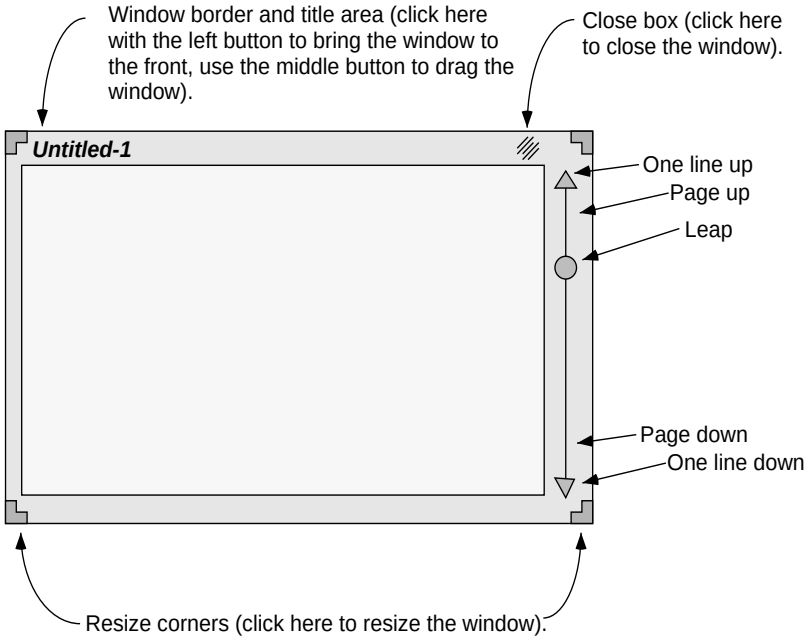


Figure 2: An example of a GoodNeWS window.

2 Getting started

Before you can start using GoodNeWS you have to set up some parameters in your *'.login'*[4] file. You should add the lines:

```
setenv GNHOME "/usr/GoodNeWS1.2"[5]
setenv PATH "${PATH}${GNHOME}/bin:"
```

If you want to use the LaTeX previewer (see section 4) you should make sure that you are using the GoodNeWS version of *dvi2ps*[6].

Note that NeWS is started as follows:

```
news_server
```

There are two ways in which you can use GoodNeWS. Firstly you can run the standard news_server and use any GoodNeWS program. This will cause the GoodNeWS system to be loaded the first time it is used. Secondly you can load the GoodNeWS system on startup. This is done by copying the file *"${GNHOME}/user.ps"* into your home directory. This will also replace your rootmenu with the GoodNeWS rootmenu and will setup NeWS as if you were running version 1.1 of GoodNeWS.

2.1 Using menus

Some people like pull-down menus better than pull-right menus. GoodNeWS provides both types of menus altough the pull-down version is currently only used in the HyperNeWS system. Pull-right menus can be popped up using the right mouse button.

For those people who prefer the keyboard to the mouse, the keyboard can be used to execute some menu items quickly without using the mouse (see Figure 1). The key corresponding to a menu action, a menu key, is indicated in the column to the right of the menu item. These menu keys of the form #X , are executed by typing Left-X. Note that the menus that allow keyboard input require that you keep the mouse in the window where the menu is popped up to enable you to use the menu keys.

2.2 Using windows

The windows used in GoodNeWS resemble OpenLook[7] windows (see Figure 2). GoodNeWS makes use of the 3 button mouse to allow manipulation of the windows. Here are some of the things you can do:

[4] Note that you will still need to set the environment variable *NEWSHOME* as explained in your NeWS manual.

[5] This might be a different directory on your system. Please consult your system manager.

[6] *dvi2ps* can be found in the directory *"${GNHOME}/bin"* directory

[7] OpenLook is SUN's proposal for a standard NeWS window interface.

In February 1989 we decided to advance GoodNeWS to version 1.2. This version runs under the standard NeWS environment and uses the standard NeWS server. It allows users to run GoodNeWS along with their own software which runs under standard NeWS. This means that the road is now free to distribute the software on a non-profit basis without legal constraints.

We would like to make it clear that, altough we are willing to help you with any problems you may have using GoodNeWS, we can not accept any responsibillity for bugs and other problems.

1.2 Differences between GoodNeWS1.2 and older versions.

The main improvement in GoodNeWS1.2 is that it now runs under the standard NeWS environment. Other differences are:

- The look and feel of GoodNeWS has changed.
- The file format for drawings and HyperNeWS stacks has changed dramatically. They are however upward compatible. This means that files created under GoodNeWS1.1 can still be loaded using GoodNeWS1.2. The latter format can however no longer be used by older version of GoodNeWS. The file size of drawing and stacks should be about 3 to 4 times smaller that the original file size. This greatly improves the speed of loading drawins and stacks. I'm afraid that saving drawings and stacks has become significantly slower.

As soon as we can obtain the OpenLook development kit we intend to change the look and feel to something that conforms with the OpenLook standard.

1 Introduction

The purpose of this document is to give an introduction to GoodNeWS (version 1.2). GoodNeWS is a NeWS[1] (version 1.1) based window interface that was developed at the Turing Institute. GoodNeWS provides an additional windowing environment to NeWS which includes terminal emulators, graphics tools and a LaTeX previewer.

GoodNeWS is different from the standard NeWS interface. It uses a more comprehensible set of PostScript routines to implement its windows and tools. The result is a more consistent and easier to use user-interface. GoodNeWS is an extension of NeWS which means that it runs in the standard NeWS environment and that all existing NeWS programs can still be used.

Here is a brief sketch of what is in this document:

Section 2 explains how to start GoodNeWS and how to use its windows and menus.

Section 3 describes the rootmenu and the software associated with it.

Section 4 details the LaTeX previewer.

Section 5 gives a description of the drawing tool.

Section 6 describes a facility that plots graphs.

Section 7 presents an application for editing chess positions graphically.

A GoodNeWS programmers manual aimed at those persons wanting to write GoodNeWS software is in progress and is likely to be finished before the end of summer 1989[2]. Meanwhile those interested can feel free to consult the GoodNeWS source[3] and the GoodNeWS software.

1.1 The history of GoodNeWS

Version 1.0 of GoodNeWS was completed in April 1988. It provided an improved user interface to the NeWS system. At that time GoodNeWS completely replaced the existing NeWS PostScript software. Most of the current GoodNeWS tools were developed using GoodNeWS version 1.0 and 1.1. During this time many problems concerning the standard news server were discovered. We were able to fix most of these problems by patching up the server since we have a source license to NeWS.

In the past year we found that there were a number of critical problems with this approach. First of all we were not able to distribute the software due to copyright problems since we could not distribute our bug fixes in the server. Secondly we found that most people using NeWS have developed software which runs under standard NeWS and which is therefore incompatible with older versions of GoodNeWS.

[1] NeWS is a PostScript based network extendible window interface.

[2] Authored by Arthur van Hoff.

[3] The source to GoodNeWS can be found in *"${GNHOME}/sys"*.

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Introducing GoodNeWS version 1.2.

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