

ANES

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COLLABORATORS

	<i>TITLE :</i> ANES		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
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REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

ANES

1.1 -÷×÷- A/NES -÷×÷-

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-$\div$-  Amiga Nintendo Emulator  -$ \div$-
          Version 0.98b
          SHAREWARE

      Development started:
          8:th of May 1997

          Created by:

          Morgan Johansson
          Fredrik Schultz

```

Documentation

The authors cannot be held responsible for any possible damage caused by this program. You are using it at your own risk!

1.2 -÷×÷- A/NES -÷×÷-

Welcome to A/NES - Amiga Nintendo 8-bit emulator.

Introduction

A short introduction to A/NES...

Requirements

What do you need to run this..?

Installation

Shouldn't be a problem...

Registered User?

Read this if you're a registered user.

Two executables?

Features

Preferences

Controls

If you don't already know them...

A.R. codes

Action Replay codes

Register

Authors

How you can contact us...

Technical info

Future

What will the future be?

History

Link to the past ;)

Bugs

Still some to fix...

FAQ

Frequently Asked Questions

Is this legal?

A legal notice found on the Net...

Greetings to

1.3 -÷×÷- ANES -÷×÷-

The A/NES archive now contains two versions of A/NES.

ANES
 ~~~~  
 Is for unregistered users and contains no sound or support  
 for cd32 joypads.

ANES\_registered  
 ~~~~~~  
 This version is for registered users and it won't work
 properly without a real keyfile.

1.4 -÷×÷- A/NES -÷×÷-

TECHNICAL INFORMATION

The following utilities was used during the
 development of A/NES.

- * ASM-ONE v1.29/v1.30
- * GADTOOLSBOX

A/NES consists of more than 13.000 lines of
 pure assembly code. The source code (including gui)
 is about 220 Kbyte in size.

The 6502 cpu emulation is NOT based on any existing
 source and is written from scratch in assembly, making
 special use of the 68020 processor or better.

1.5 -÷×÷- A/NES - Preferences -÷×÷-

PREFERENCES

Features enabled at this time are:

GENERAL

EMULATION

CHEAT

Functions marked (*) does only works properly for
 registered users.

1.6 -÷×÷- A/NES -÷×÷-

GENERAL WINDOW

SCREENMODE

Selects between PAL/NTSC mode. This is not 100% stable yet so be careful when using it (especially on NTSC Amigas...)

LIMIT SPEED

This function disables all speed-limitation code. So, if your favourite game always run at 50fps, it should now run even faster (even if it will probably flicker even more)....
On 68040/060 you can really enjoy FAAAAST NES emulation. About 2 - 3x NES speed is not unusual... :)
Default = checked

AUTOSAVE BATTERY

Turn this function off if you don't want to save the battery.
Default = checked

IGNORE LED

Here is a real usefull option! :D
When this button is cleared, A/NES automatically takes care of switching on/off the hardware sound-filter to improve sound quality.
Check this if you don't want A/NES to do that.
Default = cleared

JOYPAD 1

Selects if you want to use keyboard/CD32 pad for emulating joypad 1. Support for more pads will be added later.

JOYPAD 2

Selects between "Disable" or "CD32". You should choose "disable" if you don't want to use joypad2 (will save a few cycles) or if you haven't got a CD32 compatible joypad. :)

1.7 -÷×÷- A/NES -÷×÷-

EMULATION WINDOW

HBLANK

Number of cycles / row. Only for advanced users.
Default value is 115.

EMULATE SOUND (*)

Turn sound emulation on / off. Saves a few cycles
but shouldn't be noticeable.

CHANNELS (*)

There are three separate channels emulated yet by
A/NES. Here you can de-select any channel you don't
want to listen too.

The three channels are squarewave 1, square wave 2
and triangle wave.

VOLUME (*)

Sets the master volume of the sound.

1.8 -:-x:- A/NES -:-x:-

Download the latest patch files from our
homepage at:

<http://home2.swipnet.se/~w-28134/ANES/>

.. or even contribute with your own!

1.9 -:-x:- A/NES -:-x:-

CHEAT WINDOW

ACTION REPLAY INFORMATION

If you look on the left side of this window, you will
discover several "string gadgets", they look something
like this:

action replay

```
.----- .-----
|         | |         |
\-----/ \-----/
```

```
.----- .-----
|         | |         |
\-----/ \-----/
```

game genie

```
.----- .-----
```

```
|           | |           |
\-----/ \-----/
```

In the Action Replay gadgets you can input Action Replay codes (really!) :)
You can have four different codes activated at once.

Game Genie codes is not enabled yet.

Note that all values you type are default as HEX code, which means you don't have to type \$-signs or similar. Valid characters are 0-F, any other characters will be ignored. Also, be sure to "fill" the entire "string-fields", for example if you want to "poke" at adress 10, be sure to write 010!

Cheat description - here you type a 64 character long description of your cheat. This is only usefull if you want to save your cheat into a special patch (.pat) file, so you don't have to type your cheatcodes more than once.

Activate - Be sure this button is activated if you want to use the current cheat codes.

Save - Press this and your current cheat will be saved as a file.

Load - Loads a cheatfile.

Get filepath - Press this button to select a suitable path for storing your cheatfiles.
There seems to be some kind of bug left in this code since the ROM path & cheat files path are mixed sometimes. Nothing serious though...

1.10 -÷×÷- A/NES - Registered Users -÷×÷-

Information for registered users

The keyfile you've got, should be placed in your S: or L: assign, it's your choice. :)

If you have installed your keyfile correctly you should be able to hear sound and you should be able to use a cd32 joypad.
These features were both enabled for all users in the previous versions, but not anymore.

NOTE! From now on, you should use the special "registered" version of A/NES, included

in this archive.

1.11 -÷×÷- A/NES What's new? -÷×÷-

Features

- Full 6502 emulation (incl. ALL timings!)
- Battery backup
- Nice looking gui! :)
- Action Replay code support!
- Sound support (registered users only!)
- OCS/ECS support! (AGA recommended!)
- Splitscreen scrolling
- Two player support (registered users only!)
- Horizontal/ Vertical / Panning mirroring modes supported!
- CD32 joypad support (registered users only!)
- XPK support
- Supports mappers 1,2,3,4,7,9,11 (more or less)
- Written in 100% 680x0 assembler code

Note! A/NES only supports loading of XPK packed ROM files, not battery save files (*.sav).

1.12 -÷×÷- A/NES Controls -÷×÷-

JOYSTICK 1

When selecting "keyboard" in the preferences window, the following keys will work:

ENTER - Start
RIGHT SHIFT - Select
LEFT ALT - A
LEFT AMIGA - B
ARROWKEYS - Guess what? :)

ESCAPE - Abort emulation

... or if you decide to use a CD32 compatible joypad:

CD32

YELLOW - Start
GREEN - Select
RED - A

BLUE - B
PAUSE - Abort emulation

JOYSTICK 2

Finally, joystick 2 is emulated! :)

Choose between "disabled" or "CD32", that suites you the best.

The keyboard is always locked to joystick 1 and may not be used by player 2.

Always set this to "disable" when not using joystick 2.

Support for more pads will be added in the future.

1.13 -÷×÷- A/NES Bugs -÷×÷-

Reporting bugs

Please report bugs to us that causes your computer to behave strangely. (See our addresses elsewhere in this guide file).

BUT! Don't report about non-working ROMS!

Many things is NOT emulated properly / yet, so please have patience...

When reporting bugs to us, don't forget to mention:

* Your complete machine setup! (cpu, ram, PAL/NTSC?, etc)

And anything else that may be usefull for us to know..

Known bugs/problems

- * Some games seems to crash your computer (in theory impossible...)
 - * Problems with some MMC's (caused by lack of good documentation).
 - * Scrolling wrong / flickers.
 - * The sound is sometimes horrible, but it's getting better! ;)
 - * Sprites sometimes appear on strange places or flickers.
- * CPU emulation bugs
- * Compability problems with NTSC.

1.14 -÷×÷- A/NES Requires -÷×÷-

Requirements

- OCS/ECS/AGA chipset (AGA is recommended for best performance)
- 68020+
- ~2Mb of Memory
- reqtools.library
- lowlevel.library (if you want CD32 joystick support!)
- xpkmaster.library (for loading XPK files!)

Using CD32 joypads also, from now on, requires a registered version of A/NES.

A/NES sometimes have problems to run on unexpanded A1200 machines, so a fastram expansion is a good thing to have.

However a 68030/050 should be enough to play most games at a decent framerate.

NOTE! You can not view the NES title if your ROM files are packed with XPK.

1.15 -:-X:- A/NES Registration -:-X:-

How to register

A/NES from now on is Shareware. We have spent alot of time developing this piece of software so we think it's time we get something back instead of just giving..

Here is the shareware price and the following currencies are accepted:

- * 100 SEK
- * \$15 US

NOTE! Only cash is accepted! (No coins please!)
If you want to send your money in some other currencie, please contact us first!

Sending us SEK is prefered since that saves us alot of trouble and you will get your keyfile even faster.

When registering A/NES you will get a personal keyfile of A/NES which you must not spread.

When you send the money to us, do not forget to mention in your letter:

- * Your complete name and address.
 - * Your e-mail address
-

* Computer (Cpu, memory, etc.)

People with e-mail will get their keyfiles into their e-mailbox.

For questions, send an e-mail / snail-mail to the addresses found in the "author" section.

Why should I register?

By registering this program you help keeping this project alive and you show us your support. Also, more registrations will make us work faster! :)

Send the registration fee to:

FREDRIK SCHULTZ
ÖSTRAVÄGEN 12
715 31 ODENSBACKEN
SWEDEN

And if everything is alright, you'll receive your keyfile within just a couple of days.

1.16 -÷×÷- A/NES Introduction-÷×÷-

Introduction

It all started a day in may in the year of 1997. I was watching Nesticle on a PC machine and started to wonder why there wasn't any decent NES emulator for Amiga... So I (Morgan) and my friend Fredrik started this little project.

We had never done anything like this before so it was a challenge.

The CPU emulation (it's incredible fast) was written from scratch in 68020 assembly language and everything else concerning the emulation is also written in assembly.

Enjoy it, and remember, if you like it and use it, register!

1.17 -÷×÷- A/NES -÷×÷-

The Legalities of Console Copying and Emulation
3-11-97, Copyright Anthony DiPasquale
<http://www.pce.net/anthony>, anthony@pce.net

1. Is it legal to create an emulator?
There has been some discussion on this. To create an emulator

one must have a high level of knowledge of the source platform to be emulated, and the target platform the emulator runs on. To find out info about the source, usually takes reverse engineering, of the original console, which may be considered illegal.

2. Is it illegal to run/use an emulator?

This goes along with the above question. There is debate around this as well. The general rule to follow is: You are allowed to own/run an emulator, as long as you actually own a corresponding hardware device. Example, you own a game boy, so you are allowed to run a game boy emulator on your computer.

3. Is downloading ROM images illegal?

No, it is not, as long as you own a hardware copy of each rom image you download. If you download images you do not own a copy of, you are committing piracy. By now, I'm sure Nintendo has realized that all the game boy game roms have been being illegally copied, that being one of the most popular emulators, and they do not seem to care. Chances are if you copy a Coleco, Atari, Sega Master System, etc, it wouldn't matter too much. The general rule is: If the company is no longer collecting royalties, they probably won't mind. Who would pay \$30 for a Coleco Vision ROM nowadays when you can go out and get the latest CD Rom game for about the same? Most people don't pirate roms because they are too cheap, they do it because they may miss an old game that you could no longer purchase even if you wanted to.

4. Is storing/distributing ROM images illegal?

It may not necessarily be illegal, it is more up to the person who downloads the image then the person who provides it. It is a questionable practice, and I wouldn't recommend it. Even though you may see various web pages and FTP sites doing it, that doesn't make it legal.

1.18 -÷×÷- A/NES -÷×÷-

Action Replay

A/NES now supports "Action Replay" codes! A/NES at the moment only support RAM based codes (most A.R codes are RAM based). They should look something like this, and should always consist of eight characters:

0005B682 (this one gives you unlimited life in "Chip'n'Dale")

If you find codes that are less than 8 characters, maybe they look like this:

05B682

Just be sure to fill it with zeroes, so it gets 0005B682 = eight characters.

Game Genie

Not supported yet, but soon.

1.19 -÷×÷- How 2 A/NES -÷×÷-

Installation

Use the installer script that is included in this archive to install A/NES.

Thanks for the script, Lennart Johannesson!

1.20 -÷×÷- The future of A/NES -÷×÷-

The future (?)

- * More speed!
- * Better graphics!
- * Rewrite code in PowerPC assembly language. (we're still waiting for a PPC assembler though...)
- * Rewrite graphics for use with the CV/BV-PPC graphicsboard.
- * Other nice features, that will be available soon...

1.21 -÷×÷- A/NES History-÷×÷-

History

Version: Released:

0.98b	6/1-98	* Now supports 4 different ActionReplay codes at once.
		* Major MMC2 improvements. (Punch-Out looks alot better!)
		* MMC3 fixes (SMB3, StarTropics now partially works!)
		* Major spritebug fixed.
		* Small changes in GUI.
		* Minor fixes and optimisations.

-
- | | | |
|-------|----------|--|
| 0.97b | 1/1-98 | <ul style="list-style-type: none">* Happy New Year edition!* Small GUI changes.* Minor MMC3 changes.* Finally, two player support!* ADC instruction optimised!* Other minor changes. |
| 0.96b | 24/12-97 | <ul style="list-style-type: none">* Christmas edition!* Filerequester code fixed.* Minor bugs in docs(!) fixed! :)* Small MMC2-fixes.* Cheatcodes can now be saved & loaded. |
| 0.95b | 14/12-97 | <ul style="list-style-type: none">* Minor sound improvements.* Major GUI bug fixed!* Cheat preferences window now implemented.* Action Replay codes supported! |
| 0.94b | 7/12-97 | <ul style="list-style-type: none">* Preferences is now available.* Nintendo MMC2 (Mapper 9) now finally works!* Sprite collision register fixed. Some games works / scrolls much better now.* Small changes in soundroutines.* Minor changes here and there. |
| 0.93b | 22/11-97 | <ul style="list-style-type: none">* CPU emulation partly rewritten to improve performance on MMC-based games.* Now less memory hungry (~1Mb!)* Mapper 4 improved. |
| 0.92b | 8/11-97 | <ul style="list-style-type: none">* Versionstring is now correct! (oops!) :) |
| 0.91b | 8/11-97 | <ul style="list-style-type: none">* GUI font-bug fixed (silly!).* Bugfixed mapper 1.* Lots of other small fixes. |
| 0.90b | 1/11-97 | <ul style="list-style-type: none">* Sprites rewritten (MUCH faster).* Splitscreen scrolling.* Sound code rewritten.* Now in theory works on ECS!* Bank switching code optimised.* Minor code cleanup.* GUI rewritten!* A/NES is STILL shareware, so register today! |
| 0.36b | 28/9-97 | <ul style="list-style-type: none">* Major CPU bugfix!* Small fixes (as usual!) |
| 0.35b | 21/9-97 | <ul style="list-style-type: none">* Now supports XPK packed files! |
-

-
- * A/NES doesn't eat 1mb of fast memory anymore when started from an icon. ;)
 - * Small changes here and there.
 - * Small soundfixes.
 - * Internal version for registered users only!
- 0.34b 13/9-97
- * Small joypad bug fixed.
 - * Keyfiles are now supported.
 - * Minor speedup and fixes in the spriteroutines.
 - * Bank-switching code optimized.
 - * Triangle Wave soundchannel implemented.
 - * Minor optimisation in PPU code.
- 0.33b 3/9-97
- * A small (but major) CPU-bug fixed!
 - * CD32 joypad support!
- 0.32b 31/8-97
- * Sound support! (partial)
 - * A spriteregister wasn't properly emulated. Fixed now!
- 0.31b 23/8-97
- * FAST version included!
 - * Mapper #11 supported.
 - * Small fixes.
 - * A/NES is SHAREWARE! Support us!
- 0.30b 5/8-97
- * Mapper #4 is now partly supported!
 - * Mapper #7 supported.
 - * Mapper #9 now fully supported.
 - * Minor changes and bugfixes.
- 0.29b 3/8-97
- * Major improvements in the graphic routines, resulting in an incredible speedup in some games.
 - * Minor fixes.
- 0.28b 27/7-97
- * A register wasn't properly emulated. Fixed now! (some games works alot better!)
 - * Battery backup functions added!
 - * Mapper #1 emulation improved and bugfixed (ALOT)!
 - * The filerequester now remembers where you "left it" the last time (saved in S:ANES.prefs).
 - * Small CPU emulation bugs fixed.
- 0.27b 19/7-97
- * Mapper #1 emulation improved but not yet perfect.
 - * 8x16 sprites supported.
-

- * Some emulation bugs fixed.
 - * GUI changes/fixes.
 - * File requester routines bug-fixed once again.
 - * And some other changes...
- 0.26b 13/7-97
- * Keyboard handler a little bit improved.
 - * File requester should now work properly (pewh!)
 - * ESCAPE is now used to abort the emulation.
- 0.25b 12/7-97
- * Damn! Bugfixing the previous version resulted in another bug. The "cannot click any button" bug should now have been removed
- 0.24b 12/7-97
- * Major improvements in the keyboard handler!
 - * Mapper #1 partly supported!
 - * Minor GUI fixes.
 - * Small CPU bugs fixed.
- 0.23b 8/7-97
- * Minor fixes.
 - * Some GUI-NTSC problems fixed.
- 0.22b 8/7-97
- * Shouldn't crash anymore if started from an icon.
- 0.21b 6/7-97
- * Fixed some minor stupid bugs!
 - * 50 FPS speed limit for fast computers. (Could cause very annoying flickering if framerate was more than 50FPS).
 - * We're still at SCC'97 and we have just found out that we won the democompo! :)
- 0.20b 6/7-97
- * Released at the SCC '97 party held in Köping, Sweden.
 - * Mapper 2 and Mapper 3 supported.
 - * Many bugfixes.
 - * Sprite routines optimised.
 - * Colours now look better.
- 0.10a 30/6-97 * First official beta release!
-

Authors of A/NES:

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guilty of: 6502 CPU emulation
 Sound
 Mapper support
 ROM-handler
 Gfx in general
 Bugtesting (and finding most of them)

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 4mb Fast, 4.3Gb HD.
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guilty of: 6502 CPU emulation
 GUI
 Gfx in general
 Sprite & Scrolling
 Some bugfixing

Also big thanks to
Dew / Limited Edition - for fixing the keyboard handler!

1.23 -÷×÷- Frequently Asked Questions -÷×÷-

Frequently Asked Questions

Q: My action replay codes doesn't work. Why?

A: Could be due to several reasons:

- 1) Check your spelling. Is it 8 characters long?

- 2) The code may be ROM based, and this does not work yet in A/NES
- 3) The action replay code may be for a different version of the game and may not work with yours.
- 4) Is the "activate" switch on? :)
- 5) Bugs in our code? :) :)

Q: A/NES crashes when I try to run some games.

A: In rare cases this may happen. We are looking into this problem.

Q: A/NES just quits when I try to start it. Why?

A: Check that you have installed the included font in your FONTS: directory properly.
Do you have enough memory available?

Q: Why do I get an 'XPK ERROR' message?

A: You are trying to load an XPK packed file, that is either corrupt or simply, you don't have the xpkmaster.library and its sub-libraries installed in your LIBS: drawer.

Q: Why is A/NES written in assembler and not C?

A: There is enough slow c-ports out there, don't you think?

Q: I keep getting a "FAILED" message what does that mean?

A: Well, the game has tried to execute an invalid assembler instruction. This is probably not caused by the game itself, it is just caused by bugs in our emulator. :)

Q: It doesn't work correctly on my NTSC system.

A: We are aware of these NTSC problems and we are working on them.

Q: In some games, the graphics looks very strange.

A: Yes. This could be the result of an unsupported (or not an entirely supported) Mapper chip.

Q: Why doesn't A/NES multitask?

A: A/NES doesn't use any system routines because of speed-reasons. Running A/NES in a workbench window would sure be nice, if you have an INCREDIBLE fast machine, but

most Amiga users doesn't have that kind of equipment today.

1.24 -÷×÷- A/NES Greetings to: -÷×÷-

Thanks to:

- YOshi - Well, thanks for your docfile and for your support!
- Marat Fayzullin - Without your NES doc file this wouldn't even exist.
- Paul Robson - For great help with some MMC's.
- Ville Helin - Thanks for alot of technical information and also for beeing such a nice guy! :)
- Dew/LED - Woah! Thanks man for everything!
- Lennart Johannesson - For the installer script.
- Fredrik Olsson - Thanx for some bugfixing-hints.
- Nate_DAC - For providing us with various usefull information about the 6502.
- Bloodlust Software - For Nesticle.
- #Amycoders - Thanks for all help.
- Everyone - That has supported us this far and believed in this project. Thanks!
-