R A I N E
M680x0 Arcade Emulation
(c)1998-2002 Antiriad & Raine Team
v0.38: MS-DOS/LINUX/WIN32

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Contents

1 What is Raine?

Raine is an emulator, it emulates some M68000 and M68020 arcade games and is mainly focused on Taito and Jaleco games hardware. It started as an experiment with the Rainbow Islands romset, dumped by Aracorn/Romlist. Raine can emulate many nice games now, including new additions from Cave and other companies. Sound was improved thanks to the work of Hiromitsu Shioya. More recently,

Several new programmers have joined Raine Team, adding drivers & making improvements.

Emulating cpu's and sound chips takes quite a lot of coding time, so, like most of the current emulators, Raine uses emulation engines already available when possible. Raine uses the following:

CPU:

M68000: Neill Corlett's Starscream 68000 emulator.

M68020: Based on Bernd Schmidt's UAE 68020 emulator.

Z80: Neil Bradley's MZ80 emulator.

M68705 Richard Mitton's static recompiler.

SOUND:

YM2151: Jarek Burczynski.

YM2203 Tatsuyuki Satoh.

YM2610: Tatsuyuki Satoh and Hiromitsu Shioya.

YM3526: Carl-Henrik Skaarstedt.

YM3812: Carl-Henrik Skaarstedt.

YMZ280B: Aaron Giles (from MAME source)

ES5506: Aaron Giles (from MAME source)

M6295: Hiromitsu Shioya.

M6585: Richard Bush.

MSM5205: Hiromitsu Shioya.

2 Requirements

[These are rough estimates, based only on the DOS version of raine, full speed means running at 60fps with no frameskipping]

Abundant requirements:

- Pentium II Processor with MMX (Minimum 300Mhz for Taito F3 Sound)

- 64Mb of ram (128Mb for Cave games)

- Win9x/Win2k/WinXP/MSDOS/Linux

- A sound card.

- Graphics card (VESA2 or better support recommended for dos)

=> You should get full speed in nearly all games with sound at a high rate (my current pc).
=> You can vastly improve the emulation speed in the Taito F3 games on slower computers by completely disabling sound!

Average requirements (MSDOS):

- Pentium Processor

- 16Mb of ram

- Win9x/MS-DOS

- 'DOS friendly' sound card

- Graphics card (VESA2 or better support recommended)

=> You should get good speed in most games with sound at an average rate. Many games should be full speed (my old pc). Note that some newly added large games will need more RAM though.

Minimal requirements:

- 486 SX-25

- Win3.1/MS-DOS

- 12Mb of ram

- 'DOS friendly' sound card

- Graphics card (VESA2 or better support recommended)

=> You should find many games playable if you disable sound and set a manual frameskip of about 4 (JCK's pc).

3 Specific versions

3.1 Introduction : which one is the fastest ???

I would say :

1. Dos version with VBE driver

2. Linux version with SVGA driver

3. Linux with DGA, and Windows with DirectX accelerated (fullscreen)

4. Windowed modes

Dos is still the fastest version because it has direct access to the hardware, with no multi-tasking to slow it down.

SVGA comes 2 because it's almost the same kind of access as VESA in dos...

The so-called accelerated drivers in windows and DGA in linux, and last the windowed modes.

3.2 Building a mini-raine

Starting with version 0.32, you can build a CPS only raine. Just type "make RAINECPS=1" instead of "make" when you build raine.

3.3 DOS

Nothing special to say here. Raine dos has always existed ! It is still probably the fastest version available, because it has not the restrictions of the other versions which are running in multi-tasking environements...

If you want to compile it, see Logiqx site. It should be as easy as typing "make" once you have installed everything needed !

3.4 Linux

3.4.1 General description

This version supports an incredible amount of video drivers. Here they are :

- VGA : not very usefull, but since it's available...

- ModeX : (by direct access to the ports, you have to be root to use it). Note : the port access is safe, you can even switch from or to X while using raine in ModeX in the console !!! This mode is not very fast though.

- SVGALib, It gives faster results than modeX. You also need to be root to use it (well, starting with the 1.9 dev branch, certain video cards can be used by normal users in svga, but it is still very experimental...). Note also that SVGAlib can be

dangerous, and you might finish with a black screen if you use it too much (then if you really can't get your screen back to normal, then Ctrl+Alt+Del should do : a nice reboot). More about SVGAlib : this is the fastest driver available for 8bpp games if a driver exists for your video card, especially if you use an agp card, and you can configure your agp port for full speed (SVGAlib does not do it yet, but X does...).

You can build your list of custom modes for svgalib. For that use the newmode command in the libvga.config file.

The deduced syntax for newmode (since it is not documented !) is :

newmode width height colours width*(bytes_per_pixel) bytes_per_pixel

Yes I know, it can look redundant, but that's what the config file expect...

- Example :

```
# Here is a mode for a ZX Spectrum emulator:
Modeline "256x192@73" 12.588 256 269 312 360 192 208 212 240 doublescan
newmode 256 192 256 256 1
newmode 256 192 65536 512 2
Modeline "320x224" 12.75 320 340 388 400 224 228 230 240 doublescan
newmode 320 224 256 320 1
newmode 320 224 65536 640 2
Modeline "384x240" 20.00 384 392 440 480 240 244 246 262 doublescan
newmode 384 240 256 384 1
newmode 384 240 65536 768 2
Modeline "360x288" 20.00 360 368 416 448 288 292 298 310 doublescan
newmode 360 288 65536 720 2 # 8bpp does not work for me here...
Modeline "360x256" 18.00 360 368 416 448 256 260 266 278 doublescan
newmode 360 256 65536 720 2
```

- X, which allows raine to run in a little X Window. For this one, no prviledges are needed, any user can run it. Of course it is not very fast, but with a fast X server on a fast computer, everything runs fine ! And it can even be run remotely ! Then it is much slower, but it is fun !!!

- Xwindows fullscreen : New in 0.32a, this driver allows a normal user (not root) to have raine in fullscreen in X11. However DGA is faster, so use DGA if you can !

- X with DGA. You have to be root to use it. It looks like the directX modes of windows (full screen). Very nice, especially with the customized graphics mode (see below). Very fast too, especially in 16bpp or higher. New in 0.31 : the list of available modes is built from your XF86Config file.

- Frame Buffer : if your kernel is configured to use frame buffer, then raine will use it in the console. You don't need to be root to use it, and it is very fast. I did not tried customized modes yet and the list of cards supporting it well is very little. Moreover, in 8bpp you are stuck with the slow palette functions from Allegro,

which makes it slower than SVGA (normally). The list of modes is red directly from /etc/fb.modes.

3.4.2 Compiling sources

This version has the exact same requirements as the dos version. You should be able to just type "make" once you have installed everything needed. See Logiqx site for more details.

3.4.3 Going further

One of the nicest features of this new release is the addition of a DGA2 driver. To access this driver, you must be root, and run raine in a DGA-enabled XFree server. DGA is enabled by default if your X server supports it.

In short, DGA is the equivalent of DirectDraw for linux. But since it is based on XFree, it can access any graphical mode that you can define in X, and that makes it VERY interesting !!!

Enabling arcade video modes in your X server   This should enable you to enjoy full screen DGA for almost any raine game. Especially now that raine knows how the change the resolution (and the depth) for each game loaded.

If everything goes fine, you should find :

modelines : this is a file distributed with xmame generally, and containing the definitions of these most usefull modes.

XF86Config-4.sample : my config file for my X server.

Basically, my XF86Config file shows you how I adapted this file from mame to my configuration. You should especially be carefull to have right values in your HorizSync and VertRefresh (capabilities of your monitor). Note also that I was obliged to remove all the modes with a width < 320 pixels and those with a width = 400 pixels, since my configuration could not support them. The next steps is to add the modes you want in the Modes lines of your "Screen" section. Then you should use xvidtune to center theses modes on screen, and you are done.

Notice : contrary to windows, X only lists available modes for your currently installed monitor (in fact svgalib too). So in windows sometimes raine will choose a mode listed as available and it's impossible to display it with your monitor, even if it's plug and pay (plug and pray ?). If you correctly configured your monitor for X, it will never happen. This is a kind of tiresome windows annoyance.

International keyboards in XFree :   Just rename the allegro-fr.cfg included with raine to have support for french keyboard in X11. For other keyboards, see xkeymap in allegro... (sorry I know it's convinient, but it's the way allegro works for now). Without it, some keys won't work in X ! (3 key for french keyboards for example...).

3.5 Windows

3.5.1 General description

Graphics drivers : this version uses 3 full screen drivers (Accelerated, safe and software), and one windowed driver. The overlay driver is a hacked windowed driver based on a fullscreen one to be even faster, but it works only on very few video cards... All the video effects do not work with the accelerated driver. Try them, and choose the one you prefer, depending on your preferences... If you just use standard video, with no special effects, then the accelerated driver should do.

The windows version is heavily dependant on the version of the graphics drivers you are using for your video card. For example a few drivers render distorted palettes while raine is making fade-ins or fade-outs, and the gui palette is distorted sometimes in 8bpp. If you experiment this try to update your graphics driver version and/or directx.

For sound, we left all the drivers available in allegro for now, but the only driver really working is the AllegMix driver. 2 settings for this one : Default, or specific to a soundcard. Try them... Also we found lately that the AllegMix drivers require your soundcard to support hardware acceleration in directx. You can find out if yours does by running dxdiag.exe. If your soundcard does not support this, you will just hear silence !

3.5.2 Installing from sources

In recent versions of allegro (4.0.0) and gcc, raine can now be either be linked staticaly or dynamicaly with allegro. The default is now dynamic, like linux.
To compile raine using mingw32, just define MINGDIR in your environement :
   set mingdir=c:\mingw (for example)
   Then go to the raine directory and type make.
   For djgpp, djdir must be defined.
   Linux, cygwin and Freebsd are using the OSTYPE environement variable.
   Nothing specific to say. You can build allegro from sources or install the binary library plus the include files. Raine can now be linked with the allegro dll built by MSVC.
   For more detailed instructions on how to build raine (not allegro), refer to Logiqx site.

4 Installing roms

Before playing any game, you need to find the correct romset. Try the links at the end of this text or a search engine. If you can't find them, too bad. When you have downloaded some games you can either:

   a) Put the zipped rom in the raine\roms\ directory
   b) Unzip the roms to raine\roms\<gamename>\

   • Note that you don't need to unzip your roms, it's just an option. See below.

- If you get stuck, learn about directories first (also read rainefaq.txt - err, well raine faq has been lost recently, but now we have a forum... !)

4.1 Zip Support

You also can place zipped copies of the romsets in the 'roms' subdirectory (eg. raine\roms). Raine will then access the zip to load the roms, saving a lot of diskspace. Zip support is now internal to Raine (using zlib+minizip), this should be faster than before.

4.2 Rom directories

You can now configure three different rom paths via the gui or config file (very useful if you have some roms on CD). Also, you can configure three different ziprom paths. To do this, click on 'change game', then on 'dirs'. Either type in the paths, or use the file selector (click the small square buttons).

5 Command Line Usage

USE: Raine <commands> <options>

Commands:

-game/-g [gamename]	Select a game to load (see game list)
-help/-?/-h/–help	Show command line options and list games
-joystick/-j [type]	Select joystick type (see list in raine.cfg)
-limitspeed/-l	Limit emulation speed to 60fps
-gamelist/-gl	Quick list of all games
-gameinfo/-listinfo <gamename>	List info for a game, or all games
-romcheck/rc <gamename>	Check roms are valid for a game, or allgames
-nogui	Disable GUI (useful for frontends)
-leds	Enable keyboard LED usage
-noleds	Disable keyboard LED usage
-screenx/sx [width]	Select screen width
-screeny/sy [height]	Select screen height
-screenmode/sm [type]	Select screen type (see list in raine.cfg)
-bpp/-depth [number]	Select screen colour depth
-rotate/-r [angle]	Rotate screen 0,90,180 or 270 degrees
-ror	Rotate screen 90 degrees
-rol	Rotate screen 270 degrees
-norotate/-nor	Ignore default rotation in game drivers
-flip/-f	[0-3] Flip screen on none, x, y or x+y axis
-flipx/-fx	Flip screen on x axis
-flipy/-fy	Flip screen on y axis
-noflip	Ignore default flipping in game drivers
-hide	Hide the gui (play at work)
-listdsw <gamename>	List dipswitches for a game, or all games
-cont	Enable continuous playing
-nocont	Disable continuous playing

Options:

-verbose   Show extra information for some options

Other options are available only from the GUI/config file for now.

For example, to load Wrestle Fest: raine -game wrestlef
If you get VESA errors, get Scitech Display Doctor from www.scitechsoft.com.
You can also use shorter command line options like -n (-nogui), -g (-game), -sx (-screenx)
etc...
See the gui for more screen resolutions from 80x80 to 1600x1200.

6 Performance tips

Usually raine is already very fast «out of the box», but these tips might help you to make it run even faster. If you want to be able to tune performance settings, you must display the rdtsc timers : press F11 3 times, and you should get a few % displays on the top right corner of the screen : CPU, Sound, Video, Pal, Misc, and Free.

6.1 Video

Games will usually run much faster in 8bpp than in any higher color depth, except if the game really uses more than 256 colors. This is because if you choose 16bpp, then raine must write 2 bytes for 1 pixel, and it writes only 1 byte/pixel for 8bpp.

Games known to actually use more than 256 colors are Atlus Cave games (Esprade, dodonpachi, Guwange...), and maybe one or 2 others.

If you are in 8bpp and the game uses more than 256 colors, then you will see the number in front of «Pal» in the rdtsc display going high. Normally the palette number should stay at 0 or 1% (or maybe a little higher on very slow machines). In any case it should be constant. If you see it raising, then you have a palette problem. First check « (section7.2.1)», and if fast_set_pal is ok and you still have the problem, then switch to 16bpp.

Video effects should not slow down very much the game play except the stretch functions which are still in software mode.

6.2 Sound

In Sound Options, you can choose the sound bitrate. 22Khz is the good average value. I don't know any game which actually uses 44Khz, so the difference should not be possible to hear. 11025 Hz is for the very slow machines : the quality gets lower, but you still have sound, and the sound creation is faster.

You can also choose «Silence», to turn off sound, which should greatly improve speed, especially in taito-f3 games.

6.3 The Free number

It shows how much free cpu power you have. If it is > 0, then your game runs at 60fps.

If you see it jumping very quickly all the time, then it most probably means that you are running another program in the background which is eating your cpu power. Raine is very sensitive to this in multitasking environements because it synchronises with the rdtsc counter of the cpu which will never slow down, no matter how loaded your cpu is. A java applet in the browser can eat a lot of cpu power for example !

6.4 Windows version

This version has not many things you can change for performance. Just be sure to run in full screen, which is much faster than in windowed modes, and prefer 8bpp color depth

than 16bpp or more.

6.5 Dos version

Be sure to use a fast video driver : VESA 3.0 or VBE/AF. To use these, you will very likely be obliged to use Scitech display doctor. Grab it from our archives page if you don't have it.

6.6 Linux

If you can be root on your machine, use DGA or svga modes, and prefer 8bpp. If you can't, then well, the standard X11 modes should do. Frame buffer modes are quite fast too, but it's very hard to have custom video modes in fbcon.

7 GUI Usage

Just type raine in DOS or in linux, or double-click raine.exe/raine32.exe in Windows, and the gui should appear:

Play Game: Play the currently loaded game.

Change Game: Load a different game.

Control Setup: Change key settings/joystick type.

Screen Setup: Change screenmode/scanlines/vsync/frame skip etc...

Sound Setup: Change soundcard/sample rate.

Game Setup: Reset game/dipswitches/rom switches/cheat codes (see below).

About Raine\Game Info: Information about the loaded game.

Quit Raine: Back to Win9x/DOS.

7.1 Snapshots

Starting with version 0.32a, raine can now display some little snapshots of the games in the game selection dialog. For that, you must download a snapshots pack from the raine site, and unpack it in your raine directory. It will create a snapshot directory, filled with pcx files.

For info, the snapshots are 130x76 for horizontal games, and 70x120 for vertical games.

7.2 Screen Setup

This dialog requires some descriptions, but I'll avoid the obvious and describe only the most obscure parts... Notice that this dialog will try to adapt automatically propose the best video mode if you change some settings while «Auto Change Mode» is on and you have loaded a game. Selecting scale2x effect for example will automatically double the resolution. You can manually override the proposed choice though.

7.2.1 General settings

Frame skip : normally should stay on "Automatic". It can allow you to have a fine tune if you are running raine on a very slow computer which drops frames all the time, and you want a constant frame rate anyway.

Triple Buffer : it's to try to improve display quality, but it deos not work with all video drivers and requires some more cpu power. With most modern monitors, you should be able to leave this off.

Limit Speed : except if you want to run some kind of benchmark, you should leave this on. If you turn it off, raine will try to run the game as fast as it can, making it totally unplayable most of the time !

Vsync Palette : This option is for despearate cases : when your colors flicker you can try to turn this on, but it might be slow. Some better things to try : in windows, upgrade your video driver. Try to run the game in 16bpp.
In DGA 8bpp, if you use the default allegro library it will automatically synchronize the palette whatever is your setting. So the palette cpu time should be around 10-20%. If you use the patched allegro version, or if you use a raine binary from an official distribution, then the palette WILL NOT be synchronized by default. It's usefull because most games don't change very much their palette during game play, so colors don't usually flicker at all. If they flicker too much for you anyway, then turn this setting on.
You can also try the fast_set_pal setting in raine.cfg :
fast_set_pal = 1 is the default. In Windows if all your colors are bad in full screen with this setting (for 8bpp games) try fast_set_pal = 2. This setting will have no effect in windows 2000 and windows xp, because these OS forbid direct access to the palette. For the same reason it won't work in linux DGA or X11 drivers, but it will work in linux svga and fbcon drivers ! In dos, it should work everywhere.

Auto mode change : When raine knows for sure which video modes are supported by your video hardware, it tries by default to choose the best mode for the game you are loading. It does not change the color depth though, so if you see the palette cpu time rising (F11 key by default), then it's time to switch to a higher color depth... There are rare cases though when you might want raine not to change the video mode. That's when you are running with a crapy monitor which does not like mode changes for example, or when you want to run the raine debuger (which requires

a large screen of course). In these cases you can turn this "Off". The setting is automatically saved by raine.

7.2.2 Video Effects

Eagle : doubles the rendered picture size with some dithering effect to avoid square pixels. This effect only works in 8bpp, and does not work often in the accelerated win32 driver.

Scale2x : Same goal as eagle but without the «blur» effect of the dithering. This effect comes from the AdvanceMame project at this place.

Pixel double : Same as eagle but without the dithering effect. You will get square pixels but it will work in any color depth.

Double width : can be useful with scanlines.

Stretch Max : Stretch the rendered bitmap so that it will take the largest area on screen while still keeping its aspect ratio. Warning : this option as well as "Stretch FS" is using software blits until now so they take some considerable cpu power !

Stretch FS : FS is for Fullscreen. Stretch the rendered bitmap to display it in the whole screen (no black border). Of course, you might loose aspect ratio here, and in this case your picture will look weird.

7.2.3 Scanlines

If you allow raine to select the best video mode when you load a game, then it will keep your scanlines setting when selecting its video mode.

Fullheight : Requires a mode with double height to be available. I mean if you want to have 320x240 with fullheight scanlines, then the 320x480 mode must be available with your current video drivers. In recent raine versions (0.37 and up), raine chooses an appropriate video mode with enough room. 1 black horizontal line is inserted every 2 lines.

Halfheight : This one just replace half of the horizontal video lines by black lines to create a scanline effect. The advantage is that you have the effect without changing the video mode. The disadvantage is that you actually loose half the screen.

Notice : Scanlines have been rewriten somewhere after 0.34. They now work in any video mode (even windowed mode), and can be combined with many video effects (it was impossible before).

7.3 Sound Setup

This dialog allows you to choose your current sound driver, the frequency to use, and whether to max mixer or not. Notice that if you choose a high frequency then it will require more cpu time to be rendered. The default of 22050Hz is probably the best for most games (I don't know any game with samples higher than 22050 Hz, so 44100 Hz can make a difference only with FM music). 44100 Hz is required for games using the namco sound system like pengo. It's because this sound driver is too lazy to adapt to the sound frequency, and it expects raine to resample its output. Since we don't want to waste cpu time this way, you should use 44.1 Khz until we find a way to make it to adapt to the current sound frequency.

In 0.35 you also have a new checkbox "Max mixer volume". This checkbox not only makes the mixer volume maximum, it also disable an allegro feature which tries to remove any distorsion in sound by making voice volumes lower. If your sound is really too quiet you can try to check this box. It is very efficient at making sound louder !

7.4 Game Setup Options

From the Game Setup menu, you can change some things related to the games functions, but you need to know the consequences before altering these options, so:

Reset Game:

Reset the game emulation, you'll lose your current game progress unless you've saved it first.

Also, if you are using "Continuous playing" from version 0.31, this really resets the game, losing any saved data like hiscores...

Dipswitches:

This option allows you to alter the dip switch settings for the current game. This feature is also present somewhere on the arcade originals, but any changes you make are not guaranteed to work until the game is reset, so you should click on reset game after any changes. This is the nature of Dipswitches.

This button now appears on the raine main bar, on the main screen, when the loaded game supports dipswitches.

Action Replay:

This is a cheat system, see 'Action Replay' (section8) below. Notice that the cheat database hasn't been updated for quite a while. It's because most cheats are found for mame first, and we lost our converter. Maybe this system will be rewriten to natively support the mame format for the cheats in the end.

Region:

When the game supports different countries, a button «Region» appears on the bar in the main screen.

With most of Taito's roms after 1987, they use a byte of the rom to define which continent/language the arcade board is for use in. Usually there are two main variants:

- Japanese version: Usually with a 'this game is for use in Japan only' copyright message at the start. The game will not necessarily have Japanese text, sometimes it will (eg. Cadash, Liquid Kids).

- American version: Usually with a 'this game is for use in America only' copyright message at the start. Also the American version nearly always has a 'winners don't use drugs' logo (or sometimes 'recycle it, don't trash it' logo) at the start.

For some games there are more interesting/useful version settings too:

Original	Switch	Main Changes
Bonze Adventure	Jigoku	new title screen
Darius 2	Sagaia	new title screen
Elevator Action 2	Elevator Action Returns	new title screen
Growl	Runark	new title screen
Jigoku	Bonze Adventure	new title screen
Kaiser Knuckle	Global Champion	some diff gfx and stuff
Plotting	Flipull	new title screen
Puzzle Bobble 2	Bust-a-Move Again	all new game gfx
Rastan Saga 2	Nastar Warrior	new title screen
Super Space Invaders 91	Majestic 12	new title screen
Twin Qix	Twin Qix Japan	all new game gfx

This option is sometimes risky to switch between (it's not possible for arcade owners to switch it at all, unless they get a new set of 68k roms). The game is now automatically reseted after you change this setting. Also, with the F3-System games, changing this setting will void the game's eeprom. Raine will try to autodetect this and reset when needed. Sometimes you will have to press the test mode key (default is 'u') to reset your eeprom. You might also need to click on 'reset game' again to achieve a clean reset with F3-System.

8 'Action Replay' Cheating

There is a simple implementation of an Action Replay type cheat system. Many console emulators have the option to apply 'action replay/game genie' type cheat codes, although they usually don't have a search option, which is a shame. The cheat stuff in raine is split in two windows. One for editing cheat data and one for searching for cheats.

8.1 Cheat Editing

In this window you can do the following:

- Enable/disable cheats

- Edit cheat data

- Delete cheats

- Add new cheats

If you get messages like 'work ram error' appearing, wait for the title screen before enabling cheats. This is the nature of Action Replay cheats.

8.2 Cheat Searching

In this window you can find new cheat data. To start a search, click new search, then choose a search mode. When you are ready to continue the search, click continue search. There are four search modes:

Absolute search:
- Searches for absolute byte values.

- Most useful for lives and other data.

Relative search:
- Searches for the difference between byte values.

- Useful when absolute search fails, like if the game stores lives starting with ascii 0x30 or stores lives +/- 1 from the value shown ingame. Remember that if the difference is positive you should enter something like 0x01 (+1), if it is negative, then you should be searching for 0xFF (-1).

Single Bit search:
- Searches for single bit values.

- Useful for status flags, and stuff like 'extend' in bubble symphony, which is stored in 6 bits of one byte.

Slow deep search:
- Searches for the following changes in byte values:
  new byte == old byte, new byte != old byte,
  new byte > old byte, new byte >= old byte,
  new byte < old byte, new byte <= old byte

- Useful for timers and anything not found with the other modes. A nice cheat to have is invulnerability, use this mode to find the invulnerability timer.

The search results are shown in a listbox, when there are more than 512 results, only the first 512 will be in the listbox. You can double click on the search results to open a scrollable hex/ascii view of the memory area where the result lies. Any bytes that are in the search results will have *..* around them, so you can easily spot them.

9 Cheats and gameplay tips

This is a small collection of known cheat modes, secrets and hidden features found in the arcade games supported by Raine. The list is maintained by Mario Silva, please send any new information to taito@rainemu.com. Thanks to all contributors.

9.1 Raizing driver (toaplan2)

Check http://www.vsa-ag.ch/r8zing/

9.2 Cave driver

Check http://www.vsa-ag.ch/cave/

9.3 Battle Garegga

Source: MAME driver
To activate the secret characters input the following commands:
After inserting a coin (pushing a credit button), input UP UP DOWN DOWN LEFT RIGHT LEFT RIGHT A B C START then you can use Mahou Daisakusen characters.

9.4 Batrider

Source: MAME driver
To activate the secret characters input the following commands:
After inserting a coin (pushing a credit button), input
UP UP DOWN DOWN LEFT RIGHT LEFT RIGHT A B START
then you can use Mahou Daisakusen and Battle Garegga characters.

9.5 Bomb Jack Twin

Source: Antiriad
The test mode is quite hard to access:

1. Reset Game and hold down Player 2 buttons 1 and 2. If you did it fast enough, you will see the message 'Ready?'. If not try again.

2. Press the following Player 1 buttons: 2, 2, 2, 1, 1, 1, 2, 2, 2, 1, 1, 1. If you did this correctly, you should see another message '9th Mar. 1992'. Now you are in the test mode.

9.6 Thunder Dragon

Source: Antiriad
The test mode is quite hard to access:

1. Reset Game and hold down Player 2 buttons 1 and 2. If you did it fast enough, you will see the message 'Ready?'. If not try again.

2. Press Player 1 Button 2 14 times. If you did this correctly, you should see another message '4th June. 1991'. Now you are in the test mode.

9.7 Bubble Memories, Bubble Symphony

Source: Carl Chavez
There is a very detailed guide/faq to Bubble Memories and Bubble Symphony available at http://www.bubandbob.com/, including cheats and secrets.

9.8 Legend of Makaj

Source: Udirnel
The correct spell at the end of the game is 'GIXGARD'.

9.9 New Zealand Story

Source: Victor Epitropou
There is a very detailed guide/faq to New Zealand Story that should be online at the following url, including cheats and secrets or where to find the secret warps (thanks Chris ? for the new url).
   http://194.177.201.73/members/andrew/nzs/newzeal.txt

9.10 Rainbow Islands Extra

Source: Dominic Holmes
There is a web page about Rainbow Islands located here:

   http://www.cs.uct.ac.za/ stjasink/ri/

The pages are by Stephen Tjasink and contain a lot of information about the game.

Source: ?????

Make sure the second to last 2 digits of your score are the same when you reach 'goal in', this will make the chest contain a better bonus item.eg. reach goal in with a score of xxxx11x to get a chest full of ?????.

9.11 Rodland Japanese

Source: Norimitsu Kaiho

After inserting a coin, press the player 1 'up' button 3 times. This will activate the extra mode, so you can play with all new levels, gfx and music.

9.12 Rodland English

Source: Norimitsu Kaiho

After inserting a coin, press the player 1 'down' button 3 times. This will activate the extra mode, so you can play with all new levels, gfx and music.

10 Sound options

10.1 Mixer

Start the mixer by pressing "Tilde" (this is the key just below escape on most keyboards) after starting a game to display every audio stream allocated by each sound chip of the current game. The game continues while the mixer is on screen so you can still hear the sound and you can now adjust the volume of each channel, either with the mouse or with the keyboard (TAB and arrow keys).

Keep in mind that the game continues while adjusting volume, but you can always reset the game or restart after eg. loosing a life. The mixer can't work while the game is paused or while the gui is displayed.
In linux at least (but probably with the other ports as well), moving the sliders by keeping the mouse button pressed on it makes the sound to loop. It is because of allegro - nothing to do about it for now. So you should probably adjust the sound with little clicks rather than big ones.
Press "~" again to return to the game or click on Exit.

10.2 Saving sound to a WAV file

You can now save sound to a wave file from the sound options. You can choose to have a graphical monitor of what is being saved over the game screen.
   This function is mixing the different sound channels to be saved in software mode. As a result, the sound might not be exactly like what you hear during gameplay. In some games, it might also be saved too loud (in this game you can hear distorsions). If it happens, just adjust sound volume with the mixer before starting to save to a wav file.

The wav file is named raine_sound.wav and is saved in the raine directory.

11 Hiscore support

The hiscore.dat file which should be in your raine directory allows raine to save the hiscore of some games in the savedata dir. The hiscore files have the name of the game, with extension ".hi".

Starting in 0.32, the hiscore.dat is **fully** compatible with mame. It means you can safety use the last unofficial hiscore.dat file for mame.

12 History.dat support

Raine now also supports the same history.dat as mame, as you can find it here (official site). Since the file is quite big, it's not included with the default raine distributions. Just unzip it in your raine directory, then load a game in raine, and click on the «?!» button on the main bar, and finally on «Game info». The history.dat info related to the game you just loaded will be inserted at the begining of the displayed text.

13 Continuous playing

This option allows you to automatically save a game when you quit, and automatically load it when you load the rom. It allows to keep high scores for any game without the hiscore.dat file, can be used as an emergency save function !

Enable it by running raine with the "-cont" option. Disable it with the "-nocont" option. You can also edit the raine configuration file. In this case, change "auto_save" option in [General] options.

Of course, it eats lots of disk space, so it is off by default.

14 Demos

With Shift-F2 you can save a demo. With that you can save everything you are doing in a game. To stop the saving, just press P (for pause) or ESC to call the GUI. To read a demo, press Shift-F4.

15 General Controls

Here are the default controls for raine.

15.1 General ingame keys:

0 Save screen shot (named raine???.pcx)

F2 Save game state

Ctrl-F2 Save game state by name

F3 Switch save state slot (10 different slots)

F4 Load game state

Ctrl-F4 Load game state by name

Shift-F2 Save demo

Shift-F4 Load demo

F11 Toggle the fps/profile display (5 different modes)

~ Display/Remove the sound mixer

PGUP Increase manual frame skip (no effect with auto frame skip)

PGDN Decrease manual frame skip (no effect with auto frame skip)

HOME Increase cpu execution (useful debug - slows motion and music)

END Reduce cpu execution (useful debug - slows motion and music)

ESC Return to GUI (exit to host os when the gui is disabled)

TAB Return to GUI (will active gui even if it is disabled)

P Pause the game

15.2 Keys in Pause mode:

UP Scroll display up (if the gamescreen does not fit)

DOWN Scroll display down (if the gamescreen does not fit)

LEFT Scroll display left (if the gamescreen does not fit)

RIGHT Scroll display right (if the gamescreen does not fit)

ESC Return to GUI (exit to host os when the gui is disabled)

TAB Return to GUI (will active gui even if it is disabled)

P Unpause the game

15.3 Default Player keys:

3 - Coin A

4 - Coin B

T - Tilt

Y - Service

1 - Player 1 Start

2 - Player 2 Start

UP - Player 1 Up

S - Player 2 Up

DOWN - Player 1 Down

X - Player 2 Down

LEFT - Player 1 Left

Z - Player 2 Left

RIGHT - Player 1 Right

C - Player 2 Right

V..M - Player 1 Buttons

Q..E - Player 2 Buttons

See the GUI to redefine these keys.

15.4 Misc:

CTRL+ALT+END Emergency exit to DOS (works at anytime, but ugly). The default game buttons are not ctrl and alt, this is due to the intrusion of windows keys between ctrl-alt on many keyboards (lame).

Ctrl+Alt+Del does the same thing in windows at least.

15.5 Analog Controls in Chase HQ

Raine now emulates the analog behaviour in the Chase H.Q. controls. You can use a standard PC steering wheel and pedals setup in analog mode. :)
The input behaviour is selectable in the dip switches menu, there is also a new option to change how the gear works.

Important: If you are upgrading from a previous version of RAINE, you MUST reset the dip switches to the new factory defaults. Dip switch settings stored from older RAINE versions will cause the game to malfunction.

15.6 Gun controls in Spacegun

The following options are available in the game dipswitches menu:

Mouse Speed Allows to change the mouse speed

Digital Input Speed Changes the speed of the crosshair when using the keyboard or a DIGITAL joystick/gamepad.

P1 Input Control Select what device you want to control the Player 1 gun, choose from mouse, analog joystick or digital (keyboard and gamepad).

Show Crosshair An option to hide the crosshair (not part of the original game, added for). This option is usefull for taking faithfull screenshots or disabling the second player crosshair if you're only using one player.

15.7 Extra controls for the Taito F3-System games:

F5 Toggle BG0 Layer

F6 Toggle BG1 Layer

F7 Toggle BG2 Layer

F8 Toggle BG3 Layer

F9 Toggle Sprite Layer

F10 Toggle FG0 Layer

F12 Toggle Pixel Layer (if used)

There are occasions in F3-System games where things look better if you disable a BG layer, for vaious reasons. Reasons like bg zooms, 'snes-like' transparencies, misc line-line effects including scrolling, priority swapping, enable-disable, also zooming on a line-line basis. These things are not emulated currently. F3-System is a full 32-bit system, and it's no fun trying to add all that on a p120.

16 Config Files

raine.cfg (rainex.cfg for linux, and raine32.cfg for windows): Contains general raine settings and comments

games.cfg Contains input, dipswitch and rom version settings for each game

cheats.cfg Contains game cheat codes

raine.cfg and games.cfg are automatically generated, so they are not supplied in raine.zip. raine.cfg is also automatically commented, you should read it. cheats.cfg is also updated when you make changed in within gui.

17 Game Information

Please take a look at the seperate gamelist.txt/gamelist.lyx file for the complete list of supported games and any information on the rom-merging relationships.

17.1 Some of the emulated Systems

System	Main CPUs	Sound CPUs	Info
Tecmo1	68000	Z80; YM2203 x 2	Some Tecmo System
Tch-1	68000	Z80; YM2151; M6295	Various Technos games
MS-1	68000	68000; YM2151; M6295 x 2	Jaleco Mega System-1
AIR-Sys	68000	Z80; YM2610	Taito AIR system (3d flying games)
B-Sys	68000	Z80; YM2203/YM2610	Taito B System
H-Sys	68000	Z80; YM2610	Taito H System
X-Sys	68000	Z80; YM2610	Taito X System
NZS-Sys|	Z80 x 2	YM2203	Taito 'TNZS' System
L-Sys	Z80 x 2	Z80; YM2203/YM2610	Taito L System (hw varies a lot)
F1-Sys	68000	Z80; YM2610	Taito F1 System (F2 with extra video chips)
F2-Sys	68000	Z80; YM2610	Taito F2 System
Z-Sys	68000 x 2	Z80; YM2610	Taito Z System (3d sprite zooming games)
Dual68	68000 x 2	Z80; YM2203/YM2610	Dual 68000 Systems (mostly 2/3 screens)
F3-Sys	68020	68000; Misc Ensoniq	Taito F3 System

18 Raine Team

Antiriad (Richard Bush) <antiriad@rainemu.com> Main coding from the start.

Emmanuel Anne (Tux in the forum) Current main programmer.

Atani previous win32 port (http://www.atani-software.net/)

Hiromitsu Shioya (Hiro-Shi) Main sound coding, implementation of sound playback and emulators, emulation of M6295, MSM5205 and YM2610. plus many other improvements.

Cedrick Collomb (Nitch) For knowing everything about x86 asm optimization :).

Mário Silva (Taito) <taito@rainemu.com> Organisation, coordination, rom finding, www updating and a lot of other stuff.

Richard Mitton (Spindizzy) Emulation of Plotting, Bubble Bobble and maybe a few other z80 games (wait and see!). Sound help, cool MCU static recompiler, and more nice things. (http://etc.home.dhs.org/)

18.1 Special Thanks

Many thanks to the following kind people who have donated hardware to help when my old HD died. Not only did I get a new HD, but I actually got half the components of my pc updated!! Certainly, there would not be any raine in the last 4 months without them, because I could not afford to buy a new HD.
NaMcO for sending 2x16mb simms and a 6GB HD when my old HD gave up on me
MadMax1, Nemesis1 & Sigurdur H. Olafsson for collectively sending me a p2-233 and mainboard and also a non-ps/2 keyboard adapter
Prophet of Retrogames for the Sidewinder Gamepad
Malcolm Laurie for the generous donation towards buying arcade boards and an ATX case
Glenn Hagon for another 2x16mb simms
Mario Silva, Razoola & Pincushion Man for the cd's to help restore what I lost

And many other people that helped us getting some donations so we could buy boards like Strahl:

Harald, Till, Jason S., Kobayashi, Tormod, Estranged, Empyre, Mario Lowang...hope I didn't forget anyone. ;)

If you would like to send a contribution to help with the development of raine, maybe some old hardware or some money or anything else, please email us. How does money help? Well, It can go towards upgrading my pc, which allows me to be more ambitious in what I try to emulate (for example f3 system with more gfx features). Or, it will go on my phone bills, which are caused by time online doing raine related things. Or it can be used to buy new boards for the rom dumpers. We can't offer much in return, but you can of course beta test new games in the emulator.

18.2 Rom Dumps

The supported romsets were dumped by the following people, many thanks:
Any, araCORN, C.Hardy, Coy, D.Winter, dump.it, Freewing, G.Hall, J-Rom, Jim H, malcor, Metalman, nnap, NAZ!, Noel Miruru, P Swann, ShinobiZ, SpainDumps, Tatsuhiko, Team Japump, Tormod, vixen, VSA and to everybody else who chose to stay anonymous.

18.3 Thanks

iceball for some nice gfx for raine, also the bg image in 0.25.
Anders and Janne for being cool and their very fast emulators, yay! NeoRAGE is back!!
araCORN+ORG/Romlist for all the great roms, hope everything works out for you!
Atila for support and hosting our site a while ago
Bouchiki for adding Play Girls 1 & 2
Calb for nice chats and helpful technos/nichibutsu fixes from Phil S.

Carl-Henrik Skårstedt/DSC for the software ym3812 emulator and sb 2/truxton 2 info

Cedrick Collomb for the optimized asm, very cool

Cgfm for the adlib help and stuff

Conjurer for supporting raine when it was v0.06

DaemoN for all your help

Dark Force for many nice things

David Winter for Toki info

Dev for the nice raine logo

Dirk Stevens for Eagle engine

Eugenio Derenzi for adding support for Gunbird, Sengoku Ace and Biomechanical Toy

Fox for the cdrom

Hiro-shi for all the work on raine sound!

JoseQ for maintaining a top quality site

Mário Silva for all the organization and rom finding for raine

MAME team for their sound drivers, especially to Aaron Giles for the ymz280b and the es5506!

Metalman for dumping the first F3-System roms and Arkanoid Returns

Michael Kleps for the direct-x offer

Mirko Buffoni for mame, nice emails and memory leak help

Mutewitness for the Darius dipswitches

Neil Bradley for MZ80 and Retrocade

Neill Corlett for the Starscream 68000 core and the sd3 translation

Nicola Salmoria for MAME, and Terra Cresta sprite colour information

Paolo for adding preliminary support for Saboten Bombers

Paul G. for the sidewinder and many useful bug reports

Richard Mitton for tnzs emu, plotting emulation and other help

The Ultimate Patchers for the cheat converter

Titan for the background image used without permission, hope you don't mind. ;)

Zoop for support, url and meka betas

zsKnight & _Demo_ for the greatest snes emulator

<Anyone who beta tests raine, or I know from my occasional icq/irc accesses>

18.4 Stuff

DJGPP 2.02 (GCC up to 2.95.3 for now) by DJ Delorie

Starscream 68000 Engine 0.26r by Neill Corlett (0.26a patched for raine)

UAE 68020 Engine by Bernd Schmidt (Unix Amiga Emulator)

MZ80 Engine 2.8 by Neil Bradley

Allegro 3.9.37 Wip by Shawn Hargreaves

Nasm 0.97 by Nasm Team

IRApc 2.00 port and SearchR2 by Antiriad

6x8 font based on one by Xen for Amiga

Eagle 0.41 by Dirk Stevens

zLib by 1.13 by Jean-loup Gailly, minizip by Gilles Vollant
dZ80 v1.31 by Mark Incley

19 History

19.1 Raine v0.37.1-0.38.1

Too lazy to write all the changes. They should be in the forum anyway at rainemu.com.

19.2 Raine v0.37.0

New games added : s.s mission, thunder dragon 2, hyper pacman (bootleg), and macross plus (without sound...)

Games now fully playable with sound : macross 2, acrobat mission, mutant knight Also we now have the (section7.2.2) video effect from the AdvMame project, and the scanlines were rewriten to work everywhere (you can even combine them with scale2x !).

19.3 Raine v0.36.2

- The bigest change is the new line scroll functions which fixes the crash in the late stages of strikers 1945, and finally add the missing line scroll effects to the cps1 driver (at least all the street fighter games, punisher and varth use these line scrolls. Maybe some others...). Also nlx_doom added street fighter zero, cps1 changer version to the cps1 driver.

- LOTS of sound fixes, including a new "enhanced stereo" effect (see the sound options dialog) which works by delaying right and left channels for sound chips having one left channel and one right channel. The explosions in darius 2 are finally fixed, and it also probably fixes a few other sound effects in some other games. And finally some volume and frequency adjustements in a few games.

- Raine should now support pads/joysticks with more than 12 buttons (untested, because I don't have such a controller, but it should work).

- Kick off is now playable (megasys1 driver), thanks to some dip switches fixes by nlx_doom.

19.4 Raine v0.36.1

- Fixed the zoom in the gunbird driver, especially for tengai. It's still not 100% perfect, but it's much better.

- Added the first complete line scroll support in raine for the gunbird driver. Now tengai has a very precise and very fast line scroll. It's also used in Battle K-Road but it's much harder to notice there !

- Fixed : the music was too fast in Rainbow Island and maybe some other games, the pause didn't work well anymore (the game timer was not stopped), the demos were unreadable (again !).

- Added hotkeys for the "ghost" buttons on the raine bar (Dips, Region and Cheats).

- The adpcm sound is mono, not stereo, so it's back to center position now (it was on the left side only before)

- Fixed the long name for "Samurai Aces"

- Switched to a gnu-like version number for raine (0.36.1 instead of 0.36a to avoid confusion).

19.5 Raine v0.36

New games :
Strikers 1945, Tengai (alias Sengoku Blade). Both are nice shooters from Psikyo.
New clones :
Gunbird (replaces the old broken world set), Esprade (newer international and japenese versions), Samurai Aces (international version of Sengoku Ace)

- Added the ability to save sound to a wav file (in sound (section10.2))

- Added adpcm sound in toki and silkworm

- Fixed sprites priorities in the cps1 driver, and in double dragon 3.

- Made the psikyo driver a little faster

- Fixed the sound mixer

- Stephane HUMBERT fixed the dipswitches for Grand Cross Pinball

- Added the ability to edit registers and to manually generate irqs or nmis to the z80 debuger included in the debug version of raine.

- Added eeprom support and sound for Battle Bakraid. The ymz280b emulator was also improved, and the sound in uopoko is much better now.

- Stephane Humbert updated our cheats database.

Fixes in the WIP release, before 0.36 :

- demos were unreadable in 0.35b

- a segmentation fault in the nmk driver "sometimes"

19.6 Raine v0.35b

- Fixed crashes in -gamelist and in the games using the YM2610b sound emulation

- Fixed some more default eeproms for taito f3 games

- Elevator action 2, dariusg and dariusgx were patched so that they start faster and automatically reset when needed (when you exit service mode, or when the eeprom is regenerated).

- Elevator action 2 can now be run in 16bpp

- Removed more debug messages from bakraid (!)

- Mustang is not a clone of raiden, sorry !

- Stephane HUMBERT updated our cheats database.

19.7 RAINE v0.35a

Bug fixes :

- Logiqx fixed the bgaregc rom I had broken (sorry !)

- Stephane Humbert fixed the controls and the dipswitches of WWF Superstars.

- Air Gallet is now fully playable (finally !).

- Removed forgotten debuging messages from bakraid (!)

- Fixed Toki crashing at startup

- Fixed missing sound in truxton 2

- Buble Boble's screen is now correctly flashing when you get certain bonuses (well, let's say it's more like the original...).

- samesame/fire shark is now playable (without sound).

- Fixed a bug when choosing the video resolution for screens rotated by 270°.

- Fixed default eeproms for most cave games.

- Fixed sprites overlaping text in the end of pang3. It might affect other cps1 games too, but I couldn't find any other problem...

- Fixed a weird bug in scroll3 rendering for cps1 games when in 8bpp for transparant tiles.

19.8 RAINE v0.35 : QSound

This version includes a major rewrite of the z80 emulation. As a consequence, savegames written by this version will not be readable by older versions. The biggest changes are for sound of course, hence the name of this version. But first the contributors (in alphabetical order) :

- Stephane HUMBERT from the Ultimate Patchers updated the raine cheats database. It includes new cheats for Bakraid, for example...

- Stephane also fixed most of the dip switches in the toaplan2 driver, and he found lots of bugs that I fixed later in this driver...

- Thanks to Liliana for the background picture of this version ! Also thanks to Zaxxon1 and Liliana for their help with the docs...

- Logiqx made many ROM changes, significantly improving compatibility with the MAME sets. All game names now match MAME, as do the ROM names and CRCs inside them. Some bad dumps were also identified and corrected during this task which should mean improved emulation. Backward ROM compatibility has been retained wherever possible but to clean up your ROM collection you should use something like ClrMamePro or RomCenter. (Battle Shark has much more sound now...)

- We also used the source of dz80 from Mark Incley for the debuger integrated in the debug version of raine (for developers only !)

Major changes :

- Added qsound support for the cps1 games which can use it.

- Fixed music tempo with a good timer emulation in batrider, battle garega, gunbird, sengoku ace, battle kroadj, and every cps1 game. This replaces the dirty hack of "fast_tp2_sound" of previous versions. Also, music now goes faster in Buble boble when you run out of time...

- Reverted to Seal for the sound emulation in the dos version, so pci soundcards should work better now. (Seal was used for the dos version in raine before 0.30). Seal is also the default for the win32 version now, so that soundcards having problems with the accelerated directx driver can work with raine.

- Added priorities emulation in the cps1 video emulation, so you don't pass through trees anymore in games like Cadillacs and dinosaurs... The code is not extremely fast yet, but it's working well. Also fixed sf2rb2 protection, a stupid rendering bug in the scroll3 layer, and slammasters is finally fully playable. Added speed hacks to most cps1 games, and added keyboard controls to Forgotten worlds (Buttons 2

and 3 can be used instead of the mouse to move the gun - your choice. But the mouse gives better precision, of course).

Except this there are numerous fixes :

- The snapshots were not displayed correctly in resolutions > 640x80 or when you moved the game selection dialog.

- The mouse pointer was moving very slowly when you ran raine in 8bpp in a window on a 16bpp desktop (in Linux, and probably in windows).

- All the region codes for the xsystem2 drivers were broken (in games like The new zealand story, Extermination, doctor Toppel, Plump Pop...

- In Battle Garrega, after a few seconds in the game, there was a little pause. If you reset the game after this pause, you had a sound error.

- Music volume adjustement in Insector X (Thanks, Liliana...)

- Slight improvement of the graphics mode selection (mainly for linux) : when 2 modes seem equaly interesting for a game, choose the one with the aspect ratio closest to 640x480.

- With Allegro sound support, add the check box "Max mixer volume" in sound setup. Allegro sound support is only used in linux now.

- Fixed the svgalib support for linux (allegro-4.0.0 broke it !)

- Added the coin sound to Arkanoid 2 (and clones), and the bug where coins were not decreasing when continuing the game was fixed by Stephane Humbert.

- Fixed blue sky in silkworm

- Fixed some restart positions in Bonze Adventures. The old file bonzchip.cfg is not necessary anymore...

- Buble boble was freezing after 20-30 minutes if left alone.

- Fixed color problems/graphics glitches in snowbros2, whoopee, pipibibi, and ghox, and fixed left/right keyboard controls in ghox.

19.9 Raine v0.34b

Added new games :

- Black Heart (nmk driver) - no sound

- Air Gallet (playable, but partial emulation only)

Fixes :

- Mustang is now playable without sound

- Fixed black screen in f3 games when changing the rom version code and reseting.

- Fixed bug in hiscores saving for win32 and dos.

- Fixed auto-fire... Now working again !

- Enlarged pcm buffer in pbobble3 to try to fix a weird bug in some win95 versions...

- Added dynamic mode lists in vbe/af (dos).

- The triple buffer hacks are back ! (for dos and linux at least. They are still troublesome in win32 !)

19.10 Raine v0.34a

Fixes :

- Up direction too slow in cave games

- Joystick settings not properly restored in win32 and dos

- Bad CRC for sailor moon original version (Logiqx)

- Bad romcheck for hotdogst, sailormn, sailormo, mainger

- Made music a little faster for cps1 games like ghosts and ghouls

- Added "fast_set_pal = 2" setting in raine.cfg.

19.11 RAINE v0.34 : Speed !

- Added new game : Sailor Moon.

- Added new clones : Gunbird korean version, Donpachi korean version, Sailor Moon original version, and battle garrega chinese version. All these clones are not just international versions : the software is really different.

- Added dynamic graphics list modes for most graphics drivers : vga, modex, vesa (1 to 3), svgalib, fbcon, dga2, directx (all fullscreen drivers). This give you every available mode in the Screen Setup dialog when you change the depth or the scanlines. This also select for you the best video mode available keeping your options (scanlines, pixel double...) for every game you load.

- Fixed music tempo and sound effects in psykio games (gunbird, sengoku ace, and battle k road).

- Made the music acceleration in toaplan2 games optional (Set fast_tp2_sound to 0 in raine.cfg if you don't like it)

- Added a cache for solid sprite to get a 20-30% increase in speed for mazinger and most toaplan2 games (batrider...).

- Added speed hacks to every cave games : a little faster on slow machines, and animations smoother on fast machines !

- New palette update function for 8bpp modes for Windows 9x fullscreen modes, and linux fbcon. This function reduces the cpu time for palette update to 0% !

- Fixed a last bug in hiscores (hopefully !) : when loading a 2nd game in the gui, the hiscores of the 2nd game were erased !!!

- Added region codes to drtopel.

19.12 RAINE 0.33 : Rush

- New game added : Battle Bakraid, Mazinger Z.

- New clone : Kingdom Grand Prix - See Neil Corlett's site

- Added demo support, load/save by name, and compression in savegames (optional - see UseCompression in raine.cfg).

- Usual bugfixes...

19.13 RAINE v0.32a : bugfixes and new cheat system

What's new :

- New optional snapshots for the games. See 7.1

- New cheats.cfg file format, with plenty of new cheats inside (thanks a lot to Steph and Pugsy). See the cheats.cfg file itself for an explanation of its new format.

- New cheat type : watches (usefull for puzzles)

- New linux video driver : Xwindows fullscreen.

And loads of bugfixes. Qsound games still have no sound though, and priorities are not fixed in every cps1 game...

19.14 RAINE v0.32 : "Capcom, and the return of windows !" - DOS/Linux/Windows.

- Added more than 85 cps1 games and clones. Qsound games have no sound for now (wof, dino, punisher, slam masters, and mbomber).

- Full mame compatibility for the hiscore.dat file. You can now grab a hiscore.dat from mame, and put it directly in the raine directory !

- Made the gui "16bpp friendly" : it is now much faster in 16bpp. And added a new file selector...

- The windows version of raine is now much more stable !!!

19.15 RAINE v0.31a: Bug fix release

Thanks to WonderBoy (from the raine forum) for his amzing tests !
 Here is a list (maybe incomplete) of what was fixed :

- Palette problems in f3 games fixed

- Many fixes in f3 sound

- Guwange : music was stopping at the begining of game

- cave games : crash fixed for zoomed sprites out of screen

- Crash fix (palette) in :
  - Asuka And Asuka
  - Bonze's Adventure
  - Earth Joker
  - Galamedes
  - Jigoku Meguri
  - Maze Of Lott
  -All the Quiz Games (except Sekai Wa Show By Shobai): Quiz Chikyu Bouei Gun ; Quiz Crayon Shinchan ; Quiz Crayon Shinchan 2, Quiz HQ ;Quiz Jinsei Gekijoh ;Quiz Torimonochoo).

- Omega Fighter/Omega Fighter Special : the game was freezing after about 4s !

- V Five/Grind Stormer (only black screen)

- Kick And Run (only black screen

- Zero Wing (only sound run and black screen

- Drive Out (problem to load Rom, bad Crc message but Roms are OK)

- Automatically saved games had various bugs.

- Palette fix in raine gui when in 16bpp and loading a game from the gui

- added automatic loading of bigfont.dat when needed (640x480 or over)

- New bonzchip.cfg allowing to finish the last level (thanks Stephh)

19.16 v0.31: "New Fundations" - Dos/Linux

This release adds mostly new graphic functions to allow almost every driver to support 16bpp/rotation. It was done mainly to see if f3 games would benefit from it. Apparently : not that much, except maybe for popnpop ?

Anyway with this, and automatic rom loading, adding new drivers should be easier now.

Since it's quiet now, and we have also included many fixes and improvements, time was good to make a release.

New games:

Game Name	Coamny/System	Dumper	Info
Donpachi	Cave		
Hot Dog Storm	Cave		

Fixes / improvements :
- Finally fixed the bad looping sounds in the F3 drivers (especially in puzzle buble 3 & 4)

- Added linescrolling to uopoko, and zooming effects to most games.

- Added 16bpp support and rotation to 90% of the games.

- Added bpp selection to the gui (you can now change the bpp without quiting raine...)

- Added continuous (section13)

- Changed the game selection dialog : options can be chosen with the new button "Selection", and added selection by company.

- Fixed Battle Shark : it works again !

- Fixed music rate in toaplan2 games (batrider...), thanks to a patch on the net. See http://www.emucamp.com/boukichi

- Fixed sample rate not being saved in 0.30a.

- Fixed bad samples in wrestlefest

- Some assembler optimisations on the basic drawing functions (from Karma)

- Fixed light bringer (broken in 0.30a).

Changes for linux :
- New fbcon driver for linux (frame buffer console)

- svga, fbcon and dga drivers are now generating their list of supported modes on the fly.

19.17 RAINE v0.30a: "Soundfix" - DOS/Linux/Windows

Game name	Company/System	Dumper	Info
Cuby Bop	Taito		Added by Antiriad
Tube It	Taito		variant of Cachat) [Antiriad]
Bubble Symphony (US)	Taito		Clone, added by Gerardo Oporto Jorrin

- Fixed music speed in Bubble Memories and Bubble Symphony.

- Big improvements on F3 sound.

- Added the ability to save sound chip status in savegames to F3 games.

- Fixed sound problems in Cave games (Dodonpachi especially)

- Saving games now also saves sound status for cave games.

- Fixed sound bankswitch in Battle Garegga. [Emmanuel Anne]

- Fixed Hachoo music tempo. [Emmanuel Anne]

- Fixed sound on the Technos games (eg. Wrestlefest). [Emmanuel Anne]

- Added analog control support to Chase (section15.5) [Warlock]

- Added many dipswitches to the Toaplan1 driver. [Emmanuel Anne]

- Added many dipswitches to the Toaplan2 driver. [Gerardo Oporto Jorrin]

- Various fixes to some old drivers. [Emmanuel Anne]

- Changed the autoswitch resolution code to accept any resolution wanted by the driver when in windowed mode in linux. [Emmanuel Anne]

- Asm optimizations in the spr8x8_8.s gfx routines. [Karma]

- Fixed a a segfault in ClearPalette of Omega Fighter. [Emmanuel Anne]

- Fixed Thunder Dragon Bootleg. [Emmanuel Anne]

- Combined the Linux and DOS makefiles. [Logiqx]. See the page "How to compile Raine" in the HTTP 23 section.

19.18 RAINE v0.30: "Rebirth" - DOS/Linux/Windows

Release notes:
1. Special thanks to the M.A.M.E. Team, in particular Aaron Giles for the ES5506 and YMZ280B sound drivers.

2. We set up the open source development site on SourceForge:
   Grab the latest sources and feel free to contribute. :)

Game Name	Company Name	Dumper	Info
Battle K-Road	Psikyo	?	[Emmanuel Anne]
Biomechanical Toy	Zeus		[Eugenio Derenzi]
Dodonpachi	Cave		[Emmanuel Anne, Antiriad]
Gals Panic	KANEKO		[Lag]
Gun Bird	Psikyo		[Eugenio Derenzi, Emmanuel Anne]
Guwange	Cave		[Emmanuel Anne]
Saboten Bombers	NMK		[Paolo]
Sengoku Ace	Psikyo		[Eugenio Derenzi, Emmanuel Anne]
Silkworm	TECMO		[Lag]

- Full sound support in the Cave games [Emmanuel Anne]: Dangun Feveron, Dodonpachi, Esprade, Guwange, Uo Poko.

- Preliminary F3 sound support [Emmanuel Anne] in: Akkanvader (space invaders 95), Arabian Magic, Arkanoid Returns, Bubble Memories, Bubble Bobble 2 / Bubble Symphony, Cleopatra Fortune, Darius Gaiden, Elevator Action Returns, Gekirindan, Global Champion / Kaiser Knuckle / Dankuga, Grid Seeker, Gun Lock, Kyukyoku Tiger II / Twin Cobra II, Land Maker, Light Bringer, Pop 'n Pop, Power Goal, Prime Time Fighter / Top Ranking Stars, Puchi Carat, Puzzle Bobble 2, 2x, 3, & 4, Ray Force/Gun Lock, Riding Fight, Ring Rage, Super Cup Final, Taito Cup Final, Twin Qix.

- Mapped the mouse buttons in Plump Pop [Emmanuel Anne]

- Fixed the controls in Special Criminal Investigation [Warlock]

- Emulated the controls in Top Speed. You need to reset the Dip Switches to factory default because the old settings are no longer valid. [Warlock]

- Lots of Dip Switches mapped. [Gerardo Jorrin]

- Fixed the coin bug in Dangun Feveron. [Emmanuel Anne]

- Major improvements to the GUI. [Antiriad, Emmanuel Anne]

- Support for the MAME highscore format. [Emmanuel Anne]

- Correct emulation speed in Light Bringer [Haze]

- Correct emulation speed in Zero Zone [Emmanuel Anne]

- Lots of improvements to the source code. [Antiriad, Atani, E. Anne]

- Lots of fixes and overall improvements, that include romset fixes, clean-ups and renaming, game title corrections, updating the RAINE documentation... [Eugenio Derenzi, Logiqx, Till, Tormod]

The RAINE romsets should match the MAME sets very closely now. It might be a good idea to use one of the various rom-management tools (links at the end of raine.txt) to fix any existing sets.

19.19 RAINE v20000819 (Open Source)

- Kiki Kai Kai and Knight Boy fixed [Kayamon]

- Play Girls 1 & 2 added [Boukichi]

- Grind Stormer uses MAME rom now [Thomas Schmidt & Brian A. Troha]

- Added rom-version switch (Japanese/American) to Soldam [Thomas Schmidt]

- Added Bubble Bobble 2 (clone of Bubble Symphony) [Tormod]

- Misc. bugfixes [katharsis]

19.20 RAINE v20000809 (Open Source)

- Battle Garegga sound added [Boukichi]

- Puzzle Bobble 4 backgound layers fixed [Thomas Schmidt]

- Removed redundant roms of Warrior Blade and Darius 2 [Brian A. Troha]

- Added dipswitch settings to all games in the Football Champ driver [Brian A. Troha]

- Migrated Antiriad's Allegro hacks to Allegro WIP 32 [katharsis]

- Misc. bugs in the source fixed [katharsis]

19.21 RAINE v20000725 (Open Source)

- New dipswitch settings for lots of games [Brian A. Troha]

- Fixed SDF Macross video decoding [Haze]

- A few misc. bugs in the source fixed [Katharsis]

19.22 RAINE v0.28h

- Added support for Puzzle Bobble and SDF Macross

- Miscelaneous bug fixes.

19.23 RAINE v0.28g

- Added support for Batsugan, Battle Garegga, Dangun Feveron, Esprade, Plump Pop and Uo Poko

- Improvements to Dr. Toppel's Adventure, Kick And Run, Kiki Kaikai and Twin Cobra II

- Horizontal pixel doubling added to the screen options.

19.24 RAINE v0.28f

This version enabled all 54 (unique) W.I.P. games.

19.25 RAINE v0.28a

No documentation available

19.26 v0.27ezel: "Irritiations"

Changes from Antiriad:

- Added alternate archive names, for ezel and his mame sets (amhorse -> horshoes, ctribebl -> ctribeb, doubled3 -> ddragon3).

19.27 v0.27beta: "Buggs/Defect"

Added the following playable game:

Game Name	Company/System	Dumper	Info
Mahou Daisakusen	Raizing	J-Rom	

Changes from Antiriad:

- Added mahoudai. Fixed sound.

- Increase music tempo in raizing games.

- Fixed keypad input.

- Fixed non-removed dsw problem when changing games.

- Fixed %ebp trashing caused by gcc 2.95.2 (fixes several games).

- Added [General] no_cpu_check to raine.cfg (disable check_cpu in about window).

- Fixed pbobble2 missing sprites.

- listdsw option (hi ne7).

19.28 v0.27alpha: "Better release something, or it will never get done"

Added the following 16 playable games:

Game Name	Company/System	Dumper	Info
Darius (alternate)	Taito	Spain Dumps	an updated version
Nastar Warrior	Taito	Spain Dumps	just a clone
Gun Lock	Taito F3-System	araCORN	some gfx problems
Grid Seeker	Taito F3-System	araCORN	some gfx problems
Kuri Kinton (alternate)	Taito L-System		an updated version
Ghox	Toaplan	J-Rom	no sound (turbo protection)
Exzisus	Taito	Noel Miruru	single screen version
Snow Bros (japanese)	Toaplan		just a clone
Snow Bros (alt 2)	Toaplan		just a clone
Arkanoid 2 (japanese)	Taito		just a clone
Makai Densetsu	Jaleco	Noel Miruru	legend of makai (japanese)
Solitary Fighter	Taito F2-System	Noel Miruru	
Shippu Mahou Daisakusen	Raizing	J-Rom	
Quiz sekai wa show by	Taito F2-System	Noel Miruru	
Quiz Chikyu Bouei Gun	Taito F2-System	Noel Miruru	
Football Champ	Taito F2-System	araCORN	
Euro Champ 92	Taito F2-System	araCORN	

Changes from Antiriad:

- Fixed memory trashing bug in layer toggle (caused crashes with f3 games).

- Added an option to save individual game display settings, but I don't like it (use save_game_screen_settings in raine.cfg).

- Added board numbers to all the games I have info for.

- Added cloneof information, for the rom merge tools that use it.

- Replaced roms/ziprom paths, now there are 4 paths, which are used for *both* roms and ziproms (instead of 3 for zipped, 3 for unzipped).

- Changed screenshot names. Now they are gamename_nnn.pcx. Yes, they are 'long' file names, if this is a problem (in real dos), see below...

- Added long_file_names switch in raine.cfg (disable for shrtflnm screenshots).

- Added rotation and flipping support in about 40% of games.

- Rotation options on command line/config file: -rotate n -no_rotate -flip n -no_flip (mame compatabilities: -rol -ror -flipx -flipy).

- Finally added zooming sprites in Ninja Kids, Growl (should of done it ages ago when I did the other games...).

- Now compiled with gcc 2.95.2 and allegro3927. Merged Sidewinder alt into a single driver.

Rom changes:

- tatsujn2: tsj2rom2.bin is cut from 512kb to 256kb.

- Renamed Legend of Makaj -> Legend of Makai.

19.29 v0.24a: "Bub and Bob are my heroes...."

Added the following 15 playable games:

Game Name	Company/System	Dumper	Info
64th Street Japanese	Jaleco MS-1	J-Rom	
Balloon Brothers	Seta & Taito		
Bio Ship Paladin	UPL & Sammy		sound cpu protected / custom?
Bubble Bobble	Taito		sound missing after gameover screen
Cadash Japanese	Taito	Noel M.	
Champion Wrestler	Taito L-System	araCORN	
Darius 2 - Dual Screen	Taito	J-Rom	
Extermination	Taito NZ-System		
Grand Cross Pinball	Excellent System		
Knuckle Bash	Toaplan	Jim H	sound cpu protected / z80
Mutant Night	UPL		hidden game since 0.22
Palamedes	Taito L-System		
Quiz HQ	Taito F2-System	J-Rom	
Quiz Torimonochou	Taito F2-System	J-Rom	
Strahl	UPL & NMK	Metalman	sound cpu protected / custom?

Changes from Hiroshi:

- Updates to M6295/MSM5205 emulators.

- Some updates to the other sound sources too.

Changes from Spindizzy:

- Static M68705 recompiler.

- Bubble Bobble (hardware info from the mame driver by Chris Moore, Oliver White, Nicola Salmoria, Marco Cassili.

Changes from Antiriad:

- Added PSX pad driver for Playstation pads via LPT1/2/3.

- Added a couple more Combatribes dsw (thx mayuga).

- Various code changes, so it compiles with msvc5.0/direct-x via allegro392x wi p.

- Coin Inputs are now only active for 250ms when you press them. This fixes the 'Coin Error' problems in Taito games (caused by holding the coin buttons down).

- Fixed Puchi Carat running too fast.

- Added Trackball control to Arkanoid Returns and Puchi Carat. Enter the test mode to enable it (or delete the eeprom images in savedata).

- In no gui mode, the tab key will reactivate the gui (req. by Bubble).

- Replaced some sample backback with streamed channels (better sync in a couple of games).

- Added LED emulation to Tatsujin 2, Snow Bros 2, Whoopee, Knuckle Bash.

- Added -gameinfo option, prints info for games in a shark and mame syntax especially for frontend authors.

- Improved key names a bit (eg. 'minus' becomes '-', 'stop' becomes '.').

- Added new control defaults for pinball games (incase some more get dumped)

- Made an M6585 emulator needed by Grand Cross Pinball.

- Added year info to all the games.

- Added the 320x240 arcade monitor mode from brian lewis... It should work fine .

- Changed the screen selector, so that the list of resolutions changes depending on what gfx driver is highlighted. For example, it only shows 320x200 for VGA, only shows possible resolutions for mode-x, only shows 320x240 for arcade monitor... Now it is easy to see which resolutions are possible for each driver :).

- Added Object and BG double buffer to tnzs-system. Now the sprites move a lot better in Insector X and Extermination.

- Cheat info lines can be edited in the gui like the other cheat data.

- Moved [General] -> LanguageFile is now [Directories] -> language_file.

- Added [Directories] -> cheat_file.

- Renamed tripple_buffer -> triple_buffer (oops).

- Added Cheat patch type, read the info in cheats.cfg.

- Changed screen setup, so the size can be dumped.

- Fixed screen size in Darius, Ninja Warriors.

- Added led emulation to Darius, Warrior Blade.

- Cadash cutting music should be fixed.

- Added better support for rom sharing/merging, so more mame sets should work.

- If a rom is not found, it will search for it in the parent game, and if a rom is not found in the parent game, it will check the parent game to see if the rom is merged with a different filename (by searching for matching crc32 and size data).

- Improved some bits of chase hq.

- Added starscream 0.26a. Seems to work, but I feel the new interrupt system might break some games... Didn't find any yet though.

- Fixed snow bros 2 and tatsujin 2 stalling with no sound selected.

19.30 v0.23: "Sidewinder release"

Changes from Antiriad:

- Added support for 12 buttons on each joystick.

- Added new default joystick settings:
  button 9 = player start (this button is the 'start' button on a sidewinder)
  button 10 = player coin slot (this button is the 'mode' button on a sidewinder).
  It's great, now I can play on raine without leaning over the keyboard =).

- Fixed sidewinder in allegro (added a second copy of the code as 'sidewinder b'). From what I can tell, the 'sidewinder b' should function the same as the system16 driver...

- BIG THANKS to Paul G. for the sidewinder gamepad :).

- Added Player 3 and 4 Controls in Snow Bros 2, Hit the Ice.

- Fixed Taito Tetris romlist (2 of the listed roms were unused).

- Fixed tripple buffer interfering with frame skip radio buttons in gui.

- Fixed most sprite sync in Tatsujin 2.

- Fixed most priorities in Master of Weapons, Ashura Blaster.

- FG0 banking in B-System (eg. screen clear in Rambo 3, FBI logo in Violence Fight),

- Updated translation template.cfg (oops, forgot).

- Changed Frame Skip option in gui.

- Replaced Tripple Buffer scroll routines, so they (should) work with vbe/af.

- Added Combatribes player 3 controls and dsw to activate them (thx mayuga).

- Changed TNZS guide url in cheats.txt (thx chris).

Non Changes:

- We didn't publically add any new games since 0.22.

- We didn't make any modifications to the Chase HQ emulation.

19.31 v0.22: "Chase HQ release"

Added 11 playable games:

Game Name	ompany/System	Dumper	Info
Bomb Jack Twin	NMK (c)NMK	Metalman	
Thunder Dragon	NMK (c)Tecmo	nnap	no sound yet (protected)
Thunder Dragon Bootleg	–	dump.it	title screens are hacked out
Omega Fighter	UPL	?	
Atomic Robokid	UPL	?	hidden in 0.20
Puzznic	Taito L-System	VSA	hidden in 0.20
Insector X	Taito TNZS-Sys	araCORN	delayed from 0.20
Silent Dragon	Taito B-System	araCORN	occasional trash on end level
Pop'n Pop	Taito F3-System	MetalMan	
Chase HQ	Taito Z-System	ara/Jim ?	preliminary ;)
Chase HQ Japanese	Taito Z-System	malcor	preliminary ;)

Changes from Hiromitsu Shioya:

- Updated all sound emulators, updated sound playback system.

- Fixed Darius object - bg1 priority.

Changes from Antiriad:

- Fixed Maze of Flott FG0 scroll typo (maybe fixes some other games too).

- Fixed Arkanoid 2 buttons and reset bug on nzs-system games.

- Fixed Insector X level 2 bug, renamed to insectx because of mame (was insectrx).

- Added a pixel double option in raine.cfg (for NaMcO's dodgy monitor).

- Added some alternate search modes (see the cheating (section8.2)).

- Converted about 15 games to slightly slower colour mapping/tile drawing, now no games need vsync to be enabled, and the vsync autodetect option is gone.

- Removed any listed resolutions where Y < 200. You can still select these from raine.cfg, but they aren't much use, so they are undocumented.

- Made palette code keep colours locked for 3 frames instead of 2, I think this is necessary for tripple buffer on some slow gfx cards?

- Keys now move around the load game list (eg. 's' to jump to saint dragon).

- Fixed Toki continue dsw.

- Type raine -romcheck to check all games, and raine -romcheck to check a single game (output is in romcheck.txt).

- Added mame tripple buffer scroll routine, which is a hack of allegro's vesa_scroll, it does not behave well with all gfx modes (vesa3 is good vbe/af is not always good).

- Added Sega ISA joystick driver. Does it work? Nobody knows...

- Added memory hex view window when you double click on cheat search results.

- Changed M6295 interface, since Bomb Jack Twin has many rom banks.

- Added crc32 and file size info for all roms (too many req's).

- Added multiple rom directory names, also with long file names :).

- Expanded Load Error messages, they are in a scrollable text box now.

- 100% decoded Bomb Jack Twin gfx roms.

- Game list mode is saved in raine.cfg (requested by some ppl)

- Added fast_set_pal in raine.cfg. 1 = Use faster colour loading (raine 0.20). 0 = Use slower colour loading (raine 0.18; compatible with more cards). Default is 1.

- Added Autofire setup in gui. Try using a test mode (eg. mega blast) to test it out :). Autofire settings are not saved, should they be?

- Gui font is proportional, except in listboxes, where it makes sense to be non -prop.

- Scanlines are now black in Rainbow Islands.

- Fixed Cheat engine for Z80 games. Tested with TNZS, Raimais, Fighting Hawk.

- Impossible Joystick positions are now prevented. So, you can press up or down, but you cannot press up and down simultaneously, etc... Fixes some bugs, like on Ninja Warriors, pressing left, right and up all together caused bad stuff to happen to the main player.

- Added default joys and a default joys editor, works like the keyboard stuff.

- Added led emulation to Darius 2 and Ninja Warriors.

- Fixed wrong joystick buttons for player 2 in space gun and op thunder.

- Added default keys and a default keys editor. Changed all game drivers.

- Fixed Dinorex lockups, caused by bad programming in the rom, leaving trash in some bits of the address registers.

- Made Action Replay cheat names max 256 chars.

- Added file selector option when setting zip/rom dirs.

- Added some game info window, with some company logos.

- Added button 3 in Violence Fight, 6 buttons in Kaiser Knuckle.

- Added some dsw from Thomas Pitt..

- Fixed Load Game when the game list selection is empty and you click load game.

- Fixed Snow Bros 2 missing sound.

19.32 v0.20: "101 games release"

Added 18 playable games:

Game Name	Company/System	Dumper	Info
Arkanoid 2	Taito 'NZS-Sys'	?	
Arkanoid 2 American	Taito 'NZS-Sys'	?	
New Zealand Story	Taito 'NZS-Sys'	?	
New Zealand Story Extra	Taito 'NZS-Sys'	?	
Kaiser Knuckle	Taito F3-System	araCORN	
Violence Fight	Taito B-System	araCORN	
Don Doko Don	Taito F2-System	J-Rom	
Hit the Ice	Taito B-System	araCORN	
Rambo 3	Taito B-System	araCORN	
Raimais	Taito L-System	araCORN	
Fighting Hawk	Taito L-System	Vixen	
Ashura Blaster	Taito B-System	Vixen	
Earth Joker	Taito	araCORN	
Galmedes	Taito	Vixen	
Space Invaders 95	Taito F3-System	Metalman	
Majestic 12	Taito F2-System	Vixen	enhancements to ssi91

Note: Insector X had to be removed because we found a last minute bug, so it will be included on another Raine release.

- Added a vsync autodetect option, which will only vsync when a game uses a direct mapper and the palette is really changed.

- Busy mouse sprite, from _iceball_.

- Added a better savegame format. Loading of the old format is fully supported.

- Made some visual improvements to the gui and made active window draggable, added game count information to game select window.

- Zooming in H-System games and sprite fixes.

- Fixed a sprite chain problem in WWF Superstars.

- Added sound pause for hardware ym3812 emulation (thx cgfm for adlib info).

- Zooming in B-System games and sprite fixes.

- Fixed several memory leaks, with some nice debugging routines from Mirko Buffoni :).

- Zooming in F2-System games and sprite fixes.

- Sprite Zooming in F3-System games and fixes.

- Fixed a bug when expanding directory names to full path.

- Changed to Allegro 3.11 (joystick bug fixes, and a new joystick supported: Wingman Warrior).

- Improved the 'mapped' colour mappers so they look always correct without vsync.

- Added Legend of Makaj dipswitches from Udirnel.

- Added cheats.txt: secrets and cheat modes for the supported games.

- YM3812 frequency is now supported for hardware emulation. Thanks to Carl/DSC and JH.

- Added keyboard leds for most taito games.

- Removed debug numbers from Mega Blast screen (oops).

- Fixed Cybattler and 64th Street missing sound (oops).

- Fixed background gfx in Rodland 'secret' levels.

- Changed the way bankswitching is handled in Z80 emulation for extra speed.

- Changed MZ80 memory interface to be more like Starscream's.

- Lots of gfx emulation merged (no speed loss, and in most cases a speed increase and improved accuracy).

- Action Replay search added to gui.

- rdtsc timer, more accurate timing, no more dropping to 59fps in Win9x-dosbox :).

- Lots of small game fixes, changes, and other stuff.

- Sound added on Toki

Changes from Hiromitsu Shioya:

- M6295 improvements.

- Multiple MSM5205 support.

Changes from others:

- Taito Board List much improved by Vixen.

- Additional Nichibutsu sound frequency fixes by Jim Hernandez.

19.33 v0.18: "Jaleco release; dedicated to AraCorn"

Added 26 playable games:

Game Name	Company/System	Dumper	Info
64th Street	Jaleco MS1-C	araCORN	
Astyanax	Jaleco MS1		
Asuka and Asuka	Taito	araCORN	
Avenging Spirit	Jaleco MS1-B	araCORN	
Bubble Symphony	Taito F3-System	Metalman	
Cadash Italian	Taito	Any	
Camel Try	Taito F2-System	J-Rom	
Combatribes	Technos	NAZ!	Bootleg
Cybattler	Jaleco MS1-C	araCORN	
Earth Defence Force	Jaleco MS1-B	araCORN	
Hachoo	Jaleco MS1	araCORN	
Legend of Makaj	Jaleco	araCORN	
Maze of Flott	Taito		
P-47 American	Jaleco MS1		
P-47 Japanese	Jaleco MS1		
Phantasm	Jaleco MS1	J-Rom	
Pipi and Bibi's	Ryouta Kikaku	dump.it	Bootleg
Plotting	Taito Z80	dump.it	Driver by Richard Mitton/ Tnzs emu
Plus Alpha	Jaleco MS1	J-Rom	
Puchi Carat	Taito F3-System	Metalman	
Puzzle Bobble 2x	Taito F3-System	Metalman	
Rodland English	Jaleco MS1	araCORN	
Saint Dragon	Jaleco MS1	J-Rom	
Snow Bros 2	Toaplan		Hardware info from Carl-Henrik and ...
Tatsujin 2 / Truxton 2	Toaplan		... Magnus / Dead Serious Clan
Whoopee	Toaplan	J-Rom	Requires Pipi & Bibis gfx roms

- Zip support is now internal (using zLib/miniunzip source).

- YM2151 engine optimized a bit (apx 10% faster).

- YM2610 engine optimized a bit (apx 30% faster).

- The 256x240 mode-x mode is now stretched to full screen. Thanks to Dark Force and FanWen for the code. Thanks to Interceptor for suggesting it.

- Added 12 new vesa modes: 640x100/120/150/160/200/240 800x150/200/300 1024x192/256/384. Some useful modes for 2/3 Screen games! Thanks to Dark Force.

- Changed adpcm sound emulation to be more accurate in Technos games and Zero Zone.

- Deprotected Jaleco 68k roms. Hopefully 100%.

- Added Darius Dipswitches. Thanks to mutewitness.

- Fixed sprite banking in Growl/Ninja Kids, thanks to Brad Oliver.

- Added Starscream 0.25 (faster). Thanks as always to Neill Corlett.

- Doubled music speed in Terra Force and Armed Formation. Thanks to Jim Hernandez for the info.

- Compiled with new Seal 1.06 and Allegro 3.1. This should fix some joystick problems, also the SnesPad support has changed, because allegro supports SnesPads now.

- Changed joystick and screen mode values in config file/command line, this is due to syntax changes in allegro 3.1.

- Some hacks to improve the sprites in Rainbow Islands Extra. The C-Chip data is different to Jumping Islands and Rainbow Islands Original...

- Lots of internal code changes/improvements. This caused a lot of retesting, and it was unreleasable over xmas...

- Added fixed sound rom for Thunder Fox (if you want sound, a new rom is required).

- Added fixed sample roms for Final Blow (if you want sound, 2 new roms are required).

- Added software YM3812 emulator, provided by Carl-Henrik Skaarstedt/DSC!

- Added sample rate and YM3812 switches in gui.

- Added faster code to draw ingame messages.

- Added quick rtdsc profiler, press ingame F11 to switch to it.

- Added YM2610 in Space Gun.

- Added Translation file support for 90% of the text in raine.

- Added support for more than 2 dipswitch banks (eg. Toaplan games have 3 dsw banks).

- Added Eagle 0.41, thx Dirk.

- Fix for Rainbow Islands sometimes dropping music.

- Added more game cheats from JCK/The Ultimate Patchers (cheats from mame).

- YM2151 sound in WrestleFest, WWF SuperStars, Double Dragon 3.

- Added FG0 gfx and scrolling in Plotting.

Changes from Hiromitsu Shioya:

- Added much better M6295 emulator with sample bank switching support.

- Added much better MSM5205 emulation for Darius.

- Added new versions of fm.c source, ym2610 emulator is now merged in fm.c.

- Switched YM2203 emulation to fm.c.

- Improve sound streaming support. Added resync if it falls behind.

- Fixed screen size for Darius 2 and Ninja Warriors.

- Fixed colour port bug in 3 screen games.

- Fixed sample rom mapping and z80 speed in most Taito ym2610 games.

- Changed some Taito games from ym2610 - ym2610b (ym2610b has more fm channels).

- Many fixes to Taito, Jaleco and Technos sound emulation.

Changes from others:

- Richard Mitton added emulation of Plotting.

- Jim Hernandez improved sound frequency in Nichibutsu games.

- Jim Hernandez improved sound frequency and volumes in Jaleco games.

20 Lists of boards

20.1 TAITO BOARD LIST - Vixen, Antiriad & Raine Team

This list is mainly to identify all Taito hardware, each Taito machine has an ordered number from 1983 onwards. It is not a list of dumped Taito romsets, some of these are undumped.

Probably other Taito hardware is also numbered this way.

Please send any extra info.

Thanks to J-Rom, araCORN, Raven, malcor, David Jorge, Al Kossow, Soren Svendsen for information. This list has been hugely ipmroved by vixen! Thanks!! :)

The change of the title that differs by country wrote to the same line. It distinguished it as the different game, in the case that there is an obvious new version.

Product listing of TAITO begins from here.

—	Phoenix	Taito	1980	....
—	Space Invaders Part 2	Taito	1980	....

Notes :
Gladiator / Great Gurianos JPN ver name "Oh-gon no Shiro(The Golden Castle)"
Renegade JPN ver name "Kunio-Kun"

A03	Water Ski	Taito	1983	....
A04	Chack'n Pop	Taito	1983	....Z80 .M68705 .AY8910 .AY8910
A10	The Tin Star	Taito	1984	....
A23	Rumba Ramba	Taito	1984	....
A24	Birdie King 3	Taito	1984	....
A26	Ben-Bero-Beh	Taito	1984	....
A30	40-0 / Fourty-Love	Taito	1985	....
A34	Metal Soldier Issac II	Taito	1985	..Z80x2 .... YM2149x2 MSM5232
A35	Samurai / Samurai Nippon-Ichi	Kaneko	1985	....
A37	Return of The Invaders	UPL	1985	....
A38	Yuke-Yuke Yamaguchi-Kun	Kaneko	1985	....
A39	Wyvern F-0	Taito	1985	....
A44	Space-Battleship Yamato	Taito	1985	.... .YM2203 ....
A45	Fairyland Story	Taito	1985	..Z80x2 .M68705 MSM5232 ....
A47	Tiger Heli	Toaplan	1985	....
A52	Onna Sanshiro	Taito	1985	..Z80x2 .M68705 MSM5232 ....
A54	Legend of Kage	Taito	1985	....Z80 .... .YM2203 ....
A62	Halley's Comet	Taito	1986	....
A64	Land Sea Air Squad	Taito	1986	....
A67	Big Event Golf	Taito	1986	....
A71	Scramble Formation / Tokio	Taito	1986	..Z80x2 ....Z80 .YM2203 ....
A72	The 26th Z	WP	1986	....
A75	Arkanoid	Taito	1986	....Z80 ....
A76	Alcon / Slap Fight	Toaplan	1986	....Z80 .... .AY8910 .AY8910
A77	Alcon / Slap Fight (JAMMA PCB)	Toaplan	1986	....Z80 .... .AY8910 .AY8910
A78	Bubble Bobble	Taito	1986	..Z80x2 ....Z80 .M68705 .YM2203
A85	Kiki Kaikai	Taito	1986	....Z80 ....Z80 .M68705 .YM2203
A87	Kick & Run	Taito	1986	....Z80 ....Z80 .YM2203 ....
A96	Darius / Darius EX	Taito	1986	MC68000 MC68000 ....Z80 .YM2203
A98	Plump Pop	Taito	1987	....Z80 ....Z80 .YM2203 ....

B02	Flying Shark/Hishou Zame/Sky Shark	Toaplan	1987	MC68000 ....Z80 .YM3812 ....
B03	Super Qix	Kaneko	1987	....Z80 ....
B04	Rastan / Rastan Saga	Taito	1987	MC68000 ....Z80 .YM2151 MSM5205
B06	Extermination	Taito	1987	....Z80 ....Z80 .YM2203 ....
B08	Arkanoid 2 / Revenge of Doh	Taito	1987	....Z80 ....Z80 .YM2203 ....
B12	Exzisus (???)	Taito	1987	....Z80 ....Z80 .M68705 .YM2151
B14	Top Speed / Full Throttle	Taito	1987	MC68000 MC68000 ....Z80 ....
B19	Dr.Toppel Adventure	Kaneko	1987	....Z80 ....Z80 .YM2203 ....
B20	Operation Wolf	Taito	1987	MC68000 ....Z80 .C-CHIP .YM2151
B22	Rainbow Islands / EX	Taito	1987	MC68000 ....Z80 .C-CHIP .YM2151
B23	Exzisus (???)	Taito	1987	....Z80 ....Z80 .M68705 .YM2151
B25	Pyros / The Forest of Wardona	Toaplan	1987	....
B30	Twin Cobra / Kyukyoku Tiger	Toaplan	1987	MC68000 ....Z80 .YM3812 ....
B31	Ninja Warriors	Taito	1987	MC68000 MC68000 ....Z80 .YM2610
B33	Continental Circus / Co. Circuit	Taito	1989	MC68000 MC68000 ....Z80 .YM2610
B35	Kageki	Taito	1988	....Z80 ....Z80 .YM2203 .YM3906
B36	Raimais	Taito	1988	....Z80 ....Z80 .YM2610 ....
B41	Bonze Adventure / Jigoku Meguri	Taito	1988	MC68000 ....Z80 .C-CHIP .YM2610
B42	Kuri Kinton	Taito	1988	....Z80 ....Z80 .YM2203 ....
B44	Chuka Taisen	Taito	1988	....Z80 ....Z80 .YM2203 ....
B50	Kabuki Z	Kaneko	1988	....Z80 ....Z80 .YM2203 ....
B51	Syvalion	Taito	1988	MC68000 ....Z80 .YM2610 ....
B52	Chase H.Q.	Taito	1988	MC68000 MC68000 ....Z80 .YM2610
B53	The New Zealand Story	Taito	1988	....Z80 ....Z80 .YM2203 ....
B56	Record Breaker / Go for the Gold	Taito	1988	MC68000 ....Z80 .YM2610 ....
B61	Superman	Taito	1988	MC68000 ....Z80 .C-CHIP .YM2610
B62	Top Landing	Taito	1988	MC68000 ....Z80 .YM2610 ....
B65	Truxton / Tatsujin	Toaplan	1988	MC68000 ....Z80 .YM3812 ....
B67	Operation Thunderbolt	Taito	1989	MC68000 ....Z80 .YM2610 ....
B70	Fighting Hawk	Taito	1989	....Z80 ....Z80 .YM2203 ....
B72	Master of Weapons	Taito	1989	MC68000 ....Z80 .YM2610 ....
B73	Heavy Unit	Kaneko	1988	....Z80 ....Z80 .YM2203 ....
B77	Aqua Jack	Taito	1989	MC68000 MC68000 ....Z80 .YM2610
B81	Rastan Saga 2 / Nastar Warrior	Taito	1989	MC68000 ....Z80 .YM2610 ....
B82	Final Blow	Taito	1989	MC68000 ....Z80 .YM2610 ....
B87	Twin Hawk / Daisenpu	Toaplan	1989	MC68000 ....Z80 .YM2151 ....
B90	Hellfire	Toaplan	1989	MC68000 ....Z80 .YM3812 ....
B91	Night Striker	Taito	1989	MC68000 MC68000 ....Z80 .YM2610
B93	Rambo 3	Taito	1989	MC68000 ....Z80 .YM2610 ....
B95	Don Doko Don	Taito	1989	MC68000 ....Z80 .YM2610 ....
B96	Plotting / Flipull	Taito	1989	....Z80 .YM2203 ....
B97	Insector X	Taito	1989	....Z80 ....Z80 .YM2203 ....
B99	Crime City	Taito	1989	MC68000 ....Z80 .YM2610 ....

C01	Champion Wrestler	Taito	1989	....Z80 ....Z80 ....Z80 .YM2203
C02	Dynamite League	Taito	1989	MC68000 ....Z80 .YM2610 ....
C04	Volfied	Taito	1989	MC68000 ....Z80 .C-CHIP .YM2610
C07	Darius 2 / Darius 2 Dual Screen	Taito	1989	MC68000 MC68000 ....Z80 .YM2610
C09	Chase HQ 2: Special Criminal Inv.	Taito	1989	MC68000 MC68000 ....Z80 .YM2610
C11	Mega Blast	Taito	1989	MC68000 ....Z80 .C-CHIP .YM2610
C12	Taito Tetris	Taito	1989	MC68000 ....Z80 .YM2610 ....
C16	Violence Fight	Taito	1989	MC68000 ....Z80 .YM2203 ..M6295
C17	Maze of Flott	Taito	1989	MC68000 ....Z80 .YM2151 MSM5205
C20	Puzznic	Taito	1989	....Z80 .M68705 .YM2203 ....
C21	Cadash	Taito	1989	MC68000 ....Z80 .YM2151 ....
C28	Thunder Fox	Taito	1989	MC68000 ....Z80 .YM2610 ....
C32	World Grand Prix	Taito	1989	MC68000 ....Z80 .YM2610 ....
C34	Battle Shark	Taito	1989	MC68000 ....Z80 .YM2610 ....
C38	Camel Try	Taito	1990	MC68000 ....Z80 .YM2610 ....
C41	Quiz Torimonochou (JPN Quiz)	Taito	1989	MC68000 ....Z80 .YM2610 ....
C43	Ashura Blaster	Visco	1990	MC68000 ....Z80 .YM2610 ....
C45	Air Inferno	Taito	1990	MC68000 ....Z80 .YM2610 ....
C47	American Horseshoes	Taito	1990	....Z80 .YM2203 ....
C49	Liquid Kids	Taito	1990	MC68000 ....Z80 .YM2610 ....
C53	Quiz HQ (JPN Quiz)	Taito	1990	....
C57	Space Gun	Taito	1990	MC68000 MC68000 .YM2610 ....
C59	Hit the Ice	Bally	1990	MC68000 ....Z80 .YM2203 ..M6295
C63	Palamedes	Taito	1990	....Z80 .YM2203 ....
C64	Super Space Invaders 91 / MJ12 / 4	Taito	1990	MC68000 ....Z80 .YM2610 ....
C69	Sonic Blast Man	Taito	1990	....
C71	Gun Frontier	Taito	1990	MC68000 ....Z80 .YM2610 ....
C73	W.G.P.2	Taito	1990	....
C74	Growl / Runark	Taito	1990	MC68000 ....Z80 .YM2610 ....
C77	Mahjong Quest	Taito?	1990	MC68000 ....Z80 .YM2610 ....
C80	Hat Trick Hero / Football Champ	Taito	1990	MC68000 ....Z80 .YM2610 ....
C81	Ah Eikou no Koushien	Taito	1990	MC68000 ....Z80 .YM2610 ....
C83	Yu-yu no Quiz de Go!Go! (JPN Quiz)	Taito	1990	MC68000 ....Z80 .YM2610 ....
C85	Ninja Kids	Taito	1991	MC68000 ....Z80 .YM2610 ....
C91	Solitary Fighter	Taito	1991	....
C92	Quiz Quest (JPN Quiz)	Taito	1991	MC68000 ....Z80 .YM2610 ....
C98	Pulirula	Taito	1991	MC68000 ....Z80 .YM2610 ....

D12	Metal Black / Gun Frontier 2	Taito	1991	MC68000 ....Z80 .YM2610 ....
D19	Quiz Chikyu Bouei-Gun (JPN Quiz)	Taito	1991	MC68000 ....Z80 .YM2610 ....
D20	Yes/No Mind Chart	Taito	1992	MC68000 ....Z80 .YM2610 ....
D21	Ring Rage	Taito	1992	MC68020 MC68000 ENSONIQ ....
D24	Warrior Blade	Taito	1992	MC68000 MC68000 ....Z80 .YM2610
D26	Mini Invaders (Test PCB)	Taito	1992	....
D27	Gun Buster	Taito	1992	....
D28	Dead Connection	Taito	1992	MC68000 ....Z80 .YM2610 ....
D29	Arabian Magic	Taito	1992	MC68020 MC68000 ENSONIQ ....
D34	Riding Fight	Taito	1992	MC68020 MC68000 ENSONIQ ....
D39	Dinorex	Taito	1992	MC68000 ....Z80 .YM2610 ....
D40	Grid Seeker: Project Stormhammer	Taito	1992	MC68020 MC68000 ENSONIQ ....
D46	Super Chase / Speed Chase	Taito	1992	MC68020 MC60000 MC68000 ENSONIQ
D48	Quiz Life Theater (JPN Quiz)	Taito	1992	MC68000 ....Z80 .YM2610 ....
D49	Hat Trick Hero 93/Taito Cup Finals	Taito	1992	MC68020 MC68000 ENSONIQ ....
D53	Top Ranking Stars/Primetime Fighters	Taito	1992	MC68000 MC68000 MC68000 ....
D55	Quiz Crayon Shin-Chan (JPN Quiz)	Taito	1992	MC68000 ....Z80 .YM2610 ....
D63	Crayon Shin-Chan 2 (not Quiz!)	Taito	1992	MC68000 ....Z80 .YM2610 ....
D66	Gun Lock / Ray Force	Taito	1993	MC68020 MC68000 ENSONIQ ....
D67	Under Fire	Taito	1993	MC68020 MC68000 ENSONIQ ....
D68	Super Cup Finals	Taito	1993	MC68020 MC68000 ENSONIQ ....
D69	Light Bringer	Taito	1993	MC68020 MC68000 ENSONIQ ....
D55	Quiz Show by Sho-bai (JPN Quiz)	Taito	1993	MC68000 ....Z80 .YM2610 ....
D77	Base Board F3-System	Taito	1994	MC68020 MC68000 ENSONIQ ....
D78	International Cup 94	Taito	1994	MC68020 MC68000 ENSONIQ ....
D84	Kaiser Knuckle / Global Champion	Taito	1994	MC68020 MC68000 ENSONIQ ....
D87	Darius Gaiden	Taito	1994	MC68020 MC68000 ENSONIQ ....
D89	Space Invaders DX (Single PCB)	Taito	1994	MC68000 ....Z80 .YM2610 ....
D90	Bubble Symphony	Taito	1994	MC68020 MC68000 ENSONIQ ....
D93	Space Invaders DX	Taito	1994	MC68020 MC68000 ENSONIQ ....
D94	Hat Trick Hero 95 / Power Goal	Taito	1995	MC68020 MC68000 ENSONIQ ....
D95	Quiz Theater: 3 Stories	Taito	1995	MC68020 MC68000 ENSONIQ ....

E02	Elevator Action Returns	Taito	1995	MC68020 MC68000 ENSONIQ ....
E06	Space Invaders 95 / Attkan Beda	Taito	1995	MC68020 MC68000 ENSONIQ ....
E08	Moriguchi Hiroko Quiz Woo! Hoo!	Taito	1995	MC68020 MC68000 ENSONIQ ....
E10	Puzzle Bobble 2 / 2 EX	Taito	1995	MC68020 MC68000 ENSONIQ ....
E11	Gekirindan	Taito	1995	MC68020 MC68000 ENSONIQ ....
E15	Twin Cobra 2 / Kyukyoku Tiger 2	Takumi	1995	MC68020 MC68000 ENSONIQ ....
E21	Bubble Memories	Taito	1995	MC68020 MC68000 ENSONIQ ....
E22	Psychic Force	Taito	1996	.R3000? ....Z80 .YM2610 ....
E22	Psychic Force EX	Taito	1996	.R3000? ....Z80 .YM2610 ....
E23	Side By Side	Taito	1996	....
E24	Raystorm	Taito	1996	.R3000? ....ZOOM ....
E25	Fighters' Impact	Taito	1996	.R3000? ....ZOOM ....
E25	Fighters' Impact A	Taito	1996	.R3000? ....ZOOM ....
E28	Cleopatra's Fortune	Taito	1996	MC68020 MC68000 ENSONIQ ....
E29	Puzzle Bobble 3	Taito	1996	MC68020 MC68000 ENSONIQ ....
E32	Magical Date	Taito	1996	.R3000? ....Z80 .YM2610 ....
E32	Magical Date EX	Taito	1997	.R3000? ....Z80 .YM2610 ....
E36	Arkanoid Returns	Taito	1997	MC68020 MC68000 ENSONIQ ....
E39	G Darius	Taito	1997	.R3000? ....ZOOM ....
E39	G Darius ver.2	Taito	1997	.R3000? ....ZOOM ....
E40	Kirameki Star Road	Taito	1997	MC68020 MC68000 ENSONIQ ....
E46	Puchi Carat	Taito	1997	MC68020 MC68000 ENSONIQ ....
E49	Puzzle Bobble 4	Taito	1997	MC68020 MC68000 ENSONIQ ....
E51	Pop'n Pop	Taito	1997	MC68020 MC68000 ENSONIQ ....
E61	Landmaker	Taito	1998	MC68020 MC68000 ENSONIQ ....

UA0	Thundercade / Special Force UAG	Seta	1987	....
UA2	Twin Eagle	Seta	1988	....
UAE	U.S. Classic Golf	Seta	1989	....
UA?	CAL.50	Seta	1989	....

???	B-Rap Boys	Kaneko	1991	....
???	Challenge Hitter	Taito	19xx	....
???	Chaos Heat	Taito	1998	....
???	Chase Bombers	Taito	199x	....
???	Dangerous Curves	Taito	199x	....
???	Dark Mist	Seibu	1986	..T5182 ....Z80 .YM2151 ....
???	Densha de Go!	Taito	199x	....
???	Densha de Go! EX	Taito	199x	....
???	Densha de Go! 2	Taito	199x	....
???	Densha de Go! 2 EX	Taito	199x	....
???	Double Axle	Taito	19xx	....
???	Electric Yo-Yo	Taito	198x	....
???	Enforce	Taito	1988	....
???	Galactic Storm	Taito	1992	....
???	Get Star	Toaplan	1986	....
???	Gyrodine	Toapla?	1984	....
???	Hot Smash	Taito	1987	....
???	Landing Gear	Taito	1995	....
???	Midnight Landing	Taito	1987	....
???	New York Captor / Cycle Shooting	Taito	1985	....
???	Parasol Stars (Prototype TG16)	Taito	199x	....
???	Power Wheels	Taito	19xx	....
???	Racing Beat	Taito	19xx	....
???	Rally Bike	Toaplan	1988	MC68000 ....Z80 .YM3812 ....
???	Revenge of Daikaiju	Taito?	1986	....
???	S.R.D.Mission	Taito	1986	....
???	Storming Party	Taito	1986	....Z80 .YM2203 ....
???	Super Dead Heat	Taito	1985	....
???	Super Dead Heat 2	Taito	1986	....
???	Super Football Champ.	Taito	1996	....
???	Super Ground Effects	Taito	1992	....
???	The First Funky Fighter	East.T	1993	....
???	Touch Down Pass	Taito	19xx	....
???	Van Allen Belt	Taito	1985	....
A??	Buggy Challenge	Taito	1984	..Z80x3 .AY8910 .AY8910 ....
A??	Gladiator / Great Gurianos	Taito	1986	....Z80 ....
A??	Great Swordsman	Taito	1984	....Z80 ....
A??	Renegade	Technos	1986	....
A??	The Athlete / Dai Undokai	Taito	1984	....
A80?	Violent Shooting	Taito	1986	....
B??	Asuka & Asuka	Taito?	1988	MC68000 ....Z80 .YM2151 ....
D??	Cachat	Taito	1993	Z80.... .YM2203 ....
D??	Euro Football Champ 92	Taito	1992	MC68000 ....Z80 .YM2610 ....
D??	Operation Wolf 3	Taito	1994	MC68000 ....Z80 .YM2610 ....
E??	Twin Qix	Taito	1995	MC68020 MC68000 ENSONIQ ....
E??	Side By Side 2 61	Taito	1998	....
E??	Ray Crysis	Taito	1998	....
E??	Operation Tiger	Taito	1998	....
E??	Psychic Force 2012	Taito	1998	....

20.2 NMK LIST - Antiriad & Raine Team

This is a small list of NMK boards. Please send any extra info.

Thanks to Noel Miruru for information on the games.

City Connection	Jaleco	19xx	....
Argus	Jaleco	19xx	....
Valtric	Jaleco	19xx	....
Psychic 5	Jaleco	19xx	....
Butasan	Jaleco	19xx	....
P-47	Jaleco	1988	....
Legend of Makai	Jaleco	1988	....
Task Force Harrier	UPL	1989	....
Saint Dragon	Jaleco	1989	....
Mustang	UPL	1990	....
Gun Dealer	Tecmo	19xx	....
Quiz Gakuen Paradise	Tecmo	19xx	....
Thunder Dragon	Tecmo	1991	....
Strahl	UPL	1992	....
Hacha Mecha Fighter	Tecmo	1991	....
Uchuu Senkan Gomora/Bio Ship Paladin	UPL	19xx	....
Saboten Bombers	Tecmo	19xx	....
Macross	Banpresto	19xx	....
Gun Nail	Tecmo	19xx	....
Quiz Panicuru Fantasy	?????	19xx	....
Thunder Dragon 2	Tecmo	19xx	....
Bomb Jack Twin	NMK/Tecmo	1993	....
Macross 2	Banpresto	19xx	....
Operation Ragnarok	?????	19xx	....
Rapid Hero	?????	19xx	....
P-47 ACE	Jaleco	19xx	....

21 List of supported games

See section «Games» in http://www.rainemu.com/

22 Disclaimer

22.1 Distribution

1. You may not distribute modified versions of the raine package. This means you must not remove any files, or add any files (especially not rom images).

2. You are encouraged to spread raine as you wish. However, you must not sell it in any way:
   If you wish to put it on a www site, that is ok, as long as there are not too many advert banners, misleading links, or other scams.
   If you wish to distribute it on a magnetic medium such as floppy disk or cd-rom, you must not charge more than the cost of the media and the packaging.

22.2 Rom Ownership

In most countries, it is illegal to own rom images for arcade games, unless you own the original arcade board too. Therefore, downloading roms for games you do not own is illegal and they should be deleted within 24 hours.

23 HTTP

RAINE OFFICIAL SITE: http://www.rainemu.com/ new releases and news appear here first.

RAINE SOURCEFORGE: http://sourceforget.net/projects/raine get the latest sources and join the development

HOW TO COMPILE RAINE: http://www.logiqx.com/HowTo/HowTo.shtml Logiqx also explains there how to download the latest raine source...

EASY EMU http://www.mameworld.net/easyemu/rainetut.htm A usefull link for beginners, with lots of pictures to help to setup raine properly...

RAINE SAVEGAMES AND PICTURES: http://www.rainemu.com/savegame/ Rare things...

STARSCREAM : http://lfx.org/ corlett/index.html Neill Corlett's asm 68k emulator (and kingdom grand prix...).

ARCADE ROMS FROM JAPAN: http://start.at/j-rom/ roms are available here

Raizing: http://www.vsa-ag.ch/r8zing/

ARCADE ROM HEAVEN: http://www.arcadeheaven.com/ roms are available here

BUB AND BOB: http://www.bubandbob.com/ bubble bobble and taito games site

EMUCAMP: http://www.emucamp.com/ emulator and news are available here

EMULATORS UNLIMITED: http://www.emuunlim.com/ emulator and news are available here

JOSEQ'S EMUVIEWS: http://www.emuviews.com/ news and forums

RETROGAMES: http://www.retrogames.com/ emulator and news are available here

ROMLIST: http://www.romlist.com/ we will miss you aracorn...

SYS2064: http://www.sys2064.com/ emulator and news are available here

TAITO JAPAN: http://www.taito.co.jp/ check the arcade history section

TEAM JAPUMP: http://www.rainemu.com/japump/ busy romdumpers

CLR MAME: http://www.mameworld.com/clrmame/ rom manager with raine romset support

ROMBUILD: http://www.logiqx.com/ rom rebuilder

ROM CENTER: http://www.romcenter.com/ rom manager with raine romset support