YP

COLLABORATORS

	TITLE : YP		
ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY		October 9, 2022	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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1.2 YP/Introduction

            The program YP is a player for
            YAFA
             animation files.
It has some features that let your AMIGA become a real multimedia machine:

-play directly from disk (only small pieces of the animation are loaded
 and displayed at a time, makes it possible to play _huge_ anims)
  or
 preload the complete animation for maximum playback speed

-can use all AGA screenmodes (all these Extra-LoRes, Productivity etc.)

-has a special batch file mode (used for sequences of animations that are
 to be played without a gap between each other)
 this feature is used in the animation shows 'Dataworld' and 'Wild Summer'
 by WK-Artworks (available for instance on Aminet)

-can play frame-synchronous sound effects (ProTracker modules, IFF samples)

1.3 YP/Requirements

                   Hardware

-MC68020 or higher
-AGA chipset
-recommended: FastRAM, HardDisk

Software

-AmigaOS V39 (3.0) or higher
-xpkmaster.library and compressors (LIBS:compressors/xpk????.library)
 if XPK compressed
                   YAFA
                    animations are to be played

Note to graphics card users

This program will (most probably) not work with graphics cards.
It accesses the AGA chipset on hardware level and uses low level system
routines in order to be most efficient. The main goal was to make the
player as fast as possible.
If you are a programmer and want to write a graphics card YAFA player you
are welcome to contact
                me
                . I'm going to support you with source code
and documentation.

1.4 YP/Usage

                 YP has two modes of operation:
 -single anim playing: YP <YAFA file> [options]
 -batch file processing: YP -batch <batch file> [general options]

Batch files have the same structure like the command line in single anim
mode (but without the program name 'YP' of course!), each line contains a
YAFA file name and corresponding anim options, sound options may also be
specified here (appended to any of the lines).
                batch file example
                If the first option is '-h' or '?' then YP will print the list of ←
                    options.

An ASL file requester opens if YP is started without any options, it lets
the user select a YAFA anim file. This requester also appears if a specified
YAFA anim file could not be found.

By default YP opens the so-called 'hardware-display' which is a LoRes screen
of the default monitor (PAL or NTSC). This makes it possible to zoom small
animations (not wider than 176 pixels) to full screen size with quite
reasonable speed (anim option
                -zoom
).
If an anim is in HAM or is wider than 352 pixels then YP automatically
switches to the so-called 'gfxlib-display', which can also be done by using
the
                -modeID
                 option. It supports the whole range of AGA screenmodes, but
it can't perform that zooming the 'hardware-display' can do.
A third display type supported by YP is the 'pubscreen-window' which is
activated by the
                -pubscr
                 option.

General options
The general options let you choose a type of display and other modes that
influence the behavior of YP for the whole time it is running.

                -pubscr
                 (or -ps) <name>

                -modeID
                 (or -mid) <hex number or 'req'>

                -info
                 (or -i)

                -wait
                 (or -w)

                -verbose
                 (or -v)

                -stats
                 (or -st)

                -nodeactivate
                 (or -nd)

                -fastblit
                 (or -fb)

                -scale
                 (or -sc)

                -fastXPK
                 (or -fx)

Animation options
The animation options are used to set buffer sizes and other things that

are specific for each animation (also important for batch files).

```
                -firstframe
                 (or -ff) <number>

                -lastframe
                 (or -lf) <number>

                -speed
                 (or -s) <number>

                -buffers
                 (or -b) <number>

                -asyncbuff
                 (or -ab) <number>

                -caching
                 (or -c)

                -loadall
                 (or -l)

                -zoom
                 (or -z)

                -dither
                 (or -d)
```

Sound options
The sound options are accepted in batch files and on the command line and
are used to make some noise while the anims are played.

```
                -module
                 (or -mod) <ProTracker module name> <startframe> <stopframe>

                -sample
                 (or -smp) <IFF sample name> <startframe> <stopframe> <channel>
                     <volume> <repeat>

                -executable
                 (or -exe) <command> <startframe>
```

Runtime controls
While YP is running it can be controlled via some keystrokes:
```
 F1..F10  set playback speed
 Space    pause/continue
 s        sleep
 n        next anim (in batch mode)
 ESC/LMB  exit
```

1.5 YP/Technical stuff

```
              Making it efficient

              Protecting the 'illegal' display against Intuition

              Built-in XPK routines
```

1.6   YP/Technical stuff/Making it efficient

```
Making it efficient

YP is programmed in C (gcc 2.7.0). The most CPU-intensive routines (such
as C2P, planar image zooming, Delta-decompression) are coded and carefully
optimized in assembler (ASM-One 1.25).
The 'realtime system' in YP has been developed during the last few months.
It is based on a VBlank interrupt for counting the speed values and switching
the screen buffers, a SoftInterrupt for transferring the frame from the load
buffer to the screen buffer (doing C2P, Delta-decompression etc.) and the OS
process itself for loading the frames using asynchronous I/O (sends DOS
packets to the filesystem).

I spent quite a lot of time on optimizing the player, and I think I nearly
reached the limit now. The major bottleneck is the slooooow Chip-RAM which
makes it impossible to play large anims (eg. 640x480x8) at high speed.
But this doesn't hurt too much as I think it is simply unreasonable to deal
with animations of that size on today's AMIGAs (I'm talking about full screen
action and not static presentations or titling).
A friend of mine has a 68060 with lots of Fast-RAM and a fast HD, and he can
play 'Dataworld' at 78fps on his A1200! So don't lament that YP runs too slow
on your machine...
```

1.7   YP/Technical stuff/Protecting the 'illegal' display against Intuition

```
                  Protecting the 'illegal' display against Intuition

The 'hardware-display' is a method normally used in demos: switch off
multitasking and bang in your own copperlists. The 'gfxlib-display' of YP
is also not very system conform, it is made with MakeVPort() and MrgCop(),
and then comes LoadView() and makes it visible.
These methods are quite efficient because they are on a very 'low level' in
the system software. The problem is that YP can't disable the multitasking
OS since it has to make use of it for loading and playing. But when the OS
is running other tasks can open screens, or the user could switch the
screens using <LCommand M>. This would definitely kill YP's display!
I experimented a while and found a good way to prevent other tasks from
destroying the 'illegal' display: YP installs it's own input handler at a
high priority that 'eats' all inputs, and LockIBase() makes it impossible
for Intuition to do anything. This works fine as far as I have tested it,
no screen blanker has a chance when YP is running :-)
Of course YP can't use Intuition itself when it has locked IBase, so one has
to be very careful when using the
              -executable
               option.
```

1.8   YP/YAFA file format

                    The animation file format YAFA is a try to develop a new standard ←
                        that is
able to supersede IFF-ANIM. The strength of YAFA lies in the great variety
of compression options which makes it easy to adapt anim files to certain
requirements. Massive compression using XPK may be the goal of the user of
a fast machine, while the user of a slower computer prefers faster playback
at the cost of less compression.
Delta-compression like it is used in IFF-ANIM and YAFA is useful for 'static
camera and some flying objects'-like animations, but it gains nothing at
'crazy camera flight through a tunnel'-like animations. IFF-ANIM offers no
alternative here, but with YAFA you can choose among the lots of XPK packers
that are available. When it comes to maximizing XPK compression ratios the
option to store the frames as chunky images is another switch to try.

YAFA features:

-bit depth 1...8 (2...256 colors, HAM6, HAM8)
-planar or chunky frames for all depths
-optional timecode-per-frame
-optional palette-per-frame
-optional Delta-compression
-optional XPK-compression
-annotations (similar to ANNO in IFF-8SVX)

Software developers!

The YAFA anim file format can be the replacement of IFF-ANIM. Please consider
implementing YAFA loaders/savers in your animation software in order to make
YAFA more popular and easier to handle. Player programs for graphics cards
are needed too.
There is a documentation on the YAFA file format available on Aminet:
 dev/misc/YAFA-doc.lha
For further help and support you are welcome to contact
                me
                    .

1.9   YP/Wildfire

Wildfire is the soon-to-be-released animation-processor and F/X-generator.

Some of the most amazing features are:
 -full support of the new and innovative YAFA-animation-format
 -fast converter handling YAFA- and ANIM-files and sequences
  of pictures (ILBM24, JPEG, datatypes) with many options
 -24bit-image-sequence-processor featuring about 30 F/X like
    -water, bump, text, wave, perspective,
    -compose, alpha, scale, rotate, balancing,
    -blur, morphing LUT's
 -creation of new complex effects by combining an unlimited
  number of the built-in F/X using several temporary buffers
 -time-dependant animation-parameters via so-called envelopes

```
-stunning preview-mode for all effects
-project-editor for creating impressive video-shows combining
 single animations (batch files for the player YP)
-filmstrip-window for easy timing of frame-synchronous sound-F/X
-Iconmanager allowing intuitive working using drag&drop
-configurable GUI with about 80 windows (no MUI, of course!)
-ARexx-Port which allows to control *all* functions of the program
-Toolkit to create custom-windows with several types of
 gadgets and graphical elements to add fully integrated
 program-extensions (eg. the included animation-transition-maker)
```
In a few words: It's *really* hard to exceed the program's limits.

It is planned to release Wildfire as Shareware, expect it to appear on Aminet
in January 97. The price for registering will be around DEM 50 (USD 35).

1.10 YP/Bugs, History

                  Known bugs

The 'gfxlib-display' still has some problems:
  -there is some annoying 'trash' between two anims in batch mode
  -palette-per-frame can cause problems with double-buffering
    (LoadRGB32() needs more time than the VBlank; currently I got no idea how
    to fix this, please contact
                  me
                   if you know how to switch colors and
    bitmaps simultaneously in a clean way using graphics.library)

History

v0.88 (Thu 26-Dec-96)
 -added "-fastXPK" unpacking routine for xpkRAKE
   (the original routine in the library modifies the packed data,
   this leads to checksum errors when using YP's "-caching" mode!)

v0.87 (Mon 11-Nov-96)
 -Workbench-startup added (featuring multiselect and tooltypes)
 -fixed "SeekAsync"-bug
 -implemented support for extended Delta-Compression format
   (one or two start-frames as delta-to-empty-frame or plain image)

v0.86 (Tue 29-Oct-96)
 -'-info' caused returncode 20
 -'-nodeactivate' was always on
 -fixed internal XPK routines using the original source codes
 -'-fastXPK' is now an official feature

v0.85 (Thu 26-Sep-96)
 -Aminet release

(no consistent history available)

many versions with lots of fixes and new features.

first version December 95, used for 'Dataworld' release at The Party 95

1.11   YP/Copyright, Distribution

                    Copyright

The program YP is Copyright (c) 1996 Michael Henke. All rights reserved.
Commercial use is prohibited, if you want to use it for commercial purposes
you have to get an explicit permission from the
                author
                 first.

YP is released as FREEWARE. It is allowed to charge a fee to recover
distribution costs, but no profit may be made by selling or otherwise
distributing the program. It is not allowed to distribute YP without this
documentation. Modified versions of the program may not be distributed.

It is not allowed to disassemble or otherwise reverse engineer the program.
If you are interested in the source code please contact the
                author
                .

Disclaimer

No guarantee is given nor implied that this program is fit for any use.
The program and the information within this text are provided on "AS-IS"
basis. The entire risk as to its quality and performance is with the user.
In no event will the author be liable for direct, indirect, incidental or
consequential damages resulting from any defect in the program. The author
reserves the right to make changes to the program or the documentation
without notice.

1.12   YP/Author

Main code and YAFA format development

Michael Henke (Smack/Infect)
Praetoriusstr. 1/205
06124 Halle/Saale
Germany

EMail: epgbd@cluster1.urz.uni-halle.de

Additional code and author of "WildFire - The animation processor",
creator of "DataWorld" - the animation demo released at "The Party 1995"

Andreas Maschke (WK-Artworks)
Zenkerstraße 5
06108 Halle/Saale
Germany

EMail: epgbc@cluster1.urz.uni-halle.de

1.13 YP/Option -pubscr

-pubscr (-ps) <name>

·activates the 'pubscreen-window' mode

·<name> is the name of the public screen, case-sensitive

·this display mode is rather experimental, it does not support double
 buffering which leads to a more or less annoying 'flickering'

1.14 YP/Option -modeID

-modeID (-mid) <hex number or 'req'>

·activates the 'gfxlib-display'

·the modeID is a hexadecimal number, don't use any prefixes (like $ or 0x)

·if 'req' (without the quotes) or an unavailable modeID is specified an ASL
 screenmode requester opens

·to get the modeID of a certain screen mode use 'req' and the
 option
            -verbose
            ·examples: LoRes   0
        HiRes-Laced   8004
        Multiscan Productivity 39024

1.15 YP/Option -info

-info (-i)

·print some information about the anim(s) (like
            -verbose
) but don't play

1.16   YP/Option -wait

-wait (-w)

·open a black screen before the first and after the last anim,
 continue with <Space>

·useful for video recording because you know exactly when the anim starts

·'hardware-display' only

1.17   YP/Option -verbose

-verbose (-v)

·print some information about the anim(s) and also some more warnings

1.18   YP/Option -stats

-stats (-st)

·print statistics (played frames, play time, frames-per-second) on exit

1.19   YP/Option -nodeactivate

                -nodeactivate (-nd)

·do not pause and restore system colors when window gets deactivated

·'pubscreen-window' only (option
                -pubscr
)

1.20   YP/Option -fastblit

                -fastblit (-fb)

·use faster blitting routine for copying image data into the window,
 this usually leads to even more 'flickering'

·'pubscreen-window' only (option
                -pubscr
)

1.21   YP/Option -scale

```
                     -scale (-sc)
```

·make the window resizeable, the anims are scaled to the current window size
 which is quite slow (thats why it's optional)

·'pubscreen-window' only (option
                     -pubscr
)

1.22   YP/Option -fastXPK

```
                     -fastXPK (-fx)
```

·use YP's internal unpacking routines (currently for FAST, NUKE and RAKE)
 instead of xpkmaster.library and the corresponding compressor libraries

·a significant speed increase can be achieved by this because using
 xpkmaster.library results in some overhead:
   -open/close the compressor library for each XpkUnpack() (=every frame!)
   -checksum the packed data before unpacking it
 the latter function can of course be considered as useful because it
 avoids crashing the unpacking routine on corrupted data, but if you are
 sure that a YAFA anim is not corrupted (after playing it without '-fx')
 the risk of crashing YP's unpacking routines should be nearly 0 (ZERO :-)

·the unpacking routines used in YP are based on these compressors:
   -xpkFAST.library V1.06 (27-Jul-94) by Christian von Roques
   -xpkNUKE.library V1.1 (02-Nov-92) by Urban Dominik Müller
   -xpkRAKE.library V1.7 (06-Sep-95) by Karsten Dageförde
 they were testet with many different files and seem to work well.
 if you encounter problems with them (an anim plays nice without '-fx' but
 crashes with it) then please contact
                     me
                       and also specify which versions
 of xpkmaster.library and the compressor were used for packing.

1.23   YP/Option -firstframe

```
-firstframe (-ff) <number>
```

·the first frame of the anim to be played,
 frames before this are skipped

1.24   YP/Option -lastframe

```
-lastframe (-lf) <number>
```

·the last frame of the anim to be played

·can be greater than the number of frames in the anim,
 playing will restart if necessary

1.25 YP/Option -speed

```
-speed (-s) <number>
```

·set the playing speed for the anim,
 overrides the value contained in the file

·the speed value is the number of video frames that each anim frame
 is shown, the smaller the value the faster it plays, minimum is 1

1.26 YP/Option -buffers

```
-buffers (-b) <number>
```

·set the number of frame buffers for the anim, default is 6

·the buffers are needed for smooth playing while loading from disk,
 the best number depends on several things (average loading speed,
 file system fragmentation, CPU and DMA speed etc.)

1.27 YP/Option -asyncbuff

```
-asyncbuff (-ab) <number>
```

·set the size of each of the two asynchronous load buffers for the anim,
 the number is in KBytes, default is 64

·large buffers can make loading faster (depends on drive, filesystem etc.),
 small buffers reduce memory usage but usually decrease loading performance

1.28 YP/Option -caching

```
-caching (-c)
```

·make YP load the complete anim to memory before starting to play

1.29   YP/Option -loadall

```
-loadall (-l)
```

·make YP load and XPK-decompress the complete anim before starting to play

1.30   YP/Option -zoom

```
-zoom (-z)
```

·do realtime 2x2 zooming while playing

·'hardware-display' only

1.31   YP/Option -dither

```
-dither (-d)
```

·do realtime 2x2 zooming with simple dithering while playing

·'hardware-display' only

1.32   YP/Option -module

```
-module (-mod) <file name> <start> <stop>
```

·the specified ProTracker module is loaded to Chip-RAM before anim playing
 starts

·module playing starts/stops when the specified anim frames are reached
 (NOTE for
            batch files
)

·modules are always loaded using XPK (so YP recognizes uncompressed and
 XPK- or PowerPacker-compressed files)

1.33   YP/Option -sample

```
-sample (-smp) <file name> <start> <stop> <channel> <volume> < ←
    repeat>
```

·the specified IFF-8SVX sample is loaded to ChipRAM before anim playing
 starts

·sample playing starts/stops when the specified anim frames are reached
 (NOTE for
                batch files
)

·channel is a number 0...3, volume is a number 0...64,
 repeat is a number: 0=loop forever, other=number of loops

·stereo samples are supported, channel has no meaning then because YP takes
 two channels for stereo playing automatically

·samples larger than 128 KBytes are not played correctly, this is due to
 some limitations in the AMIGA audio hardware

1.34 YP/Option -executable

                    -executable (-exe) <command> <start>

·the specified AmigaDOS command is executed when the anim frame <start>
 is reached (NOTE for
                batch files
)

·NOTE:
  use this with care when YP runs on 'hardware-display' or 'gfxlib-display'!
  the command may not do any output to a shell window,
  it may not do anything with windows and screens.
  (actually the complete Intuition system may not be used!
  see also
                tech stuff
)

·if <start> is 0 (zero) the command is executed _before_ the player's display
 is opened (it is allowed to use Intuition)

1.35 YP/Batch file example

    This is an example of a batch file used by YP:

---cut here-------
;
; comment lines have a ';' as first character

; empty lines are allowed too
; every (real) line contains one animation (and maybe anim options)
; sound options can be appended to every animation line
;   NOTE: in batch files the start/stop frames for sounds
;   are frame numbers in the whole anim sequence

```
;                 rather than frame numbers of individual anims
ram:example1.yafa -c -lf 200  -mod ram:mod1 1 500
ram:example2.yafa -z -ff 20 -lf 400
---cut here-------
```