Day 20

Glitches
Errors, Failures, Risks

0 Most computer applications are so complex it is virtually impossible to produce programs with no errors

0 The cause of failure is often more than one factor

0 Computer professionals must study failures to learn how to avoid them
0 Billing errors (updated 4/2017)

Colorado Medicaid claims botched in transition to new payment system, state failed to pay hundreds of thousands of dollars

State has given advances to some providers awaiting payment.


0 Inaccurate and misinterpreted data in databases
0 Large population where people may share names
0 Automated processing may not be able to recognize special cases
0 Overconfidence in the accuracy of data
0 Errors in data entry
0 Lack of accountability for errors
A New Hampshire man was shocked to learn that when he purchased pack of cigarettes he also got charged $23,148,855,308,184,500, or more than $23 quadrillion — a number that rivals that of the national debt.

Couple Jailed over Unreported Credit Card Payments Glitch

By Arlene Paredes  @jotfields on May 04 2012 11:05 AM

A married couple living on Brisbane's bayside had realized their credit card dues were being paid off automatically, but instead of reporting the suspicious mistake, they took it as a windfall and enjoyed the luxury they could afford with it, until they were jailed for having done so.

When they went back to the bank to pay off their balance, they were surprised to learn that their outstanding balance was just $375.

They told the teller it was not possible, but without realizing the details behind their reaction, the teller told them: "Computers don't lie." In turn, the couple did not say anything more.
The VA Can't Seem To Fix A Computer Glitch That's Denying Health Care To 29,000 Combat Vets

A whistleblower says the agency is intentionally ignoring the problem.

Jennifer Bendery
White House & Congressional Reporter, The Huffington Post
July 8, 2015

3 simultaneous glitches temporarily shut down NYSE, United Airlines and the Wall Street Journal’s internet homepage
Voting systems

VOTING MACHINES ARE A MESS — BUT THE FEDS HAVE A (KINDA) PLAN

America’s voting machines are a patchwork of systems spread across thousands of districts, with widely varying degrees of accountability. It’s a mess. One that the Department of Homeland Security has finally committed to helping clean up.

Voting methods by state

The map and table below show what voting equipment was used in each state as of September 2016. Please note that the equipment listed below applies to the voter's experience. For example, in New York state, a voter submits a paper ballot, which in turn is tallied using electronic equipment. For the purposes of the map and table below, such states are considered “paper ballot” states. To expand the table, click "show".

Another viewpoint:

The Cylance demonstration was "not new and badly timed," said Joe Kiniry, a security researcher and CEO at Free and Fair, an election technology developer. "This kind of attack has been demonstrated on almost all of the widely deployed machines used today."
What happened?

- **Real-world problems**: some scanners got dirty or knocked out of alignment. Faulty latches on carts caused luggage to fall onto the tracks between stops.
- **Problems in other systems**: The airport’s electrical system could not handle the power surges associated with the baggage system.
- **Software errors**: A software error caused the routing of carts to waiting pens when they were actually needed.
- **Reluctance to admit failure**
Reluctance to admit failure

0 Abandoned systems
  0 Some flaws in systems are so extreme that the systems are discarded after wasting millions, or even billions, of dollars.

0 “Hopelessly inadequate”

0 Britain’s NHS IT program: “One of the worse fiascos ever.”
Lack of clear, well-thought-out goals and specifications

Poor management and poor communication among customers, designers, programmers, etc.

Institutional and political pressures that encourage unrealistically low bids, low budget requests, and underestimates of time requirements

Use of very new technology, with unknown reliability and problems

Refusal to recognize or admit a project is in trouble
LEGACY SYSTEMS

0 Reliable but inflexible
0 Expensive to replace
0 Little or no documentation
0 Obscure to new users

EUROPE

Windows 3.1 Is Still Alive, And It Just Killed a French Airport

By Pierre Longeay

Legacy Systems

"The issue with a system that old is that people don't like to do maintenance work," explained Fiacre. "Furthermore, we are starting to lose the expertise [to deal] with that type of operating system. In Paris, we have only three specialists who can deal with DECOR-related issues," said Fiacre.

"One of them is retiring next year, and we haven't found anyone to replace him," he added.
ATMs running on Windows XP, 3/2014
Software mistakes are **nonlinear**: large repercussions for something as small as a typo.
Psychological or market triggers for problems:

0 Cognitive Dissonance: mental stress generated by the co-existence of conflicting thoughts → usually minimized by self-justification.

0 Insufficient market or legal incentives to do a better job

Cognitive dissonance: http://psychology.about.com/od/cognitivepsychology/f/dissonance.htm