MIRACLE

Chris Date

Database Specialist

Normal Forms and All That Jazz : A Database Professional's Guide to the Theory of Database Design

a Chris Date Master Class

ABOUT THIS SEMINAR

When and where: May the 17th, Paasitorni, Helsinki, Finland

Registration: by email to chrisdate2011@miracleoy.fi, no later than May the 10th.

Fee: 600e+VAT, members of Oracle User Group Finland 450e+VAT

Organizator: Miracle Finland Oy

How many of these questions can you answer?

1. What's the difference between 3NF and BCNF?
2. Is it true that if a table has just two columns, then it's in 4NF?
3. Is it true that if a table has just one key and just one other column, then it's in 5NF?
4. Is it true that if a table is in BCNF but not 5NF, then it must be all key?
5. Is it true that 5NF tables are redundancy free?
6. What precisely is denormalization?

As you can see, these questions all have to do with normalization and normal forms. Normal forms are important, of course, but there's much more to database design theory than just normal forms as such. Here are some more questions:

7. What's Heath's Theorem, and why is it important?
8. What's The Principle of Orthogonal Design?
9. What makes some JDs reducible and others irreducible?
10. What's dependency preservation, and why is it important?
11. Should data redundancy always be avoided? Can it be?
12. What's the chase?

All of these questions have to do with design theory. Design theory is the scientific foundation for database design, just as the relational model is the scientific foundation for database technology in general. And just as anyone professionally involved in database technology in general needs to be familiar with the relational model, so anyone involved in database design in particular needs to be familiar with design theory. But design theory has its problems ... and one of those problems, from the practitioner's point of view at any rate, is that it's riddled with terms and concepts that are difficult to understand and don't seem to have much to do with design as actually done in practice. Now, nobody could claim designing databases is easy; but a sound knowledge of the theory can only help. In fact, if you want to do design properly? if you want to build databases that are robust and flexible and accurate? then you really have to come to grips with that theory. There's just no alternative: at least, not if you want to claim to be a design professional. Proper design is so important! (After all, the database lies at the heart of much of what we do in the computing world; so if the database is badly designed, the negative impacts can be extraordinarily widespread.) Attend this seminar, then, and learn the answers to questions like those above, as well as much, much more. To be specific, the seminar will:

* Review, but from an unfamiliar perspective, aspects of design you should already be familiar with
* Explore in depth aspects you're probably not already familiar with
* Provide clear and accurate explanations and definitions of all pertinent concepts
* Not spend a lot of time on well-known material such as 2NF and 3NF

Overall, the intent is to serve as a painless introduction to design theory for database professionals. Note: Classroom exercises are an integral part of the seminar, and attendee discussion and interaction are encouraged.

TOPICS INCLUDED

* Popular misconceptions
* The place of design theory
* Functional dependencies (informal)
* Functional dependencies (formal)
* Boyce/Codd normal form (informal)
* Boyce/Codd normal form (formal)
* Preserving dependencies
* FD axiomatization
* Join dependencies (informal)
* Join dependencies (formal)
* Fifth normal form (informal)
* Fifth normal form (formal)
* Implicit dependencies
* The chase
* Multivalued dependencies
* MVD axiomatization
* Fourth normal form
* Sixth normal form
* Other normal forms
* Principles of normalization
* Objectives of normalization
* Why normalization is not a panacea

* The Principle of Orthogonal Design
* Orthogonality vs. normalization
* What is redundancy?
* Kinds of redundancy
* Dealing with redundancy

WHO SHOULD ATTEND
This is an advanced class; attendees will be expected to be familiar with the relational model and to have a professional interest in database design. Prior attendance at the Chris Date Master Class SQL and Relational Theory: How to Write Accurate SQL Code is highly recommended.

OBJECTIVES
On completion of this seminar, attendees will:

* Understand, and be able to apply, the scientific principles of normalization and orthogonality that underlie design practice
* Know which normal forms are important, how they differ from one another, and how to achieve them
* Understand dependencies and the concepts of dependency inference and dependency preservation
* Generally, understand the contributions (and the limitations) of design theory

DOCUMENTATION
Attendees will receive a workbook containing copies of the speaker's slides.

SPEAKER: Chris Date
C. J. Date is an independent author, lecturer, researcher, and consultant, specializing in relational database technology. He is best known for his book An Introduction to Database Systems (eighth edition, Addison-Wesley, 2004), which has sold almost 850,000 copies and is used by several hundred colleges and universities worldwide. He is also the author of many other books on database management, including most recently:

* From Addison-Wesley: *Databases, Types, and the Relational Model: The Third Manifesto* (coauthored with Hugh Darwen, 2006)
* From Trafford: *Logic and Databases: The Roots of Relational Theory* (2007)
* From Apress: *The Relational Database Dictionary, Extended Edition* (2008)
* From O'Reilly: *SQL and Relational Theory: How to Write Accurate SQL Code* (2009)
* From Trafford: *Database Explorations: Essays on The Third Manifesto and Related Topics* (coauthored with Hugh Darwen, 2010)

Another book, *Go Faster! The TransRelational™ Approach to DBMS Implementation*, is due for publication in the near future.

Mr. Date was inducted into the Computing Industry Hall of Fame in 2004. He enjoys a reputation that is second to none for his ability to communicate complex technical subjects in a clear and understandable fashion.