**Division / Team:** GDS-DCUBE / OneCV

**Brief Description of your Div/ Team:** OneCV is a system enabler which pulls data from a range of agencies to provide frontline officers a comprehensive view of clients that approached them for aid. This enables officers to customise assistance and/or refer their clients to appropriate support avenue expeditiously.

**Assessment Title:** Golang API Assessment

**Overview/Background:** Develop a backend application that will be part of a system which teachers can use to perform administrative functions for their students. Teachers and students are identified by their email addresses.

**Assessment Instructions / Case Study Scenarios:**

**Your Task**

Your task is to:

1. Develop a set of API endpoints, listed under *User Stories* below, for teachers to perform administrative functions for their classes.
   * Your code must be hosted on Github or Gitlab, or any other similar code repository hosting service, in a publicly-accessible repo.
   * You may assume that login and access control have already been handled.
2. *(Optional)* Deploy your API to any publicly accessible hosting environment.

Remember to include link to your code repository when you have completed the assignment and submit the link to your repository when you complete your assessment to Huijie ([wu\_huijie@tech.gov.sg](mailto:wu_huijie@tech.gov.sg)). Do title the subject of your email as OneCV Software Engineer Internship Tech Test Submission - Your Name (Eg: OneCV Software Engineer Internship Tech Test Submission – First Name Last Name).

**Requirements/Expectations**

1. Your code repository should contain a README.md that includes the following:
   * Link(s) to the hosted API (if applicable)
   * Instructions for running local instance of your API server; we need to minimally be able to launch and test your solution locally
2. Please use Golang for the backend code.
3. Please use PostgreSQL as the database.
4. Please include unit tests.
5. If you are selected for a virtual/face-to-face interview, you should be prepared to:
   * Walk through your code to interviewers
   * Explain any design decisions you have made
   * Modify the API endpoints, or implement more endpoints for on-the-spot challenges

## **Important!**

* We will assess your submission holistically (i.e. not just in terms of functionality), including factors such as:
  + Readability and code cleanliness
  + Secure coding practices
  + Code structure/design, e.g. modularity, testability
* Your API will be subjected to automated test tools, so **please adhere closely to the given specs**.
  + (Optional) You can provide a Postman collection for the APIs that you've implemented, *but* we can (and likely will) still use our own tools as well to test your API.

**User Stories**

### 1. As a teacher, I want to register one or more students to a specified teacher.

A teacher can register multiple students. A student can also be registered to multiple teachers.

* Endpoint: POST /api/register
* Headers: Content-Type: application/json
* Success response status: HTTP 204
* Request body example:

{

"teacher": "teacherken@gmail.com"

"students":

[

"studentjon@gmail.com",

"studenthon@gmail.com"

]

}

### 2. As a teacher, I want to retrieve a list of students common to a given list of teachers (i.e. retrieve students who are registered to ALL of the given teachers).

* Endpoint: GET /api/commonstudents
* Success response status: HTTP 200
* Request example 1: GET /api/commonstudents?teacher=teacherken%40gmail.com
* Success response body 1:

{

"students" :

[

"commonstudent1@gmail.com",

"commonstudent2@gmail.com",

"student\_only\_under\_teacher\_ken@gmail.com"

]

}

* Request example 2: GET /api/commonstudents?teacher=teacherken%40gmail.com&teacher=teacherjoe%40gmail.com
* Success response body 2:

{

"students" :

[

"commonstudent1@gmail.com",

"commonstudent2@gmail.com"

]

}

### 3. As a teacher, I want to suspend a specified student.

* Endpoint: POST /api/suspend
* Headers: Content-Type: application/json
* Success response status: HTTP 204
* Request body example:

{

"student" : "studentmary@gmail.com"

}

### 4. As a teacher, I want to retrieve a list of students who can receive a given notification.

A notification consists of:

* the teacher who is sending the notification, and
* the text of the notification itself.

To receive notifications from e.g. '[teacherken@gmail.com](mailto:teacherken@gmail.com)', a student:

* MUST NOT be suspended,
* AND MUST fulfill AT LEAST ONE of the following:
  1. is registered with “[teacherken@gmail.com](mailto:teacherken@gmail.com)"
  2. has been @mentioned in the notification

The list of students retrieved should not contain any duplicates/repetitions.

* Endpoint: POST /api/retrievefornotifications
* Headers: Content-Type: application/json
* Success response status: HTTP 200
* Request body example 1:

{

"teacher": "teacherken@gmail.com",

"notification": "Hello students! @studentagnes@gmail.com @studentmiche@gmail.com"

}

* Success response body 1:

{

"recipients":

[

"studentbob@gmail.com",

"studentagnes@gmail.com",

"studentmiche@gmail.com"

]

}

In the example above, [studentagnes@gmail.com](mailto:studentagnes@gmail.com) and [studentmiche@gmail.com](mailto:studentmiche@gmail.com) can receive the notification from [teacherken@gmail.com](mailto:teacherken@gmail.com), regardless whether they are registered to him, because they are @mentioned in the notification text. [studentbob@gmail.com](mailto:studentbob@gmail.com) however, has to be registered to [teacherken@gmail.com](mailto:teacherken@gmail.com).

* Request body example 2:

{

"teacher": "teacherken@gmail.com",

"notification": "Hey everybody"

}

* Success response body 2:

{

"recipients":

[

"studentbob@gmail.com"

]

}

## Error Responses

For all the above API endpoints, error responses should:

* have an appropriate HTTP response code
* have a JSON response body containing a meaningful error message:

{ "message": "Some meaningful error message" }

* For questions relating to the assessment, please contact [wu\_huijie@tech.gov.sg.](mailto:wu_huijie@tech.gov.sg)

**Deadline:**

* Please complete the assessment **within deadline** set by our HR partners.