Open Hardware/Modding: RISC-V, Arduino, and More

By Roy Schestowitz
Created 04/12/2021 - 3:37am
Submitted by Roy Schestowitz on Saturday 4th of December 2021 03:37:56 AM Filed under Hardware [1]

SiFive Performance P650 RISC-V core to outperform Arm Cortex-A77 performance per mm2 - CNX Software [2]

About six months have passed since the SiFive announcement of the Performance P550 ?fastest 64-bit RISC-V processor? ever, and the company has now introduced an even faster RISC-V core with the Performance P650 that?s expected to match Cortex-A77 performance.

Building upon the Performance P550 design, the SiFive Performance P650 is scalable to sixteen cores using a coherent multicore complex, and delivers a 40% performance increase per clock cycle based on SiFive engineering estimated performance in SPECInt2006/GHz, thanks to an expansion of the processor?s instruction-issue width. The company compares P650 to the Arm family by saying it ?maintains a significant performance-per-area advantage compared to the Arm Cortex-A77?.

On servers maybe moving to M.2 NVMe drives for their system drives [3]

We've been looking into getting some new servers (partly because a number of our existing Dell R210 IIs are starting to fail). Although we haven't run into this yet ourselves, one of the things we've heard in the process of this investigation is that various lines of basic servers are trying to move to M.2 NVMe system disks instead of 3.5" or 2.5" disks. People are generally unhappy about this, for a number of reasons including that these are not fancy hot-swappable M.2 NVMe, just basic motherboard plug-in M.2.

One way a builder culture can fail [4]
I've told some stories about what happens when you end up at a company that builds nothing and instead rents everything from some vendor. Given that, it's only fair that I describe something bad that can happen at a company which is known for building stuff.

- **Count down to Christmas with the Arduino-powered Hackvent Calendar | Arduino Blog** [5]

  Along with the typical Christmas decorations of trees and elves sitting on shelves Tom Goff was motivated to build a DIY ?Hackvent? calendar after being inspired by his son?s request for one. The design differed from the traditional Advent calendar in that it features an array of 25 lights, one for each day, that light up sequentially whenever a button is pressed. After the final day is reached, the system begins to play a song and makes the lights dance around.

  To create the calendar?s housing, Goff designed a 2D panel with cutouts for all the LEDs and an additional one for a single button. After laser cutting a piece of plywood, he got to work coming up with a circuit. The components included an Arduino Mega, 25 LEDs and resistors that are directly driven by the Mega?s GPIO pins, an ISD 1760 module that plays music from its embedded ROM, and a small 2W speaker.

- **Schematic-o-matic automatically creates KiCAD schematics from your breadboard | Arduino Blog** [6]

  Breadboards are the first tool you break out in any prototyping journey and almost every project will utilize a breadboard at some point. Those breadboards often turn into a rats? nest of overlapping wires that are difficult to trace, which makes it difficult to create an accurate schematic when it is time to design your PCB. To make your life easier, Nick Bild came up with a script that analyzes your physical breadboard to automatically generate a KiCAD schematic.

  A breadboard is, at its core, a series of connectors. This script?s purpose is to identify every connection and associate it with the corresponding pin on a component. It is able to do that using a special breadboard that has every row of pins connected to an Arduino Due board I/O pin. A Python script running on a connected PC then checks every row for continuity. The user then inputs the component located at connection, and the script will draw a KiCAD schematic with wires between every component?s pins.

**Hardware**

**Source URL:** http://www.tuxmachines.org/node/158704

**Links:**
[3] https://utcc.utoronto.ca/~cks/space/blog/tech/NVMForServerSystemDisks
[4] https://rachelbythebay.com/w/2021/12/02/build/