

The Living Computer Museum

Charles Severance

Charles Severance visits the Living Computer Museum in Seattle, Washington, to get back to his programming roots.

The unique goal of the Living Computer Museum (LCM) in Seattle, Washington, is to keep old computer technology powered up and ready to be used by patrons. Instead of sheltering its rare artifacts in climate-controlled glass cases, most of the computers at the LCM are turned on and accompanied by a user manual to read, a chair to sit in, and a keyboard to type on so you can explore what it was actually like to use computers from a bygone era. When you visit the museum, be prepared to sit down and play. You can see a video of my visit to the museum and get a behind-the-scenes tour of what it takes to keep this decades-old equipment running at www.computer.org/computingconversations.

KEEPING OLD TECHNOLOGY ALIVE

The LCM is supported by Paul Allen (cofounder of Microsoft) and others to make sure that visitors can experience what it was like to use technology as it emerged and developed over the past 50 years. Although the LCM does collect,

catalog, interpret, and display historically significant computer technology, it spends most of its time maintaining and repairing that technology to keep it running. According to museum librarian and archivist Cynde Moya:

At a lot of computer museums, the artifact is a “special, holy thing.” You put it away carefully and then you don’t use it for anything in particular. This museum is really a crossover between a parts lab and a museum. The items in our collection are just resources that can be used as computers or to provide parts to fix another computer.

This means it’s important to keep track of the items in the collection and the parts within those items when they are scavenged to fix another computer.

Sometimes it’s necessary to re-engineer an element of a computer when a replacement part can’t be found or if the original part is too expensive or has reliability issues. For example, there are a lot of Digital Equipment Corporation (DEC) systems at the museum, which have the same power supply. As originally designed, the power supply was inefficient, needed to be repaired regularly, and was very expensive to maintain. According to LCM’s Senior Systems Engineer Keith Perez:



We have 56 of these power supplies in our various DEC machines in the museum. We had to replace the large and expensive capacitors every 13 years because they wore out. So we decided to come up with a modern design that fit in the same form. Our new power supply is better than the original DEC power supply. There are no solder connections and it's highly reliable. It uses a military-grade power-supply module that is guaranteed for 40 years. We built a bunch of these for \$350 apiece and they're all in the DEC machines.

Solving a problem like an unreliable power supply is a fun engineering challenge. You have to figure out how the part works and then find a better way to do the same thing using modern technology. Keith said the new DEC power supply turned out to be far superior to the original power supply in terms of its power consumption:

The original part was a linear supply with 15 percent efficiency. The new power supply has 90 percent efficiency, so we automatically saved 10 tons of air conditioning that normally would have gone out as heat. The machines run cooler, fail less often, and we're not repairing them as often.

AN IMPORTANT HISTORY LESSON

LCM's goal is to make these old computers reliable so they can run continuously in 24/7 production. According to Cynde:

Restoring these computers is one of the things that makes the museum special. We make them available to people in the exhibit hall and also online. Users can

get accounts, log in, and try out different operating systems that are running on the real computers.

It might be a good idea to review your BASIC programming before you come to the museum, as you'll need to know BASIC to use many of the early mini- and microcomputers. My favorite was writing BASIC on a PDP-8 minicomputer with a real, working TTY-33 terminal. I also wrote some BASIC on a Heathkit H-19 minicomputer, and I wrote a "hello world\n" C program on an early Sun workstation.


But with all the computers available, the most enjoyable exhibit was the IBM-029 keypunch. Feeding blank cards, adding seven spaces (for Fortran), and then typing characters represented by punched holes took me back to when I was first learning to program in the 1970s. The IBM-029 keypunch was a joy to use back then, and I loved reliving my early experiences with it.

Cynde says this is the typical reaction when programmers visit the museum:

When older people come, they often have a feeling of nostalgia. They'll express delight: "Oh look, I had one of those—this is so exciting. Wow, I remember that!" They look back at the days when computing was really quite difficult and you would have to use cassette tapes to load your programs or interact with them using a teletype.

For younger tech-savvy visitors, Cynde says the computers are an important history lesson:

Some of it is to demonstrate how far we've come in a very short period of time, from these giant supercomputers to our telephones, which have more computing power than the entire museum.

If you're in Seattle, plan to stop by the LCM to see and touch the wonderful artifacts. But be warned: if you sit down and start to use some of these wonderful old computers, you might find yourself spending an entire day at the museum. 

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