UNIVAC® Memories

INTRODUCTION

I received an email from Paul Dickson forwarding "Chuck Caldarale sent me an email noting the passing of John Walker, who died last month after a fall in Neuchâtel, Switzerland."

From Chuck: "Although John never worked for Sperry/Univac/Unisys, he played an important part in 1107/1108/1110 goings on in the 1970s before founding Marinchip and AutoDesk. As part of the east coast university Univac crowd (UMD, Case, CMU, SUNY, GT, MSU, etc.); I met him several times at USE conferences back in the day. His web site has lots of interesting stuff, including a good bit of Univac trivia. This is John's web site, https://www.fourmilab.ch/. This link is to his Univac memories, https://www.fourmilab.ch/documents/univac/."

Whereas our Legacy Anthology was created to share bits and bytes of history, it is appropriate to add Mr. Walker's website link to https://vipclubmn.org/Contact-Links.html#Research. And, to publish this as a monthly Our Stories so that our reading public can find his information and correlate his memories with their own. *Note that the .ch URL subscript is Switzerland.*

Table of Contents

Edited with Microsoft Word.

WEB SITE TEXT W/LINKS

This document is an ever-growing collection of memorabilia, contemporary documents, and anecdotes recounting the history of UNIVAC 1100 series mainframes. The first computer I ever used was a UNIVAC 1107, and for more than a decade stretching from 1967 through 1978, most of my programming was oriented toward those machines, spanning four generations of hardware: the 1107, 1108, 1110, and 1100/80 (which I used briefly to develop microprocessor software).

As the collection grows, I will organize it more coherently and make it easier to find your way around. In these early days of the archive, it's simply a collection of unrelated documents linked to the items below.

Enjoy, and may minus zero never be (completely) forgotten.

The UNIVAC 1107 at Case Institute of Technology

In September of 1967 I wrote my first computer program and ran it on this machine. This illustrated document recalls the characteristics of a supercomputer, 1960s style - https://www.fourmilab.ch/documents/univac/case1107.html

Case Institute of Technology UNIVAC 1107 SLEUTH Code Card

The ultimate fashion statement for assembly language programmers of the Case UNIVAC 1107 wasn't a pocket protector and pens of many colors but these plastic laminated cards documenting the instruction set of that computer, https://www.fourmilab.ch/documents/univac/casecard/.

The FASTRAND Page

People who have used a 100-megabyte hard drive that weighed two and a quarter tons and cost more than US$130,000 in 1968 experience a special sense of wonder when tucking one of today's 2.1 gigabyte drives, just purchased for less than US$1,000 and weighing less than half a kilo, into their pocket. The FASTRAND Page turns the clock back to the days when mass storage was massive, https://www.fourmilab.ch/documents/univac/fastrand.html.

Typical UNIVAC 1108 Prices in 1968

In 1968 you could pick up a 1.3 MHz CPU with half a megabyte of RAM and 100-megabyte hard drive for a mere US$1.6 million. Oh, and you want a printer too…?
https://www.fourmilab.ch/documents/univac/config1108.html

UNIVAC 1107/1108/1110 Instruction Set

What UNIVAC programmer can ever forget the day he or she found a way to use an instruction like "Magnitude of Characteristic Difference to Upper"? Here are all the instructions for the 1100 family from 1107 to 1110, color-coded to indicate which machine included what instructions, with SLEUTH I and SLEUTH II mnemonics, https://www.fourmilab.ch/documents/univac/instructions.html.

Minus Zero

UNIVAC 1100 machines used one's complement representation of negative numbers, as opposed to the two's complement form almost universal today. In one's complement, where zero is a *signed number*, you have not only zero, but *minus zero* to contend with. This document explores various representations of negative numbers and describes some of the bizarre consequences and applications of minus zero, https://www.fourmilab.ch/documents/univac/minuszero.html.

Derek Zave's Amazing Octal Editor

Nothing better illustrates what could be accomplished with the rather odd UNIVAC 1100 instruction set than this program, which edits a 36-bit number into a 12-digit octal string in exactly 12 instructions, with no loops, https://www.fourmilab.ch/documents/univac/eoctal.html.

Cute Tricks on the UNIVAC 1100

Programmers of UNIVAC 1100 mainframes in the 1960s through the mid-1970s exalted in discovering clever ways to squeeze the most out of machines which, by today's standards, would be considered hopelessly slow and short of memory. Here's a collection of assembly language and FORTRAN coding tricks for the UNIVAC 1100 collected in 1974 and 1975 by Walter Gilbert of the University of Maryland Administrative Computer Center, https://www.fourmilab.ch/documents/univac/cute_tricks.html.

Chi Corporation Code Card

If they can put a man on the Moon, why can't they put a UNIVAC 1108 in your shirt pocket? Well, a few months *before* a man walked on the Moon, programmers at Chi Corporation in Cleveland did the next best thing—a shirt-pocket reference card for the UNIVAC 1108 packed with essential information for assembly language systems programmers. Can't find yours after all these years? Here's your own personal copy, on the Web, https://www.fourmilab.ch/documents/univac/codecard/.

The FIELDATA Character Code

Back in the '60s, almost every mainframe computer had its own character code. The UNIVAC 1100 machines used a 6-bit variant of FIELDATA code, originally designed by the U.S. Army, https://www.fourmilab.ch/documents/univac/fieldata.html.

Punch Card Gallery

Programmers of the mainframe era tended to be better typists than those who started with timesharing terminals or personal computers. Why? Because the only way to get your program into the computer was to punch it on cards, and as you discovered within seconds after sitting down at the keypunch, "you can't erase a hole". Since the computer only reads the holes, cards could be any color and bear any design, and many sites printed their own custom cards, sometimes quite elaborate. Here's a gallery of punch cards from UNIVAC sites, including a rare 90-column card dating from the era when 80-column "IBM cards" were the exclusive property of IBM, https://www.fourmilab.ch/documents/univac/cards.html.

UNIVACKY

This hilarious mid-1970s poem by Harry Gilbert, in the spirit of Lewis Carroll's *Jabberwocky*, packs more EXEC-8 acronyms than you can probably recall into a delightful story which can't help but summon memories of the late night "code rage" which occasionally possessed even the most mild-mannered UNIVAC system programmers, https://www.fourmilab.ch/documents/univac/univacky.html.

The Morse Code Exec

In 1971, John Walker figured out how to convert a multi-million-dollar room-sized UNIVAC 1108 mainframe into a Morse *code practice oscillator* with a stand-alone,

bootable operating system dedicated to that dubious application. Here it is, complete with source code, https://www.fourmilab.ch/documents/univac/morse.html.

The ANIMAL Episode

ANIMAL Source Code - https://www.fourmilab.ch/documents/univac/animalsrc.html.

PERVADE Source Code - https://www.fourmilab.ch/documents/univac/pervade.html.

Ever heard the one about the self-reproducing ANIMAL program that spread throughout systems and colonized new machines? I wrote it. Here's the story, both as it actually happened, and recounted in the press as a "computer urban legend" 10 and 15 years after the fact, https://www.fourmilab.ch/documents/univac/animal.html.

FANG Source Code Browser

Freeware, 1972-style! FANG was one of the rare applications to fully exploit the multi-tasking, multi-processor, and multiple I/O channel architecture of the UNIVAC 1100 series. A file and tape utility, it allowed simultaneous execution of any number of commands, while guaranteeing results identical to the much slower serial execution employed by UNIVAC's own utilities. FANG was freely available, first released in 1972, and was used by hundreds of UNIVAC sites. It was last modified in 1975, and remains in use today, more than 20 years later. To view this document, you need a browser which supports frames, https://www.fourmilab.ch/documents/univac/fang/.

Heisenbug

The year is 1974, and a few lines of clever code in the operating system idle loop seem to be provoking crashes of a massive UNIVAC 1110 mainframe. What's going on? Sometimes it *really* *is* the hardware, https://www.fourmilab.ch/documents/univac/heisenbug/.

UNIVAC Document Archive

Thanks to volunteer archivists and packrats across the Internet, here is a collection of documents, including user manuals, sales brochures, and articles about the UNIVAC 1100 series spanning the era from model 1107 through the 1100/80, https://www.fourmilab.ch/documents/univac/manuals/.

UNIVAC has been, over the years, a registered trademark of Eckert-Mauchly Computer Corporation, Remington Rand Corporation, Sperry Rand Corporation, Sperry Corporation, and Unisys Corporation. FASTRAND is a trademark of Sperry Rand Corporation, since merged into Unisys Corporation.

Other Computing History Resources at Fourmilab, https://www.fourmilab.ch/?topic=history.

Fourmilab Home Page - https://www.fourmilab.ch/.
 Welcome to Fourmilab, Last update: 9 November 2023

This site is developed and maintained by John Walker, founder of Autodesk, Inc. and co-author of AutoCAD. A variety of documents, images, software for various machines, and interactive Web resources are available here; click on entries in the frame to the left to display a table of contents for that topic. Items which span more than one category are listed in all.

A comprehensive (and large) list of all items on the site is available as a frame- and graphics-free Site Map, https://www.fourmilab.ch/nav/topics/map.html.

Except for a few clearly marked exceptions, all the material on this site is in the public domain and may be used in any manner without permission, restriction, attribution, or compensation. Back links to this site are welcome. https://www.fourmilab.ch/fourmilog/ lists Mr. Walker's updates to the site since October 2004.

EPILOGUE

Wow!! I, Lowell, wish that we had had links to this site available in 2006 when we had started our website. In the paragraph immediately above this, the site states, "Back links to this site are welcome.". Thus, implied permission for this paper and the entries on our contacts and links page. Mr. Walker's site makes our https://vipclubmn.org/processors.html chapter look like a Jr. Hi. School paper. And all this created by a user of our equipment and systems versus an (ex) employee.

Whereas Mr. Walker recently passed away (February 2024), my immediate plan is to capture the entire website onto a USB stick for posterior then to ascertain whether anyone will be preserving this site. It contains so much commercial systems information that we, the Legacy Committee, want to have it available for researchers via our web site or from a 'USB' stick at CBI or the Lawshe Museum.