



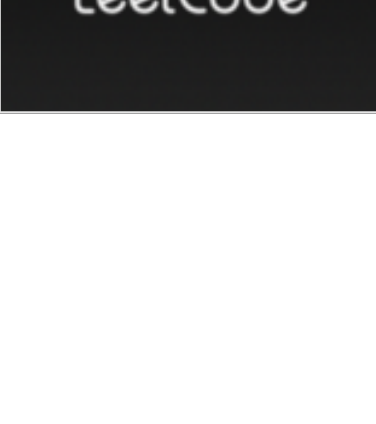
## Best solutions for Microsoft interview tasks. Max Sum of Numbers With Same Digit Sum

Description:

 **Alexander Molchevskyi** May 28, 2020 · 2 min read



**Microsoft | OA 2020 | Max Sum of Numbers With Same Digit Sum - LeetCode Discuss**  
1.2K VIEWS You are given an array of numbers, you need to find out a pair of numbers whos sum is max and also the sum of...  
leetcode.com



Solution:

In this task we need to do following things:

1. We need to write a function which returns sum of digits for a given number.
2. We need to make a hash map where the key is the sum of digits of the given number and the value is this number.
3. Then we will take each given number and put sum of it's digits and the number itself into the hash map
4. If the hash map contains this sum we check if sum of our number and number from the map is bigger than maximum encountered sum of numbers.
5. If yes we save this sum as the maximum sum and save in the hash map given number if it is bigger than the number from the map.

```
// this function returns sum of digits of a given number
int dsum(int a) {
    int s = 0;
    for (; a > 0; a /= 10) {
        s += a % 10;
    }
    return s;
}

int solution(const vector<int> & v) {
    using sum_t = int;
    using number_t = int;
    unordered_map<sum_t, number_t> m;

    // Maximum sum of given numbers
    int max_sum = 0;

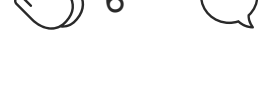
    for (auto i : v) {
        int s = dsum(i);
        // if we have no such sum of digits in the map
        // if we have no such sum of digits in the map
        if (!m.count(s)) {
            // add this sum to the map as a key and the number
            // as a value
            m[s] = i;
        }
        else {
            // if we have the sum of digits in the map
            // if sum of current number and number from
            // the map with the same sum of digits are bigger than
            // maximum encountered sum then update the maximum sum
            max_sum = max(max_sum, m[s] + i);

            // Save current number as value for current sum
            // of digits if it is bigger than number from the map
            m[s] = max(i, m[s]);
        }
    }
    // if the are no numbers with equal sum return -1
    return max_sum ? max_sum : -1;
}
```

Repository with the full project you can find here:

[https://github.com/jolly-fellow/microsoft/tree/master/numbers\\_with\\_equal\\_digit\\_sum](https://github.com/jolly-fellow/microsoft/tree/master/numbers_with_equal_digit_sum)

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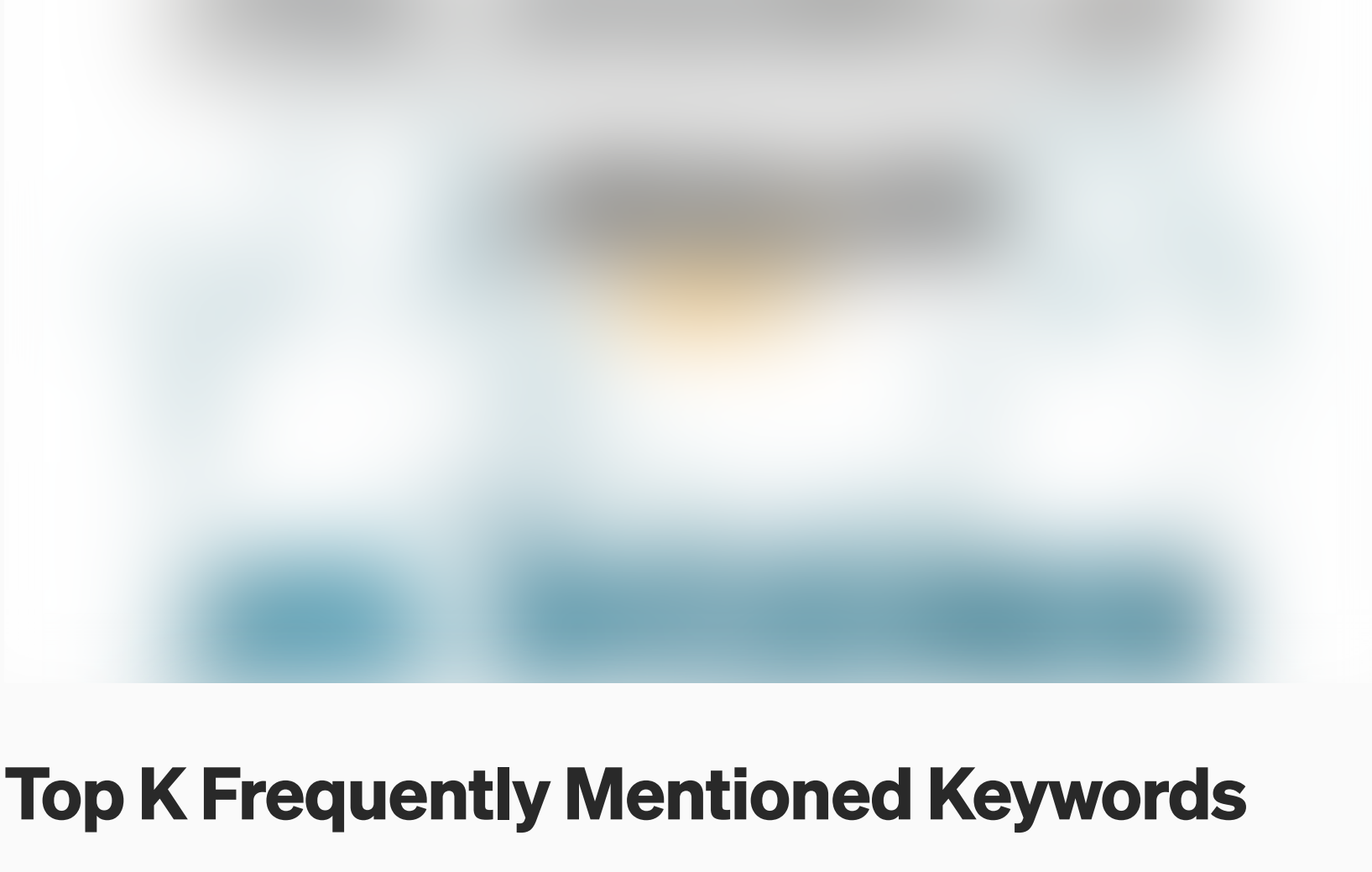
Programming Interview Solutions Microsoft Questions

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Looking for an interesting project to join. <https://www.linkedin.com/in/molchevskyi/>

Apr 1, 2020



## Top K Frequently Mentioned Keywords

Also known as “Top K Buzzwords”.

Description:

Given a list of reviews, a list of keywords and an integer k. Find the most popular k keywords in order of most to least frequently mentioned.

The comparison of strings is case-insensitive. If keywords are mentioned an equal number of times in reviews, sort alphabetically.

Example 1:

```
Input:
k = 2
keywords = ["anacell", "cetracular", "betacellular"]
reviews = [
    "Anacell provides the best services in the city",
    "betacellular has awesome services",
    "Best services provided by anacell, everyone should use anacell",
]

Output:
["anacell", "betacellular"]

Explanation:
"anacell" is occurring in 2 different reviews and "betacellular" is
only occurring in 1 review. ...
```

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Mar 27, 2020

## Best solutions for Codility Lessons. Lesson 7 Stacks and Queues

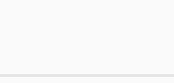
### Task 1 Brackets

**Brackets coding task - Learn to Code - Codility**  
A string S consisting of N characters is considered to be properly nested if any of the following conditions is true: S...  
app.codility.com

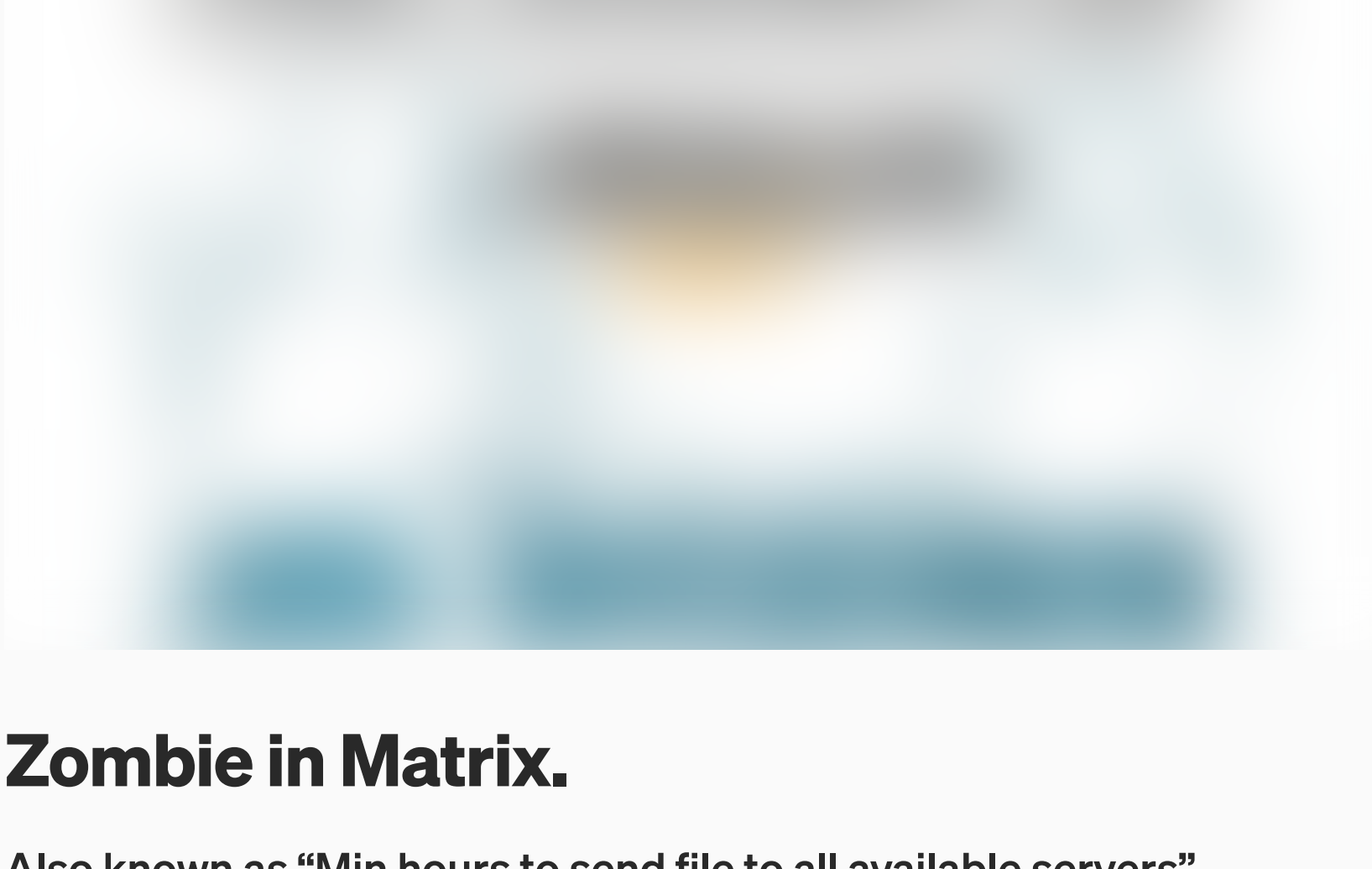
Solution:

This is a simple task for using a stack container. There are no any tricks. Actually this is a simplest parser based on a state machine. All other such parsers even very complex parsers for programming languages looks like this one. The idea is simple. We read symbols one by one and put them to a variable which contains a state of our state machine — “c”. The state machine switch its state based on this data. This leads to run the code which correspond to this state. ...

[Read more · 7 min read](#)



Mar 22, 2020



## Zombie in Matrix.

Also known as “Min hours to send file to all available servers”.

Description:

Given a 2D grid, each cell is either a zombie 1 or a human 0. (Or in case of the servers 1 means a server which already contains the file and 0 is an empty server). Zombies can turn adjacent (up/down/left/right) human beings into zombies every hour (server can send a file to adjacent server).

Find out how many hours does it take to infect all humans (send the file to all servers)?

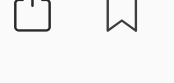
Example:

```
Input:
[[0, 1, 1, 0, 1],
 [0, 1, 0, 1, 0],
 [0, 0, 0, 0, 1],
 [0, 1, 0, 0, 0]]

Output: 2

Explanation:
At the end of the 1st hour, the status of the grid:
[[1, 1, 1, 1, 1],
 [1, 1, 1, 1, 1],
 [0, 1, 0, 1, 1],
 [1, 1, 1, 1, 0]]
```

[Read more · 3 min read](#)



Mar 17, 2020

## Best solutions for Codility Lessons. Lesson 6 Sorting

### Task 1 Distinct

**Distinct coding task - Learn to Code - Codility**  
Write a function class Solution { public int solution(int[] A); } that, given an array A consisting of N integers...  
app.codility.com

Solution:

This is a classic simple task for using a hash set or other data structure that allows you to quickly add and find values. There are no any tricks.

In C++ it looks like:

```
int count_distinct(vector<int> &v) {
    return std::unordered_set<int>(v.begin(), v.end()).size();
}
```

### Task 2 MaxProductOfThree

**MaxProductOfThree coding task - Learn to Code - Codility**  
A non-empty array A consisting of N integers is given. The product of triplet (P, Q, R) equates to A[P] \* A[Q] \* A[R]...  
app.codility.com

Solution:

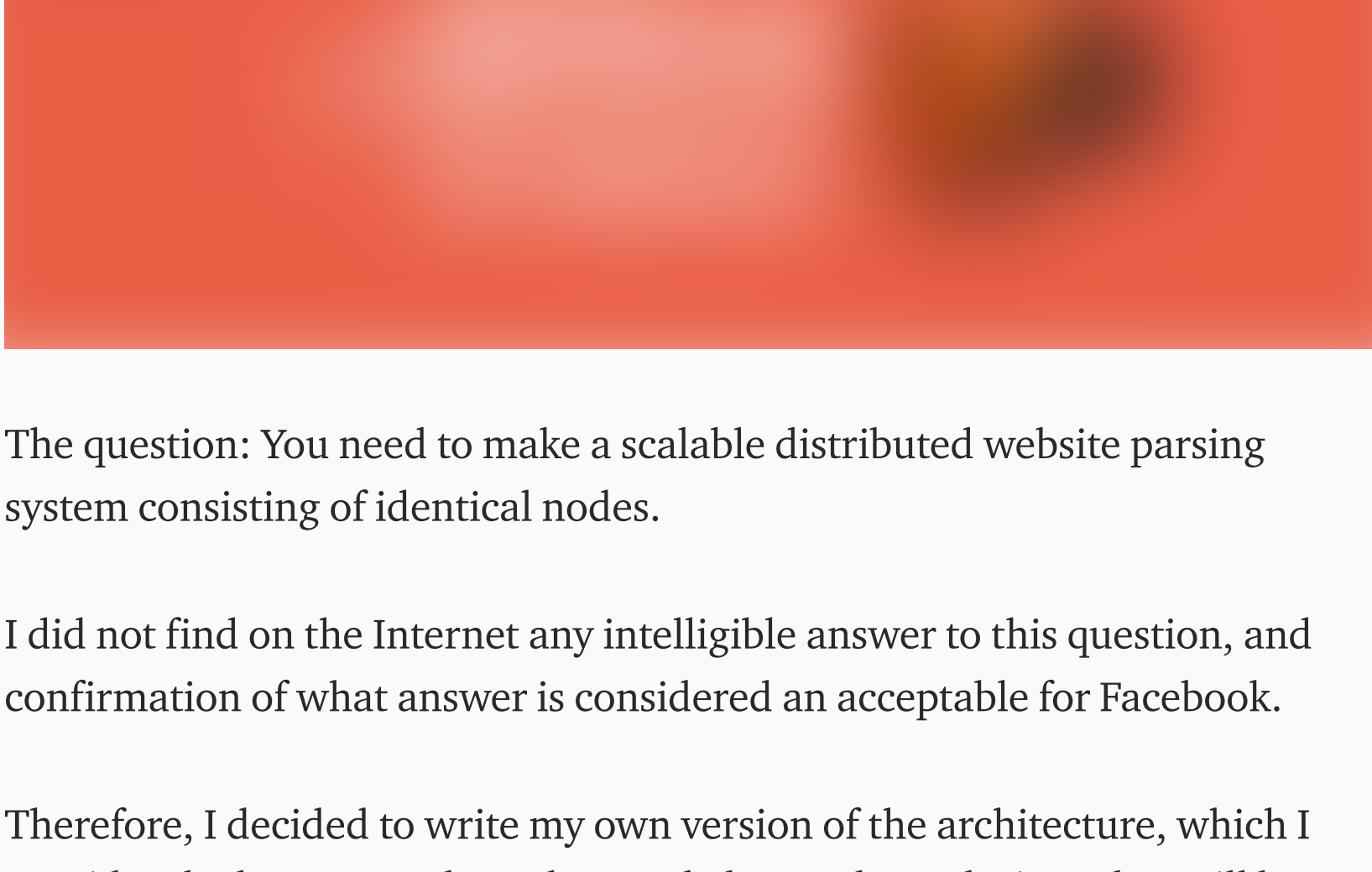
Here we don't need to sort the array or do something complex. We just need to scan the given array in order to find 3 biggest numbers (doesn't matter positive or negative) and two smallest negative numbers. ...

[Read more · 4 min read](#)



Feb 13, 2020

## Interesting software design question on interview in Facebook.



The question: You need to make a scalable distributed website parsing system consisting of identical nodes.

I did not find on the Internet any intelligible answer to this question, and confirmation of what answer is considered an acceptable for Facebook.

Therefore, I decided to write my own version of the architecture, which I consider the best. I am pleased to read about other solutions that will be better than this.

The basis of the system should be a network based on DHT. It will be responsible for the connectivity of the network of nodes, the reliability of data transfer, and most importantly for the quick determination of which files were parsed and which were not yet. ...

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