Programming in the 1960s: a Personal History

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I graduated college with a Bachelor’s degree in Mathematics in 1964

• Two possible positions
  • Actuary
  • Computer programmer
• Guess which one I took?
• Prior computer experience
  • Saw a computer once on a tour
  • No knowledge of programming
• I was given a thin book on Fortran II and told to learn it.
• First program was copied out of the book. It didn’t work because the machine I used it on ran Fortran IV.
Job workflow - submission

• Type up submission on cards
• Place job card with submission number in front of cards
• Give cards to operator
Fortran IBM card
026 Keypunch
Operator loads cards into card reader
IBM 7094 processes job
IBM Chain Printer prints output
Final portion of the workflow

• Operator takes cards and output, places them into a box with submission number in front and places box in wooden frame
• Elapsed time ~2-3 hours, typically.
First Assignment – involved Legendre Polynomials

• The formula involved computing $\frac{N!}{M!}$
• It took me six weeks to debug with much wasted computer time.
• Why? $7!$ overflowed when computed as an integer on a 36 bit word.
• Recall I had a degree in mathematics
  • Factorials were integers.
  • Who ever heard of “overflow”
Consequence

• Debriefing meeting with my boss and my boss’ boss.
• Outcome – my boss should have overseen me more closely.
• It wasn’t my fault!! It was management’s fault.
1968 – I am off to graduate school at Purdue

- Purdue constructed new mathematical sciences/computer sciences building
  - Completed in 1967
  - Designed for IBM 360/67 in basement
IBM 360/67 was ~3 years late

• Purdue replaced their order with a CDC 6600
Why is this interesting?

• Mathematical Sciences building was designed to have an IBM 360/67 in the basement
• Building was constructed with an external elevator shaft to take computer to the basement
• CDC 6600 was two inches wider than the IBM 360/67
• Had to redig the elevator shaft!!
My assistantship

• Systems programmer for the High Energy Physics department
• They had an IBM 360/44. What we would today call a RISC machine
I learn to boot the machine

• I was shown how to boot the IBM 360/44
  • Push blue button on lower right
  • Enter date/time on console

• First time I did this ...
• Lights went out
• Bells went off

• There was a power failure at that moment

• It wasn’t my fault!
IBM repairman as terrorist

• IBM performed weekly preventive maintenance where card dust is vacuumed from inside the computer.
• Involves removing the front panel of the console
• Purdue installed intrusion alarms on all of the computers on campus including the High Energy Physics computer
• The intrusion alarm prevented the repairman from removing the front panel.
• So ... he removed the intrusion alarm
Consequences

• Removing the intrusion alarm set off a silent alarm at the campus police state
• Policemen in full riot gear and shotguns arrived at the computer.
• ...
In 1970, I get a job at the University of Rhode Island

• Computation is performed through a time-sharing machine (IBM 370/??)
• A room full of typewriter type devices is shared by students.
Acoustic Coupler

- User would pick up a phone and connect to a switchboard.
- Place phone into acoustic coupler and interact with computer.
- Does anyone see an anachronism in this picture?
One operational problem

• A female student with long hair got her hair caught under the paper advance.
• In her struggles to get free she would hit the “enter” key which advanced the paper.
Consequences

• At the beginning of each semester I would tell the students their first task was to find the off button.

• During the 1970s hair styles were noticeably shorter than they were during the 1960s.
Me ~1980
The world has changed!!