

Analysis of Sorting Problem Based on Computer Programming

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Abstract: Under the background of the continuous improvement of the development level of modern information technology in China, computer technology has been widely used in various industries. Computer programming is mainly one of the channels to ensure the effective realization of various application functions of the computer according to the development law of machine logic language. In the algorithm system, the sorting problem has multiple types. Therefore, in order to ensure the effective realization of the sorting function, the programming language must participate in it. This paper focuses on the classical sorting algorithm in computer programming, which lays a solid foundation for the further optimization and improvement of the sorting problem.

1. Introduction

For machine language, it mainly refers to a language form that effectively operates computer hardware by using the simplest binary logic. According to the actual analysis, it can be found that because the types of computer programming languages include diversified characteristics, such as C language, C++ language, Java language, C# language, Python language, assembly language, etc., in the process of computer program design, we must strictly follow the basic principles and relevant requirements to ensure that various functions can be effectively realized through the compiler. The sorting problem is one of the algorithm design projects with the widest application range and the longest research history in the knowledge system of computer algorithm and data structure. In the process of computer program design, the realization of various functions usually needs to use the sorting algorithm. In view of this, relevant people must correctly recognize and attach great importance to the significance of sorting problems in improving the level of computer programming, conduct a detailed analysis of the existing problems, clearly understand the causes of relevant problems, and take diversified and effective ways to properly solve specific problems, so as to provide positive help for further improving the development level of computer technology.

2. File Archiving Problem

As one of the common information problems in the production and management of modern enterprises, the problem of file archiving is very common. The staff need to sort and archive the documents with different coding numbers and different categories. In this process, the methods that can be selected include bubble sorting algorithm, quick sorting algorithm and insertion sorting algorithm. In the process of archiving relevant documents, the problem of parameter input needs to be fully considered to ensure that the classification information of documents can be associated with the matrix or array of the system, so as to ensure that the actual use efficiency can be greatly improved.

When the specific application scenario changes, the staff can take the time elements and importance of relevant documents as the basis for archiving and sorting, and ensure the search efficiency to be effectively improved by using the insertion sorting algorithm or quick sorting algorithm. In this process, the divide and conquer idea of the quick sort algorithm can highly meet the needs of file archiving. Select a file from the file database as the basis, which has time elements and importance less than the benchmark file data, and set the relevant contents on the left side of the benchmark, so that all time elements and contents with importance greater than the benchmark file

data can be summarized to the right side of the benchmark. Then the recursive method is used to repeatedly perform the above operations to clarify the specific position of each file data element in the partition, and finally form a file array and linked list structure arranged and output in ascending or descending order. Although the quick sorting algorithm is classified into the list of unstable sorting algorithms, it has high work efficiency and will not occupy additional space and memory of the computer. It can complete the sorting operation by simply exchanging positions, which can meet the solution ideas and methods of document archiving problems. Therefore, it has been widely used in related work^[1].

3. Shortest Path Problem

The shortest path problem is one of the application problems that people often encounter when using computers in their daily work. For example, the route planning problem in taxi software and the shortest path problem in construction engineering bridge construction are summarized in the shortest path problem. At the same time, in graph theory, it is necessary to fully integrate the sorting method with the shortest path problem, so as to mine the corresponding topological and binary tree structure. In this process, topological sorting method has been widely used in solving the shortest path problem in daily work by virtue of its diversified advantages^[2].

When using the topological sorting method to solve the shortest path problem, it can not only effectively simplify the time complexity, but also further reduce the complexity of the algorithm. The arrangement based on the topological order can add each vertex in the graph to the tree species of the shortest path, and all the vertices extending from the vertex will be deleted one by one in the process of adding tree species. The complexity of related algorithms is $E + V$ level. Next, take Java programming language as an example to elaborate on the shortest path problem. Workers can select a vertex output with a penetration of 0 in AOV network. After deleting this vertex, they should delete all arcs at the end of this vertex again, and repeat this step until there are no vertices with a penetration of 0 in AOV network or all output vertices. Because the topological sorting method and the shortest path problem need to delete the vertices, the adjacency table method can be preferred when storing the vertex and border information of the graph^[3].

4. Content Recommendation Problem

According to the actual investigation and research, we can know that there are a large number of applications related to the content recommendation system in the Internet. Therefore, in the process of users using the computer, the system can recommend the corresponding products or information for users according to the tags of interest uploaded by users and browsing preferences. It can be seen that the ranking algorithm should also be given priority in the problem of content recommendation. Through the content recommendation of the system, the recall function, rough sorting function, fine sorting function and mixed sorting function can be effectively realized. For the recall function, it is based on the correlation between the user and the content to establish a general product candidate set related to the request, which needs to be based on many data labels in order to effectively realize the control logic goal of diversity^[4].

For the sorting module in the content recommendation system, it is not only necessary to set modeling objectives, samples and feature sets, common model sequences, but also to formulate rough and fine sorting methods and related contents in combination with the actual situation. In the specific sorting process, we should ensure that the dual objectives of accuracy and speed are guaranteed. Therefore, we should strengthen the full utilization of complex models, accurately recommend personalized content, and ensure that the recommendation results and feedback results can be output to the front end of the system in a timely and accurate manner. In order to ensure that the ranking method can play its role and value in solving the problem of content recommendation, it is necessary to effectively balance the diversified target ranking results based on the estimated completion rate by regression analysis, so as to ensure that multiple targets are weighted or multiplied, so that users can feedback in a hidden way^[5].

5. Fuzzy Screening Problem

The fuzzy screening problem is one of the common forms of effective combination of data structure sorting method and fuzzy mathematics. In the process of solving the fuzzy screening problem, we can start from the following two levels:

First, according to the actual investigation and research, it can be found that the data set of fuzzy screening problem can't be determined, and it can only present an interval set with fuzzy range, but each number can find the corresponding position in an interval of the real axis. Therefore, in the process of using the sorting algorithm, it is necessary to prioritize the fuzzy data set. Through the effective combination with the relevant principles of fuzzy mathematics, first, the range of relative fuzzy interval is divided in detail, then, with the aid of quick sorting method, the left and right boundaries of interval positions are defined. Finally, by making full use of the overlapping space, the operation efficiency of the system is further optimized and improved^[6].

Second, overlap all the sections that have been divided, use the quick sorting algorithm to calculate in the overlapping interval, improve the algorithm performance of fuzzy screening problem. In this process, when the left and right endpoints of the small interval are smaller than the elements of the large interval and will not intersect with any elements of the large interval, the sorting order can be determined through the specific endpoints. If the left and right endpoints of the small interval are smaller than the elements of the large interval and intersect with the elements of the large interval, there is no need for quick sorting within the intersection interval, which can not only greatly reduce the time complexity of the algorithm, but also ensure the effective output of the final fuzzy screening results. At present, in the field of e-commerce, fuzzy screening problem has been widely used by virtue of its diversified advantages. In the process of practical use, it is necessary to optimize the sorting algorithm in combination with specific problems, so as to effectively implement the optimal solution measures of computer programming and sorting problems^[7].

6. Conclusion

As one of the effective tools to solve the sorting problem, computer programming can fully interpret the function and performance of the sorting problem by using the language design results. Especially driven by the all-round development and continuous innovation of China's computer program design level, the complexity of time factors and space factors existing in the traditional sorting problems is gradually reduced. In the process of computer program design, if you want to ensure that relevant problems are effectively solved, you should not only seek the help of basic theoretical research, but also constantly seek answers in practice. In the computer algorithm system, the sorting problem has diversified characteristics. In order to give full play to the role of the sorting function, the programming language must be used reasonably. Through the continuous exploration of the relationship between the sorting problem and the programming method, the optimization strategy of the sorting problem can be ensured to be highly feasible and scientific, and the function value of the sorting problem can be brought into full play in the practical work.

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