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SUMMARY: Design, build, and enhance relational databases in a variety of sectors with particular emphasis on reliability, performance, and ease-of-maintenance

SPECIALTIES: Relational Database Development, C and C++ Programming, Database Administration, UNIX System Administration, Web Development, Multimedia.

SOFTWARE: Databases: MS SQL Server, MySQL, PostgreSQL, Informix, Oracle, Access, Filemaker, File, Ingres, Omnis, others.
Languages: SQL (VARIOUS DIALECTS), STORED PROCEDURES (VARIOUS DIALECTS); C, C++; PERL, PHP; RUBY, PYTHON; HTML, XML; UNIX SHELL (VARIOUS DIALECTS); MATHEMATICA, SAGE, RELATED.
Operating Systems: UNIX (LINUX, MAC OSX, SCO, BSD, OTHERS), WINDOWS, DOS.

SECTORS: Startups, Security, Physics, Financial Services, Media & Advertising, Health Care, Telecom, Publishing, Education, Legal, others.

Current.

- 1/14-now DBA for PostgreSQL at Ruby-on-Rails site for Bauer Publishing.
- 8/13-now DBA for large SQL Server database for *LDV Law*, ensuring system conformant to best practice in regards to reliability, security, and so on.
- 5/13-now Maintenance of PostgreSQL at Ruby-on-rails web site for *American Board of Allergies & Immunology*.
- 1/13-now MySQL, Filemaker & InDesign support for *Fertiserv*, an international fertilizer trading company.
- 9/12-now *Philly PostreSQL User Group*: organizer. Talks on PostgreSQL: [Ruby-on-Rails & PostgreSQL](#), [Installing PostgreSQL & PostGIS](#).
- 1/12-now Development and support of web & mobile MySQL database to help make the construction of maps & related infographics easier. Uses JavaScript, HTML5, CSS, SVG, & PHP.
- 2/11-now Database & security consulting for *Herz NLP*. General consulting & database support for patented security tool using evolutionary algorithms to detect threats.
- 1/11-now Physics dissertation at *University of Pennsylvania*, on "Time & Quantum Mechanics". Various talks on this at physics conferences. Dissertation done in Mathematica, Sage, Python, LyX, BibDesk, & related technologies. Currently working on experimental test section, incorporating conference feedback.
- 9/10-now PostgreSQL & MySQL consulting for Philly startup community. Participated in several hackathons.

Academic & Educational.

- 3/06-10/10 Specifying, designing, building, & testing distributed operational & student tracking databases using SQL Server 2008 & 2005, web services, and related technologies for a school district with 12,000 students. *West Chester Area School District.*
- 12/05-1/06 Designed & taught course on SQL Server installation, administration, & development. *Computeach.*
- 6/06-7/10 Enhancements to web-based course tracker & scheduler using MySQL, Perl.
- 7/05-10/05 Wrote web-based course tracker & scheduler using MySQL & Perl. Tracks student course preferences, schedules them automatically into appropriate courses respecting practical and academic requirements. Does database style validation using CGI. *Haverford & Bryn Mawr Colleges*

Financial Services. 1838 Investment Advisors.

- 11/04-7/05 Wrote code generator that builds new stored procedures at a rate of 20,000 lines/minute. Wrote Access & Excel applications to merge data from SQL Server & Informix databases to meet business intelligence targets. Provided backend support using Informix stored procedures for ecommerce website. Built business intelligence datamart in SQL Server to support corporate decision making. Built XML parser to move business data around easily in a heterogeneous environment.
- 7/03-5/04 Administered Informix Online 9.2 databases running on Solaris 9 servers using C++, ESQL/C, Perl, Bourne & Korn shells. Improved reliability while reducing time spent on maintenance. Automated critical functions, i.e. built disk management tools using C++, Perl, database management tools using Perl and Ace. Trained client personnel in administration of databases and servers.
- 11/03-2/04 Ported SalesLogix Customer Relationship Management (CRM) system written in Oracle 9 PL/SQL to SQL Server 2000/Transact-SQL (both on Windows 2000). Improved upload time from three days to fifteen minutes, letting financial product sales force get daily rather than monthly updates. Developed and codified Transact-SQL stored procedure API for use by front-end developers. Improved stability; added automatic self-tests.
- 9/03 Automated quality control procedures for tax optimization software, running on Solaris, using C++, ESQL/C, Perl, and Bourne & Korn shells. Eliminated potentially sensitive errors in analysis of client portfolios.
- 11/01-3/02 Revised tax-sensitive portfolio management tools to maximize flexibility of portfolio adjustments while still ensuring conformance to SEC-mandated wash rules. Since the wash rules represent a moving target, system was optimized for flexibility and ease-of-maintenance as well as for raw performance. Software built with Informix SPL, SQL, Ace, ESQL/C, C++, Perl, and UNIX toolset.
- 5/01-1/02 Designed and developed tax-sensitive investment management software running on Solaris using C++, Perl, and Informix SQL, SPL, Ace, & ESQL/C. New system reduced time required to make tax-advantaged portfolio adjustments from several days to under an hour. This was essential to the client to permit timely

response to market changes, and thereby maintain its market share in the highly competitive portfolio management space.

10/01–11/01 Automated client data feeds using C++, Perl, and Informix SQL, SPL, Ace, & ESQL/C to improve reliability and performance. Ported databases from Informix 7 to 9.

Manufacturing. Huntleigh Healthcare

8/07–11/09 Developed EDI-based automated order & invoicing system. General database maintenance.

7/04–4/05 Database reporting using Informix Ace, Perl, Bourne & Korn shells. Reduced time to get new report out from two weeks to one or two days.

Media & Advertising. Starnet & Radius Communications (jointly held companies)

2/99–1/00 Automated existing television channel using Scala software running on virtual Amiga OS emulated on Windows NT platform. Feeds were set up & reports constructed using C, Perl, SQL, Pro*C against Oracle 8 database. System let client present a combined stream of photo-classified advertising, news, weather, sports, and current events. Automation of channel made it possible for client to develop new lines of business, i.e. real estate and automobile ads.

9/97–1/99 Designed and built Intranet reporting systems to track delivery and playback of digital video. Wrote system in HTML, Perl, CGI, C, and Java; extracted data from Oracle 8 and Informix 7 databases using ESQL/C & Pro*C, PL/SQL, Perl, and SQL. Application supported automated error reporting, allowing pre-failure service of remote field equipment and improving service levels from 60% to 90%.

6/96–8/97 Enhanced existing cable television marketing broadcast system, running on NCR Unix, Windows NT & DOS: found way to multiplex existing single output channel to six. System written against Informix 7 database and then ported to Oracle 8. Ran on Solaris, Windows, and DOS. Written in C, Perl, ESQL/C, Pro*C, Informix-4GL, SQL, Perform, Ace. This let the client expand a single revenue stream into six, improve customer retention performance, and open up new marketing opportunities.

6/95–5/96 Project leader for construction of digital video system. Directed construction of code running on UNIX servers (Solaris, Lynx realtime) and Windows NT in C, C++, Perl, Bourne & Korn shell, SQL, and ESQL/C using Informix 7 and SQL Server 6.0 databases.

3/93–5/95 Enhanced a large Informix Online 5 database used by cable TV advertising firm to manage multimedia advertising applications and satellite transmissions. Improved performance, reliability, and functionality. Performance rewrite of C code reduced machine loads from 100% to 30%. Simplified DOS C code (reducing code base from 40,000 lines to 12,000), reducing maintenance costs and improving reliability proportionately (code that doesn't exist can't break). Database ported from Informix 5 to 7. Ported system from SCO to NCR to (ultimately) Solaris. System written in C, lex, yacc, Unix Bourne & Korn shells, Informix SQL, 4GL, Ace, Perform, & ESQL/C.

Health care.

- 11/87–3/95 Upgraded and maintained Informix SQL/4GL/Perform/Ace system for tracking medical laboratory and billing data. Ported system from Fortune Unix to Solaris 5 and from Informix v2 to v5. Used C, Awk, Bourne shell as well as Informix 4GL, Ace, Perform & ESQL/C. Code reduction measures reduced time to add new tests by factor of 12. *Pennsylvania Endocrine Laboratory*
- 1/90–3/90 Using C, Unix tools, and Informix tools (SQL, Perform, Ace) automated statistical analysis of certain blood tests, making possible new screening procedures for Down syndrome that can eliminate the need for amniocentesis in pregnant women. New test eventually generated 60% of the laboratory's revenue. *Pennsylvania Endocrine Laboratory*
- 1/88–12/93 Designed and built a cytogenetics database to track medical and billing information, using Informix SQL/Perform/Ace. It generated over 200 Ace reports, including result letters, bills, and patient financial histories. More accurate tracking of laboratory work reduced exposure to errors and litigation. Automated billing enhanced yield; helped reduce average collection time by 15 days. *Medigen*
- 3/88–12/93 Implemented tracking database on Macintosh in Omnis 5 and 7 for perinatal patient and visitation data to improve patient care, provide management overviews of work flow, support research needs, and create a more professional appearance for the laboratory. *Antenatal Testing Unit*

Other. Montefiore Cemetery Company

- 11/89–8/94 Designed, built, enhanced, & maintained a cemetery management database on AIX in Ingres, C, and UNIX toolset. System tracks graves, their ownership, and the deceased. Software written to conform to relevant requirements in Jewish cemetery law, e.g. requirement that no software tasks may be initiated on the Sabbath.

Telecom. Bellcore

- 1/85–11/87 Responsible for a computer site with approximately 2000 users, 26 mini computers running UNIX SVR2 and Ultrix, five system administrators, and two shifts of operators. Designed, wrote, and installed tape management system (in Empress). Track all the tapes made by 50+ minicomputers. Provided publishing support to Bellcore: created debugging version of *Troff*, maintained macro packages, solved typesetting problems. Automated procedures for installing a new release of UNIX, moving users from one machine to another, *et cetera*.
- 1/84–12/84 Responsible for fifteen VAX 780's and 785's by end of first year. All usual system administrator responsibilities, as well as responsibility for file save and publishing software. Improved file save software: eliminated downtime for incremental file saves, reduced disk space needed by half.

Publishing, Centrum, Inc.

- 7/82-12/83 Founding member of new scholarly and scientific press: developed typesetting production system from scratch, using UNIX, C, Bourne shell, Awk. Administered system; automated typesetting and other workflows; trained users. Reduced time to produce individual issues from four to six weeks down to three days.

Education.

- 9/72–6/77 MA in Physics, Princeton University.
9/68–6/72 BA in Physics, Harvard University, *summa cum laude*.
9/65–6/68 Harriton High School, *valedictorian*

Talks.

- 11/88–Now Many technical & scientific talks. Some of the more recent have been uploaded to Slideshare: <http://www.slideshare.net/akmed13/presentations>.

Subjects include: databases (MySQL & PostgreSQL), security, war stories of programming, how to install & use various packages, and so on.

There are also some talks on physics, given at science fiction conventions and at NASA (<http://ecolloq.gsfc.nasa.gov/archive/2011-Spring/announce.ashmead.html>). The most recent is The Theory and Practice of Invisibility (<http://www.slideshare.net/akmed13/invisibility-theory-practice-27034337>). The most popular is easily How to Build a Real Time Machine (<http://www.slideshare.net/akmed13/how-to-build-a-real-time-machine>).