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Lee Lindley

# Skills

Oracle, SQL, PL/SQL, ETL, Unix, Scripting, Perl, C, Git, SVN, Autosys, Control-M, Jira, Service Now, Deployment automation, Security

# Links

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| --- | --- |
| Email | [lee.lindley@gmail.com](mailto:lee.lindley@gmail.com) |
| Technical Blog | <https://lee-lindley.github.io/> |
| Open Source Github Repository | <https://github.com/lee-lindley> |
| Linked In | <https://www.linkedin.com/in/lee-lindley/> |

# Summary

* Large Oracle Database specialization with partitioning and procedural parallelism.
* Comprehensive, efficient application of Oracle SQL capabilities and patterns including analytics.
* Extensive experience with Oracle tuning, and designing efficient, application-performance targeted Oracle architecture.
* Adept with PL/SQL including Object Types, collections, bulk processing, and pipelined table functions.
* Broad knowledge and awareness of low-level hardware and OS operations including a Unix System Administration background.
* Strong Perl/Shell scripting.
* Knowledgeable about and interested in business intent. Capable in capturing and translating business communication and gathered requirements into actionable plans.

# Professional Experience

***F&G Life (A Fidelity National Financial company)***

Contract engagement to supplement the Finance and Actuarial IT team with a modernization project (grab-bag assortment of business requested enhancements) as well as IT process improvements and general technical capabilities on the Oracle platform. Worked with management to establish what my tech-lead role entailed, then set out to fill any gaps where I thought I could make a difference.

* While core team was sequestered on a time-critical project, reverse engineered existing Oracle database application framework to learn how to meet business requirements. Existing system is large, complex, relatively robust and capable, but the complexity exceeds comfort level of everyone involved.
* Enhanced an existing Technical Design document pattern to fit the needs of the modernization project and implement manager's vision for how we should work. Added Use Case diagram as a staple of the Introduction as well as other UML where appropriate (sparingly). Emphasis on deployment deliverables, and traceability matrix on how the design satisfied the Jira story Acceptance Criteria .
* Led two junior developers by establishing and teaching patterns for our work, guiding assignments of work, performing code and technical documentation reviews. Having them write their own technical design documents is a work in process.
* Participated in requirements gathering. The methodology was still waterfall with an agile veneer while the organization worked to transition to agile. As a development team we sought to engage the business with prototypes during the development process, feeding back changes to the requirements. Worked with BA's and QA team to improve SDLC process using Jira and Confluence for tracking and documentation.
* Developed and refined design patterns to meet business requirements while respecting existing system design. Added *ExcelGen* and job logging to the mix. Provided for both reading uploaded spreadsheets and generating a superior output product for the business.
* Analyzed problems with existing jobs that used an external Python script directly on the database server (which was difficult to debug, had a 4000 char SQL statement limitation, and was subject to running the database server out of memory). Designed a pattern and utility package that implemented an *ExcelGen* replacement of the Python script with a tiny change in the calling programs that required minimal testing (regression). Proposed and drove the initiative to retrofit the existing "problematic" jobs.

## NRG Energy, Houston TX – December 2021 through June 2022

Contract engagement with a small team supporting a data warehouse application for Retail Commissions business support. The environment is exclusively batch implemented entirely in PL/SQL (little to no shell scripting) on an Oracle 19 database complex. The team uses Tortoise SVN for source code control, Control-M for job scheduling and Service Now for change management.

* While absorbing knowledge transfer sessions from team members, wrote and published “Developer Guide” documentation to capture the tribal knowledge. My goal was to codify the team processes as well as design patterns, making it easier and more efficient to on-board new team members. Extended this by creating new and enhancing existing system documentation for the team infrastructure code including Use Case, Sequence, Data Flow and Deployment diagrams.
* Began introducing more formal Requirements and Design documentation for projects I was assigned with the intent of improving team practices.
* Made improvements to team infrastructure code including CLOB/BLOB handling for the existing HTML email and CSV file generation packages so that there was no need to create Oracle directories and files. Tweaked existing libraries with performance improvements (result\_cache, deterministic, query optimizations).
* Made a presentation and sold the team on implementing an open-source package named ExcelGen to replace CSV file generation with multi-sheet XLSX files. Contributed changes our team needed to the open-source project.
* Optimized SQL and PL/SQL of existing jobs for performance as assigned. A pattern of using multiple staging tables and small intermediate steps was prevalent. Taught by example how it can be done using Common Table Expressions (CTE aka WITH clause views) without sacrificing breakdown of the problem into small, understandable pieces.
* Identified ETL jobs to eliminate. Limited consumers of the data rewritten to go directly to the source. Cut I/O in a critical one hour window by 11 percent.
* Identified and eliminated unused indexes, saving on load time, statistics gathering, and I/O.
* Analyzed SQL performance extensively, rewriting in some cases to be more efficient (such as refactoring multiple joins to a source table into a single join) and using hints judiciously in cases where the optimizer was unable to arrive at the best plan given available statistics.
* Spotted shared pool thrashing by processes using dynamic SQL in loops based on values in a lookup table. Redesigned into a single SQL statement joining to the lookup table.
* Mentored receptive team members on how to follow our design patterns. Participated in code and design documentation reviews.

## Northeastern Illinois University, Chicago/Remote - April 2021 through November 2021.

On a short-term contract basis joined a very small team performing 3rd party application integration and custom interfaces for Ellucian Banner ERP system (Oracle).

* Reverse engineered a complicated HR Benefits process performed manually via multiple SQL script file feeds to an access database with over 200 macros, queries, and reports. Produced a robust PL/SQL package to perform the required functionality while refactoring, simplifying, and documenting the process. Addressed multiple “issues” the users experience with the incumbent system as well as protecting PII values in the outputs and improving said outputs for use by HR and Controller’s office.
* Helped team members improve their Oracle skills as well as validating their successes. Build confidence in the team. Produced PL/SQL packages that follow best practices (leading by example) with respect to layout, comments, formatting, and efficient operation. Established patterns for using Banner Reports/Process jobs to accomplish business tasks.
* Built infrastructure PL/SQL utility packages, and established patterns including:
  + Produce HTML emails with embedded tables from PL/SQL.
  + Generate PDF with page headers/footers and custom resultset formatting
  + Generate multi-tab XLSX spreadsheets.
  + Combine generated files/blobs into zip archive
  + Deliver result “files” to end users via email attachment and/or secure file download from Banner.
  + Parse and apply updates from XLSX spreadsheets uploaded to Banner.
  + Utilities and patterns for BLOB/CLOB interaction with Banner tables for file upload/download.
  + General purpose application parameter interface.
  + General purpose application logging (lightweight Object user type with autonomous transactions).
* Deploy and configure an open-source Git server. Champion the use of git, creating and documenting general daily use guide with examples to get the team started.
* Deployment patterns that while not Continuous Improvement in scope, moved the team into a more robust direction of creating a release package with handoff for production deployment.
* Began a document library with “Cookbook” style guides for common use cases, a naming convention document (from tribal knowledge), and other development guides and aids.

## Wells Fargo Performance Reporting Team, Richmond, VA - June 2012 through March 2020.

Rejoining Wells Fargo as a contractor in 2012 and then as an FTE in January 2014, I led Oracle upgrades to 11g and then to Exadata 12c, as well as multiple high value enhancement projects. Used and taught new design patterns and core Oracle concepts to the team that will serve them well in the future.

* Designed and implemented the Performance Reporting Core Repository DataStore to provide SOA service for the domain. The Oracle design is carefully tuned to support many simultaneous single (or limited number) account queries, while providing near-real time updates from the source system and efficient bulk updates in off hours. Less commonly used Index Organized Tables (IOT) and rolled up object collection columns support this goal. Many of the bulk updates use CTAS and partition exchange so that readers are not impacted, and “undo” logging is kept to a minimum. The tables are hash partitioned by account key and DBMS\_PARALLEL\_EXECUTE performs the individual partition updates maintaining a consistent view across tables for any given account. This provides for efficient, tunable use of available resources to perform the updates while allowing efficient concurrent read access.
* Designed and created an object-oriented User Defined Type hierarchy and wrote PL/SQL procedures to provide the SOA web service with completely fleshed out and filtered data objects. Championed the use of this technique to greatly simplify the .NET interface to the database in the most efficient single-call method possible.
* Rearchitected table design from one table per business day to date partitioned (and range subpartitioned) structure with robust, restartable partition maintenance process optimizing older data for expected use cases.
  + Implemented Daily Exact performance calculation.
  + Enables (including delivered proof of concept) Security and Asset level performance reporting.
  + Reduced database segments from 10 million to half a million moving from extreme outlier database instance with huge, unwieldy shared pool to more normal database behavior.
* Designed and implemented a replacement for the core Brokerage Investment Performance calculation engine using PL/SQL. This radically improved run-time for two of the three use cases, fixed bugs and security compliance issues with the vendor provided executable, and allowed for future database schema design changes, opening the door for many desired enhancements.
* Created a security policy compliant framework for DDL operations and refactored a large installed code base to comply.
* Retrofitted all file load operations from “external tables” to “sqlldr” as a security policy prerequisite for moving onto Exadata hardware.
* Created a "proof of concept" implementation of a security level performance calculation and presentation system. Working informally with business proponents we drilled through what was possible and what was not, working together toward a full-scale system funding proposal. This rapid application development (RAD) collaboration with business partners was a key component of success. The resulting "prototype" is nearly production ready.
* Designed and created a module to replace inefficient (and costly to correct) vendor code in the calculation of Composite account performance. The module efficiently handles the four use cases of daily posting, small bulk corrections, large bulk corrections, and full replace through selective hinting and parallelism run-time decisions. The design implements the SQL one time but decorates it (hints and procedural parallel options) for each use case. Money-weighted rate of return calculation is implemented in an efficient PL/SQL procedure using a custom algorithm to radically reduce number of iterations required.
* Performed application upgrade from Oracle 10g to 11g including additional tuning improvements. In support of a massive regression test effort, reduced the problem to one of comparing test system outputs to the production system outputs. Used Perl to write a file comparison harness that accounted for known differences and filtered the comparisons. This greatly simplified the regression test coverage for the batch processes and allowed the Test team to focus on regression of the GUI interface. The upgrade implementation was on-time and had zero issues.

## J.P. Morgan Chase (Contract), August 2011 through April 2012.

Oracle Consultant (Home Lending): Responsible for analyzing performance, recommending improvements, and teaching improved techniques to the application development team for the Home Lending Operational Data Store.

* Analyzed the longest running queries and determined how to make them more efficient. Combined multiple sequential queries on a single table into a single query.
* Through direct system observation and analysis of AWR reports, determined that the system was dependent on outstanding SAN performance. When SAN response time was more pedestrian, application performance suffered badly. Analyzed bottleneck queries and determined that 4 index changes would eliminate table reads completely, reducing total required I/O. This change reduced the average sequential read rate per unit of work by 50% and improved the buffer cache hit rate from 79% to 95%. Application performance went from lagging several hours to current.
* Analyzed issues raised by business users, tied them to root cause and designed solutions.
* Designed and led implementation of a separation of the application into four parts to be run in parallel. This allowed it to scale as the volume increased.
* Led team through sessions on how to read AWR reports, how to use Toad Session Browser and how to spot performance bottlenecks.
* Guided team members on process improvements and improved techniques for Oracle queries.
* Assisted the team in improving technical design document writing.

## Wachovia/Wells Fargo, Performance Reporting Team (Contract), Richmond, VA - June 2004 through March 2010, October 2010 through August 2011

Senior Technical Consultant: Responsible for implementing the “Caliper” investment account performance measurement system, associated data conversions, and interfaces to other corporate systems.

* Trained and mentored team that grew by a factor of 5 in a very short time. Wrote and maintained extensive technical documentation. Supported and trained new BA’s, PM’s, developers and testers.
* Working from complicated business requirements, designed and built highly efficient SQL queries to produce formatted records to feed a printing engine for customer facing performance reports. Using advanced Oracle techniques such as analytic clauses, pivot and reverse pivot, model clause and “WITH” sub-query factoring, produced SQL that broke the problem into small, manageable and understandable parts, yet delivered complex functionality that traditionally would have been developed using a procedural language. The resulting programs are both maintainable and extremely efficient.
* Developed robust infrastructure code for use by development team to provide:
  + Procedural parallelism in both Shell and through an object-oriented Perl library
  + An infrastructure for deploying multiple custom “reports” to be displayed from a Web GUI with report attributes and meta-data stored in tables. New reports can be rapidly deployed without changes to the display code.
  + Oracle statistics gathering that correctly gathered the right statistics for the Caliper database and not statistics that can and did result in poor explain plans.
  + Infrastructure modules with object-oriented interfaces to commonly used structures.
* Performed extensive analysis and optimization to reduce batch run times by 40% in preparation for a major merger conversion and doubling of the number of accounts in the system. Worked with SA and DBA teams to adjust database parameters (PGA, shared pool sizes, etc..), memory allocation and disk configuration to optimize performance and minimize problems.
* Designed and implemented conversion of data and code base from Informix to Oracle 10g.
* Design, develop, test and implement programs to Extract, Transform and Load (ETL) large conversion files into the Caliper Informix database using SQL, SPL, Korn shell and Perl. Parallelism and in-line streaming implemented manually using background processes and UNIX pipes as opposed to commercial ETL tools. Performed similar tasks to convert from Informix to Oracle.
* Rapid Application Development in response to business needs as problems are discovered during the conversion. Work with the business to refine the requirements as part of an iterative development process.
* Manage and support production operations. Rapidly respond to identify and fix problems with the processes. Provide 24x7 support.

## Trenchant Solutions LLC, Richmond, VA - April 2001 to June 2004

Senior Technical Consultant: Responsible for the management and delivery of technical services to client organizations.

* Provided technical and professional development training to junior consultants.
* Assisted in all aspects of business development and client relationship management.
* Designed and developed custom C code for clients (Genesis/Enterprise CAM C shared libraries) as per general requirements specification.
* Implemented and administered various infrastructure platforms such as a BSD firewall, SQL server database, email server, file server and internal applications.

Capital One, Solicitation One, APS (Contract) June 2003 – June 2004

* Provide Application Production Support (APS) for the Capstone application and ancillary support applications within the Solicitation One program.
* Respond to user requests for assistance.
* Resolve problems with credit applications in various error states.
* Spot patterns and identify problems and anomalies via analysis of various data sources.
  + Perform first level analysis of impacted applications and root cause identification.
  + Perform research in support of problem resolution via analysis of Capstone Config code and/or solicitation setup errors in ancillary support systems.
  + Perform cleanup of impacted applications through use of SQL and PL/SQL queries to create populations for input to cleanup tools.
  + Write custom Capstone Configuration Workstation code to perform application cleanup.
* Perform detailed analysis of application code to identify potential problem areas and ensure sub-system integrity.
* File defect tickets and enhancement requests via ClearQuest defect tracking system
* Participate in clarifying business requirements and solutions for defects and enhancements.

Capital One, Capstone Program (Contract) June 2002 – June 2003

* Successfully delivered the Software Configuration Management (SCM) solution for the solicitation process and development environment using PL/SQL, SQL, korn-shell, awk, Perl, C/C++, Make, and ClearCase SCM software. Benefits included:
  + Simultaneous development on multiple branches
  + Regulatory compliance
  + Enhanced change control and quality improvements
  + Delivery to aggressive schedules
* Developed and delivered training classes for the SCM process.
* Designed, formally documented, and developed solutions to Extract, Transform and Load (ETL) large volumes of data from and to an Oracle database using k-shell and Ab Initio software.
* Produced formal design documentation correlating to business and system requirements.
* Performed development of Capstone Configuration Workstation code, UNIX Shell and SQL scripts to deliver business functionality.
* Assisted testing team in all aspects of designing and performing acceptance testing.
* Mentored team members with respect to UNIX systems and coding best practices.
* Responded to high-impact emergencies by rapid “hacking” of analysis and fix code in PL/SQL, k-shell and Perl, including use of sophisticated regular expressions.

## Viasystems/Lucent Technologies/AT&T, Sandston, VA - 1983 to April 2001

Senior Staff Engineer: Provided technical expertise and leadership in the areas of Software Development, Systems Administration, and Systems Integration for a fortune 500 company

**Software Development Achievements:**

Responsible for technical direction and leadership of the development team charged with automating, extending, and improving business processes within a technical environment.

* Lead the daily activities of a team of developers responsible for automation and integration of an enterprise level software package. Set technical direction, mentored, and advised teammates, responsible for final deliverables.
* Developed and deployed custom Oracle tables and components encapsulating an interface to the tables using the Perl DBI module.
* Designed, developed, and implemented low level, object-oriented Perl and C libraries to call Perl modules from C shared libraries (embedded interpreter) and calling C shared library code from Perl modules (XS).
* Designed and implemented interfaces and enhancements to Production Scheduling, Materials Resource Planning, and Capacity Planning enterprise systems.

**System Administration Achievements:**

Responsible for deploying, configuring, and maintaining a network of more than 50 workstations, File Servers, Archive and Backup operations and printers.

* Installed and administered a network consisting of Solaris workstations; file, print and application servers; as well as HP and Linux machines while maintaining a 99.9% availability goal.
* Implemented the location-wide NIS services and deployed DNS servers inside and outside the firewall.
* Configured a sendmail gateway outside the firewall and a sendmail relay inside the firewall to serve the entire multinational corporation.
* Set up and maintained the customer facing ftp server as well as developing web upload and email robot interfaces for the secure transfer of design data.
* Configured open-source software packages such as Samba, Perl, Apache and gcc to enhance the overall computing environment for end-users and developers.

# Professional Training

Formal training in C, C++, UNIX System Internals, Device Drivers, Oracle SQL, Solaris administration. To be honest this training is now only about as relevant as my Engineering degree. I learned how to think and learn about code. I don't need training anymore - just the manual.

# Education

Bachelor of Science, Materials Engineering, Virginia Tech. 1983.

# Publications

“The hidden financial costs of ERP software”, Journal of Managerial Finance, 2008. Emerald Outstanding Paper Award.

# Patents

US 10,664,247 B1 - May 26, 2020 - Quilt Chart - User Interface for comparing rate of returns between benchmark asset classes and client accounts*.*