

A Magnetic Scrolls Interpreter

Release 0.23

Thomas Dettbarn dettus@dettus.net

June 6, 2020

dMagnetic has been released under the BSD-2-clause license

Copyright (c) 2020, Thomas Dettbarn
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The Pawn, The Guild of Thieves, Jinxter, Fish!, Corruption, Myth and Wonderland are interactive fiction games copyright Magnetic Scrolls Ltd, 1984-1990.

Magnetic Scrolls was an interactive fiction developer, based in London UK, active between 1984 and 1990 and pioneer of audio-visually elaborate text adventures.

Contents

| | | |
|----------|----------------------------------------------------|-----------|
| 1 | Introduction | 5 |
| 2 | Getting started | 7 |
| 2.1 | Downloading and compiling dMagnetic | 7 |
| 2.2 | The game binaries | 7 |
| 2.2.1 | .mag and .gfx | 8 |
| 2.2.2 | MS DOS binaries | 8 |
| 2.2.3 | Magnetic Windows resource files | 8 |
| 2.3 | Taking the first steps | 9 |
| 2.4 | Saving the configuration in an .ini-file | 11 |
| 3 | Graphics | 13 |
| 3.1 | Size of the graphics | 15 |
| 3.2 | Text only | 15 |
| 3.3 | Monochrome | 17 |
| 3.4 | Low Ansi | 19 |
| 3.5 | Low Ansi 2 | 19 |
| 3.6 | High Ansi | 20 |
| 3.7 | High Ansi 2 | 20 |
| 3.8 | Sixel | 20 |
| 3.8.1 | Resolution | 22 |
| 4 | Random events | 23 |
| 4.1 | Pseudo random | 23 |
| 4.2 | External random generator | 24 |
| 5 | Advanced logging | 25 |
| 5.1 | A walkthrough script | 25 |
| 5.2 | Turning a walkthrough into a story | 26 |
| A | Command line parameters | 27 |

| | |
|--------------------------------------|-----------|
| B dMagnetic.ini file | 29 |
| B.1 Example | 31 |
| C Priorities | 33 |
| C.1 Location of .ini files | 33 |
| C.2 Configuration | 33 |
| D ANSI RGB values | 35 |

Chapter 1

Introduction

"I am having great trouble in finding someone to perform an extremely simple task and I wonder if you would help me out. If you deliver this sealed letter to King Erik of Kerovnia, you will be well rewarded when I next meet you on your travels and I would be forever indebted to you."
— Kronos the magician

Hello, and thank you for your interest. `dMagnetic` is a Magnetic Scrolls interpreter. It can be used to play the following classics:

- The Pawn
- The Guild of Thieves
- Jinxter
- Fish!
- Corruption
- Myth
- Wonderland

Those games were Text adventures, a popular genre during the 1980s. They were telling a story in written form, and to advance, players had to type in instructions. Since players were presented with a story, one with which they could interact, those were also affectionally called "interactive fiction".

To explore the environment, for example, one would type in `GO NORTH`, `GO UP` or `NW`. `OPEN DOOR` would open a door, and to talk to other characters was started by something like `SAY HELLO`. Players also had to solve puzzles, rescue a princess (or not), which was a big part of the

gameplay. Magnetic Scrolls took great pride in its advanced parser, which was famous for being able to understand instructions such as
PLANT THE POT PLANT IN THE PLANT POT WITH THE TROWEL.

Some games used graphics to illustrate the story, and Magnetic Scrolls' games were particularly famous for the beauty of the images they used.

The 1980s were also a decade in which several home computer systems were fighting for dominance. Software, and games, had to be written for as many of those platforms as possible, to reach a wider audience. For developers, this meant writing in assembler for several processors. Finding an error in one system, or even a small rewrite to the story would have caused a a painstakingly tedious process, where the software for all the other systems had to be checked and modified as well.

Magnetic Scrolls' solution to this was to create a virtual machine, one that was greatly inspired by the popular 68000 processor, and to develop the games for this. This machine was ported to different platforms, and the story, the puzzles, and the images had to be designed only once.

By itself, `dMagnetic` is not a game. It is an implementation of the virtual machine. It requires the original game binaries to run. In theory, it could run other software as well, but it has not been designed for that.

The purpose of this document is to explain the usage of `dMagnetic`, to allow users on modern computers to play the classics.

Thank you Hugh. Thank you Stefan. Thank you Niclas and David for your pioneering work on reverse engineering.
And finally: Thank you Magnetic Scrolls for being one of the reasons that have gotten me into computer science.

Chapter 2

Getting started

“The Guild and I have surveyed this region and know exactly how much of value is to be obtained. Jump to the jetty and begin your work. Return here when you have completed your business. And remember, I and my associates will be keeping an eye on you.”
— *The master thief*

2.1 Downloading and compiling dMagnetic

dMagnetic can be downloaded from its homepage(2). Since it has been developed on OpenBSD and was later ported to Linux, it can be downloaded within a terminal window by typing

```
% wget https://dettus.net/dMagnetic/ \
                                     dMagnetic_0.23.tar.bz2
% tar xvfj dMagnetic_0.23.tar.bz2
% cd dMagnetic_0.23
% make
```

This should result in an executable file called “dMagnetic”. Typing

```
% ./dMagnetic --help
```

should print out the most important command line parameters.

2.2 The game binaries

dMagnetic by itself is not a game. It is an interpreter for game binaries, offering two possibilities to play them. The first is by owning the original files from the MS-DOS release of the games. The second, a more robust way, is using .mag and .gfx container files.

2.2.1 .mag and .gfx

The container format has been developed by Niclas Karlsson and David Kinder; it allowed for a uniform way of combining the necessary game binaries from different platforms into two files: One for the story and the interpreter (.mag), and one for the BEAUTIFUL graphics (.gfx). Magnetic Scrolls is especially known for the latter.

Several of those containers can be downloaded from the Magnetic Scrolls Memorial's Website(1). Afterwards, "The Pawn" can be played by typing

```
% ./dMagnetic -mag pawn.mag -gfx pawn.gfx
```

This should start the game in the same terminal window. It is now possible to play, or to close `dMagnetic` by typing `QUIT`.

By default, the size of the terminal is expected to be at least 125 columns wide and 50 rows high. Running `dMagnetic` in a smaller window might result in distorted output. Changing the window size helps, but if this is not possible, please see chapter 3.1.

2.2.2 MS DOS binaries

In case somebody is lucky enough to own an original copy of "The Pawn", and has installed it in the directory `/C/GAMES/PAWN`, typing

```
% ./dMagnetic -msdosdir /C/GAMES/PAWN -vmode high_ansi2
```

will read the binaries and load them into the virtual machine. This version also provides a beautiful title screen, which is shown before the actual game can be played in the terminal window.

As with the .mag and .gfx files, the terminal window's size is expected to have at least 125 columns and 50 rows. Additionally, the graphics are in a slightly different format. Chapter 3.7 explains how to view them with a richer amount of colours.

2.2.3 Magnetic Windows resource files

"Wonderland" and "The Magnetic Scrolls Collection" were released using a framework called "Magnetic Windows". This one used several resource file at its core. `dMagnetic` is able to read those. To provide the location, the prefix and possible capitalization of those, the name of the file ending in "TWO.RSC" needs to be provided:


```
% ./dMagnetic -tworsc /C/GAMES/WONDER/TWO.RSC
% ./dMagnetic -tworsc /C/GAMES/MSC/CTWO.RSC
% ./dMagnetic -tworsc /C/GAMES/MSC/FTWO.RSC
% ./dMagnetic -tworsc /C/GAMES/MSC/GTWO.RSC
```

The names of the other resource files (like ONE.RSC, THREE.RSC, FFOUR.RSC...) is being calculated from this.

It should also be noted that this release saw the addition of some bonus graphics, which, of course, are being shown in dMagnetic as well.

This collection also offers alternative pictures for the EGA graphics. To play with those pictures, it is recommended to try

```
% ./dMagnetic -tworsc MSC/GTWO.RSC -ega -vmode sixel
```

For games from this framework, however, graphics only become visible after typing GRAPHICS on the prompt.

2.3 Taking the first steps

Once dMagnetic has been started to play "The Pawn" by either one of

```
% ./dMagnetic -mag pawn.mag -gfx pawn.gfx
% ./dMagnetic -msdosdir /C/GAMES/PAWN
```

the game is running. The player is greeted with a screen, consisting of four elements, as seen in Figure 2.1. On the top, there is a header, giving away the room the player is currently in, as well as the score and the number of steps already taken. Below that comes the story in the form of text. (It IS a text adventure after all). Occasionally, the rooms have some illustrative images. Which will be, by default, rendered in ANSI Art. (Chapter 3.4 elaborates on the `-vmode low_ansi` option).

The last element is the input prompt, starting with `>`. To advance in the game, and the story, text adventures require the player to type in instructions. Going north three times from the starting point in "The Pawn", for example, will lead the player to a larger boulder.

```
> GO NORTH
> GO NORTH
> GO NORTH
```

From here, going back to the starting point, and east afterwards will lead to the first encounter with Kronos the magician.

```
> GO SOUTH. GO SOUTH. GO SOUTH.
> GO EAST
```


2.4 Saving the configuration in an .ini-file

In case the user is getting more inclined to run any of the games more often, typing in full pathnames before being able to run the game might become a tedious chore. Instead, it is possible to create a dMagnetic.ini file in the home directory. This allows for a shortcut.

```
% echo "[FILES]" >~/dMagnetic.ini
% echo "pawnmag=" `pwd`"/pawn.mag" >>~/dMagnetic.ini
% echo "pawnmag=" `pwd`"/pawn.gfx" >>~/dMagnetic.ini
```

This way, a single command line option is required to select "The Pawn" for playing

```
% ./dMagnetic pawn
```

A more comprehensive dMagnetic.ini file can be produced by typing

```
% ./dMagnetic -helpini >~/dMagnetic.ini
```

This file needs to be edited.

It is possible to use several dMagnetic.ini files. To distinguish between them, the `-ini` parameter can be used on the command line

```
% ./dMagnetic -ini dMagnetic.test.ini pawn
```


Chapter 3

Graphics

*“We knew you’d stop the Seven Deadly Fins.
Good show! It’s a shame they got away again.
But now I suggest you take a vacation. You’ve
earned it, old boy.”
— Sir Playfair Panchax*

Magnetic Scrolls’ games were famous for the beautiful images with which they enriched their stories. `dMagnetic` has been designed to run in a terminal, but it offers various ways of displaying them, by means of the `-vmode` commandline parameter. To make the selection permanently, the entry `mode=` in the `[DEFAULTGUI]` section of the `dMagnetic.ini` file can be changed. An illustration about the different options for playing the games can be seen in figure 3.1.

If the user wishes to try out the monochrome mode, for example, the command line used would be

```
% dMagnetic -vmode monochrome pawn
```

In case this mode is satisfactory, the entry in the `[DEFAULTGUI]` section would then be changed to

```
mode=monochrome
```

This way, the extra parameter can then be skipped the next time `dMagnetic` is being started

```
% dMagnetic pawn
```

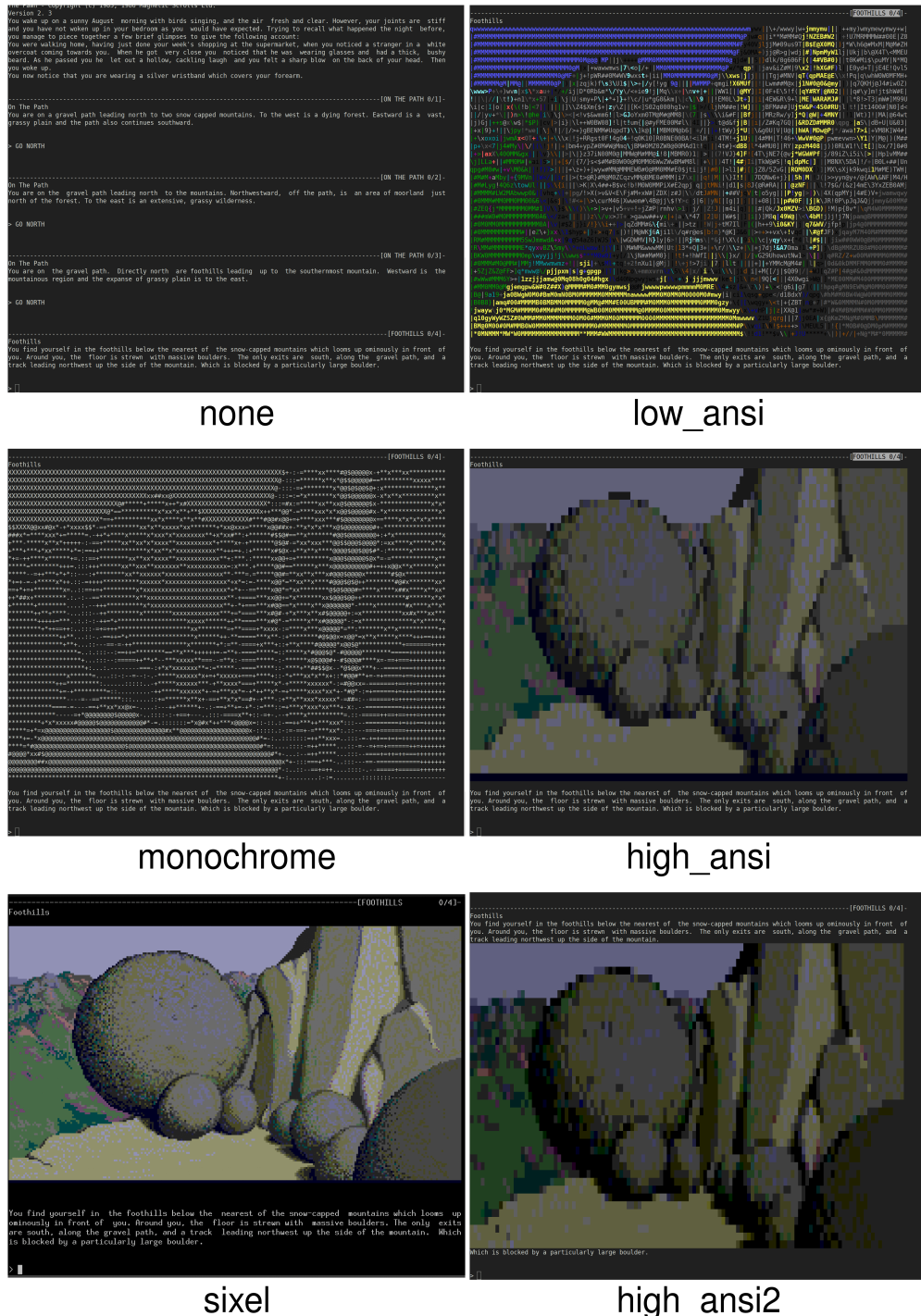


Figure 3.1: The options for the `-vmode` command line parameter offer a wide range of possibilities to experience "The Pawn" in a terminal window. The actual choice does not only depend on the user's preference, but also on the capabilities of the terminal window. The "sixel" mode, for example, offers the highest resolution, but only works in certain variants of `xterm`.

3.1 Size of the graphics

The size of the graphics, its height and its width, are configurable within the .ini file or via command line paramters. In the .ini file, the entries are `rows` and `columns` within the `[DEFAULTGUI]` section.

```
[DEFAULTGUI]
rows=40
columns=120
```

The same values can be passed to `dMagnetic` with the `vrows` and `vcols` parameter

```
% ./dMagnetic -vcols 120 -vrows 40 pawn
```

By default, a UNIX terminal offers only 80x25 characters. If a user wishes to play within this confined space, it is possible to restrict the graphics to 15 lines.

```
% ./dMagnetic -vcols 80 -vrows 15 pawn
```

Which is 60% of the available space. An example can be seen in the top half of figure 3.2.

Alternatively, the images can be rendered in a higher resolution. This requires nothing more than a resize of the terminal window. However, with this technique, a pixel is exactly as wide as a character in the textual output. Meaning, that when the pixels get smaller, the texts get smaller. This can be seen in the bottom half of figure 3.2.

Choosing the actual size of the images should thus be up to the user's personal preferences.

3.2 Text only

Adding the paramter `-vmode none` to the commandline allows the user to play the games as pure text adventures.

```
% dMagnetic -vmode none -vcols 50 pawn
-----[ON THE PATH 0/1]-
On The Path
You are on a gravel path leading north to two
snow capped mountains. To the west is a dying
forest. Eastward is a vast, grassy plain and the
path also continues southward.
>
```

It should be noted that this case also requires the addition of the `-vcols` parameter, to show the text with proper line wraps.

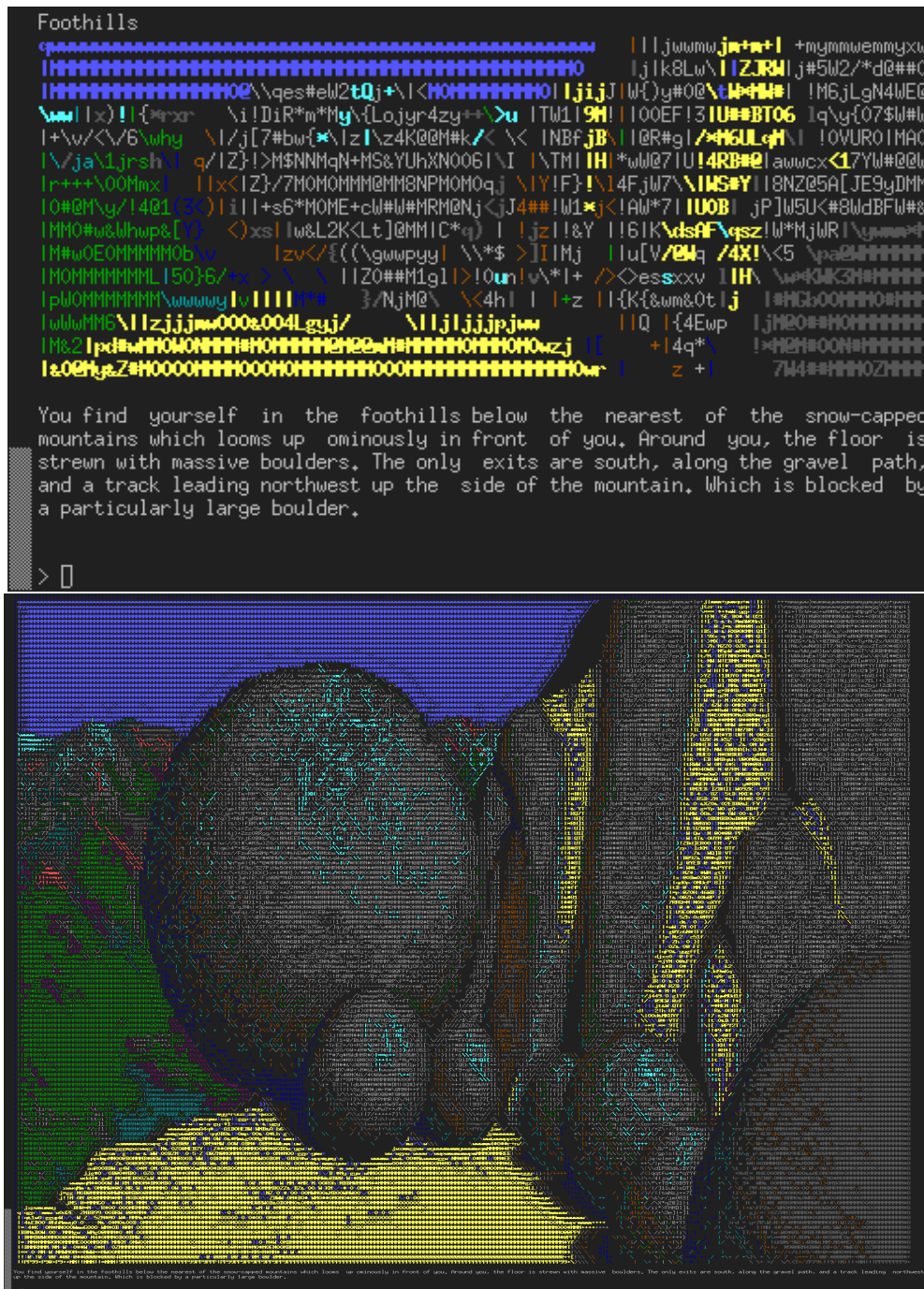


Figure 3.2: Top: “The Pawn”, running in xterm, with `-vcols 80 -vrows 15`. The graphics are scaled down to fit within a terminal window with 80 columns and 25 rows. Bottom: “The Pawn”, running in xterm, with `-vcols 260 -vrows 150`. The image takes up most of the screen and shows the highest amount of detail. However, the text becomes smaller.

To make the text-only output the default, the entry `mode=none` in the `[DEFAULTGUI]` section of the `dMagnetic.ini` file needs to be set.

The standard alignment for the text is block aligned (`-valign block`). This can be changed with the commandline option `-valign left` or `-valign right`.

```
% dMagnetic -vmode none -vcols 50 -valign left pawn
-----[ON THE PATH 0/1]-
On The Path
You are on a gravel path leading north to two
snow capped mountains. To the west is a dying
forest. Eastward is a vast, grassy plain and the
path also continues southward.
>
```

Currently, the right alignment is considered broken.

```
% dMagnetic -vmode none -vcols 50 -valign right pawn
-----[ON THE PATH 0/1]-
                On The Path
    You are on a gravel path leading north to two
    snow capped mountains. To the west is a dying
    forest. Eastward is a vast, grassy plain and the
    path also continues southward.
    >
```

The preferred alignment option can be set within the `[DEFAULTGUI]` section with the `align` entry.

3.3 Monochrome

The `-vmode monochrome` and `-vmode monochrome_inv` parameters offer the possibility to play the game with images, even if the terminal does not have any colour-capability.

The effect is acquired by calculating the intensity, or brightness, of each pixel, which is then translated into a character. The characters can be configured by changing the `monochrome_characters` entry of the `[DEFAULTGUI]` section in the `dMagnetic.ini` file. Said entry defines a ramp, from left to right, of increasing intensity.

It should be noted that the background of the terminal window factors into the appearance of the image, as seen in figure 3.3.

On a white background, this technique works as followed: Small characters, such as a dot `.`, will be perceived as light. On the other hand, larger characters, such as `@` cover more of the white background and are being perceived as dark.

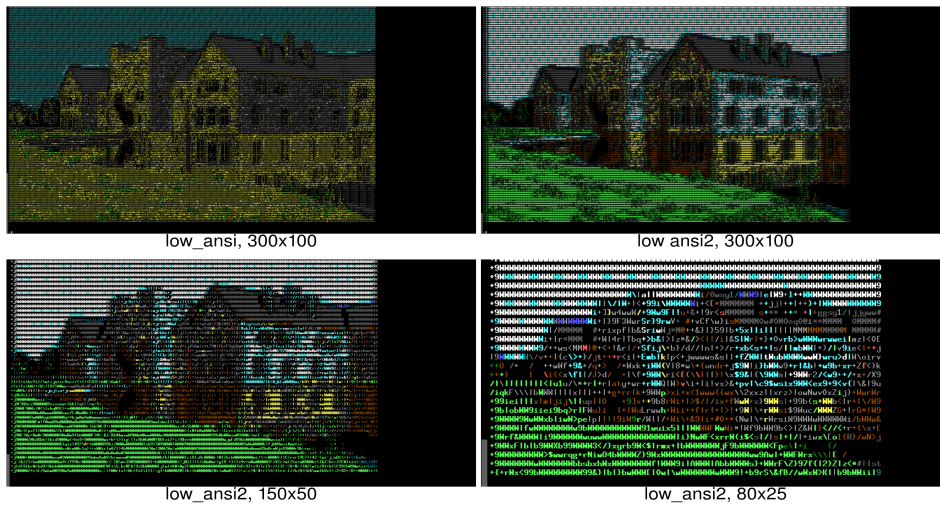


Figure 3.4: Playing “The Guild of Thieves” from the MS DOS binaries in dMagnetic 0.23 with different low ANSI options. Top left: `vmode low_ansi` does not offer many colours. Top right: `vmode low_ansi2` chooses the colours based on averaging pixels and offers more nuances. Bottom: Examples of the `vmode low_ansi2` with more realistic resolutions.

3.4 Low Ansi

Using `-vmode low_ansi` will render the images in ANSI art. The colours are first projected into a limited colour palette. Afterwards, from a selection of characters, the ones representing the image best are being chosen.

It is possible to configure the characters used for rendering, by changing the entry `low_ansi_characters` in the `[DEFAULTGUI]` section of the `dMagnetic.ini` file.

This mode works best in terminal windows which offer the VGA ANSI RGB palette in appendix D.

3.5 Low Ansi 2

The MS-DOS releases of the games had a different format to store the images. Here, a higher resolution was used, albeit with only 2 instead of 3 bits per RGB-channel. Hence the introduction of the `-vmode low_ansi2`: It uses an alternative algorithm to choose the colours before rendering them by averaging over several pixels. The resulting picture has more nuances, as can be seen in figure 3.4. The experience for the player is a much more satisfying one.

3.6 High Ansi

Using `-vmode high_ansi` is rendering the images with the real RGB values. It requires a terminal window with the capability to do so, otherwise the image will be invisible.

This mode provides a rich amount of colours, however, one pixel is as large as a single character. The output will look blocky and pixelated.

3.7 High Ansi 2

As with the High Ansi mode, this mode requires a terminal window with the capability of showing real RGB values.

As figure 3.5 shows, the images from the MS-DOS version of the games can create some issues on modern monitors. Thus, the command line parameter `-vmode high_ansi2` can be used to average over several pixels.

3.8 Sixel

Sixel is a technique that offers the possibility of rendering high-resolution images within certain terminal emulators.

One such terminal emulator would be `xterm`, but only when invoked via

```
% xterm -ti vt340
```

the sixel mode becomes available. Another terminal emulator known to offer this mode is `mlterm`. When `dMagnetic` is running in `Eterm`, or `gnome-terminal`, for example, the images will be skipped. Others, such as Linux command lines in text-mode, might start flooding the output with command-codes.

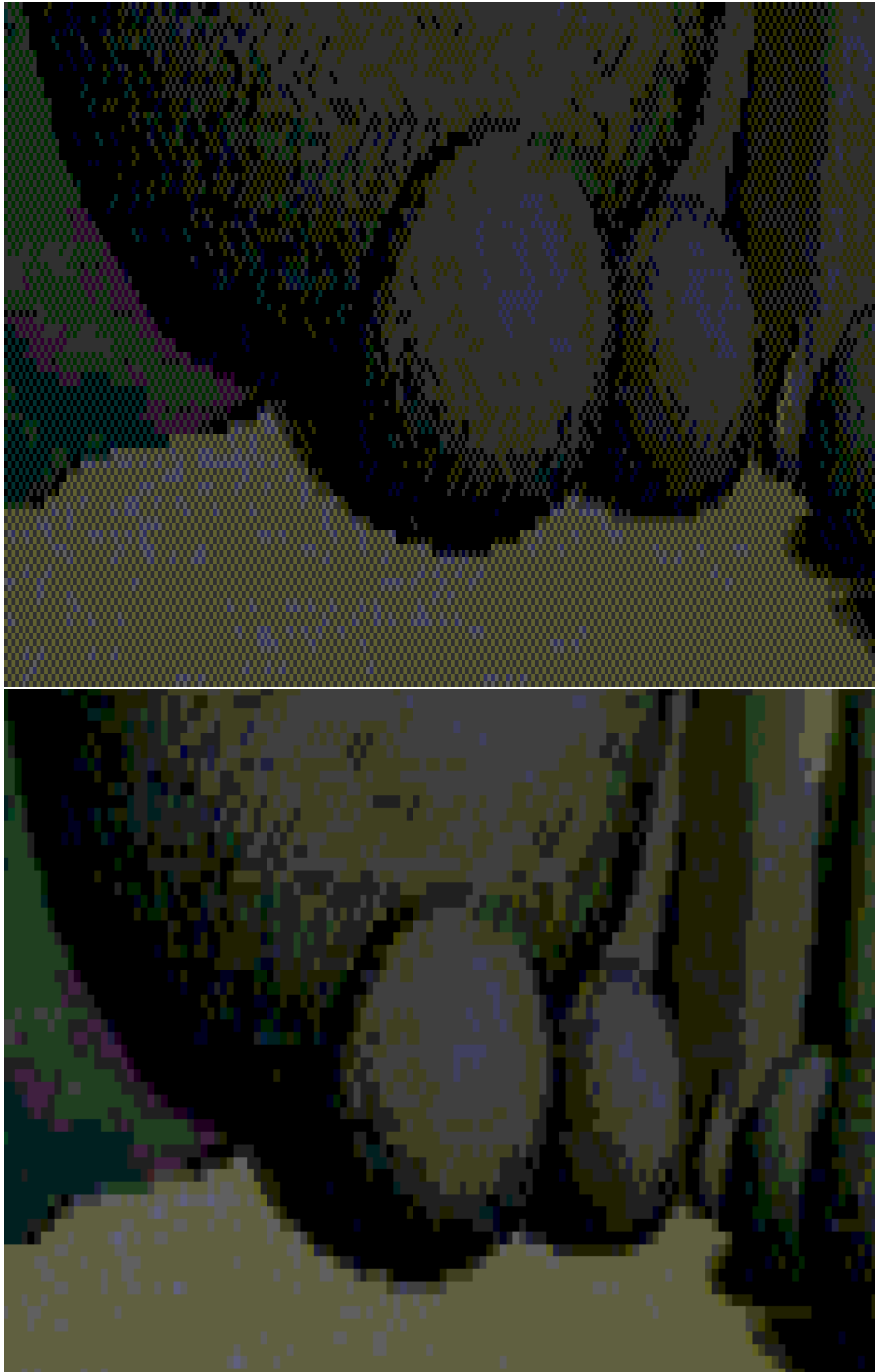


Figure 3.5: The MS DOS version of "The Pawn" used half-tone graphics for the image. dMagnetic offers two possibilities of rendering those. Top: `-vmode high_ansi`. Bottom: `-vmode high_ansi2`.

3.8.1 Resolution

For technical reasons, `dMagnetic` does not detect the size of the terminal window itself. To scale the images in `sixel` mode, the maximum resolution has to be passed on with the `-sres` commandline option. Alternatively, the `sixel_resolution` entry within the `[DEFAULTGUI]` section of the `dMagnetic.ini` file can be set as well.

As can be seen in figure 3.6, the images are in fact being scaled up from their original size, whilst the appropriate aspect ratio is being preserved.

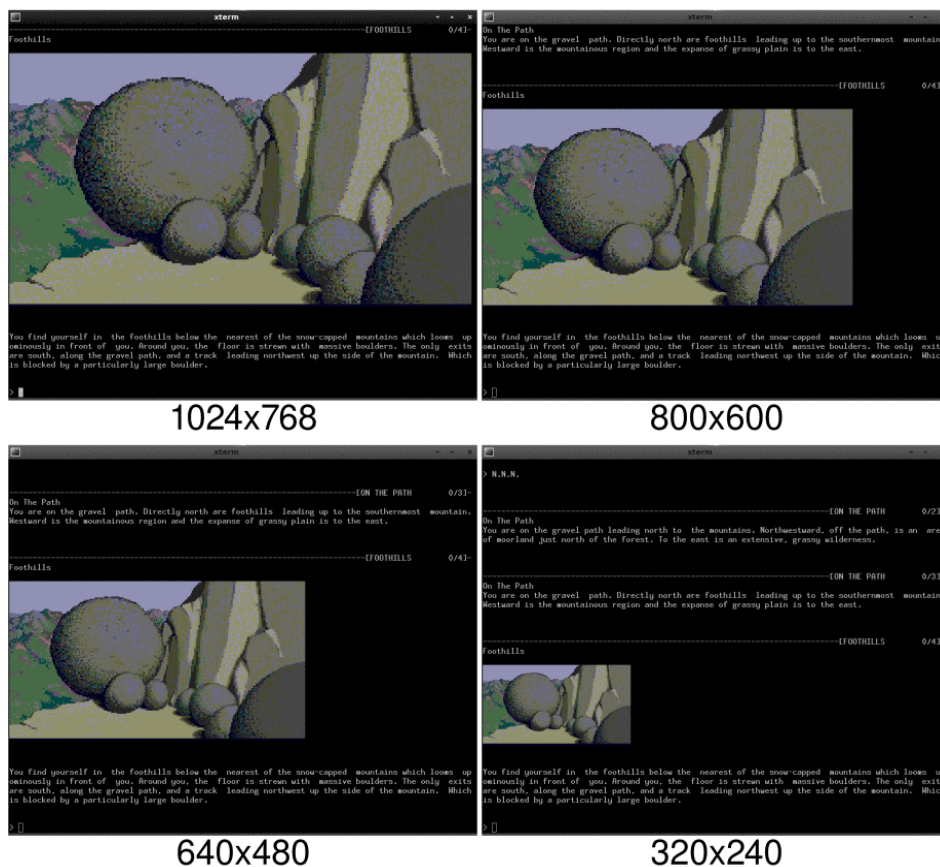


Figure 3.6: *Different options for the `-sres` commandline parameter whilst running the `-vmode sixel` mode. The original images are being scaled up, their aspect ratio is being preserved. It is up to the user to decide which one should be preferred.*

Chapter 4

Random events

*"We play a variation on the game of Blackjack."
— Charon*

Certain elements of the games rely on chance, to make playing through them more challenging. Those elements require a random number generator. `dMagnetic` offers the possibilities to generate the numbers internally, or externally, from the operating system. They can be chosen with the command line parameter `-rmode pseudo` or `-rmode real`, and further configured with the parameter `-rseed 12345`.

Within the `dmagnetic.ini` file, the `[RANDOM]` section can be used to make the choice permanent.

```
[RANDOM]
mode=pseudo
;mode=real
seed=12345
```

4.1 Pseudo random

The pseudo random generator offers some sort of determinism when playing through the game. This is necessary for scripted playthroughs (See chapter 5). Basically, the numbers advance with each command that has been typed in. So after the same amount of instructions, the same event happens.

Using `-rseed 12345` gives the random number generator the start value of 12345. Using a different value will, obviously, result in a different timing of events, and sometimes a different outcome of the game.

4.2 External random generator

A different experience whilst playing can be achieved with the option `-rmode real`. This is using the random number generator of the operating system. The option given by the `-rseed` parameter is used as additional salt.

The random numbers generated here are more sophisticated, even used for cryptographic purposes. Thus, the events happening in the game become much less predictable.

This mode is recommended for a repeated playthrough.

Chapter 5

Advanced logging

*“Derek, that Scott Electronics deal did brilliantly.”
— David Rogers*

dMagnetic is reading from standard input and writing to standard output. It is thus easy to do some logging in the form of

```
% dMagnetic pawn | tee pawn.log
```

However, this does not work for walkthroughs, since it would only write the story and the images into a file, but not the commands being typed in.

5.1 A walkthrough script

A better way to store the commands, and nothing else, comes with the `-vlog` parameter.

```
% dMagnetic pawn -vlog pawncmds.log -rmode pseudo -rseed 1  
> NORTH. NORTH. NORTH.  
> quit  
> d  
> y  
% cat pawncmds.log  
NORTH. NORTH. NORTH.  
quit  
d  
y
```

Since `-rmode pseudo` has been chosen, the random events are deterministic (See chapter 4.1). Thus, the inputs can be played back easily with the same result as before:

```
% cat pawncmds.log | dMagnetic pawn -rmode pseudo -rseed 1
```

They can also be copied from the `.log` file and pasted into a new session of dMagnetic, to get back to the same point as before.

5.2 Turning a walkthrough into a story

To retrace the steps where something went wrong, it is better to have the story along with the commands. To log the inputs as well as the output, the parameter `-vecho` repeats whatever the user has typed in. This makes `dMagnetic` work together with the `tee` command.

```
% dMagnetic pawn -vecho | tee pawn.txt
```

When trying to write a walkthrough script, it is thus recommended to use the following commandline

```
% dMagnetic pawn -vlog pawncmds.log -vecho \  
-rmode pseudo -rseed 12345 | tee pawn.txt
```

Once the walkthrough is finished, it can be turned into a book EASILY by typing

```
% cat pawncmds.log \  
| dMagnetic pawn -vmode monochrome \  
-rmode pseudo -rseed 12345 \  
-vcols 80 -vrows 40 -vecho >pawn.txt  
% a2ps -o- pawn.txt >pawn.ps  
% ps2pdf pawn.ps
```

(Even though `pawn.txt` should be edited so that the images are not spread out over several pages...)

Appendix A

Command line parameters

| Configuration | | |
|---------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| -ini | dMagnetic.ini | Location and name of the .ini file. |
| Loading the game | | |
| -mag -gfx -msdosdir | pawn.mag pawn.gfx /C/GAMES/PAWN | Location and name of the .mag container Location and name of the .gfx container Location and name of the directory containing the MSDOS binaries. |
| | pawn guild jinxter fish corruption myth wonderland | Read the location of the .mag and .gfx containers from the dMagnetic.ini file. |
| Graphic output | | |
| -vcols -vrows | 120 40 | Maximum number of columns for the image Maximum number of rows for the image |
| -vmode | none monochrome monochrome_inv low_ansi low_ansi2 high_ansi high_ansi2 sixel | Graphic output mode Inverted monochrome Different algorithm Special mode for the MS DOS images. Requires xterm -ti vt340. |
| -sres | 1024x768 | Resolution for the sixel mode |
| Text alignment | | |
| -valign | block left right | Currently broken |

| Logging | | |
|----------------------|--------------|-------------------------------------------|
| -vlog | pawncmds.log | Write the commands into a file |
| -vecho | | Repeat the commands on the output console |
| Random events | | |
| -rmode | pseudo | Deterministic random events |
| | real | Real random |
| -rseed | 12345 | Seed/salt for the random number generator |
| Others | | |
| --help | | Prints out the most important parameters |
| --helpini | | Prints out an example of the .ini file. |
| --version | | Prints out the version of dMagnetic. |
| -ega | | Prefers the EGA images (Version 4 games). |
| -bsd | | Prints out the license. |

Appendix B

dMagnetic.ini file

| Special characters | | |
|----------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------|
| \ | | Escape sequence |
| ; | | Comment |
| \; | | Escaped ; (Not a comment) |
| \\ | | Escaped \ |
| Section [FILES] configures the location of the game binaries. | | |
| pawnmag | /usr/local/games/pawn.mag | Container format by (1). |
| pawngfx | /usr/local/games/pawn.gfx | |
| guildmag | /usr/local/games/guild.mag | |
| guildgfx | /usr/local/games/guild.gfx | |
| jinxtermag | /usr/local/games/jinxter.mag | |
| jinxtergfx | /usr/local/games/jinxter.gfx | |
| corruptionmag | /usr/local/games/ccorrupt.mag | |
| corruptiongfx | /usr/local/games/ccorrupt.gfx | |
| fishmag | /usr/local/games/fish.mag | |
| fishgfx | /usr/local/games/fish.gfx | |
| mythmag | /usr/local/games/myth.mag | |
| mythgfx | /usr/local/games/myth.gfx | |
| wonderlandmag | /usr/local/games/wonder.mag | |
| wonderlandgfx | /usr/local/games/wonder.gfx | |
| pawnmsdos | /C/GAMES/PAWN | Alternative: MS DOS binaries |
| guildmsdos | /C/GAMES/GUILD | |
| jinxtermsdos | /C/GAMES/JINXTER | |
| fishmsdos | /C/GAMES/FISH | |
| mythmsdos | /C/GAMES/MYTH | |
| corruptionmsdos | /C/GAMES/CORRUPT | |
| guildtworc | /C/GAMES/MSD/GTWO.RSC | Alternative: Resource files from the Magnetic Windows System |
| corruptiontworc | /C/GAMES/MSD/CTWO.RSC | |
| fishtworc | /C/GAMES/MSD/FTWO.RSC | |
| wonderlandtworc | /C/GAMES/WONDER/TWO.RSC | |
| Section [RANDOM] configures the random events | | |
| mode | pseudo | Deterministic |
| | real | Real random |
| seed | 12345 | Seed/salt |

| Section [DEFAULTGUI] configures the output | | |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| rows | 40 | Number of rows |
| columns | 120 | Number of columns |
| align | left block right | Currently broken |
| mode | none monochrome monochrome_inv low_ansi low_ansi2 high_ansi high_ansi2 sixel | Inverted monochrome Different algorithm May not work in very terminal Special mode for the MS DOS images Requires <code>xterm -ti vt340</code> |
| sixel_resolution | 1024x768 | Maximum resolution |
| low_ansi_characters | \\ MS | Characters with which the Low ansi output is being rendered |
| monochrome_characters | .-=*x\$X | Characters with which the monochrome output is being rendered. It is a ramp increasing intensity; characters on the left represent dark colors. |

B.1 Example

```
% dMagnetic --helpini
;https://msmemorial.if-legends.org/magnetic.php
[FILES]
pawnmag=/usr/share/games/magneticscrolls/pawn.mag
pawngfx=/usr/share/games/magneticscrolls/pawn.gfx
;pawnmsdos=/usr/share/games/magneticscrolls/msdosversions/PAWN
guildmag=/usr/share/games/magneticscrolls/guild.mag
guildgfx=/usr/share/games/magneticscrolls/guild.gfx
;guildmsdos=/usr/share/games/magneticscrolls/msdosversions/GUILD
;guildtworsc=/usr/share/games/magneticscrolls/MSD/GTWO.RSC
jinxtermag=/usr/share/games/magneticscrolls/jinxter.mag
jinxtergfx=/usr/share/games/magneticscrolls/jinxter.gfx
corruptionmag=/usr/share/games/magneticscrolls/ccorrupt.mag
corruptiongfx=/usr/share/games/magneticscrolls/ccorrupt.gfx
fishmag=/usr/share/games/magneticscrolls/fish.mag
fishgfx=/usr/share/games/magneticscrolls/fish.gfx
mythmag=/usr/share/games/magneticscrolls/myth.mag
mythgfx=/usr/share/games/magneticscrolls/myth.gfx
wonderlandmag=/usr/share/games/magneticscrolls/wonder.mag
wonderlandgfx=/usr/share/games/magneticscrolls/wonder.gfx
[RANDOM]
mode=pseudo
seed=12345
[DEFAULTGUI]
rows=40
columns=120
align=block
mode=high_ansi
low_ansi_characters=\\|/=
monochrome_characters= .:-+*x#@$X
```


Appendix C

Priorities

C.1 Location of .ini files

Highest priority: `-ini` parameter.
 `~/dMagnetic.ini` (Home directory)
 `/etc/dMagnetic.ini`
 `/usr/local/share/dMagnetic.ini`
 `/usr/local/share/games/dMagnetic.ini`
 `/usr/local/games/dMagnetic.ini`
 `/usr/share/dMagnetic.ini`
 `/usr/share/games/dMagnetic.ini`
 `/usr/share/dMagnetic/dMagnetic.ini`
 `/usr/games/dMagnetic.ini`
 `/usr/games/dMagnetic/dMagnetic.ini`
 `/usr/share/doc/dmagnetic/dMagnetic.ini`
 `/usr/pkg/share/doc/dMagnetic/dMagnetic.ini`
Lowest priority: `./dMagnetic.ini` (current directory)


C.2 Configuration

Highest priority: Command line parameters.
Medium priority: Read from the ini file.
Lowest priority: Pre-compiled values

Appendix D

ANSI RGB values

Colours for the low ansi mode are being chosen from this palette

| | | |
|----------------|-------------------------------------------------------------------------------------|---------|
| Black |  | #000000 |
| Red |  | #AA0000 |
| Green |  | #00AA00 |
| Brown |  | #AA5500 |
| Blue |  | #0000AA |
| Magenta |  | #AA00AA |
| Cyan |  | #00AAAA |
| Grey |  | #AAAAAA |
| Dark Grey |  | #555555 |
| Bright red |  | #FF5555 |
| Bright Green |  | #55FF55 |
| Yellow |  | #FFFF55 |
| Bright blue |  | #5555FF |
| Bright Magenta |  | #FF55FF |
| Bright Cyan |  | #55FFFF |
| White | | #FFFFFF |

Bibliography

- (1) The magnetic scrolls memorial.
<https://msmemorial.if-legends.org/>
- (2) dMagnetic home.
<https://www.dettus.net/dMagnetic>