

\*\*\*\*\*Draft\*\*\*\*\*

**Testing Upgrades to icestorm, yosys, zipcpu and nextpnr  
autofpga & verilator  
mypi3-20 pi400-2 pi400-1  
mypi3-16 mypi3-18 ws011  
10/11/21**

\*\*\*\*\*Draft\*\*\*\*\*

Testing upgrade to zipcpu that fixes LOCK instruction generation in GCC  
rtl/catzip/cpu/zipcpu.v

```
-      .OPT_LOCK(OPT_LOCK),  
+      .OPT_LOCK(1'b1),
```

icepll -i 100 -o 40 -f 40pll.txt -m

cat 40pll.txt

```
/**  
 * PLL configuration  
 *  
 * This Verilog module was generated automatically  
 * using the icepll tool from the IceStorm project.  
 * Use at your own risk.  
 *  
 * Given input frequency:    100.000 MHz  
 * Requested output frequency: 40.000 MHz  
 * Achieved output frequency: 40.000 MHz  
 */
```

```
module pll(  
    input clock_in,  
    output clock_out,  
    output locked  
);
```

```
SB_PLL40_CORE #(  
    .FEEDBACK_PATH("SIMPLE"),  
    .DIVR(4'b0100),           // DIVR = 4  
    .DIVF(7'b0011111),       // DIVF = 31  
    .DIVQ(3'b100),           // DIVQ = 4  
    .FILTER_RANGE(3'b010)    // FILTER_RANGE = 2  
) uut (  
    .LOCK(locked),  
    .RESETB(1'b1),  
    .BYPASS(1'b0),  
    .REFERENCECLK(clock_in),  
    .PLLOUTCORE(clock_out)  
);
```

endmodule

4th build on pi400-1 finally ran correctly  
2nd build on ws011 finally ran correctly  
3rd build on mypi3-20 finally ran correctly  
2nd build on pi400-2 finally ran correctly

sw/host/rgb.m

-title "DWT jpeg.c 3 Lvl 10/06/21 write 0x0200fe08 read 0x0200fe08"  
+title "DWT jpeg.c 3 Lvl 10/11/21 write 0x0200fdf8 read 0x0200fdf8"

sw/host/wrsdram.cpp

```
-#define DUMPMEM 0x0200fe08  
+#define DUMPMEM 0x0200fdf8
```

sw/host/rdsdram.cpp

```
-#define DUMPMEM 0x0200fe08  
+#define DUMPMEM 0x0200fdf8
```

auto-data/clockpll40.txt

```
- .DIVQ(3'b100), // DIVF = 4  
+ .DIVQ(7'b0011111), // DIVQ = 31  
+ .DIVF(3'b100), // DIVF = 4
```

rtl/catzip/cpu/zipcpu.v

```
- .OPT_LOCK(OPT_LOCK),  
+ .OPT_LOCK(1'b1),
```

commit 548a0efbe5729279f2ae9779a2af4229e8241e52 (HEAD -> master, upstream/master,  
upstream/dev)

Author: ZipCPU <dgisselq@ieee.org>

Date: Wed Oct 6 11:54:56 2021 -0400

Fixed LOCK instruction generation in GCC

```
-#define DUMPMEM 0x0200fe08  
+#define DUMPMEM 0x0200fdf8
```

ws011

./pc-wbregs -n mypi3-19 version  
01000014 ( VERSION) : [!..] 20211011

mypi3-16

```
./arm-wbregs version  
01000014 ( VERSION) : [!..] 20211007
```

mypi3-20

```
./arm-wbregs version  
01000014 ( VERSION) : [!..] 20211011
```

pi400-1

```
./arm-wbregs version  
01000014 ( VERSION) : [!..] 20211011
```

pi400-2

```
/arm-wbregs version  
01000014 ( VERSION) : [!..] 20211011
```

```
devel@pi400-1:~/testbuilds $ git clone git@github.com:develone/icozip.git -b catzip catzip
```

```
devel@pi400-1:~/testbuilds $ cd catzip/
```

```
evel@pi400-1:cp auto-data/clockpll40.txt.wkg auto-data/clockpll40.txt
```

```
/home/devel/zipcpu/sw/install/cross-tools/bin:/home/devel/.local/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/local/games:/usr/games
```

```
devel@pi400-1:~/testbuilds/catzip $ make
```

**Note: These next 4 steps might be needed to be repeated one or more times.  
This creates a catzip.bin. If the runjpeg does not end  
in ./arm-netpport window with the following.**

```
. w=256 h=256  
. 1401000 2  
. flag 2 0x204fe08  
. 1401004 1  
. 140100c 200fe08
```

```
cd ~/testbuilds/catzip/rtl/catzip/
```

```
rm -f catzip.asc catzip.json catzip.bin
```

```
make bin
```

```
rsync -avl --delete /home/devel/testbuilds/catzip mypi3-19:~/testbuilds/mypi3-20/ or  
(mypi3-16 mypi3-18  
pi400-1 pi400-2 ws011)
```

```
Tested verilog & C++  
commit 5df54b35ca8724fe0cf3149f1543cfa2dd66acd7 (HEAD -> catzip)  
Author: Edward Vidal Jr <develone@sbcglobal.net>  
Date: Wed Sep 29 06:23:55 2021 -0600
```

missing from last commit

yosys -V

Yosys 0.9+4081 (git sha1 83a21814, gcc 8.3.0-6+rpi1 -fPIC -Os)

nextpnr-ice40 -V

nextpnr-ice40 -- Next Generation Place and Route (Version 67bd349e)

verilator -V

Verilator 4.100 2020-09-07 rev v4.100-10-g39eea781

zipcpu

commit 548a0efbe5729279f2ae9779a2af4229e8241e52 (HEAD -> master, upstream/master, upstream/dev)

Author: ZipCPU <dgisselq@ieee.org>

Date: Wed Oct 6 11:54:56 2021 -0400

Fixed LOCK instruction generation in GCC

autofpga

devel@mypi3-20:~/autofpga \$ git log

commit 5b57538081d60a04cd32aeba2436816062cb0141 (HEAD -> master, upstream/master, upstream/dev)

Author: ZipCPU <dgisselq@ieee.org>

Date: Fri Aug 14 07:55:55 2020 -0400

Fixes MacOS build err--std::string vs char \* in gbl\_msg.err()

icestorm pi400-1

commit 83b8ef947f77723f602b706eac16281e37de278c (HEAD -> master, upstream/master)

Merge: 9880f6e 97b6e27

Author: Miodrag Milanović <mmicko@gmail.com>

Date: Mon Sep 6 11:14:46 2021 +0200

Merge pull request #282 from jkiv/iceprog-ignorig-fix

[iceprog] Fixed typo in error message: "Ignorig"

File Edit Tabs Help

devel@mypi3-19:~/testbuilds/mypi3-20/catzip/sw/host \$ sudo ./arm-netpport

Listening on port 8363

Listening on port 8364

```
. |=====|
. |
. | Four score and seven years ago our fathers brought forth on this
. | continent, a new nation, conceived in Liberty, and dedicated to
. | the proposition that all men are created equal.
. |
. | Now we are engaged in a great civil war, testing whether that
. | nation, or any nation so conceived and so dedicated, can long
. | endure. We are met on a great battle-field of that war. We have
. | come to dedicate a portion of that field, as a final resting
. | place for those who here gave their lives that that nation might
. | live. It is altogether fitting and proper that we should do this.
. |
. | But, in a larger sense, we can not dedicate-we can not consecrate-
. | we can not hallow-this ground. The brave men, living and dead,
. | who struggled here, have consecrated it, far above our poor power
. | to add or detract. The world will little note, nor long remember
. | what we say here, but it can never forget what they did here. It
. | is for us the living, rather, to be dedicated here to the
. | unfinished work which they who fought here have thus far so nobly
. | advanced. It is rather for us to be here dedicated to the great
. | task remaining before us-that from these honored dead we take
. | increased devotion to that cause for which they gave the last
. | full measure of devotion-that we here highly resolve that these
. | dead shall not have died in vain-that this nation, under God,
. | shall have a new birth of freedom-and that government of the
. | people, by the people, for the people, shall not perish from the
. | earth.
. |
. |
. |=====|
```

. ello, World!

. Hello, World!

. Hello, World!

^C

devel@mypi3-19:~/testbuilds/mypi3-20/catzip/sw/host \$

## cputest

```
File Edit Tabs Help
> A040000005K000000000
< A040000001W41f
> A040000001K000000000
< A040000005W
> A040000005K000000000
< A040000001Wc00
> A040000001K000000000
< A040000001W40f
> A040000001K000000000
< A040000005W20000000
> A040000005
> K000000000
< A040000001R
> A040000001R00000060f
Command port disconnect
Command port is now connected
< A040000001Wf
> A040000001K000000000
Command port disconnect
#
# Running CPU self-test
# -----
# SIM Instructions          Pass
# CIS Instructions         Supported
# Break test #1            Pass
# Break test #2            Pass
# Break test #3            Pass
# Early Branch test        Pass
# Trap test/AND             Pass
# Trap test/CLR             Pass
# Overflow test             Pass
# Carry test                Pass
# Loop test                 Pass
# Shift test                Pass
# Pipeline test             Pass
# Mem-Pipeline test         Pass
# Conditional Execution test Pass
# No-waiting pipeline test   Pass
# Conditional Branching test Pass
# Ill Instruction test, NULL PC Pass
# Ill Instruction test, two  Pass
# Comparison test, ==       Pass
# Comparison test, !=       Pass
# CC Register test          Pass
# Multi-Arg test            Pass
# Multiply test              Pass
# Multiply HI-word test     Pass
# Divide test                Pass
#
# -----
# All tests passed.  Halting CPU.
#
```

hello

```
File Edit Tabs Help
> A04000005K00000000
< A04000001W417
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W418
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W419
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W41a
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W41b
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W41c
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W41d
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W41e
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001W41f
> A04000001K00000000
< A04000005W
> A04000005K00000000
< A04000001Wc00
> A04000001K00000000
< A04000001W40f
> A04000001K00000000
< A04000005W20000000
> A04000005
> K00000000
< A04000001R
> A04000001R00000060f
Command port disconnect
Command port is now connected
< A04000001Wf
> A04000001K00000000
Command port disconnect
# Hello, World!
```

now using b.bin which was extracted from blu.pgm with wrpgm.m

This does not need to use split.

./runjpeg.sh

01401000 ( )-> 00000002

01401004 ( )-> 00000001

```
01401008 (    )-> 00000001
0140100c (    )-> 00000000
01401010 (    )-> 00000001
01401018 (    )-> 00000001
Halting the CPU
Memory regions:
    Block RAM: 01400000 - 01402000
    SDRAM      : 02000000 - 03000000
Loading: ../board/jpeg
Section 0: 02000000 - 0204fe6c
Writing to MEM: 02000000-0204fe6c
Clearing the CPUs registers
Setting PC to 02000000
The CPU should be fully loaded, you may now
start it (from reset/reboot) with:
> wbrege cpu 0x0f
```

```
CPU Status is: 0000060f
04000000 (    CPU)-> 0000000f
```

```
# w=256 h=256
# 1401000 2
# flag 2 0x204fde8
# 1401004 1
# 140100c 200fde8
```

```
./arm-wrsdram b.bin or ./arm-wrsdram g.bin or ./arm-wrsdram r.bin
The size of the buffer is 0x010000 or 65536 words
```

READ-COMPLETE

```
./arm-wbrege 0x01401008 0
01401008 (    )-> 00000000
```

```
# ptrs.alt 0x20544c8 0x200fde8
# 131072
```

```
./arm-wbrege 0x01401010 0
01401010 (    )-> 00000000
```

```
./arm-wbrege 0x01401008 0
01401008 (    )-> 00000000
```

```
./arm-wbrege 0x01401010 0
01401010 (    )-> 00000000
```

```
# 0x200fde8 0x7e
# 0x200fdec 0x7d
# 0x200fdf0 0x7b
# 0x200fdf4 0x76
#
# 0x202fde8 0x6a
```



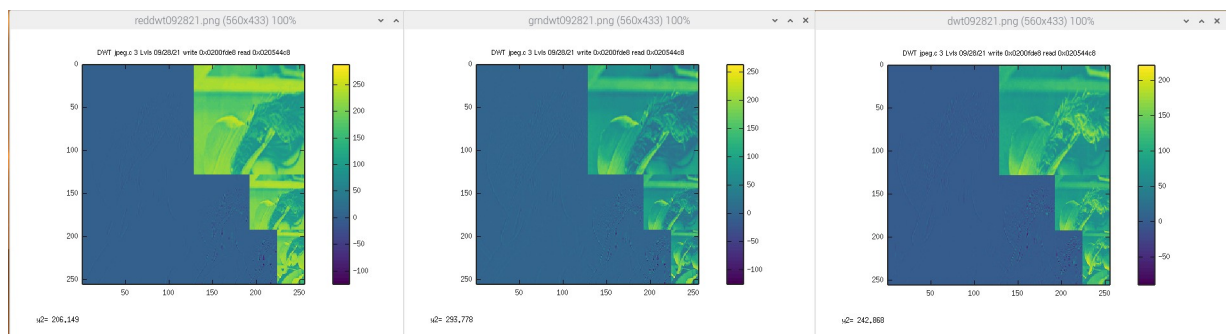
```
# 0x202fdec 0x6a
# 0x202fdf0 0x68
# 0x202fdf4 0x64
#
# 0x204fdd8 0x48
# 0x204fddc 0x4a
# 0x204fde0 0x4e
# 0x204fde4 0x50
# 256 0x200fde8 0x20544c8 0x 1401004
# 256
```

```
rm -f dwt.bin; ./arm-rdsdram dwt.bin
```

Write-COMplete

The size of the buffer is 0x010000 or 65536 words

red grn & blu ptrs.alt



red grn & blu ptrs.inpbuf

