Class: SE1101

Members:

Phan Đăng Lâm

Nguyễn Quang Minh

Khổng Đức Cảnh

Nguyễn Duy Hải

Công Tôn Minh

JAVA WEB PROJECT

ONLINE EXAMINATION APPLICATION

Business rules for entities

## I. Test master

1. **Overview**

Test master can be referred to as administrators who manage activities on the platform.

1. **Functions**
   1. Add/remove other test masters

At the beginning, there is only one test master by means of manual insertion into the database. This test master can then add other test masters by adding/removing their email to/from the list.

One test master cannot remove his/her referrer test master.

The main test master cannot be removed in any way.

* 1. Import questions

The test master can import question into the system, either manually through a form interface or automatically from files such as xls, csv, etc.

Duplicate questions are to be detected and reported.

* 1. Manage questions

The test master can delete or edit questions.

* 1. Manage tests

Open/close tests; assign specific list of students for specific tests; set question scheme, duration for a test; view results of tests.

* 1. Manage students

Ban students; view a student’s test score; view/search students.

TestMaster (ID, email, referrer) [referrer = NULL means the original test master who cannot be removed]

ID: int, primary key

Email: string, unique

Referrer: int, foreign key to TestMaster(ID)

## II. Submission

1. **Overview**

Submission record for each participant after a test.

1. **Specifications**

* Each submission has a unique id.
* Submission time must match the test time, that is must be during the test time span.
* A submission contains the test id, student id, submission time, answer list, right answer count (calculated server-side).
* Submission data is auto saved during the test for resuming in case of network problems.

Submission (ID, Time, Data, Score)

ID: int, primary key

Time: datetime

Data: string

Score: float

## III. Students

1. General Information:

* Students can only attempt one test with one account at a time.

1. Account:

* Students don’t have to register an account on this website, they can use their mail account.
* Each student can only have one account to attempt to test on this website each time (can be Gmail or FPT mail). FPT mail is used in private tests, while Gmail is used in public ones.
* Password of the account is the password of the mail account.

1. Before the test:

* Before the test for the corresponding subject, students need to register (enroll) that course to be able to test. (Refer to cms.fpt.edu.vn).
* There will be a list of enrolled students of a specific subject. This list will store the FPT mail or Gmail account of the students.
* Students only need to attend on time to do the test of the registered subject.

1. During the test:

* Students can select one or multiple answers for each question by checking it.
* Students can change freely from one current question to another, forward or backward by selecting buttons.

1. After the test:

* Student’s test is submitted automatically when the test is over. If the time of the test is 2/3 of the total duration or longer, student can submit the test manually.

## IV. Subject

1. Each subject is an object with 2 behaviors:

* Subject Code (primary key): a string of 6 letters (3 characters and 3 numbers).
* Subject code is a foreign key on question table
* Subject name: a string (cannot be duplicated)

Example:

Subject Code: PRO192

Subject Name: OOP with Java

1. A subject can have many questions, but a question can only belong to one subject
2. Subject can be inserted or removed in the database by only Test Master

## V. Test

1. Test includes

* Test code: String
* Subject Code: String
* Test time (begin): datetime
* Test time (end): datetime
* QuestionID: int

## VI. Question

* [Code] is reference key of list subject table.
* [Code] + [ID\_Question] is primary key.
* Each question has maximum 6 choices and 1 or more right answers.
* If there is no selection for choice, the value is null.
* The value in Ans\_True column equals to the number of column of right answer. For example: Choice 1, 3, 4 are true then Ans\_True = 1 3 4 (separate by space character).