Core Toolchain Setup

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  for MIOS32 application development on Linux
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Preparation

This document assumes that you have a relatively modern x86 based linux distribution. While it may work other distributions, it has only been tested on x86 Ubuntu 10.10. Many of the commands, especially “aptitude” are only available on Debian derived distributions like Ubuntu.

Linux Utilities

subversion

You will need to install subversion to download the svn repository

- sudo aptitude install subversion

wget

Wget is a useful tool for downloading files from the Internet and can be downloaded with:

- sudo aptitude install wget

Required Stuff

Download the MIOS32 repository

Create a directory to download the toolchain to (~/midibox is my personal favourite). and download the repository:

- mkdir ~/midibox
- cd ~/midibox
- svn checkout svnmios.midibox.org/mios32

```
(If that doesn't work try:)
* svn checkout svn://svnmios.midibox.org/mios32/
```

Linux build utilities

Terminal commands for installing basic build tools like “make”:
* **Debian/Ubuntu/Mint:** *sudo aptitude install build-essential*
* **Arch Linux/Manjaro:** *sudo pacman -S base-devel*

GNU Multiple Precision Library

Terminal Commands:
* **Arch Linux/Manjaro:** *sudo pacman -S gmp*
* **Debian/Ubuntu/Mint:** *sudo aptitude install libgmp3-dev* (or *lib32gmp3-dev* for AMD64Version)
Ubuntu, Mint troubleshoot: if it still doesnt build(make) it might be that you use a 64bit Computer, but the toolchain is for 32bit, so you will need additonal following commands:
sudo dpkg –add-architecture i386
sudo apt-get update
sudo apt-get install libc6:i386 libstdc++6:i386 zlib1g:i386
sudo apt-get install libc6:i386

MIOS32 Toolchain

The MIDIbox community have created a modified GNU Compiler Collection, ready for use with the ARM Cortex M3 platform. The toolchain contains all of the tools required to build MIOS32 applications including GCC and NEWLIB.

The Toolchain has currently been compiled for Windows (2000+), Mac OS X (Leopard or newer) and Linux x86 (built on Ubuntu 10.10).

The download directory for the toolchain is http://www.midibox.org/mios32_toolchain

Download the latest “linux” file and extract into your favorite directory, If you extract into /usr/local the toolchain will create /usr/local/mios32_toolchain and various sub-directories containing the toolchain files.

- cd /usr/local
- sudo wget http://www.midibox.org/mios32_toolchain/gcc-arm-none-eabi-xxxxxx.tar.bz2
- sudo tar zxvf gcc-arm-none-eabi-xxxxxx.tar.bz2

replace xxxxxxx with the date of the latest linux toolchain in
http://www.midibox.org/mios32_toolchain

You now need to set the path variable for the toolchain bin directory (/usr/local/mios32_toolchain/bin) this is covered in the next section

Environment Variables

If you are using the default bash shell then setting up path variables in the shell is quite easy, in a terminal window just type:

- export VARIABLE_NAME=something

and if you want to check to what the variable has been assigned, type:

- echo $VARIABLE_NAME

this will print what's inside the variable. For example, type:

- export MIOS32_PATH=~/svn/mios32/trunk

to set up the mios32 folder path, then type

- echo $MIOS32_PATH

Adding to the path

To temporarily add the mios32_toolchain bin directory to the path, type:

- export PATH=$PATH:/usr/local/mios32_toolchain/bin

to check that the path variable has been assigned type:

- echo $PATH

You should see the toolchain directory at the end of the path

Setup MIOS32 Environment

The following commands will setup the build environment for MIOS32, you must change MIOS32_PATH to be wherever you installed the svn repository:

- export MIOS32_PATH=~/midibox/mios32/trunk
- export MIOS32_BIN_PATH=$MIOS32_PATH/bin
- export MIOS32_GCC_PREFIX=arm-none-eabi
- export MIOS32_FAMILY=STM32F10x
- export MIOS32_PROCESSOR=STM32F103RE
- export MIOS32_BOARD=MBHP_CORE_STM32
- export MIOS32_LCD=universal

You can add these lines to your ~/.profile file to ensure that they are always set, the editor pico (or nano) is a fairly simple text editor but you may have your favourite.

If you know what you are Doing in Linux-you can do this systemwide:
open your filebrowser with sudo rights, for example type in terminal:
* **Linux Mint:** *sudo nemo*
* **Linux Arch:** *sudo thunar*
the filebrowser now opens with root rights, navigate to the folder “etc” open the file “environment” »> **/etc/environment**
Depending on the path where your toolchain is situated, the Example Content off this file is:

- PATH=“/home/autark/midibox/gcc-arm-none-eabi/bin”
- MIOS32_PATH=/home/autark/midibox/mios32
- MIOS32_BIN_PATH=/home/autark/midibox/mios32/bin
- MIOS32_BOARD=MBHP_CORE_STM32F4
- MIOS32_FAMILY=STM32F4xx
- MIOS32_GCC_PREFIX=arm-none-eabi
- MIOS32_PROCESSOR=STM32F407VG
- MIOS32_LCD=universal

if you cant log after reboot, then mostly you messed up your “PATH” variable, in this case, boot with Linuxbootstick, and remove the PATH - line…

you can also add more folders to the PATH, they are separeted with a “:”, for example:
* PATH=“/home/autark/midibox/gcc-arm-none-eabi/bin:/home/autark/program”
here we also have a folder named “program”, when you put in there “Mios Studio”, then you can write in Terminal “Mios Studio” and mios studio will open

Building your first application

Once you have completed the above steps, you should be able to build your first application.

- cd $MIOS32_PATH/apps/tutorials/001_forwarding_midi
- make

if this works great! If not, either you made a mistake (or I did!!)

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