Annotated Bibliography:

Database Design

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Introduction

Databases store large amounts of information in one compact space and enable users to easily retrieve needed information. In order for users to access this material in a timely manner, there must be a system in place allowing for an efficient search of the collection. This is where a well designed database becomes extremely important. This bibliography is designed to help students ranging from late high school to the college level learn the basics of database design and the popular programs used by professionals in the field. There are two sections. The first section contains sources introducing readers to the programming language of SQL, or Standard Query Language, which is the industry standard for programming a custom database. It will also provide students with tips for learning database design, and suggestions for ways to learn the basic concepts. The second section focuses on resources which help students learn two of the popular database software programs available, Microsoft Access and Oracle. The final resource provides students with an option for downloading trial software to test out programs for a limited time.

**Learning Database Design**

Churcher, C. (2008). *Beginning SQL queries: From novice to professional*. Berkley: Apress.

For anyone learning database design and SQL, this book is a great place to get additional help. The author, Clare Churcher, has a PhD in physics and teaches database design and programming at the university level. Throughout this book, Churcher gives clear, step-by-step instructions for learning and using SQL in both Microsoft Access and SQL Server, two common programs in database design. Diagrams and screenshots throughout the book make it easy for people learning the programs to follow along on their own. The contents list and index in the back of the book make it easy to look up terms and find specific sections if you are looking for help on a particular area. This selection is appropriate for anyone from late high-school and older. However, her references to algebra and calculus when discussing SQL programming language may confuse beginners and are an unnecessary analogy in this field. For a different option for beginners consider checking out Learning SQL (Beaulieu, A. (2009). *Learning SQL*. [Sebastopol](http://en.wikipedia.org/wiki/Sebastopol%2C_California), CA: O'Reilly Media, Inc.).

Maxwell, R. (n.d.). *SQL solver*. Retrieved April 13, 2011, from <http://sqlsolver.com/new_index.htm>

Ramona Maxwell’s website provides links to articles and other websites for students interested in database design. She had been studying Microsoft database systems for many years and provides professional technical services for database development and implementation. Here Ramona shares her favorite websites and database tools in a format that is visually pleasing and easy to follow. She gives recommendations to her favorite database software, including test-prep materials for students interested in learning about the certifications for database design programs. She also provides her own tips on preparing for the various exams. This website is a great resource for students wanting to pursue careers in database design and lets them learn what education and testing is required. There are links to other sites for further exploration. However, it may be overwhelming for those just getting started in the field and who may not be familiar with the many of the terms she uses. For those simply wanting to learn the basics of databases, Oppel’s Databases Demystified (see citation below) would be a great place to start.

Oppel, A. (2011). *Databases demystified* (2nd ed.). New York, NY: McGraw-Hill.

Andy Oppel is a professional database designer and architect with a degree in computer science. He has more than twenty-five years of teaching experience, and has designed and implemented many professional databases. He received the Honored Instructor Award in 2000.Oppel’s book focuses on the beginning student learner interested in relational databases. The author takes the reader through the database design process from design fundamentals to implementation and security. Diagrams and illustrations from common software including Microsoft Access, MySQL, Microsoft SQL Server, and Oracle enable students to follow along using their own programs. Quizzes and a final exam in the back of the book allow students to test their comprehension of tasks and ideas presented in the text. Although the author uses several different programs to illustrate his concepts, this book does not “teach” readers how to use a specific program. For those wanting to learn more about specific software, they should refer to the many resources available for learning these particular programs. However, learning the database creation process is a fundamental that will translate to whatever program the student later wishes to utilize.

Post, G.V., & Whisenand, T.G. (2005). An expert system helps students learn database design. *Decision Sciences Journal of Innovative Education*, 3(2), 273-293.

# This article examines the challenges faced by students and teachers of database design, and how web-based expert systems can help in the learning process. It first looks at how students learn database design, and how the subject is traditionally taught in schools. It then gives an example of how the system can provide feedback for the student and what advantages it gives over traditional learning systems. Thomas Whisenand is an associate professor of MIS at Shippensburg University. He holds a PhD and MIS, and has spent time evaluating the use of technology tools. While this article can give database design students a look into a type of teaching tool they are not familiar to, this article’s intended audience is instructors of database design looking for a different system for tracking their student’s progress. For those wanting to learn the basic concepts of database design, they should see Clare Churcher’s Beginning Database Design: From Novice to Professional (2007. New York: Apress).

Teorey, T., Lightstone, S., Nadeau, T., & Jagadish, H. (2011). *Database modeling and design: logical design* (5th ed.). Amsterdam: Morgan Kaufmann Publishers.

Professional accomplishments of the authors include Professor Emeritus, Ph.D. in Computer Science, and patent holder in their fields of study. Two authors teach database design classes, and all work in the field of database design. The book is well organized with a table of contents and index for quick information look-up. The beginning of each chapter has a more detailed contents list with page numbers. Numerous illustrations are found throughout the book to visually explain what is being said in the text. The authors insert sections called “Tips and incites for database professionals”, which can be helpful for both professionals working on projects and students who want to learn professional quality database design. An extensive index and glossary allows for quick keyword searching of topics and terms important to the user. This book does a good job of incorporating material that can be processed and understood by users of all skill levels. For a more advanced option intended for computer science majors, check out [Ramez Elmasri](http://www.amazon.com/Ramez-Elmasri/e/B000APV0OK/ref%3Dntt_athr_dp_pel_1)’s Fundamentals of Database Systems (Elmasri, R., & [Navathe](http://www.amazon.com/s/ref%3Dntt_athr_dp_sr_2?_encoding=UTF8&sort=relevancerank&search-alias=books&field-author=Shamkant%20Navathe), S. (2010). *Fundamentals of Database Systems*, (6th ed.). Boston: Addison Wesley)

**Tools for Learning Software Programs**

Burleson, D. (2004). *Physical database design using oracle*. Boca Raton: Auerbach Publications.

This book provides a good resource for students interested in studying Oracle in their database careers. It teaches students how to use Oracle to design data structures which will allow for the best database organization possible. The author, Donald Burleson, is one of the top Oracle database experts with more than twenty years of experience in the database design field. He had written more than thirty-two books on database administration, and is a former adjunct professor. This book is targeted at undergraduate and graduate information science students well on their way to becoming Oracle professionals. It is expected that readers will have already had exposure to basic Oracle database administration, whether through classes or another avenue. Those who are just picking up the subject on their own may have difficulty understanding the concepts presented within. For those wanting help to learn Oracle for the first time, they should pick up Learning Oracle PL/SQL by [Bill Pribyl](http://productsearch.barnesandnoble.com/search/results.aspx?store=book&ATH=Bill+Pribyl) (Pribyl, B. *Learning Oracle PL/SQL*. Sebastopol, CA: O’Rielly Media.). Burleson’s book is a great book for students just getting started with Oracle.

Database design basics: applies to Microsoft Access 2007 by Microsoft Corporation. 2011. Retrieved from <http://office.microsoft.com/en-us/access-help/database-design-basics-HA001224247.aspx> on April 19, 2011

Microsoft Access is one of the main systems used to learn database design. This webpage provides students with an introduction to the design process, tips for organizing information in tables, and how to take a design idea from paper to a database program. The website uses screenshots from Access showing steps and concepts, along with the written instructions, to illustrate how to complete a basic database. It also does a good job of explaining terms, and key concepts. Microsoft Corporation has long been providing people with tools for creating and organizing information, and this particular site does a good job of introducing students from high school and up to key concepts for creating their first database. However, for those who prefer to have a physical document to refer to while they are working on their database in front of them, other books and resources may be a better option, including Lisa Friedrichsen’s Microsoft Office Access 2007-Illustrated Complete. Students will find this a great starting resource for their exploration of Access.

Database solutions & downloads for Microsoft access, Retrieved April 13, 2011from <http://www.databasedev.co.uk>.

For those looking for a free resource for tips on using Microsoft Access to design a database, this is one to explore. The site is full of articles on how to create a database from creating your tables and fields to store your information to how to write programs, or macros, to tell your database what to do. The website has an easy-to-use design with an expandable menu on the right hand side to find the topics you are interested in, and links to specific instruction pages which do not require a download to access them. The site also provides links to other resources for users to explore, all regarding Microsoft Access. The website provides a wealth of information for anyone from high school student to working professional, although some content may be better for those already familiar with the basics of the program. However, it does not cover any program other than Microsoft Access and the lack of screenshots when giving directions to create new items may confuse those not familiar with all the menus in the program. For those interested in learning Access, this website offers an easy to follow, free alternative to books.

**Database Design Software**

Tools for database developers: database modeling, synchronization, comparison and test data generation. (n.d.). *Tools for Database Developers: database modeling, synchronization, comparison and test data generation*. Retrieved April 13, 2011, from http://www.datanamic.com

The field of database design requires the use of many different software packages, depending on what kind of work one is interested in pursuing. Datanamic.com provides descriptions and purchase instructions for a variety of database development software which are essential tools for any professional working in the database design business. The website gives descriptions of many popular tools used in the trade, along with some screenshot examples from the programs. For students it can offer a glimpse into the variety of tools used by professionals, and summaries of how the tools are used. Although the prices for these software packages put this site in the user range of aspiring to established professionals, those taking classes or who are interested in trying particular software can take advantage of free 30-day trials of any software package offered. This is a great resource to get acquainted with many of the tools professionals use on a day-to-day basis.