

## Database Development Best Practices

### Executive summary

Industry experts estimate that software bugs cost the worldwide economy billions of dollars. These bugs pose tremendous financial burdens, due to the poor performance and logic errors they create. In addition, they also decrease productivity, increase frustration, and make it difficult for companies to meet changing business requirements.

In an age of outsourcing and multi-skilled developers—whose focus may not be on database development—there is a pressing need for a process to ensure the deployment of the highest quality code to production.

Currently organizations lack the ability to automate the process, thus inhibiting all development teams, regardless of skill set, from consistently producing

the highest quality performing code. In addition, management has no way to effectively validate code before it's deployed into production.

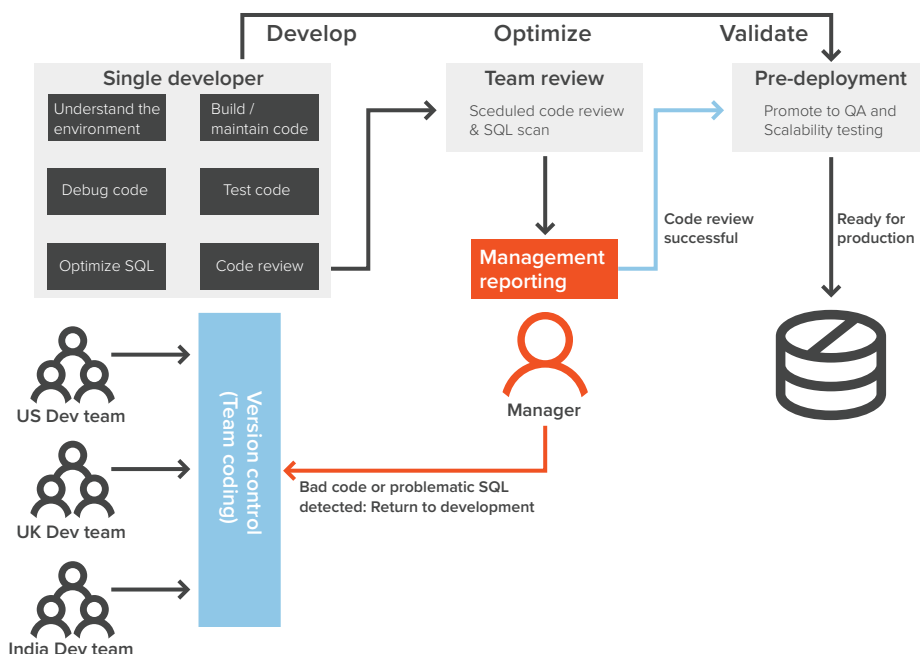
Building on the foundation of Toad<sup>®</sup> and leveraging a proactive automated methodology developed by industry experts, the Toad Development Suite provides an integrated toolset to ensure that the highest quality of code is delivered, optimized and scaled for better performance—regardless of user skill set.

Following the development best practices workflow to developing, optimizing and validating code will result in top quality and easy-to-maintain SQL code as well as eliminate a bottleneck in the development process.

“Due to the lack of widely-accepted guidelines for database development best practices, it is exceedingly difficult for many IT organizations to construct highly optimized and maintainable software. Let’s be clear: It is not enough to create applications that seem ‘good enough for now.’ Instead, we need to figure out how to build applications that will work well today, but also be maintainable ten years from now.”

*Steven Feuerstein, Oracle PL/SQL expert and author*

### Development best practice process workflow



As individual developers assume responsibility for quality SQL production, the development cycle decreases and management's visibility into code quality increases.

By implementing development best practices, organizations can achieve these goals and measure which development teams or developers are producing the highest quality code.

## DATABASE DEVELOPMENT BEST PRACTICES WORKFLOW

### Step one: Develop

Develop the highest quality code faster and receive better performing applications from day one.

- **Build:** Toad is equipped with multiple features to help developers be more productive and efficient when building or maintaining code.
- **Test:** Users can create test cases for all their code automatically and run them for functional correctness, then store those test for later regression testing.
- **Debug:** Bugs and problematic logic in stored procedures are easily identified for quick resolution.
- **Review:** Users can review all their code against predefined coding standards to ensure consistently high quality.

### Step two: Optimize

Toad's Code Analysis feature and SQL Optimizer component maximize code quality and SQL performance by automating the manual, tedious and uncertain process of traditional code reviews and ensuring the fastest possible performance of SQL statements.

Toad's Code Analysis feature:

- Provides a code-quality assessment of all the code in a project based on predefined standards combined with HTML reporting of overall quality.

Toad's SQL Optimizer component:

- Scans application source code and identifies poorly performing SQL.
- Generates every possible rewrite and frees up the trial-and-error process.
- Benchmarks and compares the fastest alternate statement.
- Automates the optimization process, guaranteeing semantic equivalency and discarding those of minimum benefits.
- Ensures optimal performance and eliminates the current manual process.

### Step three: Validate

Toad's Benchmark Factory component:

- Tests critical SQL and stored procedure code for scalability and performance under various user loads in pre-production.
- Enables full database capture of production transactions and replay on a test server with the ability to scale- up user load.

## CONCLUSION

Best practices can be too costly, skill-intensive and time-consuming to enforce, without the appropriate framework in place. Regardless of the environment's platform or an individual skill set, any developer can write code for functionality and performance with the Toad Development Suite. Their applications will meet coding standards and are optimized for performance, scalability and maintainability.

For more information on database development best practices, visit: [toadworld.com](http://toadworld.com).

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#### Quest

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