Blast Off!

maddog goes to Rio for "Hack and Beer" and learns to appreciate the journey.

By Jon "maddog" Hall

The little boy behind me was really excited about his first airplane trip. When the plane started to take off, he gave a very loud countdown to "blast off!" It was refreshing to hear that much enthusiasm, particularly because air travel has become a "magic elevator" for me. The doors close in one location and open in another, but I have little excitement in the journey, only the destination.

I experienced a similar excitement with my first Arduino "Hack and Beer." Arranged by my friend Álvaro Justen in Rio de Janeiro, I must admit I was a bit dubious that anything significant would come of just one night's hardware "hacking."

Planning and discussion of the Hack and Beer event occurred ahead of time. A fee was requested to help pay for refreshments: munchies, soda, and (of course) beer. Four projects were discussed, and about 20 people showed up, so approximately four or five people worked on each project.

All of the projects required an Arduino. The Arduino is an "open" hardware platform, so people can make various derivatives of the motherboard. Most of these derivatives tend toward units that are very easy to interface to breadboards, so people can build simple hardware "extensions." A software development tool chain allows you to create programs easily for the Arduino, test the programs, and store them. A large and rapidly growing library of source code is available to drive simple (and not so simple) electrical circuits. Best of all, these electrical components and the Arduino itself are relatively inexpensive and re-usable for other things.

After distributing a few munchies, sodas, and beers, we broke into the four groups. One group was led by a young woman demonstrating basic programming of the Arduino. Another group was working on interfacing the Arduino to a stoplight, which was "difficult" because the light required a greater power input to drive it than the Arduino itself would generate.

My Hack and Beer group was trying to integrate a distance sensor that used sound to measure distance. Some circuits and software had already been developed and published for the Arduino, but the sensor used in the sample program was fairly expensive, and another sensor had been found that was available for much less money. The sensor had arrived, and my group were anxious to get it going.

When I was asked to help the "sensor" group with their project, I started to object because I knew nothing about the Arduino other than that it had a relatively small memory space. Also, it had been more than 20 years since I had done any electronics work. However, I could see that Álvaro needed a little bit of assistance. Many of the people in the room were not computer science majors or electrical engineering majors; rather, they were history majors and people from other disciplines who just wanted to experience participating in these projects.

The sensor group loaded the sample code and wired up the sensor. Unfortunately, the sensor did not work; the program returned very large distances all the time. Then I learned about the different sensor and asked whether they had the "specification sheet" for it. They did not, so I suggested they search the Internet for the sensor part number to see if they could locate the specification sheet, and they found it online.

The new sensor had three pins – one for power, one for ground, and one that output a signal when the sensor detected an audio wave being bounced back – and the group was trying to feed an input signal into that output pin. I began to suspect that the workings of this sensor were completely different from the sensor used in the Arduino sample code, so I explained that without more specifications for the unit, we could not tell the time span from "power on" to the first pulse going out. Also, we did not know how long the output pulse would be present on the output pin or whether the Arduino would be able to capture it. I suggested an electrical circuit known as a "latch." Unfortunately, we did not have the parts available to build one.

Although the sensor did not work at this Hack and Beer session, I know that our team learned a lot from our efforts. The other members said they would keep trying: They were excited about the trip, not the destination, and that's what Hack and Beer was all about. ∎∎∎