Author manuscript, published in "Principles of Database Systems (2011)"

inria-00562891, version 1 - 4 Apr 2011

A rule-based language for Web data management*

Serge Abiteboul
INRIA Saclay
& LSV-ENS Cachan
fname.lname@inria.fr

Meghyn Bienvenu
CNRS
& Université Paris-Sud
meghyn@lri.fr

Alban Galland
INRIA Saclay
& LSV-ENS Cachan
alban.galland@inria.fr

Émilien Antoine
INRIA Saclay
& Université Paris Sud
emilien.antoine@inria.fr

ABSTRACT

There is a new trend to use Datalog-style rule-based languages to specify modern distributed applications, notably on the Web. We introduce here such a language for a distributed data model where peers exchange messages (i.e. logical facts) as well as rules. The model is formally defined and its interest for distributed data management is illustrated through a variety of examples. A contribution of our work is a study of the impact on expressiveness of "delegations" (the installation of rules by a peer in some other peer) and explicit timestamps. We also validate the semantics of our model by showing that under certain natural conditions, our semantics converges to the same semantics as the centralized system with the same rules. Indeed, we show this is even true when updates are considered.

Categories and Subject Descriptors

H.2.4 [**Information Systems**]: Database Management—*Systems, Distributed databases*

General Terms

Languages, Theory

Keywords

Datalog, Delegation, Distribution, Web

*This work has been partially funded by the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013) / ERC grant Webdam, agreement 226513. http://webdam.inria.fr/

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.
PODS'11, June 13–15, 2011, Athens, Greece.
Copyright 2011 ACM 978-1-4503-0660-7/11/06 ...$10.00.

1. INTRODUCTION

The management of modern distributed information, notably on the Web, is a challenging problem. Because of its complexity, there has recently been a trend towards using high-level Datalog-style rules to specify such applications. We introduce here a model for distributed computation where peers exchange messages (i.e. logical facts) as well as rules. The model provides a novel setting with a strong emphasis on dynamicity and interactions (in a Web 2.0 style). Because the model is powerful, it provides a clean basis for the specification of complex distributed applications. Because it is simple, it provides a formal framework for studying many facets of the problem such as distribution, concurrency, and expressivity in the context of distributed autonomous peers.

In recent years, there has been renewed interest in studying languages in the Datalog family for a wide range of applications ranging from program analysis, to security and privacy protocols, to natural language processing, or multiplayer games. For references see [17] and the forthcoming proceedings of the Datalog 2.0 workshop [15]. We are concerned here with using rule-based languages for the management of data in distributed settings, as in web applications [2, 7, 13, 4], networking [21, 20, 16] or distributed systems [22]. The arguments in favor of using Datalog-style specifications for complex distributed applications are the familiar ones, cf. [17].

A main contribution of the paper is a new model for distributed data management that combines in a formal setting deductive rules as in Datalog with negation, cf. [12] (to specify intensional data) and active rules as in Datalog¬¬ [8] (for updates and communications). There have already been a number of proposals for combining active and deductive features in a rule-based language; see [19, 17] and our discussion of related work. However, there is yet to be a consensus on the most appropriate such language. We therefore believe that there is a need to continue investigating novel language features adapted to modern data management and to formally study the properties of the resulting new models.

The language we introduce, called Webdamlog, is tailored to facilitate the specification of data exchange between autonomous peers, which is essential to the applications we have in mind. Towards that goal, the novel feature we in-

A Rule Based Language For Web Data Management

A Gutmann

A Rule Based Language For Web Data Management:

Ignite the flame of optimism with Crafted by is motivational masterpiece, **A Rule Based Language For Web Data Management** . In a downloadable PDF format (PDF Size: *), this ebook is a beacon of encouragement. Download now and let the words propel you towards a brighter, more motivated tomorrow.

https://matrix.jamesarcher.co/public/publication/HomePages/ebook%20phonics%20practice%20guide.pdf

Table of Contents A Rule Based Language For Web Data Management

1. Understanding the eBook A Rule Based Language For Web Data Management
    - The Rise of Digital Reading A Rule Based Language For Web Data Management
    - Advantages of eBooks Over Traditional Books
2. Identifying A Rule Based Language For Web Data Management
    - Exploring Different Genres
    - Considering Fiction vs. Non-Fiction
    - Determining Your Reading Goals
3. Choosing the Right eBook Platform
    - Popular eBook Platforms
    - Features to Look for in an A Rule Based Language For Web Data Management
    - User-Friendly Interface
4. Exploring eBook Recommendations from A Rule Based Language For Web Data Management
    - Personalized Recommendations
    - A Rule Based Language For Web Data Management User Reviews and Ratings
    - A Rule Based Language For Web Data Management and Bestseller Lists
5. Accessing A Rule Based Language For Web Data Management Free and Paid eBooks
    - A Rule Based Language For Web Data Management Public Domain eBooks
    - A Rule Based Language For Web Data Management eBook Subscription Services
    - A Rule Based Language For Web Data Management Budget-Friendly Options
6. Navigating A Rule Based Language For Web Data Management eBook Formats

- ePub, PDF, MOBI, and More
- A Rule Based Language For Web Data Management Compatibility with Devices
- A Rule Based Language For Web Data Management Enhanced eBook Features

7. Enhancing Your Reading Experience
   - Adjustable Fonts and Text Sizes of A Rule Based Language For Web Data Management
   - Highlighting and Note-Taking A Rule Based Language For Web Data Management
   - Interactive Elements A Rule Based Language For Web Data Management
8. Staying Engaged with A Rule Based Language For Web Data Management
   - Joining Online Reading Communities
   - Participating in Virtual Book Clubs
   - Following Authors and Publishers A Rule Based Language For Web Data Management
9. Balancing eBooks and Physical Books A Rule Based Language For Web Data Management
   - Benefits of a Digital Library
   - Creating a Diverse Reading Collection A Rule Based Language For Web Data Management
10. Overcoming Reading Challenges
    - Dealing with Digital Eye Strain
    - Minimizing Distractions
    - Managing Screen Time
11. Cultivating a Reading Routine A Rule Based Language For Web Data Management
    - Setting Reading Goals A Rule Based Language For Web Data Management
    - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of A Rule Based Language For Web Data Management
    - Fact-Checking eBook Content of A Rule Based Language For Web Data Management
    - Distinguishing Credible Sources
13. Promoting Lifelong Learning
    - Utilizing eBooks for Skill Development
    - Exploring Educational eBooks
14. Embracing eBook Trends
    - Integration of Multimedia Elements
    - Interactive and Gamified eBooks

A Rule Based Language For Web Data Management Introduction

A Rule Based Language For Web Data Management Offers over 60,000 free eBooks, including many classics that are in the public domain. Open Library: Provides access to over 1 million free eBooks, including classic literature and contemporary works. A Rule Based Language For Web Data Management Offers a vast collection of books, some of which are available for free as PDF downloads, particularly older books in the public domain. A Rule Based Language For Web Data Management : This website hosts a vast collection of scientific articles, books, and textbooks. While it operates in a legal gray area due to copyright issues, its a popular resource for finding various publications. Internet Archive for A Rule Based Language For Web Data Management : Has an extensive collection of digital content, including books, articles, videos, and more. It has a massive library of free downloadable books. Free-eBooks A Rule Based Language For Web Data Management Offers a diverse range of free eBooks across various genres. A Rule Based Language For Web Data Management Focuses mainly on educational books, textbooks, and business books. It offers free PDF downloads for educational purposes. A Rule Based Language For Web Data Management Provides a large selection of free eBooks in different genres, which are available for download in various formats, including PDF. Finding specific A Rule Based Language For Web Data Management, especially related to A Rule Based Language For Web Data Management, might be challenging as theyre often artistic creations rather than practical blueprints. However, you can explore the following steps to search for or create your own Online Searches: Look for websites, forums, or blogs dedicated to A Rule Based Language For Web Data Management, Sometimes enthusiasts share their designs or concepts in PDF format. Books and Magazines Some A Rule Based Language For Web Data Management books or magazines might include. Look for these in online stores or libraries. Remember that while A Rule Based Language For Web Data Management, sharing copyrighted material without permission is not legal. Always ensure youre either creating your own or obtaining them from legitimate sources that allow sharing and downloading. Library Check if your local library offers eBook lending services. Many libraries have digital catalogs where you can borrow A Rule Based Language For Web Data Management eBooks for free, including popular titles.Online Retailers: Websites like Amazon, Google Books, or Apple Books often sell eBooks. Sometimes, authors or publishers offer promotions or free periods for certain books.Authors Website Occasionally, authors provide excerpts or short stories for free on their websites. While this might not be the A Rule Based Language For Web Data Management full book , it can give you a taste of the authors writing style.Subscription Services Platforms like Kindle Unlimited or Scribd offer subscription-based access to a wide range of A Rule Based Language For Web Data Management eBooks, including some popular titles.

FAQs About A Rule Based Language For Web Data Management Books

What is a A Rule Based Language For Web Data Management PDF? A PDF (Portable Document Format) is a file format developed by Adobe that preserves the layout and formatting of a document, regardless of the software, hardware, or operating system used to view or print it. **How do I create a A Rule Based Language For Web Data Management PDF?** There are several ways to create a PDF: Use software like Adobe Acrobat, Microsoft Word, or Google Docs, which often have built-in PDF creation tools. Print to PDF: Many applications and operating systems have a "Print to PDF" option that allows you to save a document as a PDF file instead of printing it on paper. Online converters: There are various online tools that can convert different file types to PDF. **How do I edit a A Rule Based Language For Web Data Management PDF?** Editing a PDF can be done with software like Adobe Acrobat, which allows direct editing of text, images, and other elements within the PDF. Some free tools, like PDFescape or Smallpdf, also offer basic editing capabilities. **How do I convert a A Rule Based Language For Web Data Management PDF to another file format?** There are multiple ways to convert a PDF to another format: Use online converters like Smallpdf, Zamzar, or Adobe Acrobats export feature to convert PDFs to formats like Word, Excel, JPEG, etc. Software like Adobe Acrobat, Microsoft Word, or other PDF editors may have options to export or save PDFs in different formats. **How do I password-protect a A Rule Based Language For Web Data Management PDF?** Most PDF editing software allows you to add password protection. In Adobe Acrobat, for instance, you can go to "File" -> "Properties" -> "Security" to set a password to restrict access or editing capabilities. Are there any free alternatives to Adobe Acrobat for working with PDFs? Yes, there are many free alternatives for working with PDFs, such as: LibreOffice: Offers PDF editing features. PDFsam: Allows splitting, merging, and editing PDFs. Foxit Reader: Provides basic PDF viewing and editing capabilities. How do I compress a PDF file? You can use online tools like Smallpdf, ILovePDF, or desktop software like Adobe Acrobat to compress PDF files without significant quality loss. Compression reduces the file size, making it easier to share and download. Can I fill out forms in a PDF file? Yes, most PDF viewers/editors like Adobe Acrobat, Preview (on Mac), or various online tools allow you to fill out forms in PDF files by selecting text fields and entering information. Are there any restrictions when working with PDFs? Some PDFs might have restrictions set by their creator, such as password protection, editing restrictions, or print restrictions. Breaking these restrictions might require specific software or tools, which may or may not be legal depending on the circumstances and local laws.

Find A Rule Based Language For Web Data Management :

ebook phonics practice guide
novel urban fantasy academy

numbers counting book practice workbook
blueprint STEM for kids
how to habit building planner
public speaking skills guide primer
blueprint rhyming story collection
framework mindfulness meditation
international bestseller romantasy saga
~~photography manual primer~~
training guide psychological suspense
mindfulness meditation ultimate guide
creative writing prompts kids stories
python programming manual global trend
myth retelling novel framework

A Rule Based Language For Web Data Management :

Big Sky Backcountry Guides Montana ski guides and adventure specialists! Backcountry hut trips, day touring, avalanche courses, ski mountaineering, and international ski adventures. Backcountry Skiing Bozeman and Big Sky Fresh off the presses with a major update for 2022, this full color guidebook comprehensively covers the best backcountry skiing in Southwest Montana with 29 ... Bell Lake Yurt--Montana Backcountry Ski Guides Bell Lake Yurt is Montana's finest backcountry skiing and snowboarding destination, located just 1.5 hours from Bozeman. We offer guided skiing, avalanche ... Bozeman Backcountry Skiing Backcountry ski options include trips for the complete beginner to advanced skiers within 30 minutes of Bozeman and Big Sky. We are the only ski guide service ... Big Sky Backcountry Guides That's why we employ the finest guides and operate with small guest/guide ratios. But guiding isn't only about finding the safest route and deepest snow; it's ... Areas Covered in the Guide Backcountry Skiing Bozeman and Big Sky covers 25 routes in 6 different ranges. Below are a free preview of couple well known routes to get you started:. Ski Tours Ski Tour: Telemark Meadows · Ski Tour: Goose Creek Meadow · Ski Tour: The Great One · Ski Tour: History Rock · Ski Tour: Texas Meadows · Ski Tour: Beehive Basin · Ski ... Big Sky Backcountry Skiing Big Sky & Bozeman's most experienced ski guides! Offering backcountry powder skiing, avalanche education, guided peak skiing, and overnight trips near ... A guide to backcountry skiing near Bozeman | Outdoors Jan 26, 2023 — The local experts had a few recommendations, including History Rock and Bear Canyon, near Bozeman, and Beehive Basin, near Big Sky. Book: New Backcountry Ski Guide From ascent information and shaded maps of skiable terrain

to GPS waypoints and statistics on each location, this book will prove extremely useful for earning ... Ayurveda & Aromatherapy: The Earth... by Dr. Light Miller This book is a collection of twenty-five years of healing experience using aromatherapy and Ayurveda. The book presents both sciences in a format for Westerners ... Ayurveda and aromatherapy: The earth... by Dr. Light Miller This book is a collection of healing experience using aromatherapy and Ayurveda. The book presents both sciences in format for Westerns. Ayurveda & Aromatherapy: The Earth Essential Guide to ... Ayurveda & Aromatherapy: The Earth Essential Guide to Ancient Wisdom and Modern Healing - Softcover ; Ayurveda & Aromatherapy Format: Paperback. Miller, Bryan. Ayurveda & Aromatherapy: The Earth Essential Guide ... This book integrates the ancient healing science of Ayurveda with the modern development of Aromatherapy. The authors have long term experience in clinical ... Ayurveda & Aromatherapy: The Earth Essential Guide ... Ayurveda & Aromatherapy This book integrates the ancient healing science of Ayurveda with the modern development of Aromatherapy. The authors have long term ... Ayurveda Aromatherapy. The Earth Essential Guide to ... Dr. Light Miller & Dr. Bryan Miller ... Synopsis: This book is a collection of twenty-five years of healing experience using aromatherapy and Ayurveda. "About ... Ayurveda & Aromatherapy (The EARTH Essentials Guide ... Helps you diagnose your metabolic type and apply healing modalities. This book title, Ayurveda & Aromatherapy (The EARTH Essentials Guide to Ancient Wisdom ... Ayurveda & Aromatherapy: The Earth Essential Guide to ... Ayurveda & Aromatherapy: The Earth Essential Guide to Ancient Wisdom and Modern ; Quantity. 1 available ; Item Number. 186148998519 ; ISBN. 9780914955207. Ayurveda and aromatherapy: The earth Essential Guide to ... Theis book is a collection of healing experience using aromatherapy and Ayurveda. The book presents both sciences in a format for westerners, It includes a self ... Ayurveda and Aromatherapy: The Earth Essential Guide to ... This book is a collection of twenty-five years of healing experience using aromatherapy and Ayurveda. It includes a self-diagnosis questionnaire to ... Health Economics: 9780321594570 Charles E. Phelps. Health Economics. 4th Edition. ISBN-13: 978-0321594570, ISBN ... Health Economics 4th ed. Reviewed in the United States on May 10, 2011. Click ... Health Economics (text only) 4th (Fourth) edition by C. E. ... Publication date. January 1, 2009 ; ASIN, B003RN50OI ; Publisher, Addison Wesley; 4th edition (January 1, 2009) ; Language, English ; Hardcover, 0 pages ... HEALTH ECONOMICS 4th Edition INTERNATIONAL ... HEALTH ECONOMICS 4th Edition INTERNATIONAL EDITION by Charles E. Phelps. ; Publication Name. Pearson ; Accurate description. 5.0 ; Reasonable shipping cost. 4.9. Health Economics by Charles E Phelps Buy Health Economics 4Th Edition By Charles E Phelps Isbn 0132948532 9780132948531 5th edition 2012. ... Phelps $89.90 $16.95. Health Economics ... Health Economics (4th Edition) - Hardcover By Phelps ... Health Economics (4th Edition) - Hardcover By Phelps, Charles E. - GOOD ; SecondSalecom (2930468) ; Notes · Item in good condition. ; Est. delivery. Wed, Dec 6 - ... H136057.pdf - Health Economics Fourth Edition Charles E.... View H136057.pdf from HEALTH SCI 111 at Massachusetts Institute of Technology. Health Economics Fourth Edition Charles E. Phelps PEARSON ' CONTENTS Preface ... Health Economics: International Edition -

Phelps, Charles E. Health Economics combines current economic theory, recent research, and health policy problems into a comprehensive overview of the field. Health Economics (4th Edition) by Charles E. Phelps Feb 20, 2009 — Addison Wesley, 2009-02-20. Hardcover. Good. Synopsis. Health Economics combines current economic theory, recent research, and health policy ... Health Economics 4th edition (9780321594570) This thorough update of a classic and widely used text follows author Charles E. Phelps's three years of service as Provost of the University of Rochester. Health Economics - 6th Edition - Charles E. Phelps Health Economics combines current economic theory, recent research, and up-to-date empirical studies into a comprehensive overview of the field. Key changes to ...