

0x03684280 [0,0]

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loader

<https://github.com/GadgetFactory/Papilio-Loader/pull/6>

```
dpavlin@blue:/blue-zfs/FPGA/Papilio$ git clone https://github.com/GadgetFactory/Papilio-Loader.git
dpavlin@blue:/blue-zfs/FPGA/Papilio$ cd Papilio-Loader/papilio-prog
dpavlin@blue:/blue-zfs/FPGA/Papilio/Papilio-Loader/papilio-prog$ git checkout -b revert-libftdi2
dpavlin@blue:/blue-zfs/FPGA/Papilio/Papilio-Loader/papilio-prog$ ./autogen.sh
dpavlin@blue:/blue-zfs/FPGA/Papilio/Papilio-Loader/papilio-prog$ ./configure && make

# check compiled binary
dpavlin@blue:/blue-zfs/FPGA/Papilio/Papilio-Loader/papilio-prog$ ./papilio-prog -v -j
Using built-in device list
JTAG chainpos: 0 Device IDCODE = 0x24001093      Desc: XC6SLX9
USB transactions: Write 3 read 2 retries 1
```

ZAP IDE

compilation

```
dpavlin@blue:/blue-zfs/FPGA/Papilio$ git clone https://github.com/GadgetFactory/ZAP--ZPUino-Arduino-Papilio--IDE/build/
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build$ ant

dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux$ ln -s zpu_tools
```

fix papilio-prog to use Linux binary

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux/work$ vi ./hardware

# fix papilioprogram to papilio-prog
tools.papilioprogram.cmd=papilio-prog

# remove .exe from this line
```

```
tools.papilioprogrammer.erase.pattern="{path}/bin/papilio-prog" -c
```

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux/work$ chmod 755
```

```
# copy compiled papilio-prog to correct location and fix permissions
```

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux/work$ cp ../../..
```

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux/work$ chmod 755
```

running IDE

Run arduino GUI:

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux/work$ ./arduino
```

Compilation works, but programming doesn't with error:

```
Board: Unknown board @ 96000000 Hz (0xa4041700)
```

so, let's rebuild zpu programmer

<http://forum.gadgetfactory.net/index.php?/topic/1588-how-to-program-the-arduino-sketch-for-zpuino-to-the-s>

```
dpavlin@blue:/blue-zfs/ZPUino/ZPUino-HDL/zpu/hdl/zpuino/programmer$ git remote -v
```

```
origin https://github.com/alvieboy/ZPUino-HDL/ (fetch)
```

```
origin https://github.com/alvieboy/ZPUino-HDL/ (push)
```

```
dpavlin@blue:/blue-zfs/ZPUino/ZPUino-HDL/zpu/hdl/zpuino/programmer$ autoreconf --install
```

```
dpavlin@blue:/blue-zfs/ZPUino/ZPUino-HDL/zpu/hdl/zpuino/programmer$ ./configure
```

```
dpavlin@blue:/blue-zfs/ZPUino/ZPUino-HDL/zpu/hdl/zpuino/programmer$ make
```

```
dpavlin@blue:/blue-zfs/ZPUino/ZPUino-HDL/zpu/hdl/zpuino/programmer$ cp zpuinoprogrammer /blue-zfs
```

```
# this one is for already built version
```

```
dpavlin@blue:/blue-zfs/ZPUino/ZPUino-HDL/zpu/hdl/zpuino/programmer$ cp zpuinoprogrammer /blue-zfs
```

program boot file (IDE doesn't have permission to do so)

```
dpavlin@blue:/blue-zfs/FPGA/Papilio$ ./papilio-prog -v -f ./zap-2.0.5/hardware/zpuino/zpu/bootloaders/lx9/zpuino-1.0-PapilioPro-S6LX9-RetroCade-
Using built-in device list
```

```
JTAG chainpos: 0 Device IDCODE = 0x24001093 Desc: XC6SLX9
```

```
Created from NCD file: papilio_pro_routed.ncd;UserID=0xFFFFFFFF
```

```
Target device: 6slx9tqg144
```

```
Created: 2012/11/20 00:16:43
```

```
Bitstream length: 2727072 bits
```

```
Uploading "./zap-2.0.5/hardware/zpuino/zpu/bootloaders/lx9/zpuino-1.0-PapilioPro-S6LX9-RetroCade-
Done.
```

```
Programming time 549.2 ms
```

```
USB transactions: Write 176 read 8 retries 5
```

run IDE

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/ZAP--ZPUino-Arduino-Papilio--IDE/build/linux/work$ ./arduino
Experimental: JNI_OnLoad called.
Stable Library
=====
Native lib Version = RXTX-2.1-7
Java lib Version   = RXTX-2.1-7
```

verification will fail, so just upload sketch:

```
dpavlin@blue:/blue-zfs/FPGA/Papilio/Papilio-SOC/zpu/hdl/zpuino/programmer$ ./zpuinoprogrammer -s
Board: GadgetFactory Papilio Pro LX9 @ 96000000 Hz (0xa4041700)
Upload completed successfully in 0.05 seconds.
```

zpugcc

```
dpavlin@blue:/blue-zfs/FPGA/Papilio$ git clone git://repo.or.cz/zpugcc.git
Cloning into 'zpugcc'...
remote: Counting objects: 35519, done.
remote: Compressing objects: 100% (26110/26110), done.
remote: Total 35519 (delta 8445), reused 35519 (delta 8445)
Receiving objects: 100% (35519/35519), 70.18 MiB | 426.00 KiB/s, done.
Resolving deltas: 100% (8445/8445), done.
Checking connectivity... done.
Checking out files: 100% (35311/35311), done.
dpavlin@blue:/blue-zfs/FPGA/Papilio$ cd zpugcc/toolchain
dpavlin@blue:/blue-zfs/FPGA/Papilio/zpugcc/toolchain$ git diff build.sh
diff --git a/toolchain/build.sh b/toolchain/build.sh
index 783beaa..034929c 100644
--- a/toolchain/build.sh
+++ b/toolchain/build.sh
@@ -3,6 +3,9 @@ set -e
  rm -rf build
  mkdir build
  cd build
+mkdir bin
+ln -s /bin/true bin/makeinfo
+export PATH=`pwd`/bin:$PATH
  ../binutils/configure --target=zpu-elf --prefix=`pwd`/../install
  make
  make install
dpavlin@blue:/blue-zfs/FPGA/Papilio/zpugcc/toolchain$ sh -x build.sh
```

RetroCade MegaWing

<http://retrocade.gadgetfactory.net/index.php?n=Main.RetroCadeMegaWing>

LCD

Modify Examples/LiqueidCrystal/Autoscroll

```
// initialize the library with the numbers of the interface pins
```

```
LiquidCrystal lcd(26, 24, 23, 22, 21, 20);

void setup() {
  // contrast to GND
  pinMode(46, OUTPUT);
  digitalWrite(46, LOW);
  // RW to ground
  pinMode(25, OUTPUT);
  digitalWrite(25, LOW);

  // set up the LCD's number of columns and rows:
  lcd.begin(16,2);
}
```

ZPU (without Arduino IDE)

- <http://forum.gadgetfactory.net/index.php?/topic/1863-bare-metal-zpu-hello-world/>

Xilinx Virtual Cable Daemon

- <https://github.com/tmbinc/xvcd/tree/ftdi>