

### Estimated needed time:

We expect you would need about 1 to 3 hours to complete this task.

### Introduction :

In our online shop, we provide our admin users through the backoffice the possibility to search for a customer by name, email, account number or even address in order to fulfill different tasks.

The database, which is by the way **MYSQL**, has at the moment more than 30 million customers. Last year there were only 19 millions. Next year we expect to have 50 millions customers.

The search used to work perfectly, but recently we started to notice many issues. For example:

- Very often, it takes very long to get results. According to our monitoring service the request takes at least 10 seconds. 60% of the search requests end with timeouts.
- It is very common that in the peak times (from 10 - 12 am and 2 - 4 pm) the database is down and therefore it's not reachable. This causes the admin users to be blocked and can't do almost anything.

## **Your task:**

We are reaching out to you to help us improve our search. The search is a vital functionality for all our admin users and it must work without any downtime.

For now, we don't want you to write any code. We are rather interested in architectural design.

## **What you need to know:**

1. The database is designed as follows:

### **users:**

- id: int
- account\_number: string / unique
- name: string
- email: string / unique

### **addresses:**

- user\_id: int
- street: string
- city: string
- country: string

2. Each customer can have multiple addresses, which based on our experience change very often.
3. Many customers delete their accounts after some time of inactivity.

## How to submit your solution?

You can submit your solution **until lately 04th April 2022** as a **zip file\*** or link to your **github/gitlab repository** per email to the email address [anass.rakibi@gmail.com](mailto:anass.rakibi@gmail.com)

The subject of your email must be specified as follows.  
“**Your Name - solution for 3rd challenge April 2022**”

**\* If you decide on a github/gitlab repository, please make sure you grant me read access.**

## README File:

In order to simplify reviewing your solution, I strongly recommend you to include a “README.md” file at the top level of your project’s folder. This file must contain the following information:

- **Name:** your name.
- **Email:** your email.
- **Description:** a short description of your solution.
- [optional] **Assumptions:** list of assumptions if you had to take any.
- [optional] **Architecture** diagram: a diagram of your design ([example](#))
- [optional] **Improvements:** what would you have added if you had more time.

You can rely on this example here

<https://gitlab.com/moroccan-phpers/1st-challenge-ferbraury-2022/-/blob/master/README.md>

## Evaluation:

When evaluating your solution, we will consider these points:

- **Efficiency:** does your solution really solve the problem?
- **Performance:** Is your solution's execution time fast? Does it consume less resources?
- **Scalability:** Does your solution fit a large use case?