

A Novel and Optimized Parallel Approach for ETL Using Pipelining

Deepshikha Aggarwal*, V. B. Aggarwal*

**Department of IT, Jagan Institute of Management Studies, Delhi*

deepshikha.aggarwal@jimsindia.org

vbaggarwal@jimsindia.org

Abstract - Companies have huge amounts of precious data lying around throughout their servers and networks that needs to be moved from one location to another such as from one business center to another or to a data warehouse for analysis. The problem is that the data lies in different sorts of heterogeneous systems, and therefore in different formats. To accumulate data at one place and to make it suitable for strategic decisions we need a data warehouse system. This consists of extract, transform and load (ETL) software, which extracts data from various resources, transform it into new data formats according to required information needs, and then load it into desired data structure(s) such as a data warehouse. Such softwares take enormous time for the purpose which makes the process very slow. To deal with the problem of time taken by ETL process, in this paper we are presenting a new technique of ETL using pipelining. We have divided the ETL process into various segments which work simultaneously using pipelining and reduce the time for ETL considerably.

Keywords— Data Warehouse, Data Mining, Data Mart, pipelining, nested pipelining, parallel computing.

I. INTRODUCTION

In today's world businesses demand softwares to process large data volumes at the lightning speeds. Everybody wants to have information and reports on a single click. In this fast changing competitive environment data volumes are increasing exponentially and hence there is an increasing demand on the data warehouses to deliver available information instantly. Additionally, data warehouses should generate consistent and accurate results.[1] In data warehouse, data is extracted from operational databases, ERP applications, CRM tools, excel spread sheets, flat files etc. It then transformed to match the data warehouse schema and business requirements and loaded into the data warehouse database in desired structures. Data in the Data warehouse is added periodically - monthly, daily, hourly depending on the purpose of the data warehouse and the type of business it serves.[2]

Because ETL is a continuous and frequent part of a data warehouse process, ETL processes must be automated and a

well-designed. An ETL system is necessary for the accomplishment of a data warehousing project. ETL is the process that involves Extraction, Transformation and Loading.

II. EXTRACTION

The first part of an ETL process is to extract the data from various source systems. Most data warehousing projects consolidate data from different sources. These systems may use a different data organization and format. Common data source formats are relational databases and flat files, but may include non-relational database structures such as IMS or other data structures such as VSAM or ISAM. To improve the quality of data during the extraction process, two operations are performed:

- ✓ Data profiling.
- ✓ Data cleansing.

A. Data Profiling

Data profiling is the process of examining the data available in an existing data source (e.g. a database or a file) and collecting statistics and information about that data [1]. The purpose of data profiling is to identify the relationships between columns, check for integrity constraints and also check for ambiguities, incomplete or incorrect values in data . Data profiling therefore enables to eliminate errors due to these reasons.

After this, the process of data cleansing is executed in which we perform the following tasks:

- ✓ Filling up the missing values.
- ✓ Smooth noisy data.
- ✓ Identify or remove outliers.
- ✓ Resolve inconsistency.
- ✓ Resolve redundancy caused by integration.

B. Data Cleansing

Scrubbing or Data Cleansing is removing or correcting errors and inconsistencies present in operational data values (e.g., inconsistently spelled names, impossible

Ieee Paper Template In A4 V1

IM Harris



Ieee Paper Template In A4 V1:

Thank you for downloading **Ieee Paper Template In A4 V1**. As you may know, people have search hundreds times for their favorite readings like this Ieee Paper Template In A4 V1, but end up in harmful downloads. Rather than enjoying a good book with a cup of coffee in the afternoon, instead they are facing with some infectious bugs inside their computer.

Ieee Paper Template In A4 V1 is available in our book collection an online access to it is set as public so you can download it instantly.

Our digital library saves in multiple countries, allowing you to get the most less latency time to download any of our books like this one.

Merely said, the Ieee Paper Template In A4 V1 is universally compatible with any devices to read

https://staging.conocer.cide.edu/book/scholarship/index.jsp/love_is_mortal_valerie_dearborn_book_english_edition.pdf

Table of Contents Ieee Paper Template In A4 V1

1. Understanding the eBook Ieee Paper Template In A4 V1
 - The Rise of Digital Reading Ieee Paper Template In A4 V1
 - Advantages of eBooks Over Traditional Books
2. Identifying Ieee Paper Template In A4 V1
 - 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 Ieee Paper Template In A4 V1
 - User-Friendly Interface
4. Exploring eBook Recommendations from Ieee Paper Template In A4 V1
 - Personalized Recommendations

- Ieee Paper Template In A4 V1 User Reviews and Ratings
- Ieee Paper Template In A4 V1 and Bestseller Lists
- 5. Accessing Ieee Paper Template In A4 V1 Free and Paid eBooks
 - Ieee Paper Template In A4 V1 Public Domain eBooks
 - Ieee Paper Template In A4 V1 eBook Subscription Services
 - Ieee Paper Template In A4 V1 Budget-Friendly Options
- 6. Navigating Ieee Paper Template In A4 V1 eBook Formats
 - ePub, PDF, MOBI, and More
 - Ieee Paper Template In A4 V1 Compatibility with Devices
 - Ieee Paper Template In A4 V1 Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Ieee Paper Template In A4 V1
 - Highlighting and Note-Taking Ieee Paper Template In A4 V1
 - Interactive Elements Ieee Paper Template In A4 V1
- 8. Staying Engaged with Ieee Paper Template In A4 V1
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Ieee Paper Template In A4 V1
- 9. Balancing eBooks and Physical Books Ieee Paper Template In A4 V1
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Ieee Paper Template In A4 V1
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Ieee Paper Template In A4 V1
 - Setting Reading Goals Ieee Paper Template In A4 V1
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Ieee Paper Template In A4 V1
 - Fact-Checking eBook Content of Ieee Paper Template In A4 V1

- 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

Ieee Paper Template In A4 V1 Introduction

Ieee Paper Template In A4 V1 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. Ieee Paper Template In A4 V1 Offers a vast collection of books, some of which are available for free as PDF downloads, particularly older books in the public domain. Ieee Paper Template In A4 V1 : 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 Ieee Paper Template In A4 V1 : Has an extensive collection of digital content, including books, articles, videos, and more. It has a massive library of free downloadable books. Free-eBooks Ieee Paper Template In A4 V1 Offers a diverse range of free eBooks across various genres. Ieee Paper Template In A4 V1 Focuses mainly on educational books, textbooks, and business books. It offers free PDF downloads for educational purposes. Ieee Paper Template In A4 V1 Provides a large selection of free eBooks in different genres, which are available for download in various formats, including PDF. Finding specific Ieee Paper Template In A4 V1, especially related to Ieee Paper Template In A4 V1, 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 Ieee Paper Template In A4 V1, Sometimes enthusiasts share their designs or concepts in PDF format. Books and Magazines Some Ieee Paper Template In A4 V1 books or magazines might include. Look for these in online stores or libraries. Remember that while Ieee Paper Template In A4 V1, 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 Ieee Paper Template In A4 V1 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 Ieee Paper Template In A4 V1

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 Ieee Paper Template In A4 V1 eBooks, including some popular titles.

FAQs About Ieee Paper Template In A4 V1 Books

How do I know which eBook platform is the best for me? Finding the best eBook platform depends on your reading preferences and device compatibility. Research different platforms, read user reviews, and explore their features before making a choice. Are free eBooks of good quality? Yes, many reputable platforms offer high-quality free eBooks, including classics and public domain works. However, make sure to verify the source to ensure the eBook credibility. Can I read eBooks without an eReader? Absolutely! Most eBook platforms offer web-based readers or mobile apps that allow you to read eBooks on your computer, tablet, or smartphone. How do I avoid digital eye strain while reading eBooks? To prevent digital eye strain, take regular breaks, adjust the font size and background color, and ensure proper lighting while reading eBooks. What the advantage of interactive eBooks? Interactive eBooks incorporate multimedia elements, quizzes, and activities, enhancing the reader engagement and providing a more immersive learning experience. Ieee Paper Template In A4 V1 is one of the best book in our library for free trial. We provide copy of Ieee Paper Template In A4 V1 in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Ieee Paper Template In A4 V1. Where to download Ieee Paper Template In A4 V1 online for free? Are you looking for Ieee Paper Template In A4 V1 PDF? This is definitely going to save you time and cash in something you should think about.

Find Ieee Paper Template In A4 V1 :

[love is mortal valerie dearborn book english edition](#)

[los primeros 90](#)

[louisians biology assessment guide answer](#)

love in the age of the pet food industry

low capacity thermal power plant study guide

lost things three adventure novels english edition

~~lost coast review winter 2015 vol 6 no 2~~

~~love lessons love lessons series book 1~~

[loving axel ames a gay romance english edition](#)

louisiana state basketball media guide

lord of the flies questions chapter 1

lost odyssey holy beast guide

low calorie protein bar recipe

~~love in the time of cholera~~

loom rubber band bracelet maker instructions

Ieee Paper Template In A4 V1 :

bibi tina mädchen gegen jungs stream online - Jun 07 2022

web jan 21 2016 bibi tina mädchen gegen jungs jetzt legal streamen hier findest du einen Überblicknbsp aller anbieter bei denen du bibi tina mädchen gegen jungs

watch bibi tina mädchen gegen jungs netflix - Jul 08 2022

web als höhepunkt ist eine geocaching challenge geplant eine moderne schatzsuche bei der jungs und mädchen gegeneinander antreten um zu gewinnen ist dem ehrgeizigen urs

bibi tina mädchen gegen jungs thalia - Feb 15 2023

web der roman zu bibi tina mädchen gegen jungs dem kinofilm von detlev buck sommerzeit campingzeit tina freut sich schon auf das zeltlager das in falkenstein

bibi tina mädchen gegen jungs das buch zum film - May 18 2023

web bibi tina mädchen gegen jungs das buch zum film finden sie alle bücher von börgerding bettina bei der büchersuchmaschine eurobuch com können sie

bibi tina mädchen gegen jungs das buch zum film eurobuch - Mar 16 2023

web oct 28 2023 video verfügbar bis 27 11 2023 in deutschland Österreich schweiz wettbewerb im sommerzeltlager alex und seine freunde wollen beweisen dass jungs

bibi tina mädchen gegen jungs film at - Mar 04 2022

bibi tina mädchen gegen jungs das buch zum film - Aug 21 2023

web dec 3 2015 der roman zu bibi tina mädchen gegen jungs dem kinofilm von detlev buck sommerzeit campingzeit tina freut sich schon auf das zeltlager das in

bibi und tina mädchen gegen jungs das buch zum film - Oct 11 2022

web bibi tina mädchen gegen jungs 2016 altersfreigabe 6 1 std 50 min kids im zeltlager treten bibi und ihre freundinnen bei

einer schatzsuche gegen die jungs an

bibi tina mädchen gegen jungs das buch zum film - Oct 23 2023

web umso besser dass sie auch ihre freundin bibi dafür begeistern kann zahlreiche schülerinnen und schüler einer internationalen schule aus berlin nehmen teil als

bibi tina mädchen gegen jungs wikipedia - Apr 17 2023

web bibi tina mädchen gegen jungs sommerzeit campingzeit tina freut sich schon auf das zeltlager das in falkenstein stattfinden soll umso besser dass sie auch ihre

bibi tina mädchen gegen jungs der kinofilm kiddinx shop - Jan 02 2022

bibi tina mädchen gegen jungs movies on google play - Apr 05 2022

web mieten ab 2 99 kaufen ab 7 99 zum angebot bibi tina mädchen gegen jungs im stream jetzt legal online schauen beim streaminganbieter deiner wahl kino de

bibi tina mädchen gegen jungs moviepilot - Feb 03 2022

bibi tina mädchen gegen jungs das buch zum - Sep 22 2023

web der roman zu bibi tina mädchen gegen jungs dem kinofilm von detlev buck sommerzeit campingzeit tina freut sich schon auf das zeltlager das in falkenstein

mädchen gegen jungs das original hörspiel zum film bibi - Sep 10 2022

web dec 18 2015 der titelsong mädchen gegen jungs aus dem kinofilm bibi tina mädchen gegen jungs jetzt im kino gesungen von lina larissa strahl lisa

bibi tina mädchen gegen jungs das buch zum film bibi - Aug 09 2022

web als höhepunkt ist eine geocaching challenge geplant eine moderne schatzsuche bei der jungs und mädchen gegeneinander antreten um zu gewinnen ist dem ehrgeizigen urs

bibi tina 3 mädchen gegen jungs offizielles youtube - May 06 2022

web sommerzeit campingzeit tina lisa marie koroll freut sich schon auf das sommercamp das in falkenstein stattfinden soll umso besser dass sie auch ihre

bibi tina mädchen gegen jungs das buch zum film - Nov 12 2022

web produktinformationen zu bibi tina mädchen gegen jungs das buch zum film bibi tina epub der roman zu bibi tina mädchen gegen jungs dem kinofilm von

bibi tina mädchen gegen jungs das buch zum - Jul 20 2023

web der roman zu bibi tina mädchen gegen jungs dem kinofilm von detlev buck sommerzeit campingzeit tina freut sich schon auf das zeltlager das in falkenstein

bibi tina mädchen gegen jungs das buch zum film apple - Jun 19 2023

web bibi tina mädchen gegen jungs ist ein deutscher spielfilm im musicalstyle des regisseurs detlev buck aus dem jahr 2016 der auf der kinderhörspielserie bibi und

bibi tina mädchen gegen jungs amazon de - Jan 14 2023

web compre online bibi und tina mädchen gegen jungs das buch zum film de börgerding bettina mikulicz wenka von na amazon frete grÁtis em milhares de

bibi amp tina mädchen gegen jungs stream - Dec 01 2021

film bibi tina mädchen gegen jungs zdftivi zdfmediathek - Dec 13 2022

web mädchen gegen jungs das original hörspiel zum film bibi tina 3 hörbuch download bettina börgerding lina larissa strahl lisa marie koroll winnie böwe

pdf reading comprehension passages ok dokumen tips - Feb 01 2022

reading comprehension passages ok hansraj college - Sep 20 2023

this book provides material for reading and listening comprehension and can be used in the year preceding the cambridge first certificate or any other comparable examination the

reading comprehension passages ok yumpu - Oct 09 2022

reading comprehension passages ok

reading comprehension worksheets 1st 10th grade - Aug 19 2023

the reading comprehension passages below include 9th and 10th grade appropriate reading passages and related questions please use any of the printable worksheets you may

getting started with reading comprehension khan - Mar 14 2023

jan 6 2013 reading comprehension passages ok page 1 and 2 benha university faculty of arts re page 3 and 4 introduction this book provides mat page 5 and 6 how to use this

reading comprehension resources for efl and esl learners - Aug 07 2022

text of reading comprehension passages ok reading comprehension passages ok docreading cod 123 compiled by associate professor in faculty of arts benha

readworks award winning edtech nonprofit organization - Feb 13 2023

reading materials reading comprehension texts english reading materials for efl and esl students develop your reading skills the texts cover a variety of topics fulfilling every

reading learnenglish - Apr 15 2023

study free online english reading comprehension tests and exercises for advanced learners if you plan to take a language proficiency exam or the toefl ielts and fce happily

reading comprehension worksheets super teacher worksheets - Jul 06 2022

jan 6 2013 6 br bill fuller the postman whistled cheerfully as he pushed his br bicycle up the hill towards old mrs dunley s house his work br for the day was almost finished

free english reading comprehension tests exercises online - Nov 10 2022

short reading comprehension passages short reading comprehension passages esl reading articles practice your reading skill and improve your english learn new vocabulary

reading comprehension passages ok yumpu - Apr 03 2022

reading comprehension passages ok yumpu - Nov 29 2021

free reading comprehension worksheets printable - Sep 08 2022

reading comprehension is the ability to process written text understand its meaning and to integrate with what the reader already knows reading comprehension relies on two abilities

reading and comprehension english learning with - Jan 12 2023

each passage is accompanied by several simple reading comprehension questions 1st grade reading comprehension this page has reading comprehension passages for students

readworks award winning edtech nonprofit organization - Oct 29 2021

reading comprehension wikipedia - Mar 02 2022

short reading comprehension passages best english pages - Jun 05 2022

reading comprehension passages ok en english deutsch français español português italiano român nederlands latina dansk svenska norsk magyar bahasa indonesia türkçe

short reading comprehension passages grammarbank - May 04 2022

readworks is an edtech nonprofit organization that is committed to helping to solve america s reading comprehension crisis

reading passages ebooks stepreads differentiation

leveled reading passages rif org - Jun 17 2023

transform students comprehension in just 10 minutes a day by building background knowledge vocabulary and reading stamina article a day provides weekly text sets of engaging

free reading comprehension worksheets - Dec 11 2022

jun 24 2022 this article compiles some good free esl printable reading comprehension worksheets pdf that will surely aid strengthen and sharpen the learners reading

best 25 comprehension passages with q a english - Jul 18 2023

here you can find activities to practise your reading skills reading will help you to improve your understanding of the language and build your vocabulary the self study lessons in this

reading comprehension worksheets online or printable - May 16 2023

in these reading comprehension worksheets students are asked questions about information they have read about a specific topic each passage reads similar to a newspaper of journal

6 bill fuller the postma yumpu - Dec 31 2021

chapter 1 economic cartoons activity weebly - Dec 06 2022

web economic cartoons prentice hall inc answer 1 1 pdf drive search and download pdf files for free economic cartoons prentice hall inc answer ebooks economic

prentice hall economics pearson education - Apr 29 2022

web oct 27 2014 page 11 and 12 prentice hall civics government an page 13 and 14 prentice hall civics government an page 15 and 16 prentice hall civics

economic prentice hall quiz answer key full pdf old vulkk - Dec 26 2021

web economic cartoons prentice hall answer 3 5 downloaded from uniport edu ng on may 24 2023 by guest economic planning and empowering the state over the individual since

economic cartoons prentice hall answer pdf uniport edu - Sep 22 2021

econ102 cartoons on pinterest - Mar 29 2022

web web economic cartoons prentice hall answer 2 thats something that will lead you to cognize even more in the area of the globe wisdom various sites past era enjoyment and

prentice hall civ yumpu - Feb 25 2022

web prentice hall economics assessment answer key carecard economic prentice hall quiz answer key quia mi economics chapter 1 test what is economics

economic cartoons chapter 2 answer key answers for 2023 - Apr 10 2023

web apr 27 2023 economic cartoons prentice hall answer 1 6 downloaded from uniport edu ng on april 27 2023 by guest economic cartoons prentice hall answer if

economic cartoons prentice hall answer htaccess guide - Jul 01 2022

web se te answering the three economic questions 23 28 the free market 29 34 reasons for government involvement 39 a correlation of prentice hall economics

chapter 4 economic cartoons activity murrieta valley unified - Sep 03 2022

web mar 29 2023 kindly say the economic cartoons prentice hall answer is universally compatible with any devices to read asian americans an encyclopedia of social

economiccartoonsprenticehallanswer full pdf - May 31 2022

web explore a hand picked collection of pins about econ102 cartoons on pinterest

chapter 5 economic cartoons activity murrieta k12 ca us - Aug 02 2022

web more than 50 years berryman s cartoons engaged readers of washington s newspapers illustrating everyday political events as they related to larger issues of civic

economic cartoons prentice hall answer pdf uniport edu - Feb 08 2023

web jun 11 2023 economist peter navarro meticulously exposes every form of death by china drawing on the latest trends and events to show a relationship spiraling out of

quora a place to share knowledge and better understand the world - Nov 24 2021

web jun 6 2023 economic cartoons prentice hall answer getting the books economic cartoons prentice hall answer now is not type of challenging means you could not

economic cartoons prentice hall answer pdf uniport edu - Oct 24 2021

economic cartoons prentice hall answer pdf uniport edu - Jan 07 2023

web all rights reserved 1 a what is calvin doing when his father asks him to do a chore b what other activity might calvin have been planning to engage in 2 a what are

economiccartoonsprenticehallanswer 2023 - Jan 27 2022

web we would like to show you a description here but the site won t allow us

economic cartoons dr arcega s website - Jun 12 2023

web 1 identifying central issues what economic questions does the cartoon raise 2 drawing inferences a typically who pays the most taxes in american society b which of the

economic cartoons prentice hall answer pdf uniport edu - Mar 09 2023

web aug 8 2023 economic cartoons prentice hall answer 2 4 downloaded from uniport edu ng on august 8 2023 by guest most common assumptions about how

solved glass economic cartoons study this cartoon - Oct 04 2022

web explain your answer chapter 5 economic cartoons 23 prentice hall inc chapter 5 economic cartoons study this cartoon and review the section entitled understanding

economic cartoons pdf demand consumer price - May 11 2023

web answer key chapter 2 principles of economics 2e openstax chapter 2 chapter 2 guides highlights 1 the opportunity cost of bus tickets is the number of burgers that

economic cartoons prentice hall inc answer - Nov 05 2022

web 1 a which of the men is selling a new product b what is his product 2 what problem does the seller have with his new product 3 analyzing information according to the law

chapter 6 economic cartoons activity dr arcega s website - Jul 13 2023

web title chapter 6 economic cartoons activity author prentice hall keywords price technology cartoon created date december 12 1997

chapter 7 economic cartoons activity dr arcega s website - Aug 14 2023

web explain your answer chapter 7 economic cartoons 47 prentice hall inc chapter 7 economic cartoons study this cartoon and review the section entitled monopoly