Amoric v1.4

COLLABORATORS

	TITLE : Amoric v1.4	

ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY		July 25, 2024	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

Amoric v1.4

1.1 Amoric v1.4

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                                Amoric (v1.4)
                The first ORIC-1/Atmos 48K emulator for the Amiga
                   © Copyright 1995-96 Jean-Francois Fabre

*****************************************************************************
```


1.2 Introduction

INTRODUCTION

As the ORIC Atmos was my first computer, I never forgot it its fantastic 8 fixed color games. The games were not that bad or ininteresting but the main problems were :

- Tape loading durations could drive you mad, mostly if that doesn't worked because of the volume, or treble, or tape speed, or the washing-machine, etc...

- The f...ing protections in games forced you to switch on and off the ORIC, damaging the chips.

- What a shame to plug in the ORIC again in 1995 to play games while you've got a new computer at your work or at home

- While C64, Amstrad, ZX81, VIC20, BBC, Apple II emulators exist for the Amiga, there were no room for the ORIC domain, while ORIC was very popular in Europe (actually, more than the Vic20 or the BBC !!)

That's why I decided to write Amoric. I first wrote a UNIX X/Windows version, then I tried to adapt it on my favourite computer : the Amiga.

I waited a long time for another programmer to release an Amiga version but noone did, so I think I'm the first one :-)

1.3 Features

Amoric 1.4 features :

- A quite good 6502 emulation.
- Graphics emulation (HIRES and TEXT mode, including double height and flash modes)
- 6522 and 8912 emulation, including Timers 1 & 2, the keyboard, and the joysticks.
- Load/Save on Floppy/Hard Disk (faster than the tape (really ?))
- Control Metakeys to perform different operations (Reset button, etc...)
- Sound (Not perfect yet, but cool...)
- Load/Save snapshots from/to disk/memory

Obviously, this is not a real Oric, that means that there are problems in emulating some software. See the Bugs chapter for more information.

This emulator does NOT emulate :

- 50/60Hz switch (not often used)
- Half-TEXT Half-HIRES mode, used in some games
- Most of undocumented instructions of the 6502 (but that doesn't matter)

1.4 Setup

USER PREFERENCES

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The oric.cfg file contains the user preferences. Until version 1.0, you
were able to edit this file in order to change them. Due to several
convenience reasons, I changed the format of this file. It is now binary
and has been renamed to 'Amoric.prefs'.
It contains the following information :

Rom filename  <--- Allows you to specify the ROM you want to run
Progs dir <--- Allows you to specify the default directory for loading tapes ( ↩
   CLOAD)
Dumps dir <--- Same thing, but with tapes to save (CSAVE)
Sound   <--- sound on/off
PatchRom  <--- patches some ROM routines for speedup.
FPS   <--- Screen refresh rate (in frame/sec, from 1 to 50, in PAL).
DisplayID <--- An amiga screen mode for the Oric display.
Joystick 1&2    <--- Enables/disables joysticks 1 or 2
Warn on exit    <--- Asks for confirmation before exiting Amoric
Do Patterns     <--- Apply the default file patterns: #?.DAT for tapes and #?.ROM  ↩
   for ROM files
Refresh policy  <--- Lets you choose between Fastest,Fast,Good,Accurate,and Full
Disk type       <--- Lets you specify the disk drive you want to be virtually  ↩
   plugged in.
Video           <--- You can choose different Video drivers. Fastest is 1 bitplane ↩
   .

You can modify this file using the setup window at Amoric startup. You can change  ↩
   the settings
for the current execution of the program or save them for later use too.

Refresh policies can be Fastest,Fast,Good,Accurate,or Full.

* Fastest is the simplest policy. It does not take dynamic character definition  ↩
   into account
(same accuracy as V1.1).
* Fast takes dynamic character into account, but only in some cases.
* Good : Same than Fast, except for the cases dynamic character are taken into  ↩
   account.
* Accurate : Dynamic character definition is always taken into account.
* Full : The screen is always fully redrawn according to the refresh rate. Very  ↩
   CPU consuming,
  but also very close to the real Oric display.

Dynamic character definition is often used in games to animate characters or  ↩
   objects. In Hires
mode, Fastest, Fast, Good, and Accurate policies act the same way.

WARNING:
  You can use Oric 1 and Oric Atmos ROMs and you can modify the ROM files for your
  personal use only. However, there are some locations which are patched after ROM
  loading by the emulator (Tape load, others) . Modifying those routines may lead
  to Oric crashes.
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1.5 Configuration and Requirements

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CONFIGURATION AND REQUIREMENTS
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AmOric is written both in C and in 680x0 assembler code. It was adapted
from a former emulator that I wrote for UNIX platforms, and which was
written exclusively in C. But UNIX workstations are usually a lot more
powerful than a 68030 or even a 68040 Amiga. Due to the RISC architecture,
C programs are usually faster than assembler programs, if the compiler is
worth (gcc), and that also allows portability on others processors.
My emulator worked fine on HP-PA1, Sun SPARC, PowerPC and Silicon Graphics.

But on Amiga, we must accept to program in assembly language for this type
of software as speed is critical during the emulation, and the famous
Amiga chipset (Paula, Denise, Gary...) can't help us with processor emulation.
Furthermore, the 6502 and the 680x0 have got lots of common features, and the
main idea is to use them (direct CCR flags conversion, same instructions...)
with a minimum of adaptation.

There were 2 versions : a 68000 version and a 68020 version, but I had decided to
give up the 68000 version, as I thought it would be really to slow. But a 68000/28
user asked me for the 68000 version and here it is, but don't expect miracles !

I don't conceal that Amoric will be SLOW on a basic A1200 and VERY SLOW on a A500.
Try REAL fast RAM.
Anyway, Eric Totel tested this version on a A1200/020/14MHz with fast RAM and
it was not that slow.

Now, it runs at around nominal speed (90-120%) on a 68030/45MHz, but I should
optimize it in later versions, even if I think it will be hard to go further,
but Fabrice Frances gave me an idea how to improve speed again.

Anyway, if your computer is slow, you can always experiment with the frame rate
refresh in the oric.cfg file. Oric speed may change according
to the display load. Amoric will slow down during scrollings.

It should run on Kickstart 2.0 and higher and requires asl.library for the ↩
requesters.

It has been succesfully tested on :

68030 KS 3.0
68020 KS 3.0
68000 KS 3.0

1.6 Startup

HOW TO RUN AMORIC

Here, I'll explain how to get started with Amoric.

Simply click on the Amoric icon or type Amoric in the shell
The program will try to load the ROM file and the config file.
Then, the Oric screen will appear.

If you press the HELP key at any moment, the summary of the commands will appear
on the Oric screen. The emulation will be halted (no active wait).

To exit Amoric, simply press F10 anytime.

To select a tape, just press F3. The screen will return to the Amiga part and a requester
will ask you for a tape file. After that, just type CLOAD"" like you were used to.
If CLOAD"" stays stuck in 'Searching...', maybe that you've not selected a tape, or that
you've reached the end of the current tape.So select a tape or press F7 to rewind the
current one (if there is one).

1.7 Sound

SOUND EMULATION

I implemented myself a kind of AY-3-8912 emulation. I know it is not perfect, but it's MY
work ;-) and I did not adapt a 8912 emulation program, that's because I wanted to do it
all by myself, although I know that it's less accurate than some existing 8912 emulations.

That's why it's still not perfect. It has not changed consistently since version 0.9,
except maybe for channels allocation. If you're listening to a module with Delitracker
and you run Amoric, the sound will be disabled because the channels wouldn't have been
allocated. Conversely, if you run Amoric and then Delitracker, Delitracker won't be
able to play anything because the channels would have been allocated.

Nevertheless, sound emulation is still done by using custom chips addressing and not
the audio.device. Many sound programs work like that and it's ok.

The noises are still missing in the emulation, and there are some persisting sounds
on some programs (ZORGONS). To remove them, just press F6 twice (sound off, then on).

1.8 Keyboard Map

There is a unique keyboard mapping, that does not depend on the localization of the
keyboard, but on the raw keycodes only, which means that it matches USA keyboard.

Anyway, some extra keys are used to perform useful control functions :

```
  F1    F2    F3    F4    F5    F6    F7    F8    F9    F10
Reset Refresh Change   Show Reboot  Toggle  Rewind   Save Restore  Break
     Tape Prefs   Sound  Tape   State    State
```

The F1 key jumps to the NMI oric routine (the unreachable black button under the computer).

The F2 key refreshes completely the screen (may be useful).

The F3 key allows you to change the current tape.

The F4 key allows you to configure Amoric while running.

The F5 key has the same effect as swithching on/off the computer.

The F6 key toggles sound on/off

The F7 key allows you to rewind the current virtual tape.

F8 allows you to save the Oric current state (memory, registers...) in a buffer.

F9 reloads the previously saved state in the Oric memory.

F10 allows you to return to the workbench screen and to stops the emulation

Help displays a helpscreen reminding you those useful control keys.

The Oric Atmos 'FUNCT' key is emulated by the Right Alt key.

Del acts the same as backspace.
The numeric keypad can also be used, as well as 'Enter' instead of 'Return'.

Caps Lock acts the same as CTRL-T in the basic commands interpreter.

NumL and ScrL (on the numeric keypad) allows you to decrease/increase the frame rate during the emulation. This can be useful in some games.

PrintScreen allows you to save a snapshot of the Oric screen in IFF-ILBM format. If you choose the Oric colors for your workbench, you can use a screenshot mosaic as a background :-) (But me I prefer Magic Workbench palette).

F8 will only work if memory could be allocated for the buffer at startup.
F9 will only work if F8 was pressed at least once during the emulation.

Note: With some games, for instance Zorgon's Revenge, the keys X and Down Arrow are used to go up/down because they are supposed to be one above the other, but that is no longer true for the Amiga and I'm sorry. Define joystick keys instead and play with the joystick.

1.9 Joysticks

JOYSTICK EMULATION

Amoric V1.4 emulates two kinds of joysticks : P.A.S.E joysticks and programmable joysticks.

The P.A.S.E joystick interface connects on the printer port of the Oric. Some games support them, like Ultima Zone, Pastablasta, or Lone Raider. But some others do not, and it can be annoying, most of all if the keys are not located one next another on the Amiga (just like in the Zorgons spaceship stage, where you had to press X to go up and <- to go down).

It also existed another type of interface plugged in the expansion port that you could configure by choosing the keys you wanted the joystick to reproduce. This programmable interface was more flexible than the P.A.S.E interface, because you could use the joystick with games which supported only the keyboard.
However, when you pressed fire, other joystick moves were disabled. Moreover, the interface was unable to reproduce Shift,Control, and Funct keys.

I tried to simulate this interface, but with the possibility to perform diagonal moves together with the fire button (if the game allows two keys pressed at the same time).
It is also possible to define Shift, Control of Funct keys as joystick moves.

You can choose the keys you want the joysticks to replace in the setup window, by pressing the 'Choose JoyType' gadget, and press the 'Define' button of the relevant joystick in the joystick prefs window (if you have selected the Custom JoyType), then follow the instructions. Note that you cannot see which keys are currently in use. You can only select valid Oric keys (for instance, the Help key will be ignored).
You can load and save the joysticks settings on disk.

1.10 Saving... GAME C

USING THE PATCHED 'CSAVE' INSTRUCTION

CSAVE and CLOAD, the tape loading routines are patched in the ROM to allow you to save/load virtual tapes from a disk. Loading is simple : you select a tape, Amoric loads it in memory and when a CLOAD"" is performed, the bytes are read from the block of memory and not from the disk file.

With saving, it's more difficult, since Amoric opens files and writes to the disk, so you must be careful since a unclosed file can trigger the Dos validation process after a reboot (well known problem).

When you type 'CSAVE "FOO"', a file FOO.DAT is created in the default tapesave directory.
If the file already exists, a requester will ask you if you want to overwrite it.
If you answer NO, CSAVE will write nothing.

If you type 'CSAVE""', a file _NONAME_.DAT will be created, since you are not allowed
to create a file with no name... But the name will remain "" for the Oric...

If the file cannot be opened for some reason, Amoric will write nothing and the data
will not be saved (but the message 'Saving... FOO B' will still appear). That would
act exactly as if there were no tape in the recorder...

The file will not be closed as long as :

- You haven't tried to save another tape
or
- You haven't pressed a function key (refresh ,exit, save state...)

That's because it's difficult to know when the saving is over. So DON'T reboot
your amiga while the emulation is running if you have saved tape and Amoric
did not close the file. It could force you to revalidate your HD
(harmless but long operation).

If you close the tape while saving (by pressing a function key), it will act
just as if you pressed the STOP button on the tape recorder.

PS : The writing is buffered with a 1K buffer. It speeds up the saves.

1.11 Hints

USEFUL HINTS USING AMORIC

- To improve speed, you can turn caches/burst mode on (68030) and also copyback
  (68040). I don't use self-modifying code or DMA transferts so all the caching
  devices should work. You can also relocate the VBR in Fast Ram, with tools such
  as TUDE from N.O.M.A.D, or SystemPrefs, to improve speed while fetching interrupts
  vectors.

- As I don't consider the Amiga timers but only the Oric ones, on slow machines you
  could have some difficulties to make the keyboard react, because the key could
  be pressed and released just before the Oric ROM routine tests the key, and misses
  the key on peak. In this case, just press longer on the key.

- Don't promote the Oric screen with NewMode since Amoric has got its own mode
  selection. Using Newmode can lead to crashes in some cases.

- If you've got a multisync monitor, choose a screen mode like DoublePAL Lores.
  The display will be better than your original Oric, and as a side effect,

```
  as strange as it may appear, the sound emulation will be better in the sharp ↩
     tones
  (due to the fact that audio and video DMA are coupled)

- In order not to let some files opened for writing unclosed, when you see
  that a write operation is over for the Oric, just press one of the
  function keys (or even the HELP key). That will close the file (but don't
  do it while saving, since it's just like stopping the recorder).

- Don't choose as commodities hotkeys a sequence like Control-T or Control-C.
  Amoric would not receive those codes and you would not be able to break
  or toggle CAPS on/off...
```

1.12 Tapeimport

```
IMPORTING GAMES OR SOFTWARE FROM TAPES


THAT'S an intricate part. How to get games or programs that are originally
stored on audio tapes ?
On the ORIC, the 6522 and the ROM manage to receive and send this horrible
and unmelodious 2400 baud signal. This fucking signal is the easier bridge
between today's computers and the ORIC (ORIC Microdisk or Jasmin would be
hard to emulate for me.
I've no knowledge about electronics, although I'm supposed to, and ORIC
disks are 3'', that means there would be no way to read them with Amiga
or PC drives. Anyway there isn't much documentation about Oric disks.
The C64 drives were more documented and many interfaces for drives were
developped for the Amiga (A64 package...))

I will not talk about RS232. I think the ORIC has got one but I've no idea
how to program it neither on the ORIC nor on any other computer. Anyway,
you'd need to carry your ORIC with you to do that (not convenient).
That would be the safest way to transfer data though.

But I concentrated more on sound tape recordings :
On any computer, it's easy to sample sounds, if you've got enough mem or
hard disk space.
For this operation, you'll need some !
First, sample your cassettes at a high rate in 8-bit mode (22050 KHz or more).
The format is lo8 (unsigned 8 bit : range 0-255)
After that, use the program 'transf', written by Boris GRANVEAUD, included in
this package. It's not very user-friendly because it's supposed to be seldom
used. The syntax is as follows :

> transf file.lo8 GAME.DAT

You'll be asked for the sample rate you recorded the file.
The program displays info about the file (name,length) and reads the data.
Because of a timing difference between ORIC-1 and Atmos, before reading data,
the program skips some bytes in the sample (time for the Atmos to display
Saving... GAME OF THE DEATH C, while the ORIC-1 only displays Saving...).

If an error occurs, try to transfer as follows :
```

```
> transf file.lo8 GAME.DAT wretwr

wretwr can be eiruti or uerhgiugh (or even nbmnmbn), because the test is made only ↩
    on the number
of args passed to the program. In this case, the program will skip no byte in
the sample. Conversely, an error will (normally) occur at the first byte.
As it is really hard to motivate Boris to improve his program, just consider
this error as a feature.

55 U Error found.
New value: <- Here just enter the value above in hexadecimal (here 55)

If you get another error, two possibilities :

1) Your tape or/and your tape player is/are fucked up
2) The sampling rate is not high enough
3) The volume is not loud enough
4) The program doesn't use the same method to read bytes than the 6522
   as the 6522 is an analogic device and here we process the data numericaly
5) It's merely a tape from ZX-Spectrum.

Actually, it makes five possibilities but that doesn't matter.

If you manage to load tapes on the ORIC (if your cat hasn't pissed on the
keyboard) and not with this program, just use a copy program on the ORIC
and send back the loaded data to the digitizer.
The program manages perfectly with a direct ORIC signal. If that doesn't
work, or if you can't carry your ORIC, save the signal on a new tape : it
will improve the signal.
ORIC's 6522 chip is very good at reading tapes and correcting errors.
Take ORIC loading program as the only reference.
If the game has many parts, save them separately, and then join them (cat).
Sometimes you'll need to put some 0x16 bytes between them (don't ask why).
Good luck !
For any technical questions, don't hesitate to contact me.

PS : I provided the C source code for the 'transf' routine and you should be
     able to compile it on UNIX Workstations and Pee Cees, if you find that
     sampling is more convienient on those platforms.

Anyway, you can get almost all the existing games on the Oric here.


IMPORTANT: If Amoric refuses to load some games, that's because the tape sync is
           too short. It's my very fault !! I uploaded games on the http site,
           and some of them have got this problem. To correct this, use the
           TapeInfo tapeinfo program, provided in this archive.
```

1.13 Other platforms

```
UNIX VERSION

As I told before in this text, my first attempt to an Amiga emulation
was on a UNIX platform. I released a version which did not handle
graphics correctly, and I contacted Fabrice Frances at the same moment,
```

who had wrote a version for PC (Euphoric). He introduced me to
Olivier Balet, which improved my UNIX version with graphical
optimizations, but now they try to release a UNIX version with
Fabrice. Maybe that I'll release a XMotif version later.

PC VERSION

For your friends owning a PC and who want to get a very good emulation, you
should try Euphoric from Fabrice Frances.
Fabrice is really an amazing programmer and his emulator is really a jewel
in the jungle of PC software. You can upload it at ftp.ensica.fr or here
There's also some interesting Netscape information about the ORIC,
its history, etc...

We often exchanged ideas and suggestions with Fabrice. If you're yourself
the unlucky owner of a Pee Cee, Euphoric should wipe your tears away.
It is fast and supports sound emulation, Oric1, Atmos, and Telestrat (!),
Oric Microdiscs, virtual disks, RS232, there's almost nothing missing...

ATARI-ST VERSION

Olivier Galibert downloaded my emulator for UNIX and e-mailed me telling
me he was going to make an emulation for ST. He gave me precious hints
which allowed me to correct 6502 emulation bugs and to gain a lot of speed.
I hope his excellent knowledge of the 680x0 will allow him to release his
emulator soon, even if the ST is a bit obsolete now. (What about the amiga...)

ORIC VERSION

Very accurate, it was developped by Oric Systems, UK in 1983.

ZX-81 VERSION

No version seems to come on this platform, sorry.

1.14 Disclaimer

DISCLAIMER

I cannot be held responsible for any damage caused directly or indirectly
by the use of this program, irrespective of its correct or improper usage.
Use it at your own risk.

1.15 Changes

CHANGES SINCE THE PRECEDENT VERSION

Amoric has been released under version number 1.4.
Some bugs have been corrected and new functionnalities have been added.

* New features in the Prefs program

* It is now possible to load and save joystick settings.

* Snapshots can be saved on disk too.

* It is now possible to save the screen as a IFF-ILBM file

* ALL amiga screen modes are usable.

* Better 6522 emulation (almost perfect now)

* Slightly faster video refresh

* Minor code cleanup.

1.16 Bugs

BUGS AND PROBLEMS

The main bugs come from difficulties with the emulation.

I had some difficulties in making some games work. In fact, some bugs in games taught me a lot about ORIC internal structure, and allowed me to improve a lot the fidelity of the emulation. For me, trying 10 or 20 games is compulsory when you program an emulator, most of all when it is a 8bit one, which has no other utility than allowing you to play the old games !

* First, I did not implement all the undocumented instructions properly (there are a lot of them), but they are implemented as NOPs with skips. That is because a few programs use them, and it is often not on purpose but due to a frequent error from the programmers who believed that the BRK instruction returned at PC+1 after the RTI while it's actually PC+2.

If you don't believe me, just try this on your Oric :

```
DOKE #400,#6000 -> BRK
    -> RTS
POKE #402,#4C -> JMP $FAE1 (ZAP)
DOKE #403,#E1FA
```

If you type CALL #400 you will hear ZAP which means that the RTS instruction is skipped.

Note : On C64 and Apple II, undocumented instructions were found very convenient by some foolish programmers and were used on purpose.

Actually, Amoric handles the undocumented instructions by skipping the PC by the same number of bytes as they did on the real 6502, but they don't perform any other operation. Amoric will prompt you if it meets some instructions which originally crashed the Oric (like $x2). You may choose between 'Reboot', which will reboot the Oric, and 'Quit', which will quit Amoric.

* Second, I did not implement in a very natural way the screen refresh, in order to improve the speed, that's why some bugs could occur when flipping in HIRES.

Some games use a hybrid video mode half-text half-hires (DOGGY,FIRE FLASH, ...), which is hard to reproduce without corrupting the emulation of the others ones (TEXT and HIRES). Those modes are not supported yet, but although I told in the docs of version 0.8 that they would be supported for sure in the next release, and that IS the next release, you can see that I lied ;-), but I tried hard to implement it, I swear, and I had lots of problems. I could do a good graphics emulation but it will considerably slow down your CPU.

* Third, when you flip between TEXT and HIRES modes, the screen does not refreshes totally
and some bugs appear on the display. To remove them, press F2 (refresh screen)

1.17 Working Games

THE GAMES WHICH WORK OK WITH AMORIC

The list is increasing from version to version.
Some of these games had to be patched to work since they needed a too much accurate emulation (Tape routines...)
They are followed by an asterisk *.

3D-FONGUS (Loriciels)
3D-MUNCH (Loriciels)
L'Aigle d'Or (Loriciels)
Andromeda et Persepolus
Le Spectre d'Anubis (Eric Chahi)
Archerons'S Rage
Arena (MicroDeal)
Baston (Sprites)
Bering (Dialog)
Bombyx (Dialog)
James Bond Part 1 (Severn)
Breakout (Tansoft)
Categ-Oric (No Man's Land)
Centipede (PSS)
Chess I et II (Tansoft)
Chopper (Severn)
Corsaire (Hebdogiciel)
Crocky (Loriciels)
Damsel in Distress (IJK)
DEFENCE FORCE (Tansoft)
Le Diamant de l'île maudite (Loriciels)
Don Juan et Dragueurs (Micropuce)
Don't press 'Q' (Andrew Moore)
Dracula's Revenge (PSS)
Driver (Dialog)
Elektro Storm (PSS)
Esquive (Oric France)
Frelon (Loriciels) (Don't use the version from the Oric Page, because it's corrupt)
Frogger
GALAXION (Loriciels)
GASTRONON (Loriciels)
Le Manoir du Docteur Genius (Loriciels)

Ghost Gobbler (IJK)
GHOSTMAN (Infogrames)
GRAPH (Loriciels)
Gravitor (Severn)
HADESASM
HADESMON
HARRIER ATTACK (Durell)
The Hobbit (Melbourne)
Honey Kong (Sprites)
Hopper (PSS)
Hu*Bert (Loriciels)
HunchBack (Ocean)
Hyper Olympics (Rotten game from mine in 1984)
Insect Insanity
INVADERS (IJK)
L'Immonde Dr Kokus (Rotten game from mine in 1986)
Karate (Gazoline Software)
KRILLYS
LAND-ILL (Tansoft)
Light Cycle (PSS)
Lilla et Jacky (MicroPuce)
LMPLUS
LOCUS
M-A-R-C (PSS)
Macadam Bumper (ERE)
MISSION
MR WIMPY (Ocean)
Mushroom Mania
Le Trident de Neptune (No Man's Land)
Nibbler (Hebdogiciel)
Nowotnik Adventure
Orion (Loriciels)
Panic (No Man's Land)
Pastablasta (Arcadia)
Pengo
Playground 21 (IJK)
Psychiatric (SPRITES) <- NOW WORKS
Tendre Poulet (Sprites)
The Ultra (PSS) <- NOW WORKS
Probe 3 (IJK)
Le Protector (Loriciels)
Psychiatric (Ere)
Lone Raider (Infogrames)
Le rendez-vous de la terreur (Ere)
Le retour du Dr Genius (Loriciels)
Ratsplat (Tansoft) <- NOW WORKS
S.A.G.A (Ere)
SKRAMBLE (Micropuce)
Sorvivor (Loriciels) <- NOW WORKS
Spooky Mansion
StarFighter (Severn)
Starter 3D (No Man's Land)
Strip 21 (Micropuce)
Super Jeep (Loriciels)
Two Gun Turtle
Le secret du tombeau (Loriciels)
Le tour du monde en 80 jours

```
  Them
  Triathlon (Ere)
  TrickShot (Ijk)
  Trouble in store
  TYRANN (Norsoft)
  Ultima Zone (Tansoft)
  WAYDOR
  WYX (Hebdogiciel)
  XENON 1 (IJK)
  XENON 3 (IJK)
  ZEBBIE (IJK)
  ZODIAC (IJK)
  Zoolympics (No Man's Land)
  Zorgon's Revenge (IJK)
```

1.18 To do

```
Some things remain undone :

* half-text/half-hires mode. Really a drag !
* Better sound emulation (noise)
* Some floppy disk emulation (virtual or real) with Sedoric
* Further improvement of the flash mode
* Improvement of the cycle timing.
* Solve the (few) remaining incompatibilities in games.
* Emulate the printer in some way.
```

1.19 Register

```
REGISTER

I gave up the idea of releasing Amoric while asking people to register to it for
many reasons I don't think it's necessary to expose.

Amoric is Giftware, so send me anything you want to 'register'. I accept  ↩
    registrations
for games and/or utilities that you've written, and also translations in different
languages for the guide. If you still want to send me money, you're welcomed.

Anyway, if you've lost all your money playing Mortal Kombat II, or you have no  ↩
    time to
translate the dox in czech, or you can't program, you can send me
a mail or a postcard to tell me what you think of my program.
Many people already e-mailed me about Amiga when I uploaded the UNIX version  ↩
    because
I said in the .readme that I had got an Amiga. I think the worst thing is  ↩
    indifference.
But many people e-mailed me about Amoric since and I hope it will continue.
```

1.20 Acknowledgements

ACKNOWLEDGEMENTS

I would like to thank the following persons :

- Fabrice Frances, who provided me the complete 6522 and AY-3-8912 docs, and
  who gave the PC world a program it doesn't deserve ;-) . He helped me to
  correct bugs in the Unix version and gave me his 6522 emulation code (in i80x86) ↩
  ,
  the Sedoric manual, and a LOT of hints. Moreover, we work at 500m one of another ↩
  !!

- Olivier Galibert, who contacted me about the Unix version to report me a bug.
  Great thanks for your powerful hints in 6502 emulation with 68000, and for
  your accurate docs on the 6502 emulation (including undocumented opcodes).
  Maybe Amoric would have never been released without you.

- Boris Granveaud, who wrote the tape digitizing routine, for his friendship
  and his great debugging help when I decided to write the Unix version.

- Frank Wille for PhxAss 4.25. Really a great in-line assembler.

- Jan Van Den Baard for GadToolsBox2.0c. A bit buggy but cool.

- Christer Bjarnemo, for his translation of this documentation in swedish,
  and for updating it since V1.3.
  He did not even know the Oric, but he enjoys emulators a lot.

- Manfred Matzinger, for his translation of this documentation in german,
  and for updating it regularly.
  I think he tries to collect every piece of software existing on the Oric.
  Good luck. There exist more games than one can think on the Oric !

- Kamel (Who is he ?) for signaling me in detail some Amoric bugs, and for ↩
  continuous
  support through e-mail.

- Christian Bauer, for providing the source code of Frodo (C64 Emulator). You ↩
  could
  think I copied the emulation code from it, but I did NOT. I just copied some ↩
  parts
  of the code relative to GadTools, because I did not know anything about it, and
  some event handling, like the keyboard. Christian, your source code was really
  useful to me. Thanks.

- Olivier Balet, for working on my Unix version.

- Sylvain SOUCHE and Jean-Yves ROSSI for providing me some games the tape
  of which I had eaten.
  Special thanks to Jean-Yves who lent me his ORIC (I had lost mine),
  his cables and his (f***ing) tape recorder.

- Bruno Thiebolt, builder of OricLink, who transfered lots of games from the Oric
  to the Oric Page on the Web.

- The late 'Theoric' french magazine, in which precious technical information
  was found on the 6522 and on the tape format.

- Eric Totel, for his testing on his A1200, and for letting me use his RKM ↩
   Libraries.

- Oliver Rummeyer, for his great program "RO", of which I'm currently the french
  official dealer (Advertisment)

- The Amiga, for being such a great computer.

- All the people who tested and enjoyed this program on its UNIX form
  the ORIC nostalgics and the others, and who e-mailed me about it. Thanks.

- The Pixies, the Breeders, Franck Black, and the Red Hot Chili Peppers.
  That's not music for PC users ! (not directed to you, Fabrice ;-))

1.21 History

AMORIC HISTORY

Before version 0.1 : UNIX X/Windows Release. Lots of bugs but still the only ↩
   Emulator on UNIX.

Version 0.1   : Programmed on A500 2 Floppies 2Mo 68000 with a hacked AsmOne. ↩
   Graphics missing.
                ROM does not execute properly.

Version 0.2   : Developped now on A1200. First try to mix the Unix version and the ↩
    A500 version.
                Some CPU bugs fixed. Assembled with PhxAss.

Version 0.3   : Amoric works with graphics. Still slow

Version 0.4   : Speed and graphics improvement. CPU bugs fixed (thanks, Olivier ↩
   Galibert).

Version 0.5   : Hires mode emulated

Version 0.6   : Added a help page (HELP key)

Version 0.7   : Tape loading routine patched

Version 0.8   : First aminet release. Full of bugs and enforcer hits.

Version 0.8a : Faster emulation

Version 0.8b : Enforcer hits corrected. Some bugs removed

Version 0.9   : Sound added. Speed improvement.

Version 0.9a : IRQ bug corrected. Cycles emulated. Ratsplat now works.

```
Version 1.0   : Multitask, system-friendly input/output, tape saving, faster  ↩
   emulation,
                2 joystick emulation (buggy), save/restore keys.
                Now needs Kick 2.0

Version 1.0a  : System-friendly audio allocation, better save/restore, keys to  ↩
   increase/
                decrease frame rate (internal version)

Version 1.1   : GUI Prefs program, selectable screen mode, save bug removed,  ↩
   slightly
                faster graphics routines (in HIRES).

Version 1.2   : Better prefs capabilities, dynamic character definition, better I/ ↩
   O emulation,
                better sound emulation, faster TEXT display, lots of nasty bugs  ↩
                   corrected,
                configurable joysticks, minor code cleanup (internal version).

Version 1.3   : Better keyboard emulation, bugs corrected, better compatibility.

Version 1.4   : Load/Save joystick settings and snapshots, screenshot saving, all  ↩
   screen
                modes available, more accurate 6522 emulation.
```

1.22 The Author

```
THE AUTHOR


If you have any feeling about this program, or you want
to make suggestions or bug reports, please contact me at one
of my e-mail addresses :

  fabre@supaero.fr
  or
  fabre@cert.fr

Mails of love or death threatening ones will be welcome.

My snail-mail address (for the postcards, cheques, Ferraris...)

  Jean-François Fabre
  19 Rue Emile Duployé
  34500 BEZIERS
  FRANCE
```

1.23 Fabrice Frances

```
FABRICE FRANCES

He wrote the PC version, available at ftp.ensica.fr.
```

```
He is very active in the Oric Mailing List.
To reach him, you can try :

      frances@ensica.fr
      or
      frances@laas.fr
```

1.24 Olivier Galibert

```
OLIVIER GALIBERT

He is currently writing the ST version.
To reach him, you can try :

      Olivier.Galibert@mines.u-nancy.fr
```

1.25 The TapeInfo program

```
TAPEINFO : Gets some information about tape files and allows to correct them.

I wrote TapeInfo recently in order to correct some tape files in an automated way.
When I transferred those files, I did not wrote enough sync bytes ($16).
The files worked OK with Amoric 0.8, 0.8a, 0.8b but they did not work with  ↩
   Euphoric,
the PC Oric emulator from Fabrice Frances, and won't work from this version of
Amoric (1.4), and Fabrice asked me to correct the relevant tapes.

HOW TO USE:

1) To get infos on a tape file

tapeinfo [file]

Example:

6.SERVICE:Programmation/ORIC48K/games> tapeinfo DEFENCE.DAT

-- Amoric TapeInfo -- Written by JF FABRE --

Loading source file : DEFENCE.DAT...
File size : 58686 bytes.
Analysing tape...

Program 1 : Offset $0
Good Sync found at offset $0.
Program name : L
Start : $6000   End : $69ff     Length : $9fe

Program 2 : Offset $a0f
Good Sync found at offset $a0f.
Program name : A
Start : $4fd    End : $4dff     Length : $4901
```

```
Program 3 : Offset $5321
Good Sync found at offset $5321.
Program name : B
Start : $2980   End : $727f     Length : $48fe

Program 4 : Offset $9c30
Good Sync found at offset $9c30.
Program name : C
Start : $4e00   End : $96ff     Length : $48fe

2) To correct a wrong sync, even on a multipart tape file :

tapeinfo -c [file]

Example :

6.SERVICE:Programmation/ORIC48K/games> tapeinfo -c HOPPER.DAT

-- Amoric TapeInfo -- Written by JF FABRE --

** Correcting mode activated...

Loading source file : HOPPER.DAT...
File size : 19218 bytes.
Analysing tape...

Program 1 : Offset $0
Weak Sync found at offset $0.
Program name : HOPPER
Start : $500    End : $5000     Length : $4aff
Correcting part 1...

The program won't modify the file if all the syncs are OK.

You can use this program with an Opus program like RO, Browser II or Directory  ↩
   Opus.

WARNING: Don't use this program with anything else than tape files, because it may ↩
    interpret
your data and destroy them (even if enough checks are done to avoid this).
```

1.26 The HTTP Site

```
THE HTTP SITE

The html Oric page is full of software and information about the Oric, its history ↩
   ,
the mailing-list, some programs to convert files...

Here is THE address

http://arlesienne.ensica.fr/LOCAL/ORIC

This page is managed by Fabrice Frances and Olivier Balet.
```