Metro

	COLLABORATORS		
	TITLE : Metro		
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Contents

Chapter 1

Metro

1.1 Metronome v1.0 © Michael W. George 1994

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             METRONOME v1.0

      (One of those things that goes click!)

    © Michael W. George 1994
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Introduction

Features

Machine Requirements

Installing

Usage

Advanced Usage

Future Ideas

Development and Testing

Bugs and Suggestions

Acknowledgements

Contacting me

1.2 Introduction

This is the first release of Metronome.
I started writing it earlier this year just before my finals at university
and have just got round to finishing it!
It's only my second reasonable sized Amiga project and I've improved on the
areas which were lacking on my first project... the UI for starters.

Everything is copyright of me 1994, but can be freely distributed so long
as the archive is kept intact and unchanged.
You are not allowed to make any profit by selling it... only a reasonable
fee for media and duplication may be charged.
The usual disclaimers apply to Metronome; I cannot be held resposible for
any damage to your machine or loss of data through it's use.

This program is CoolWare! Send me an e-mail saying 'Cool' if you like it :-)
Better still, send me a postcard of where you live (still say 'Cool'!).

The
                icons
                are for use with
                MagicWB
                which is why the colours look a bit
funny on a normal Workbench.

1.3   The icons used by Metronome

The icons provided are in the XEN style used by MagicWB. To see them in the
correct colours you will need Workbench to use the MagicWB palette.

The Amigaguide and drawer icons have come from MagicWB itself (v1.2p) by
Martin Huttenloher.

I made the main icon for Metronome from a Music ED icon created by someone
called Miki, and the MagicWB clock icon by Martin Huttenloher.

The sample icon came from Osma Ahvenlampi's TauIcons archive (fifth release).

1.4   About Magic Workbench

MagicWB is a set of replacement icons and backgrounds created by Martin
Huttenloher which vastly improve the look of the Amiga Workbench.

He has created a special colour scheme for these icons and if your Workbench
isn't using the correct colours you will not benefit from the intended look
of the icons. If you have not seen MagicWB, then you ought to get hold of
it and consider registration.

1.5   Features of Metronome

Aswell as going click like the original metronome (which was ←
patented by

Maelzel in 1815) my metronome also has some additional features:

- It has a nice GUI (well, I think so anyway!).

- It is fully multitasking and can run on any public screen.

- The GUI complies with the guidelines in Commodore's Style Guide.
  It is font sensitive; using your preferred proportional font and
  reverts to topaz8 if it will not fit on the screen.
  It also looks correct for any screen depth and appears in the visible
  part of autoscroll screens.

- The GUI is slightly improved on WB3 machines... you get a coloured LED.
  Wow! The other side effect of this is that because it gets a lock on the
  palette entry and changes it's colour in the palette (not drawing into
  the GUI) the metronome doesn't stop when you use menus or cycle-to-menu.
  This is only if you get a two shade coloured LED though...

- It's configurable via Workbench Tooltypes and CLI Arguments.

- It can use any
                    IFF 8SVX
                    or
                    RAW
                    sample.

- It has an ARexx port allowing programmed rhythms and automated control
  of the GUI.

1.6   IFF 8SVX Samples

Many people have the misconception that IFF files are picture files.
They are not... they can be anything – pictures, sound, text, 3D objects etc.

The most commonly used sample format used on the Amiga is 8SVX which is an
IFF. Aswell as the actual sample waveform the file can contain the name,
sample rate, comments for a sample and many other things.

1.7   RAW Samples

Unlike 8SVX samples, RAW sample files are just the waveform for the sample
and do not contain any other information. They are always 8363Hz.

1.8   Machine Requirements

Metronome requires Workbench 2 or higher to run. That's it!
Well, to be more specific it requires Kickstart 2.04+ (not Kickstart 2).

If you still have a Workbench 1.x machine, then upgrade now...
You have no excuse now that Workbench 3 upgrades are available for all types
of machine!

The full list of machines that Metronome has been tested on is pretty big,
so I won't list them all here!

It has been tested on various different A500s, A600s, A1200s, A2000s and
A4000s. These have covered all of the different Kickstarts and Workbenches,
many different processors/accelerators and a variety of memory configurations.
The minimum spec machine was an A500 with .5Mb Chip RAM, a single disk drive,
Kickstart 2.04 and Workbench 2.1.

1.9   Installing Metronome

The fact that you are reading this means it has been installed!

If you have got this from a PD library on disk, then just copy the entire
contents of the Metro drawer to somewhere on your HD as described in your
AmigaDOS or Workbench manual.

I would also recommend that you get Cycle-to-Menu (which is currently on
version 2.1). This enhances GadTools cycle gadgets by turning them into
pop-up menus and is of benefit to any application that uses GadTools, not
just Metronome.

1.10   Using Metronome

                    Metronome can be loaded from either the CLI or Workbench:

Loading from the CLI

- type metro and press return.

Loading from Workbench

- Double click on Metro's icon.

Once Metronome is loaded it should open it's GUI and you'll be off.
If you are presented with an
                error message
                then something has gone wrong.
This is most likely to be caused by low memory.
If this happens, quit another application and try to load Metronome again.

The User Interface

I've tried to make the interface as easy to use as possible and gadgets have

been split into groups according to their function.

You will also notice that certain options such as the tempo, volume and
balance have several gadgets; a slider, number gadget and +/- buttons.
These give you the option of several ways to change the attribute's value.

Keyboard shortcuts are also provided for all functions.
Pressing the key marked (by underlining) activates the gadget or, in the case
of groups of gadgets which increase/decrease a value, pressing the unshifted
key increases the value and pressing the shifted key decreases it.

The groups of gadgets are detailed below:

SPEED

The gadgets in the speed group control how fast the metronome goes.

- The tempo gadgets change the tempo. That is, the number the crotchets (also
  known as quarter notes) in a minute.
  If your music specifies the number of minims per minute, then double the
  number to give the number of crotchets.

- The note gadgets specify what type of note you want to be played.
  Specifying crotchets will play crotchets, minims will play minims etc.

Note: I haven't used words like largo, allegro etc. for tempo because they
      are not very precise and vary too much from one book to another.

SOUND

These gadgets affect the sound that you hear.

- The sample is the actual sample used. A new sample can be loaded by typing
  it's name into the string gadget or pressing the '?' button to bring up the
  standard ASL file requester.
  Trying to load a very big sample may result in the IFFParse library failing
  to load it (due to lack of memory) or there not being enough chip memory to
  store it in.

- The volume ranges from 0 for off to 64 for full.

- The balance ranges from 0 for left to 64 for right (32 is dead centre).

CONTROL

These gadgets control the metronome.

- 'Start' and 'Stop' are used to start and stop the metronome.

- 'About' gives information about Metronome and the currently loaded sample.
  The sample length given is the actual length of the sample... not of the
  whole IFF 8SVX file.

- 'Quit' asks for confirmation then quits Metronome.

The Menus

Some functions from the main window are also available from the menu strip,
but there also some functions only available from the menus.

File

These options are all available from the main window:

Load Sample, Start, Stop, About and Quit.

Settings

These options are to configure Metro to your own preferences.

- LED Colour.
  If you have Workbench 3 then you can have a red, yellow or green LED.
  However, this is only possible if there is a free palette entry that
  Metronome can obtain for it's own use, or a suitable shareable colour
  already in the palette.
  If you do not get a coloured LED, then increasing the number of screen
  colours should solve the problem.

- Note names.
  You can choose whether the text in the note gadget uses the English names
  (crotchet, quaver etc), American style (whole note, quarter note etc) or
  both.

- Bounce Sample.
  When this option is switched on the sample bounces from one speaker to the
  other. It actually bouncers around 32, so you can set the proportion for
  each speaker before starting the metronome.

  Note: This option introduces the problem of the right mouse button stopping
        the Metronome (like on WB2 machines normally).
        This is because it needs to redraw the balance slider each click.

- LED.
  This option is of most use to users with WB2 machines.
  By making the LED inactive the metronome doesn't stop when you move the
  window or use the menus.

- Low pass filter.
  The Amiga audio circuitry includes a
                  low-pass filter
                  which can be turned
  on or off. This option toggles it's state.

- Auto Load RAW.
  This option allows Metronome to automatically load RAW samples after
  discovering that they are not an IFF sample. This does however mean that
  you can accidently load anything as a sample and will hear an infernal
  racket!
  By default you are asked whether you would like to load a sample as RAW

```
  data if it is not an IFF 8SVX sample.

- Auto Load Bad 8SVX.
  This option allows Metronome to automatically load 8SVX samples which
  contain an error.
  By default the error is reported to you and you are asked if you would
  still like to try to use the sample.


All attributes and settings can be set up when Metronome is loaded by using

                CLI Arguments
                and
                Workbench Tooltypes
                 .

The provision of an
                ARexx Port
                also means that Metronome can automatically
be controlled from an ARexx script or another application supporting ARexx.
```

1.11 Error Messages

```
There are should only be two times that you may get an error message:

- Initial loading of Metronome.
- Loading a sample.


Errors when loading Metronome

This may be failure to successfully open a library, failure to allocate memory
or problems creating the user interface (which is also due to memory).

If a library can't be opened, then you either don't have it installed on your
system (you should because I am only using Commodore libraries), or you have
an old version of the library.

Any other error reports will say exactly what the problem was, but will most
likely be as a result of low memory.
If this happens, try quiting another application before loading Metronome.


Errors when loading Samples

The only message that you are likely to see is 'File is not an IFF. Should I
load it as a RAW sample? Yes/No".
If you know that the file is a sample, then select yes and the sample will be
loaded as RAW sample data.

If you do not want to give confirmation to load RAW samples every time, then
turn the 'Load RAW' option from the settings menu on.

The other error messages are all very specific and will only appear when the
IFF 8SVX file is damaged/corrupt.
```

The sample may still be usable though and Metronome will tell you what is
wrong with it and ask if you want to try to use it.

Metronome can automatically try loading these files without bringing up the
requester by selecting the 'Load Bad 8SVX' option from the settings menu.

1.12   The Low-pass Filter

The low-pass filter reduces aliasing and distortion when playing back samples.
This has the effect of dampening sounds and it is often best to turn it off
so that sounds are brighter.

For those would like to know, the low-pass filter becomes active at around
4KHz and gradually begins to cut off the signal.
The higher the frequency, the more that it is attenuated (cut off).

1.13   Advanced Usage of Metronome

                    All attributes and settings can be set up when Metronome is loaded ←
                        by using

                     CLI Arguments
                     and
                     Workbench Tooltypes
                    .

The provision of an
                    ARexx Port
                    also means that Metronome can automatically
be controlled from an ARexx script or another application supporting ARexx.

1.14   CLI Arguments

All settings for Metronome can be initialised to any value that you wish when
it is loaded from the CLI by providing additional arguments:

eg. metro tempo=60 pubscreen=DOPUS.1 nofilter
    This will force Metronome to open on Directory Opus' screen with an
    initial tempo of 60 and the low-pass filter turned off.

To see all possible arguments type 'metro ?' and press return.
This will show you:

TEMPO/N,NOTE/N,SAMPLE/K,VOLUME=VOL/N,BALANCE/N,AUTOSTART=START/S,PUBSCREEN/K,
LEDCOLOUR/K,NOTENAMES/N,LEDACTIVE/S,LEDINACTIVE/S,BOUNCESAMPLE/S,FILTER/S,
NOFILTER/S,LOADRAW/S,LOADBAD/S:

The possible values for these arguments are listed below:

```
Parameter    Possible values    Default value

TEMPO/N    40..208        96
NOTE/N     1, 2, 4, 8, 16 or 32    4 (crotchet)
SAMPLE/K    <file name>    DEFAULT.SAMPLE
VOLUME=VOL/N    0..64        64 (max)
BALANCE/N    0..64 (0=left, 64=right)  32 (centre)
AUTOSTART=START/S        NO
PUBSCREEN/K    <screen name>    Workbench
LEDCOLOUR/K    RED, YELLOW or GREEN    GREEN
NOTENAMES/N    1, 2 or 3    1
LEDACTIVE/S        YES
LEDINACTIVE/S        NO
BOUNCESAMPLE/S        NO
FILTER/S        YES
NOFILTER/S        NO
LOADRAW/S        NO
LOADBAD/S        NO
```

1.15 Workbench Tooltypes

In a similar way that you can give initial settings to Metronome using CLI
arguments you can use Workbench tooltypes.

The tooltypes are saved with Metronome's icon and can be viewed by clicking
on the Metro icon, then choosing the 'Information' option from the Workbench
'Icon' menu.

The different tooltypes are given below with their possible values:

```
Tooltype    Possible values    Default value

TEMPO    40..208        96
NOTE     1, 2, 4, 8, 16 or 32    4 (crotchet)
SAMPLE    <file name>    DEFAULT.SAMPLE
VOLUME=VOL    0..64        64 (max)
BALANCE    0..64        32 (centre)
AUTOSTART=START   YES or NO    NO
PUBSCREEN    <screen name>    Workbench
LEDCOLOUR    RED, YELLOW or GREEN    GREEN
NOTENAMES  1, 2 or 3    1
LED    ACTIVE or INACTIVE    ACTIVE
BOUNCESAMPLE    YES or NO    NO
FILTER    ON or OFF    YES
LOADRAW    YES or NO    NO
LOADBAD    YES or NO    NO
```

By the use of tooltypes you can also create configuration files for
Metronome (an example of this being the TickSecs icon provided).
Double clicking on TickSecs will load Metronome using the settings defined
by TickSecs.
This is because the tooltypes in the TickSecs icon override the ones given

in the Metronome icon (and the internal defaults in the program).

By copying TickSecs.info and editing the that new icon's tooltypes you can
create your own settings file.

If you do this, then you may wish to store these configuration files in a
different directory to that of Metronome. In this case you will need to add
the following line to your s:user-startup script:

path <full path of Metronome directory> add

1.16 ARexx Port

Metronome has an ARexx port named METRO.x, where x is the instance of
Metronome (so it is normally called METRO.1).

The command set is listed below:

Command   Possible values   Function

TEMPO   40..208   Set the tempo
NOTE   1, 2, 4, 8, 16 or 32 Set the note type
LOADSAMPLE <file name>   Load a different sample
VOLUME   0..64   Set the volume
BALANCE   0..64   Set the balance

LEDCOL   RED, YELLOW or GREEN Set the LED colour (WB3 only)
NOTENAME 1, 2 or 3   Set the text in the note cycle gad
LEDACTIVE   Make the LED active
LEDINACTIVE   Make the LED inactive
BOUNCESAMPLE   Turn 'bounce' option on
NOBOUNCESAMPLE   Turn 'bounce' option off
FILTER   Turn the low-pass filter on
NOFILTER   Turn the low-pass filter off
LOADRAW   Automatically load of RAW samples
NOLOADRAW   Confirmation to load RAW samples
LOADBAD   Automatically load of bad samples
NOLOADBAD   Confirmation to load bad samples

QUIT   Quit Metronome
START   Start Metronome
STOP   Stop Metronome
WAITTICKS 1..32   Wait for x ticks to be started
NOMORETICKS   Stop Metronome (let sample finish)

Note: Any commands which change a sound or the tempo will take effect from
      the next tick. The WAITTICKS command returns as soon as the last tick
      is started, so by changing the volume/tempo etc. after WAITTICKS the
      volume/length of the next sound will be affected.

      Using the LOADSAMPLE command on a floppy system may not work properly
      because it isn't possible to load the sample fast enough.
      This means that the old sample is played on the next tick aswell and the

```
        next WAITTICKS command will have missed one (or more) ticks.
        If you do not have a hard drive and would like to use ARexx scripts
        similar to example4.rexx, then place the samples in a RAM disk.

        I have not included any commands to read settings because I can't think
        of any need for them. If you can, then tell me and I can include them!
```

I have provided a few demonstration ARexx scripts as examples.
To run them you will need RexxMast running (I actually have this in my
WBStartup drawer) and Metronome loaded.

Open a shell and change directory to where the scripts are by 'cd Metro/Rexx'

Run scripts by typing 'rx <scriptname>'.

1.17 The Future

Metronome is pretty complete in it's current form and has several nice
features already. However, there is still room for improvement and a few
additions that I have thought of or have been suggested to me are:

User Interface

- Icon for sample load button.
- Icon selection of note type (like selection of font style on Word etc).
- Show gadget selection when using keyboard shortcuts.
  (This isn't supported by GadTools yet... I'd need to find another method)
- Improve the flashing LED... not just have it on while the sample is playing.
- Asynchronous requesters.
- Ability to save current settings and window positions.
- True iconify with flashing LED on the icon.
- Ability to move the UI from one public screen to another.
- Locale Support

Samples

- Mono playback option (aswell as the stereo panning method already used).
- Slider to change the pitch of the 8SVX sample/playback rate of RAW sample.
- Support samples which are compressed using Fibonacci-delta compression.
- Support for stereo samples.
- Support for other sample formats? (MED Synth, AIFF, SAMP etc).
- Use optional chunks in 8SVX files? (CHAN, PAN, SEQN, FADE etc).
- Play samples longer than 32k (ie. double buffered audio requests).
- Load as much of a large sample as possible (instead of none).
- 12 bit/16 bit sample support.

General

- LED flash only (similar to LED on/off option, but for the sample).
- Display the total playing time.
- Multiple loaded samples.
- Programmable rhythms.

– MIDI support.

1.18   Development and Testing

```
                  DEVELOPMENT SYSTEM

Hardware

Commodore Amiga 4000/030:

  25Mhz 680EC30 CPU
  25MHz 68882 FPU
  2Mb Chip RAM + 4Mb Fast RAM
  Kickstart v39.106
  Workbench v37.67


Software

SAS/C v6.51 – SAS Institute 1994
Mungwall 37.64 – Commodore-Amiga, Inc. 1993
SnoopDOS 2.0 – Eddy Carroll 1994
StackCheck v1.0 – Günther Röhrich
CheckGuide 1.0 – Eddy Carroll 1994


TESTING

I have tested Metronome on as many different machines as I can.
See
                machine requirements
                for a full list.

Metronome has been tested with Mungwall and doesn't cause any hits.
I don't know if it causes any Enforcer hits though because I don't have a
machine with an MMU!

An A500 plays semiquavers perfectly at a tempo of 185... above that and it
starts getting a bit irregular (not that you'd ever want it to play that
fast anyway!). My A4000/030 handles any speed perfectly and I expect that
anything with a 14MHz 68000 or better will do to.
```

1.19   Sending Suggestions and Bug Reports

```
            Even though I have made a great effort to remove all possible bugs ←
                and make
this program bullet-proof it is still possible that there could be some
bugs or glitches left.

If you have any problems or suggestions, then either send an e-mail or send
snail mail to me at my
                address
```

```
                    (given the end of this document).
```

1.20   Acknowledgements

```
The claves sample came with an old version of MED.
I hope that Teijo doesn't mind me using it!

The other two samples came from a disk called ST-01...
I don't know if it is a standard sample disk, but there you go!


Thanks go to:

- Everyone on CIX who has tested Metronome on their machines for me:
  Rob Baxter, Peter Darton, Christopher Rea, Matthew Walker, Richard Waspe
  and Martin Watson.

- Mike Sinz for the SimpleRexx code which has enabled me to put an ARexx port
  onto this program.

- Martin Huttenloher, Osma Ahvenlampi and Miki for their icon colections.

- The SAS Institute for their great C compiler.

- Commodore for the Amiga.

- Everyone who has written utilities that I use on the Amiga.
```

1.21   My Contact Address

```
If you use Metronome, then please do register by sending me an e-mail or
postcard.

Having plenty of people write to me will make the time and effort that I
have put into the development of Metronome worthwhile. This will also ensure
that I continue work on Metronome and other projects that I plan to do in the
future.

That's all I ask... Thanks!


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