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COLUMNS

Strategic Software Engineering

Attached Processes

By John McGregor

7

The attached process describes how the core asset is used in the production of products. The attached process is written by the creator of the core asset to which it will be attached. Designing the attached process in parallel with the design of the core asset enhances the usability of the core asset and ensures that the attached process gives correct information, describes the complete asset, and provides information that is consistent with the actual asset.

Java at Large

The Discrete Fourier Transform, Part 6: Cross-Correlation

By Douglas Lyon

17

The cross correlation has uses in many fields of scientific endeavor (music, identification of blood flow, astronomical event processing, speech processing, pattern recognition, financial engineering, etc.). One of the basic problems with the term *normalization* when applied to the cross-correlation is that it is defined in different places differently. For example, Pratt suggests that the number of elements in the normalization (an even a square root) is not needed [Pratt]. Lewis suggests using both the square root and the average [Lewis]. Therefore the question of which normalization to use is application-specific.

The OOP Scene

Professional Developers Practice their Kata to Stay Sharp

By Dave Thomas

23

Test First and *Refactoring* are arguably only possible by leveraging shortcuts. Using the mouse and menus makes it look like a developer is working in slow motion! Imagine if when you get an error in a new test if you were not able to use a shortcut to define a new class or method. It is no surprise that those who don't use two hands and

keyboard shortcuts find TDD takes a lot longer and often express great frustration or give up.

Business Objects

“Architected” Cloud Solutions Revealed

27

By Mahesh Dodani

We introduce a safe form of *automatic* covariant adjustment of the parameters of co-types, to reflect the different expanded types which occur in the subtype hierarchy of the initial expanded type. This potentially spares the programmer from writing such methods explicitly and helps to ensure consistency between co-types which are related via an adjustment hierarchy.

Guest column

Towards a theory and calculus of aliasing

37

By Bertrand Meyer

A theory, graphical notation, mathematical calculus and implementation for finding whether two given expressions can, at execution time, denote references attached to the same object. Intended as the basis for a comprehensive solution to the “frame problem” and as an alternative (for the specific issue of determining aliases) to separation logic, shape analysis, ownership types and dynamic frames.

Educator’s Corner

Darwin’s World Simulation in C#: The Model/View Classes

75

By Richard Wiener

The important C# programming and software development principles of event handling and model/view separation, use of delegate types as “data” in a dictionary and the construction of a GUI class that listens to events originating in a separate model class thread and using `Invoke` to protect against a cross-thread exception are all included in this application.



REFEREED ARTICLES

A Rule-Driven Approach for composing Viewpoint-oriented Models 89

By Adil Anwar, Sophie Ebersold, Bernard Coulette, Mahmoud Nassar, Abdelaziz Kriouile

The VUML profile was developed to meet the needs of complex systems analysis and design according to various viewpoints. In VUML, a viewpoint represents the perspective from which a given actor interacts with the system. In other words, a viewpoint expresses an actor's requirements and rights. A view is the result of the application of a viewpoint on a given entity of the system.

Automatic Test Data Synthesis using UML Sequence Diagrams 115

By Ashalatha Nayak and Debasis Samanta

The goal oriented test data generation procedure is employed to overcome the difficulty of path execution methods in deciding path feasibility. For the selected node in a program known as goal node g , the procedure finds program input so that the node g will be executed irrespective of the path taken. Thus the path selection procedure is eliminated, instead a goal node is selected.

Converting Relational Databases into Object-relational Databases

By Abdelsalam Maatuk, M. Akhtar Ali, and Nick Rossiter

145

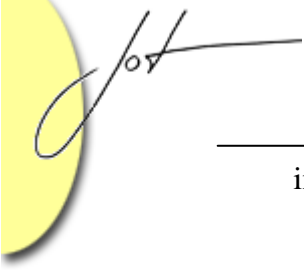
We propose a method for migrating RDBs into ORDBs. The method comprises three basic steps. In the first step, the method produces a Canonical Data Model (CDM), which is enriched with RDB integrity constraints and data semantics that may not have been explicitly expressed in its metadata. The CDM so obtained is translated into an ORDB schema in the second step. Data conversion is the third step, in which RDB data are converted into their equivalents in the ORDB environment.

SOA Web Security and Applications

By Raymond Wu, Masayuki Hisada

163

To deal with taint prediction, we propose token based metadata to validate semantic notation. We introduce SOA service bus and token based framing technique as supplementary solutions to strengthen token based architectural foundation. This enables the parser analyzer to isolate semantics from the frame in performing input string validation. In service industry, as componentization and our token based strategy encapsulate robust validation and tracking, point of failure can be precisely identified at transaction level, and business



impact can be minimized.

UML Profiles for Modeling Real-Time Communication Protocols

By Barath Kumar and Juergen Jasperneite

178

UML profile for schedulability, Performance and Time (UML/SPT) [OMG05b] is an OMG standard UML profile suitable for modeling and analysis of real-time systems. It is a framework to model resource, time and concurrency concepts, and to support predictive quantitative analysis of UML models by supporting schedulability and performance analysis.

OUTLOOK

A brief outlook to the next issue

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