



MAXSUS SARALASH USULLARI VA ULARDAN FOYDALANISH

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ABSTRACT

Bugungi maqola algoritmlashning to'rt asosiy yo'nalishlaridan biri hisoblangan saralash algoritmlariga bag'ishlanadi. Saralash deb, berilgan obyektlar ketma-ketligini ma'lum mantiqiy tartibda qayta joylashtirish jarayoniga aytiladi. Saralash bir necha ko'rsatkichlarga bog'liq bo'lishi mumkin. Misol uchun maktab jismoniy tarbiya darsi. Bu dars boshida bolalar bo'ylariga qarab safda turishadi. Me'yor topshirish jarayonida esa sinf jurnalidagi familyalar ketma-ketligiga qarab topshirishadi. Shu yerning o'zida 2ta saralashdan foydalanilyapti. Biri, bo'y uzunligi bo'yicha, ikkinchisi sinf jurnalidagi o'rinlar bo'yicha.

Sorting is the placement of data in the memory of the machine in a permanent form according to its keys. Here, it is understood that permanence is given in the order of increasing the keys of the data in the array.

Sorting is the ordering of structure elements based on some criteria. A numerical field called a key is usually used as a criterion. If each subsequent key field of the elements is smaller than the previous one, such sorting is said to be sorted in descending order. If each subsequent key field is greater than the previous one, it is called ascending sorting

When processing data, it is necessary to know the information space of the data and its location in the machine.

There are two types of sorting: internal and external:

-internal sorting - sorting in RAM;

- external sorting – sorting in external memory.

If the records being sorted take up a large amount of memory, then replacing them requires a lot of effort (in terms of time and memory). In order to reduce this cost, sorting is done in the key address table. In this case, only the data pointers are changed, and the array remains in place. This method is called the address table sorting method. During sorting, the same keys

may meet, in this case, after sorting, it is appropriate to leave the same keys in the same order as they were in the initial order. This method is called static sorting.

Sorting efficiency can be evaluated according to several criteria:

- ☑ qualifying time;
- ☑ RAM required for sorting;
- ☑ time taken to develop the program.

Let's look at the first criterion. The number of comparisons or permutations can be counted when sorting is done.

Algorithm of sorting by selection

This method is based on the following principles:

1. The element with the smallest key is selected.
2. This element is replaced by the first element.
3. Then this process is repeated with the remaining $n-1$, $n-2$ elements until there is only one "biggest" element left.

Bubble sort algorithm

The idea of this method is as follows: $n - 1$ times the array is compared with pairs of keys going from bottom to top. If the value of the lower key is smaller than the key of the upper pair, then they are exchanged.

Quicksort quick sorting algorithm

1. This algorithm is a clear example of the "take and own" principle. This algorithm is recursive and sorts on average $N \cdot \log_2 N$ comparisons. To sort the given array, the algorithm divides it into 2 parts. Select an arbitrary element and divide it into 2 parts. But it is better to select the element in the middle and divide it by 2 from the equal half of the array. Each element to the left and right of the selected key element is compared.
2. From the key element, the smaller ones are moved to the left, and the bigger ones to the right. Now, the same steps as above are repeated on both sides of the array. That is, the elements between these intervals are taken as keys, and so on.

Placement in the Quicksort algorithm

3. We compare the i -element on the left with the key. If the key is small, we go to the next step. Otherwise, $i++$ and repeat this step.
4. The key is compared with the j -element on the right. If the key is large, we go to the next step, otherwise $j--$ and we repeat this step.
5. i - and j -elements are replaced. If $i \leq j$, it goes to step 3. After the first step, the selected element is placed in its place.
6. Now, if there are elements on the left side of the key in this visible range, the above actions should be performed on them, that is, the visible range is defined as 0 to $key-1$ and proceed to step 2. Otherwise, it goes to the next step.
7. Now, if there are elements to the right of the key in this visible range, the above operations should be performed on them, that is, the visible range is defined as $key+1$ to $n-1$ and go to step 2. Otherwise, the algorithm terminates.

In conclusion, we can say that each sorting algorithm has its own complexity. Depending on the tasks, one of the presented algorithms can be used. But my opinion is that quick sort is the best algorithm. It allows you to select the base element and divides the array into 3 parts: less than, equal to, and greater than the base.

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Eshbaevich, T. D. Gulistan State University, 120100, 4th microdistrict, Gulistan city, Syrdarya region, Uzbekistan E-mail: doniyor120373@ gmail. com Abstract. The article describes the creation of modern e-learning resources for educational process, their purpose, content, structure and stages of creation. The article also gives recommendations on how to create e-learning resources, and. *Pedagogika*, 21.

