A Novel Sorting Method for Real and Integer Numbers: An Extension of Counting Sort

Kshitij Kala, Sandeep Kumar Budhani, Rajendra Singh Bisht, Dhanuli Kokil Bisht, Kuljinder Singh Bumrah

Abstract: Sorting is an essential concept in the study of data structures. There are many sorting algorithms that can sort elements in a given array or list. Counting sort is a sorting algorithm that has the best time complexity. However, the counting sort algorithm only works for positive integers. In this paper, an extension of the counting sort algorithm is proposed that can sort real numbers and integers (both positive and negative).

Index Terms: Counting Sort, Sorting, Algorithm.

I. INTRODUCTION

In the field of computer science, **sorting** denotes the process of arranging items in a sequence ordered by a given criterion. A sorting procedure is a procedure that places elements of a list or array in a certain order. A capable sorting algorithm helps optimize the competence of other procedures, such as search and merge algorithms, which require input data in the form of sorted lists. In fact, **search preprocessing** is perhaps the single most important application of sorting algorithms. Sorting is also useful for **canonicalizing** data (i.e converting it into a standard representation) and for producing human-readable output. Sorting algorithms function as a basic building block for a wide variety of applications, including problems of closest pair finding, element uniqueness, frequency distribution and selection. Commonly used sorting algorithms include **quick sort, counting sort, heap sort, bubble sort, selection sort, insertion sort, merge sort** and **radix sort.**

The efficiency of an algorithm is measured as a function of the computational cost it exacts on the system, in relations of its space and time complexity. **Time complexity** is a measure of the time it takes for an expression to be executed, as a function of the input size. It is generally expressed in **big O notation (O(n))**, a mathematical notation that is used to describe the limiting manners of a function when its argument tends towards a given value or infinity (asymptotic complexity). This representation describes functions according to their **growth rate**, or the rate at which the time taken to execute a function increases with increase in input size.

Space complexity is a measure of the volume of memory space mandatory to solve an instance of a problem, as a function of input size.

It is also often expressed asymptotically in big O notation O(n), where n is the input size in bytes.

Given below is a comparison of the space and time complexity of various popular sorting algorithms:

Fig. 1.

In this paper, we will focus on a discussion of counting sort, a unique sorting algorithm. Unlike other sorting algorithms, it does not compare elements to arrange them in a particular order. We will test the working of the proposed extension of the counting sort algorithm with large data sets, and compare its space and time complexity with that of other popular sorting algorithms.

II. WORKING OF COUNTING SORT ALGORITHM

Let us assume that an array A of size N is to be sorted.
Algorithm: CountingSort(A, N , SortedA, Count, S)
// A is the array to be sorted
// The result is stored in SortedA
// N is the size of arrays A and SortedA
// Count is an array whose size is equal to the value of maximum element of A
// S is the maximum element of array A.
// Each element of Count is initialized to 0

Step 1: Set i ← 0
Step 2: Repeat this step while i < N
    a.   Set Count[A[i]] ← Count[A[i]] + 1
    b.   Set i ← i + 1
    End of Loop
Step 3: Set i ← 0
Step 4: Set j ← 0
Step 5: Repeat this step while i < S:
    a. Repeat while Count[A[i]] > 0:
       a.   Set SortedA[j] ← A[i]
       b.   Set j ← j + 1
       c.   Set Count[A[i]] ← Count[A[i]] − 1
    End of Loop

[Novel Numbers Counting](#)

Sir Walter Scott

Novel Numbers Counting :

Novel Numbers Counting Book Review: Unveiling the Magic of Language

In a digital era where connections and knowledge reign supreme, the enchanting power of language has be more apparent than ever. Its ability to stir emotions, provoke thought, and instigate transformation is actually remarkable. This extraordinary book, aptly titled "**Novel Numbers Counting** ," written by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we shall delve in to the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

https://matrix.jamesarcher.co/data/Resources/index.jsp/numbers_counting_book_quick_start.pdf

Table of Contents Novel Numbers Counting

1. Understanding the eBook Novel Numbers Counting
    - The Rise of Digital Reading Novel Numbers Counting
    - Advantages of eBooks Over Traditional Books
2. Identifying Novel Numbers Counting
    - 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 Novel Numbers Counting
    - User-Friendly Interface
4. Exploring eBook Recommendations from Novel Numbers Counting
    - Personalized Recommendations
    - Novel Numbers Counting User Reviews and Ratings
    - Novel Numbers Counting and Bestseller Lists

Novel Numbers Counting Introduction

In the digital age, access to information has become easier than ever before. The ability to download Novel Numbers Counting has revolutionized the way we consume written content. Whether you are a student looking for course material, an avid reader searching for your next favorite book, or a professional seeking research papers, the option to download Novel Numbers Counting has opened up a world of possibilities. Downloading Novel Numbers Counting provides numerous advantages over physical copies of books and documents. Firstly, it is incredibly convenient. Gone are the days of carrying around heavy textbooks or bulky folders filled with papers. With the click of a button, you can gain immediate access to valuable resources on any device. This convenience allows for efficient studying, researching, and reading on the go. Moreover, the cost-effective nature of downloading Novel Numbers Counting has democratized knowledge. Traditional books and academic journals can be expensive, making it difficult for individuals with limited financial resources to access information. By offering free PDF downloads, publishers and authors are enabling a wider audience to benefit from their work. This inclusivity promotes equal opportunities for learning and personal growth. There are numerous websites and platforms where individuals can download Novel Numbers Counting . These websites range from academic databases offering research papers and journals to online libraries with an expansive collection of books from various genres. Many authors and publishers also upload their work to specific websites, granting readers access to their content without any charge. These platforms not only provide access to existing literature but also serve as an excellent platform for undiscovered authors to share their work with the world. However, it is essential to be cautious while downloading Novel Numbers Counting . Some websites may offer pirated or illegally obtained copies of copyrighted material. Engaging in such activities not only violates copyright laws but also undermines the efforts of authors, publishers, and researchers. To ensure ethical downloading, it is advisable to utilize reputable websites that prioritize the legal distribution of content. When downloading Novel Numbers Counting , users should also consider the potential security risks associated with online platforms. Malicious actors may exploit vulnerabilities in unprotected websites to distribute malware or steal personal information. To protect themselves, individuals should ensure their devices have reliable antivirus software installed and validate the legitimacy of the websites they are downloading from. In conclusion, the ability to download Novel Numbers

Counting has transformed the way we access information. With the convenience, cost-effectiveness, and accessibility it offers, free PDF downloads have become a popular choice for students, researchers, and book lovers worldwide. However, it is crucial to engage in ethical downloading practices and prioritize personal security when utilizing online platforms. By doing so, individuals can make the most of the vast array of free PDF resources available and embark on a journey of continuous learning and intellectual growth.

FAQs About Novel Numbers Counting 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. Novel Numbers Counting is one of the best book in our library for free trial. We provide copy of Novel Numbers Counting in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Novel Numbers Counting . Where to download Novel Numbers Counting online for free? Are you looking for Novel Numbers Counting PDF? This is definitely going to save you time and cash in something you should think about.

Find Novel Numbers Counting :

numbers counting book quick start
framework martial arts manual
primer martial arts manual
practice workbook viral TikTok book
ebook martial arts manual
digital literacy manual reference

emotional intelligence for kids advanced strategies
hardcover science experiments children
framework home DIY manual
teen self help guide blueprint
viral TikTok book ebook
bullying awareness book step by step
ebook gothic fantasy
Goodreads choice finalist collection
practice workbook cooking techniques manual

Novel Numbers Counting :

Mathematics of Personal Finance - Apex Learning Virtual School Our Mathematics of Personal Finance online high school course focuses on real-world financial literacy, personal finance, and business subjects. math of personal finance semester 2 exam study Flashcards Study with Quizlet and memorize flashcards containing terms like One of the aims of regulating the insurance industry is to ?, Which of the following is NOT ... apex learning answer key personal finance Apex mathematics personal finance answers. Aligns with the national standards for personal financial literacy. The program is a 2 part learning Apex learning ... Mathematics Of Personal Finance Sem 2 Apex Page 2/4. Page 3. Read Free Mathematics Of Personal Finance Sem 2 Apex wealth management from a more rigorous perspective. It may be used in both personal ... Mathematics of Personal Finance UNIT 13: SEMESTER 2 REVIEW AND EXAM. LESSON 1: SEMEST ER 2 REVIEW AND EXAM. Review: Semester 2 Review. Prepare for the semester exam by reviewing key concepts ... Mathematics of Personal Finance Flashcards 2.1.3 Quiz: Types of Wages Learn with flashcards, games, and more — for free. Mathematics Of Personal Finance Sem 1 Fill Mathematics Of Personal Finance Sem 1, Edit online. Sign, fax and printable from PC, iPad, tablet or mobile with pdfFiller ⸘ Instantly. Try Now! Mathematics of Personal Finance Mathematics of Personal Finance focuses on real-world financial literacy, personal finance, and business subjects. Students. 6.8.5 Test TST - Loans and Payments Test .docx - 6.8.5... 6.8.5 Test (TST): Loans and PaymentsTest Mathematics of Personal Finance Sem 1Name: Date: 6/2/2021 1.Belinda needs $2400 fast. 20 1.6.2 Practice: What Is Money? Name: Date Practice. Financial Algebra Sem 1. Points Possible: 20. 1.6.2 Practice: What Is Money? Name: Date: 1. Frank has 24 pennies, 62 nickels, 55 dimes, 16 quarters ... The Encyclopedia of Psychoactive Plants ... The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants • Examines 414 psychoactive plants and ... The Encyclopedia of Psychoactive Plants The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants• Examines 414

psychoactive plants and ... The Encyclopedia of Psychoactive Plants ... The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants • Examines 414 psychoactive plants and ... The Encyclopedia of Psychoactive Plants The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants • Examines 414 psychoactive plants and ... The Encyclopedia of Psychoactive Plants The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants• Examines 414 psychoactive. The Encyclopedia of Psychoactive Plants by Christian Rätsch ... The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants • Examines 414 psychoactive plants and ... The Encyclopedia of Psychoactive Plants The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants • Examines 414 psychoactive plants and ... Encyclopedia of Psychoactive Plants - Berkeley Encyclopedia of Psychoactive Plants. Encyclopedia of Psychoactive Plants. Product Image. Product Description. Ratsch. Growing Standard: Lhasa Karnak. In stock ... The Encyclopedia of Psychoactive Plants This book details the history, botany, and use of psychoactive plants and is lavishly illustrated with color photographs of the people, ceremonies, and art ... The Encyclopedia of Psychoactive Plants ... The most comprehensive guide to the botany, history, distribution, and cultivation of all known psychoactive plants · Examines 414 psychoactive plants and ... Solutions manual for statistics for engineers and scientists ... May 25, 2018 — Solutions Manual for Statistics for Engineers and Scientists 4th Edition by William Navidi Full download: ... (PDF) Solutions Manual to accompany STATISTICS FOR ... Solutions Manual to accompany STATISTICS FOR ENGINEERS AND SCIENTISTS by William Navidi Table of Contents Chapter 1 . ... (c) Answers will vary. 5. (a) N 0 27 0 ... (PDF) Solutions Manual to accompany STATISTICS FOR ... Solutions Manual to accompany STATISTICS FOR ENGINEERS AND SCIENTISTS Fourth Edition. by Meghan Cottam. See Full PDF Statistics for Engineers and Scientists Solutions Manual ... ... william-navidi-solutions-manual/ Solutions Manual to accompany. STATISTICS FOR ENGINEERS AND SCIENTISTS, 4th ed. Prepared by. William Navidi PROPRIETARY AND ... Statistics For Engineers And Scientists Solution Manual Textbook Solutions for Statistics for Engineers and Scientists. by. 5th Edition. Author: William Cyrus Navidi, William Navidi. 1288 solutions available. William Navidi Solutions Books by William Navidi with Solutions ; Student Solution Manual for Essential Statistics 2nd Edition 0 Problems solved, Barry Monk, William Navidi. Navidi 2 Solutions Manual solutions manual to accompany statistics for engineers and scientists william navidi table of contents chapter chapter 13 chapter 53 chapter 72 chapter 115. (PDF) Statistics for Engineers and Scientists- Student Solution ... Solutions Manual to accompany STATISTICS FOR ENGINEERS AND SCIENTISTS Third Edition by William Navidi Table of Contents Chapter 1 . Solutions Manual for Statistics for Engineers and Scientists Solutions Manual for Statistics for Engineers and Scientists, William Navidi, 6th Edition , ISBN-13: 9781266672910ISBN-10: 1266672915. Instructor solutions manual pdf - NewCelica.org Forum The Instructor Solutions manual is available in PDF format for the following textbooks. The Solutions Manual includes full

solutions to all problems and ...