

Vietnamese Study System for Japanese

DETAIL DESIGN DOCUMENT

Class Design

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# Introduction

## Purpose

Vietnamese Study System for Japanese class design document contains descriptions of all classes of the Vietnamese Study System for Japanese system. It includes:

* Class diagrams that describe the static relation of all classes in the system.

## Definitions, Acronyms and Abbreviations

|  |  |  |
| --- | --- | --- |
| Abbreviations | Description | Comment |
| MVC | Model View Control model |  |

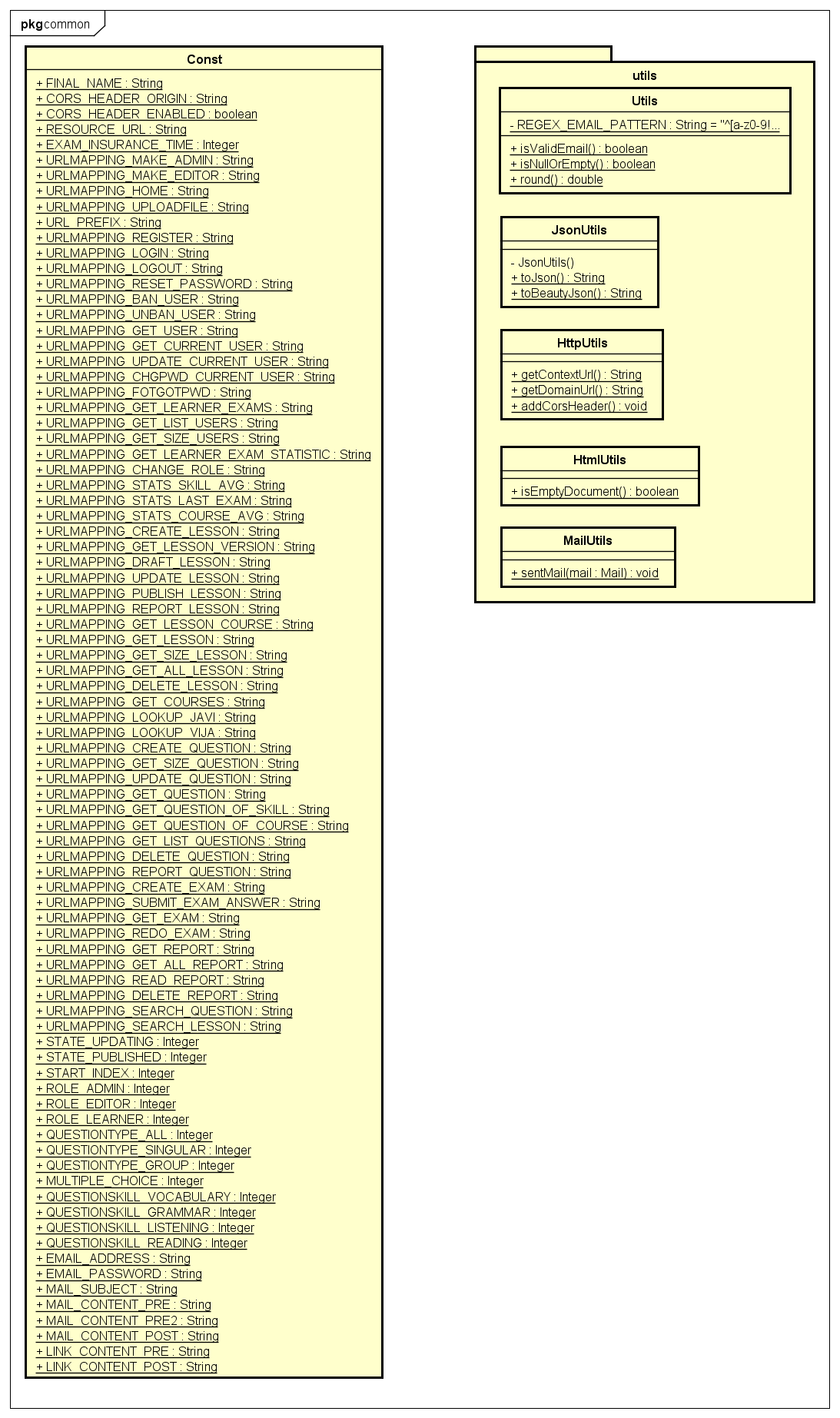
# C:\Users\MinhNN\Pictures\pkg.pngPackages

**Figure 0: List Packages**

|  |  |  |  |
| --- | --- | --- | --- |
| No | Package | Language | Description |
| 1. 01 | core | JAVA | Contains classes related to core functions |
|  | common | JAVA | Contains common shared classes |
|  | controller | JAVA | Contains Spring controllers |
|  | dao | JAVA | Contains Hibernate data access object classes |
|  | exception | JAVA | Contains user-defined exceptions |
|  | form | JAVA | Contains pojo data forms |
|  | model | JAVA | Contains Spring entity classes |
|  | response | JAVA | Contains data response classes |
|  | security | JAVA | Contain classes related to security |
|  | service | JAVA | Contains Spring service classes |

## core.common Package

### Class diagram



**Figure 1: Class diagram core.common package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | Const | Contain constant variable |
| 2 | Utils | Contain common utility function |
| 3 | JsonUtils | Contain utility function about JSON |
| 4 | HttpUtils | Contain utility function about http |
| 5 | HtmlUtils | Contain utility function about html |
| 6 | MailUtils | Contain utility function about mail |

### Const class

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| No | Attribute | Type | Value |
| 1. 1 | FINAL\_NAME | String | Veazy |
|  | CORS\_HEADER\_ORIGIN | String | Origin |
| 1. 2 | CORS\_HEADER\_ENABLED | boolean | TRUE |
| 1. 3 | RESOURCE\_URL | String | /res |
| 1. 3 | EXAM\_INSURANCE\_TIME | Integer | 30 |
|  | URLMAPPING\_MAKE\_ADMIN | String | /mkad/{user\_id} |
|  | URLMAPPING\_MAKE\_EDITOR | String | /mked/{user\_id} |
|  | URLMAPPING\_HOME | String | / |
|  | URLMAPPING\_UPLOADFILE | String | /uploadfile |
|  | URL\_PREFIX | String | /api |
|  | URLMAPPING\_REGISTER | String | URL\_PREFIX + "/register" |
|  | URLMAPPING\_LOGIN | String | URL\_PREFIX + "/login" |
|  | URLMAPPING\_LOGOUT | String | URL\_PREFIX + "/logout" |
|  | URLMAPPING\_RESET\_PASSWORD | String | URL\_PREFIX + "/users/reset\_password" |
|  | URLMAPPING\_BAN\_USER | String | URL\_PREFIX + "/users/ban/{user\_id}" |
|  | URLMAPPING\_UNBAN\_USER | String | URL\_PREFIX + "/users/unban/{user\_id}" |
|  | URLMAPPING\_GET\_USER | String | URL\_PREFIX + "/users/{user\_id}" |
|  | URLMAPPING\_GET\_CURRENT\_USER | String | URL\_PREFIX + "/user" |
|  | URLMAPPING\_UPDATE\_CURRENT\_USER | String | URL\_PREFIX + "/user/update" |
|  | URLMAPPING\_CHGPWD\_CURRENT\_USER | String | URL\_PREFIX + "/user/chgpwd" |
|  | URLMAPPING\_FOTGOTPWD | String | URL\_PREFIX + "/user/forgotpwd" |
|  | URLMAPPING\_GET\_LEARNER\_EXAMS | String | URL\_PREFIX + "/user/exams" |
|  | URLMAPPING\_GET\_LIST\_USERS | String | URL\_PREFIX + "/users" |
|  | URLMAPPING\_GET\_SIZE\_USERS | String | URL\_PREFIX + "/users/count" |
|  | URLMAPPING\_GET\_LEARNER\_EXAM\_STATISTIC | String | URL\_PREFIX + "/users/{user\_id}/exams/statistics" |
|  | URLMAPPING\_CHANGE\_ROLE | String | URL\_PREFIX + "/users/change\_roll/{user\_id}" |
|  | URLMAPPING\_STATS\_SKILL\_AVG | String | URL\_PREFIX + "/stats/skill/avg" |
|  | URLMAPPING\_STATS\_LAST\_EXAM | String | URL\_PREFIX + "/stats/exam/last/{number}" |
|  | URLMAPPING\_STATS\_COURSE\_AVG | String | URL\_PREFIX + "/stats/course/avg" |
|  | URLMAPPING\_CREATE\_LESSON | String | URL\_PREFIX + "/lessons/new" |
|  | URLMAPPING\_GET\_LESSON\_VERSION | String | URL\_PREFIX + "/lessons/{lesson\_id}/ver{version}" |
|  | URLMAPPING\_DRAFT\_LESSON | String | URL\_PREFIX + "/lessons/savedraft/{lesson\_id}" |
|  | URLMAPPING\_UPDATE\_LESSON | String | URL\_PREFIX + "/lessons/update/{lesson\_id}" |
|  | URLMAPPING\_PUBLISH\_LESSON | String | URL\_PREFIX + "/lessons/publish/{lesson\_id}" |
|  | URLMAPPING\_REPORT\_LESSON | String | URL\_PREFIX + "/lessons/report/{lesson\_id}" |
|  | URLMAPPING\_GET\_LESSON\_COURSE | String | URL\_PREFIX + "/courses/{course\_id}/lessons" |
|  | URLMAPPING\_GET\_LESSON | String | URL\_PREFIX + "/lessons/{lesson\_id}" |
|  | URLMAPPING\_GET\_SIZE\_LESSON | String | URL\_PREFIX + "/lessons/count" |
|  | URLMAPPING\_GET\_ALL\_LESSON | String | URL\_PREFIX + "/lessons" |
|  | URLMAPPING\_DELETE\_LESSON | String | URL\_PREFIX + "/lessons/delete/{lesson\_id}" |
|  | URLMAPPING\_GET\_COURSES | String | URL\_PREFIX + "/courses" |
|  | URLMAPPING\_LOOKUP\_JAVI | String | URL\_PREFIX + "/dict/javi/" |
|  | URLMAPPING\_LOOKUP\_VIJA | String | URL\_PREFIX + "/dict/vija/" |
|  | URLMAPPING\_CREATE\_QUESTION | String | URL\_PREFIX + "/questions/new" |
|  | URLMAPPING\_GET\_SIZE\_QUESTION | String | URL\_PREFIX + "/questions/count" |
|  | URLMAPPING\_UPDATE\_QUESTION | String | URL\_PREFIX + "/questions/update/{question\_id}" |
|  | URLMAPPING\_GET\_QUESTION | String | URL\_PREFIX + "/questions/{question\_id}" |
|  | URLMAPPING\_GET\_QUESTION\_OF\_SKILL | String | URL\_PREFIX + "/skill/{skill\_id}/questions" |
|  | URLMAPPING\_GET\_QUESTION\_OF\_COURSE | String | URL\_PREFIX + "/courses/{course\_id}/questions" |
|  | URLMAPPING\_GET\_LIST\_QUESTIONS | String | URL\_PREFIX + "/questions" |
|  | URLMAPPING\_DELETE\_QUESTION | String | URL\_PREFIX + "/questions/delete/{question\_id}" |
|  | URLMAPPING\_REPORT\_QUESTION | String | URL\_PREFIX + "/questions/report/{question\_id}" |
|  | URLMAPPING\_CREATE\_EXAM | String | URL\_PREFIX + "/exams" |
|  | URLMAPPING\_SUBMIT\_EXAM\_ANSWER | String | URL\_PREFIX + "/exams/submit" |
|  | URLMAPPING\_GET\_EXAM | String | URL\_PREFIX + "/exams/{exam\_id}" |
|  | URLMAPPING\_REDO\_EXAM | String | URL\_PREFIX + "/exams/{exam\_id}/redo" |
|  | URLMAPPING\_GET\_REPORT | String | URL\_PREFIX + "/report/get/{report\_id}" |
|  | URLMAPPING\_GET\_ALL\_REPORT | String | URL\_PREFIX + "/report/all" |
|  | URLMAPPING\_READ\_REPORT | String | URL\_PREFIX + "/report/read/{report\_id}" |
|  | URLMAPPING\_DELETE\_REPORT | String | URL\_PREFIX + "/report/delete/{report\_id}" |
|  | URLMAPPING\_SEARCH\_QUESTION | String | URL\_PREFIX + "/search/question" |
|  | URLMAPPING\_SEARCH\_LESSON | String | URL\_PREFIX + "/search/lesson" |
|  | UPDATING | Integer | 1 |
|  | PUBLISHED | Integer | 2 |
|  | START\_INDEX | Integer | 1 |
|  | ROLE\_ADMIN | Integer | 1 |
|  | ROLE\_EDITOR | Integer | 2 |
|  | ROLE\_LEARNER | Integer | 3 |
|  | QUESTIONTYPE\_ALL | Integer | 0 |
|  | QUESTIONTYPE\_SINGULAR | Integer | 1 |
|  | QUESTIONTYPE\_GROUP | Integer | 2 |
|  | MULTIPLE\_CHOICE | Integer | 1 |
|  | QUESTIONSKILL\_VOCABULARY | Integer | 1 |
|  | QUESTIONSKILL\_GRAMMAR | Integer | 2 |
|  | QUESTIONSKILL\_LISTENING | Integer | 3 |
|  | QUESTIONSKILL\_READING | Integer | 4 |
|  | EMAIL\_ADDRESS | String | veazysystem@gmail.com |
|  | EMAIL\_PASSWORD | String | veazy123 |
|  | MAIL\_SUBJECT | String | Veazy Reset Password |
|  | MAIL\_CONTENT\_PRE | String | Hey |
|  | MAIL\_CONTENT\_PRE2 | String | ,\nSomeone has requested a new password for your Veazy account.\n |
|  | MAIL\_CONTENT\_POST | String | If you didn't make this request then you can safely ignore this email.\nBest,\n\nThe Veazy Team |
|  | LINK\_CONTENT\_PRE | String | <a href=\" |
|  | LINK\_CONTENT\_PRE | String | \">Reset Password</a> |

### Utils class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | REGEX\_EMAIL\_PATTERN | String | private | Regex pattern to determine an email |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | isValidEmail() | Check if a string is a valid email or not. |
| 2 | isNullOrEmpty() | Check if a string is null or empty. |
| 3 | round() | round a decimal number |

### JsonUtils class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | toJson() | Convert an object to a json format |
| 2 | toBeautyJson() | Convert an object to a beautiful json format |

### HttpUtils Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getContextUrl() | Extracts context url from requested url |
| 2 | addCorsHeader() | Adds CORS headers if enabled |

### HtmlUtils Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | isEmptyDocument() | Check if Html document is empty |

### MailUtils Class

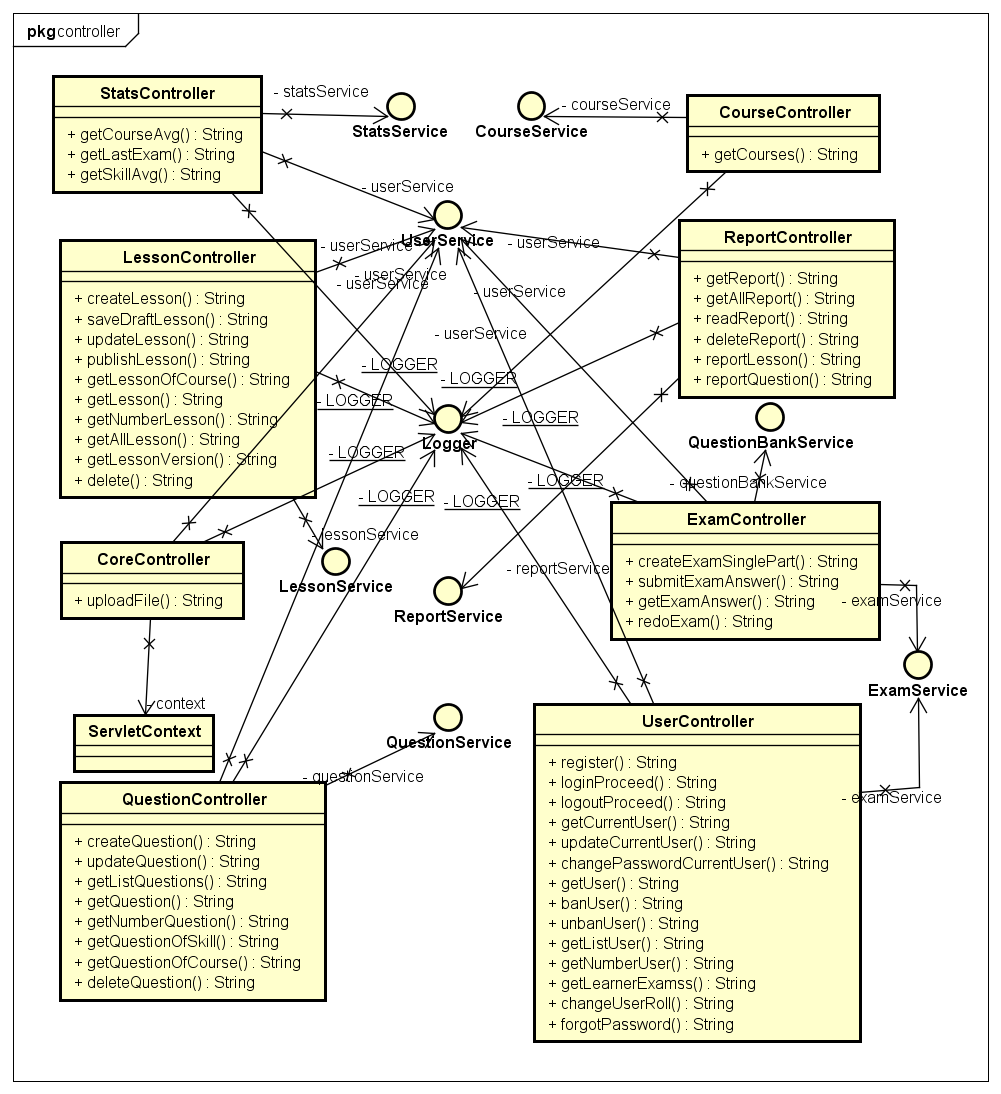
#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | sentMail() | Send an email |

### Common Sequence Diagram

## core.controller Package

### Class diagram



**Figure 2: Class diagram core.controller package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | CoreController | Control core API |
| 2 | CourseController | Control course API |
| 3 | ExamController | Control exam API |
| 4 | LessonController | Control lesson API |
| 5 | QuestionController | Control question API |
| 6 | ReportController | Control report API |
| 8 | StatsController | Control user statistic API |
| 9 | UserController | Control user API |

### CoreController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 2 | uploadFile() | To upload file |

### CourseController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCourses() | Return all courses |

### ExamController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | createExamSinglePart() | Generate an exam for learner and return the exam. |
| 2 | submitExamAnswer() | Submit exam answers. |
| 3 | getExamAnswer() | Return the answer of an exam |
| 4 | redoExam() | Return an exam the user had done. |

### LessonController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | createLesson | Create a lesson. |
| 2 | saveDraftLesson | Save lesson as draft. |
| 3 | updateLesson | Update a lesson. |
| 4 | publishLesson | Make updating lesson version to publish state. |
| 5 | getLessonOfCourse | Return all lesson of a course. |
| 6 | getLesson | Return a lesson. |
| 7 | getNumberLesson | Return the number of lesson in system. |
| 8 | getAllLesson | Return all lesson of system |
| 9 | getLessonVersion | Return the version of lesson |
| 10 | delete | Delete a lesson |

### QuestionController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | createQuestion() | Create a question. |
| 2 | updateQuestion() | Update a question. |
| 3 | getListQuestions() | Return list of question. |
| 4 | getQuestion() | Return a question. |
| 5 | getNumberQuestion() | Return the number of question in system. |
| 6 | getQuestionOfSkill() | Return all question by a skill. |
| 7 | getQuestionOfCourse() | Return all question in a course. |
| 8 | deleteQuestion() | Delete a question. |

### ReportController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getReport () | Return a report |
| 2 | getAllReport () | Return all report |
| 3 | readReport () | Make a report as read state |
| 4 | deleteReport () | Delete a report |
| 5 | reportLesson | Report a lesson. |
| 6 | reportQuestion() | Report a question. |

### StatsController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCourseAvg | Return the average point of a course. |
| 2 | getLastExam | Return the last exam of user |
| 3 | getSkillAvg | Return the average point of a test skill. |

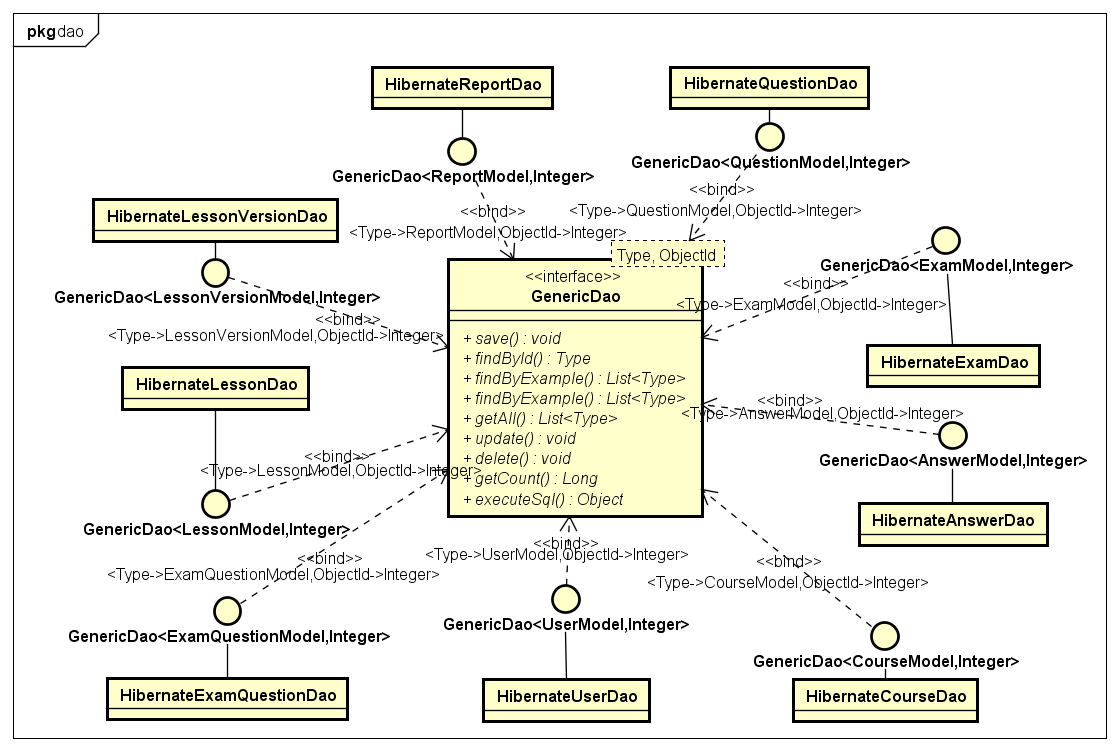
### UserController Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | register() | Sign up an account |
| 2 | loginProceed() | Login to system |
| 3 | logoutProceed() | Logout system |
| 4 | getCurrentUser() | Return current user information |
| 5 | updateCurrentUser() | Update user information |
| 6 | changePasswordCurrentUser() | Change password |
| 7 | getUser() | Return an user information |
| 8 | banUser() | Ban a user. |
| 9 | unbanUser() | Unban a user. |
| 10 | getListUser() | Return list of the user. |
| 11 | getNumberUser() | Return the number of user in system. |
| 12 | getLearnerExamss() | Return the done exam of a learner. |
| 13 | changeUserRoll() | Change user role. |

### Sequence Diagram

## core.dao Package



**Figure 3: Class diagram core.dao package**

### Class diagram

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | HibernateCourseDao | Provides methods to manage course data in database |
| 2 | HibernateExamDao | Provides methods to manage test data in database |
| 3 | HibernateLessonDao | Provides methods to manage lesson data in database |
| 4 | HibernateLessonVersionDao | Provides methods to manage versions of lesson in database |
| 5 | HibernateQuestionDao | Provides methods to manage question data in database |
| 6 | HibernateReportDao | Provides methods to manage report data in database |
| 7 | HibernateUserDao | Provides methods to manage user data in database |
| 8 | HibernateAnswerDao | Provides methods to manage course data in database |
| 9 | HibernateExamQuestionDao | Provides methods to manage test data in database |

### HibernateCourseDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save a course to database |
| 2 | findById() | Find a course by its id |
| 3 | findByExample() | Find all course have same feature with example |
| 4 | findByExample() | Find some course have same feature with example |
| 5 | getAll() | Return all course |
| 6 | update() | Update a course |
| 7 | delete() | Delete a course |
| 8 | getCount() | Return the number of the course in database |
| 9 | executeSql() | Return the courses execute by sql |

### HibernateExamDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save an exam to database |
| 2 | findById() | Find an exam by its id |
| 3 | findByExample() | Find all exam have same feature with example |
| 4 | findByExample() | Find some exam have same feature with example |
| 5 | getAll() | Return all exam |
| 6 | update() | Update an exam |
| 7 | delete() | Delete an exam |
| 8 | getCount() | Return the number of the exam in database |
| 9 | executeSql() | Return the exams execute by sql |

### HibernateLessonDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save a lesson to database |
| 2 | findById() | Find a lesson by its id |
| 3 | findByExample() | Find all lesson have same feature with example |
| 4 | findByExample() | Find some lesson have same feature with example |
| 5 | getAll() | Return all lesson |
| 6 | update() | Update a lesson |
| 7 | delete() | Delete a lesson |
| 8 | getCount() | Return the number of the lesson in database |
| 9 | executeSql() | Return the lessons execute by sql |

### HibernateLessonVersionDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save a lesson version to database |
| 2 | findById() | Find a lesson version by its id |
| 3 | findByExample() | Find all lesson version have same feature with example |
| 4 | findByExample() | Find some lesson version have same feature with example |
| 5 | getAll() | Return all lesson version |
| 6 | update() | Update a lesson version |
| 7 | delete() | Delete a lesson version |
| 8 | getCount() | Return the number of the lesson version in database |
| 9 | executeSql() | Return the lesson versions execute by sql |

### HibernateQuestionDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save a question to database |
| 2 | findById() | Find a question by its id |
| 3 | findByExample() | Find all question have same feature with example |
| 4 | findByExample() | Find some question have same feature with example |
| 5 | getAll() | Return all question |
| 6 | update() | Update a question |
| 7 | delete() | Delete a question |
| 8 | getCount() | Return the number of the question in database |
| 9 | executeSql() | Return the questions execute by sql |

### HibernateReportDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save a report to database |
| 2 | findById() | Find a report by its id |
| 3 | findByExample() | Find all report have same feature with example |
| 4 | findByExample() | Find some report have same feature with example |
| 5 | getAll() | Return all report |
| 6 | update() | Update a report |
| 7 | delete() | Delete a report |
| 8 | getCount() | Return the number of the report in database |
| 9 | executeSql() | Return the reports execute by sql |

### HibernateUserDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save an account to database |
| 2 | findById() | Find an account by its id |
| 3 | findByExample() | Find all account have same feature with example |
| 4 | findByExample() | Find some account have same feature with example |
| 5 | getAll() | Return all account |
| 6 | update() | Update an account |
| 7 | delete() | Delete an account |
| 8 | getCount() | Return the number of the account in database |
| 9 | executeSql() | Return the accounts execute by sql |

### HibernateAnswerDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save an answer to database |
| 2 | findById() | Find an answer by its id |
| 3 | findByExample() | Find all answer have same feature with example |
| 4 | findByExample() | Find some answer have same feature with example |
| 5 | getAll() | Return all answer |
| 6 | update() | Update an answer |
| 7 | delete() | Delete an answer |
| 8 | getCount() | Return the number of the answer in database |
| 9 | executeSql() | Return the answer execute by sql |

### HibernateExamQuestionDao Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | save() | Save an exam question to database |
| 2 | findById() | Find an exam question by its id |
| 3 | findByExample() | Find all exam question have same feature with example |
| 4 | findByExample() | Find some exam question have same feature with example |
| 5 | getAll() | Return all exam question |
| 6 | update() | Update an exam question |
| 7 | delete() | Delete an exam question |
| 8 | getCount() | Return the number of the exam question in database |
| 9 | executeSql() | Return the exam questions execute by sql |

### Sequence diagram

## core.exception Package

### C:\Users\CuHo\Desktop\Exception.pngClass diagram

***Figure 4: Class diagram Practice core.exception package***

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | CorruptedFormException | Exception throwed when user submitted a corrupted form i.e. form that does not have enough expected data |
| 2 | EmailExpectedException | Exception throwed when submitted form does not contain email |
| 3 | InvalidEmailException | Exception throwed when submitted form contains invalid email |
| 4 | PasswordExpectedException | Exception throwed when submitted form does not contain password |
| 5 | PasswordIncorrectException | Exception throwed when submitted form contains incorrect username or password |
| 6 | UsernameExpectedException | Exception throwed when submitted form does not contain username |
| 7 | NullOrEmptyContentException | Exception throwed when submitted data is null or empty |

### CorruptedFormException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### EmailExpectedException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### InvalidEmailException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### PasswordExpectedException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### PasswordIncorrectException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### UsernameExpectedException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### NullOrEmptyContentException Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | ERROR\_CODE | int |  | private |  |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCode() |  |

### Sequence Diagram

## core.form Package

### C:\Users\CuHo\Desktop\Diagram v2\Form.pngClass diagram

**Figure 5: Class diagram core.form package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | AnswerForm | Answer form |
| 2 | ChangeRoleForm | Change user role form |
| 3 | ChgpwdForm | Change password form |
| 4 | CreateExamSinglePartForm | Create exam form |
| 5 | CreateLessonForm | Create lesson form |
| 6 | ExamPartForm | Form for generating a exam |
| 7 | FileUploadForm | Upload file form |
| 8 | LoginForm | Login form Lookup word form |
| 9 | QuestionForm | Get a question form |
| 10 | RegisterForm | Register form |
| 11 | ReportForm | Report a question or lesson form |
| 12 | SubmitExamForm | Submit an exam |
| 13 | SubmitQuestionForm | Submit questions of an exam |
| 14 | SubmitAnswerForm | Submit answers of a question |
| 15 | UpdateLessonForm | Update question lesson form |
| 16 | UpdateUserForm | Update user form |
| 17 | Mail | Send email form |

### AnswerForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | answer | String | private | The question answer. |
| 2 | isRight | Boolean | private | The answer is correct or not |

### ChangeRoleForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | userId | Integer | private | The user id. |
| 2 | role | Integer | private | The new role of user. |

### ChgpwdForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | oldPassword | String | private | Old password. |
| 2 | newPassword | String | private | New password. |

### CreateExamSinglePartForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | courseId | Integer | private | The course of the exam |
| 2 | skill | Integer | private | The skill of the exam |
| 3 | numberOfQuestion | Integer | private | The number question of the exam |

### CreateLessonForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | courseId | Integer | private | The course id of lesson. |
| 2 | lessonTitle | String | private | The lesson title. |
| 3 | description | String | private | The lesson description. |
| 4 | vocabulary | String | private | The lesson vocabulary. |
| 5 | grammar | String | private | The lesson grammar. |
| 6 | reading | String | private | The lesson reading part. |
| 7 | listening | String | private | The lesson listening part. |
| 8 | practice | String | private | The lesson practice part. |
| 9 | article | String | private | The lesson article. |

### ExamPartForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | skill | int | private | The skill of exam. |
| 2 | numberOfQuestion | int | private | The number of question in exam. |

### FileUploadForm Class

### LoginForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | username | String | private | The user name. |
| 2 | encryptedPassword | String | private | The user password has been encrypted. |

### QuestionForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionId | Integer | private | The question Id. |
| 2 | questionAnswerType | Integer | private | The question answer type. |
| 3 | questionType | Integer | private | The question type. |
| 4 | questionSkill | Integer | private | The question skill. |
| 5 | courseId | Integer | private | The course id of question. |
| 6 | creatorId | Integer | private | The id of user who create question. |
| 7 | numberOfQuestion | Integer | private | The number of child question. |
| 8 | etaTime | Integer | private | Estimate time to complete the question |
| 9 | question | String | private | The question. |
| 10 | attachment | String | private | The file attach with question |

### RegisterForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | username | String | private | The user name. |
| 2 | password | String | private | The user password. |
| 3 | email | String | private | The user email. |

### ReportForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | content | String | private | The report content. |

### SubmitExamForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | examId | Integer | private | The exam id. |
| 2 | takenTime | Integer | private | The time user do exam. |

### SubmitQuestionForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionId | Integer | private | The question id. |

### SubmitAnswerForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | answer | String | private | The answer |
| 2 | isSelected | Boolean | private | User select this answer or not |

### UpdateLessonForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | lessonId | Integer | private | The lesson id |
| 2 | courseId | Integer | private | The course id of lesson. |
| 3 | lessonTitle | String | private | The lesson title. |
| 4 | description | String | private | The lesson description. |
| 5 | vocabulary | String | private | The lesson vocabulary. |
| 6 | grammar | String | private | The lesson grammar. |
| 7 | reading | String | private | The lesson reading part. |
| 8 | listening | String | private | The lesson listening part. |
| 9 | practice | String | private | The lesson practice part. |
| 10 | article | String | private | The lesson article. |

### UpdateUserForm Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | firstName | String | private | The user first name. |
| 2 | lastName | String | private | The user last name. |
| 3 | dob | Long | private | date of birth |
| 4 | address | String | private | The user address. |
| 5 | hobby | String | private | The user hobby. |
| 6 | bio | String | private | The user introduction. |
| 7 | website | String | private | The user website. |
| 8 | quote | String | private | Favorite quote |

### Email Class

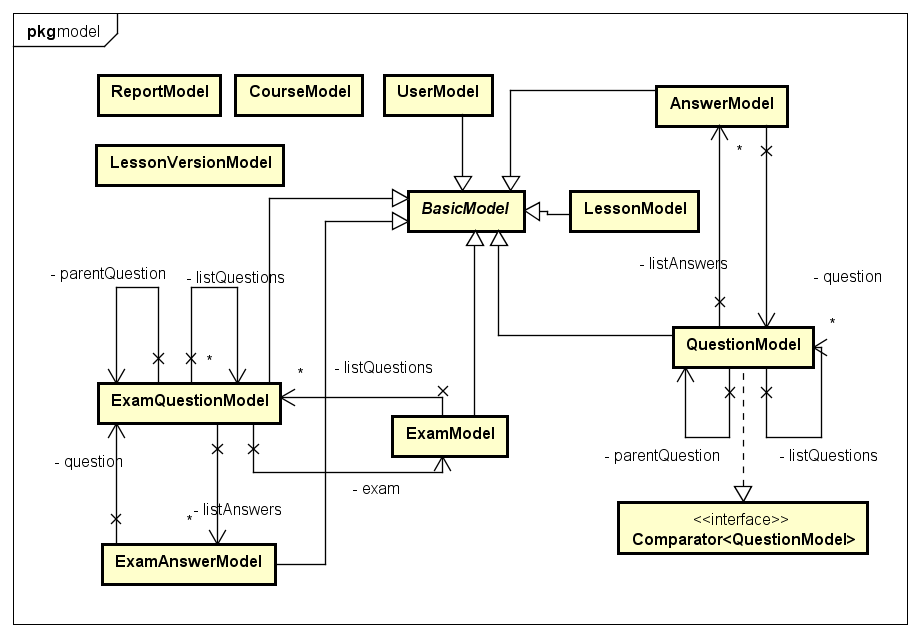
#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | senderEmailAddress | String | private | Email address of sender |
| 2 | senderPassword | String | private | Password of sender |
| 3 | receiverEmailAddress | String | private | Email address of receiver |
| 4 | emailSubject | String | private | Email subject |
| 5 | emailContent | String | private | Email content |
| 6 | emailContentType | String | private | Email content type |

### Sequence Diagram

## core.model package

### Class diagram



**Figure 6: Class diagram core.model package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | AnswerModel | Answer model |
| 2 | BasicModel | Basic model |
| 3 | CourseModel | Course model |
| 4 | ExamAnswerModel | Exam answer |
| 5 | ExamModel | Exam model |
| 6 | ExamQuestionModel | Exam question model |
| 7 | LessonModel | Lesson model |
| 8 | LessonVersionModel | Lesson version model |
| 9 | QuestionModel | Question model |
| 10 | ReportModel | Report model |
| 11 | UserModel | User model |

### AnswerModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | answer | String | private | The question answer. |
| 2 | isRight | Boolean | private | The answer is correct or not |

### BasicModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | id | Integer | private | The model id |
| 2 | createDate | Long | private | The date model is created |
| 3 | updateDate | Long | private | The last update date |
| 4 | deleteDate | Long | private | The date model is deleted |
| 5 | deleteFlag | Boolean | private | The model is deleted or not |

### CourseModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | id | Integer | private | The course id |
| 2 | name | String | private | The course name |
| 3 | description | String | private | The course desciption |

### ExamAnswer Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | answer | String |  | private | The answer. |
| 2 | isRight | Boolean |  | private | The answer is correct or not. |
| 3 | isSelected | Boolean |  | private | The answer is selected by learner or not. |

### ExamModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | userId | Integer | private | The id of user who do exam |
| 2 | courseId | Integer | private | The course id of exam |
| 3 | questionSkill | Integer | private | The skill of exam |
| 4 | result | Double | private | The result |
| 5 | takenTime | Integer | private | The time user do exam |
| 6 | etaTime | Integer | private | The total time of exam |
| 7 | finishState | Boolean | private | The exam has been finished or not |

### ExamQuestionModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionId | Integer | private | The question id |
| 2 | question | String | private | The question |
| 3 | questionType | Integer | private | The question type |
| 4 | numberOfQuestion | Integer | private | The number of child question |
| 5 | questionAnswerType | Integer | private | The question answer type |
| 6 | attachment | String | private | The file attach with question |
| 7 | isChanged | Boolean | private | The question has been changed or not |

### LessonModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | index | Integer | private | The index of lesson in course. |
| 2 | courseId | Integer | private | The course id of lesson. |
| 3 | currentVersionId | Integer | private | The current lesson version id. |

### LessonVersionModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | id | Integer | private | The lesson version id |
| 2 | createDate | Long | private | The create date. |
| 3 | updateDate | Long | private | The update date |
| 4 | lessonId | Integer | private | The lesson id. |
| 5 | version | Integer | private | The lesson version |
| 6 | state | Integer | private | The state of lesson version |
| 7 | title | String | private | The lesson title. |
| 8 | description | String | private | The lesson description. |
| 9 | creatorId | Integer | private | The creator id |
| 10 | vocabulary | String | private | The lesson vocabulary. |
| 11 | grammar | String | private | The lesson grammar. |
| 12 | reading | String | private | The lesson reading part. |
| 13 | listening | String | private | The lesson listening part. |
| 14 | practice | String | private | The lesson practice part. |
| 15 | article | String | private | The lesson article. |

### QuestionModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionCode | Integer | private | The question code |
| 2 | creatorId | Integer | private | The creator id |
| 3 | questionAnswerType | Integer | private | The question answer type |
| 4 | questionType | Integer | private | The question type |
| 5 | questionSkill | Integer | private | The question skill |
| 6 | numberOfQuestion | Integer | private | The number of child questions |
| 7 | courseId | Integer | private | The course id |
| 8 | question | String | private | The question |
| 9 | content | List<Integer> | private | The child questions id |
| 10 | state | Integer | private | The question state |
| 11 | attachment | Integer | private | The file url attach with question |

### ReportModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | id | Integer | private | The report id |
| 2 | createDate | Long | private | The create date |
| 3 | deleteDate | Long | private | The delete date |
| 4 | deleteFlag | Long | private | The report is deleted or not |
| 5 | senderId | Integer | private | The user who send report |
| 6 | receiverId | Integer | private | The user who receive report |
| 7 | readFlag | Boolean | private | Check if report is read or not |
| 8 | content | String | private | The report content |
| 9 | lessonId | Integer | private | The id of lesson is reported |
| 10 | questionId | Integer | private | The id of question is reported |

### UserModel Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | email | String | private | The user email |
| 2 | userName | String | private | The user name |
| 3 | encryptedPassword | String | private | The password had been encrypted |
| 4 | firstName | String | private | The user first name. |
| 5 | lastName | String | private | The user last name. |
| 6 | dob | Long | private | Date of birth |
| 7 | joinDate | Long | private | The join date |
| 8 | address | String | private | The user address. |
| 9 | role | Integer | private | The user role |
| 10 | hobby | String | private | The user hobby. |
| 11 | bio | String | private | The user introduction. |
| 12 | website | String | private | The user website. |
| 13 | quote | String | private | Favorite quote |
| 14 | isBanned | Boolean | private | The user is banned or not |

### Sequence Diagram

## core.response Package

### C:\Users\CuHo\Desktop\Diagram v2\Response.pngClass diagram

**Figure 7: Class diagram core.response package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | AddQuestionResponse | Response for add question API |
| 2 | AnswerResponse | Answer of a question |
| 3 | BriefAnswerResponse | Brief of an answer |
| 4 | BriefLessonResponse | Brief of an lesson |
| 5 | BriefQuestionResponse | Brief of an question |
| 6 | CreateLessonResponse | Response for create lesson API |
| 7 | ExamAnswerResponse | Answer of a question in exam |
| 8 | ExamPartResponse | Response for a generated an exam |
| 9 | ExamQuestionResponse | Question in exam |
| 10 | ExamResultResponse | Result of exam |
| 11 | ExamSinglePartResponse | Response for generating a single-skill exam |
| 12 | GetCourseResponse | Response for get course API |
| 13 | GetExamResponse | Response for get exam API |
| 14 | GetLearnerExamsResponse | Response for get learner exam API |
| 15 | GetLessonResponse | Response for get lesson API |
| 16 | GetLessonVersionResponse | Response for get lesson version API |
| 17 | GetListUsersResponse | Response for get list users API |
| 18 | GetUserResponse | Response for get a user API |
| 19 | LoginResponse | Response for login API |
| 20 | QuestionResponse | Contain question content |
| 21 | Response | Response form for all API |
| 22 | ResponseCode | Return code for each API |
| 23 | StatsCourseAvgResponse | Response for get statistic of exam in a course API |
| 24 | StatsLastExamResponse | Response for get statistic of last exam API |
| 25 | StatsLessonsResponse | Response for get statistic of lesson API |
| 26 | StatsQuestionsResponse | Response for get statistic of question API |
| 27 | StatsSkillAvgResponse | Response for get statistic of exam in a skill API |
| 28 | StatsUsersResponse | Response for get statistic of an user API |
| 29 | UploadFileResponse | Response for upload file API |

### AddQuestionResponseData Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | questionId | Integer |  | private | question id |

### AnswerResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | answer | String | private | The question answer. |
| 2 | isRight | Boolean | private | The answer is correct or not |

### BriefAnswerResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | answer | String | private | The question answer. |
| 2 | isRight | Boolean | private | The answer is correct or not |
| 3 | isSelected | Boolean | private | User choose answer or not |

### BriefLessonResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | lessonId | Integer | private | The lesson id |
| 2 | title | String | private | The lesson type |
| 3 | state | Integer | private | The lesson state |
| 4 | courseId | Integer | private | The course id |
| 5 | version | Integer | private | The lesson version |
| 6 | description | String | private | The lesson description |

### BriefQuestionResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionId | Integer | private | The question id |
| 2 | question | String | private | The question |
| 3 | attachment | String | private | The file url attach with question |

### CreateLessonResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | lessonId | Integer | private | The lesson version |
| 2 | courseId | Integer | private | The state of lesson version |
| 3 | version | Integer | private | The lesson version |
| 4 | lessonTitle | String | private | The lesson title. |
| 5 | description | String | private | The lesson description. |
| 6 | creatorId | Integer | private | The creator id |
| 7 | createDate | Long | private | The creation date |
| 8 | vocabulary | String | private | The lesson vocabulary. |
| 9 | grammar | String | private | The lesson grammar. |
| 10 | reading | String | private | The lesson reading part. |
| 11 | listening | String | private | The lesson listening part. |
| 12 | practice | String | private | The lesson practice part. |
| 13 | article | String | private | The lesson article. |

### ExamAnswerResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | answer | Integer | private | The question answer. |
| 2 | isRight | Boolean | private | The answer is correct or not |
| 3 | isSelected | Boolean | private | User choose answer or not |

### ExamPartResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | examId | Integer | private | The exam id |
| 2 | skill | Integer | private | The exam skill |
| 3 | etaTime | Integer | private | The total time of exam |
| 4 | offlineCheck | Boolean | private | The backend side check exam result or not |

### ExamQuestionResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionId | Integer | private | The question id |
| 2 | questionType | Integer | private | The question type |
| 3 | question | String | private | The question |
| 4 | numberOfQuestion | Integer | private | The number of child questions |
| 5 | questionAnswerType | Integer | private | The question answer type |
| 6 | attachment | String | private | The file url attach with question |
| 7 | isChanged | Boolean | private | The question has been changed or not |

### ExamResultResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | examId | Integer | private | The exam id |
| 2 | course | Integer | private | The course id |
| 3 | skill | Integer | private | The exam skill |
| 4 | offlineCheck | Boolean | private | The backend side check exam result or not |
| 5 | etaTime | Integer | private | The total time of exam |

### ExamSinglePartResponseClass

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | examId | Integer | private | The exam id |
| 2 | result | Double | private | The exam result |

### GetCourseResponse Class

#### Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Attribute | Type | Default | Note | Description |
| 1 | name | String |  | private | The course name |
| 2 | description | String |  | private | The course desciption |

### GetExamResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | examId | Integer | private | The exam id |
| 2 | courseId | Integer | private | The course id |
| 3 | questionSkill | Integer | private | The question skill |
| 4 | result | Double | private | The exam result |
| 5 | takenTime | Integer | private | The time user do exam |
| 6 | etaTime | Integer | private | The total time of exam |

### GetLearnerExamsResponseData Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | exams | ExamResponseData | private | Exam response data |

### GetLessonResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | lessonId | Integer | private | The lesson id |
| 2 | courseId | Integer | private | The course id |
| 3 | lessonTitle | String | private | The lesson title |
| 4 | description | String | private | The lesson description |
| 5 | updateDate | Long | private | The update date |
| 6 | state | Integer | private | The lesson state |
| 7 | version | Integer | private | The lesson version |
| 8 | vocabulary | String | private | The lesson vocabulary. |
| 9 | grammar | String | private | The lesson grammar. |
| 10 | conversation | String | private | The lesson conversation part. |
| 11 | listening | String | private | The lesson listening part. |
| 12 | practice | String | private | The lesson practice part. |
| 13 | reading | String | private | The lesson reading. |
| 14 | previousLessonId | Integer | private | The previous lesson on same course |
| 15 | nextLessonId | Integer | private | The next lesson on same course |

### GetLessonVersionResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | lessonId | Integer | private | The lesson id. |
| 2 | courseId | Integer | private | The lesson version |
| 3 | version | Integer | private | The lesson version |
| 4 | lessonTitle | String | private | The lesson title |
| 5 | description | String | private | The lesson description |
| 6 | creatorId | Integer | private | The creator id |
| 7 | createDate | Long | private | The creation date. |
| 8 | updateDate | Long | private | The update date |
| 9 | vocabulary | String | private | The lesson vocabulary. |
| 10 | grammar | String | private | The lesson grammar. |
| 11 | reading | String | private | The lesson reading part. |
| 12 | listening | String | private | The lesson listening part. |
| 13 | practice | String | private | The lesson practice part. |
| 14 | article | String | private | The lesson article. |
| 15 | listVersions | List< Integer> | private | List lesson version id in same lesson |

### GetListUsersResponseData Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | listUsers | List<GetUserResponseData> | private |  |

### GetUserResponseData Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | email | String | private | The user email |
| 2 | userName | String | private | The user name |
| 3 | firstName | String | private | The user first name. |
| 4 | lastName | String | private | The user last name. |
| 5 | dob | Long | private | Date of birth |
| 6 | joinDate | Long | private | The join date |
| 7 | address | String | private | The user address. |
| 8 | role | Integer | private | The user role |
| 9 | hobby | String | private | The user hobby. |
| 10 | bio | String | private | The user introduction. |
| 11 | website | String | private | The user website. |
| 12 | quote | String | private | Favorite quote |

### LoginResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | role | Integer | private | The role of user |

### QuestionResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | questionId | Integer | private | The question id |
| 2 | questionCode | Integer | private | The question code |
| 3 | questionAnswerType | Integer | private | The question answer type |
| 4 | questionType | Integer | private | The question type |
| 5 | questionSkill | Integer | private | The question skill |
| 6 | courseId | Integer | private | The course id |
| 7 | question | String | private | The question |
| 8 | state | Integer | private | The question state |
| 9 | createDate | Long | private | The creation date |
| 10 | updateDate | Long | private | The update date |

### Response Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | code | Integer | private | Response code. |
| 2 | data | String | private | Response detail content. |

### ResponseCode Class

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| No | Attribute | Type | Value |
| 1. 1 | SUCCESS | int | 200 |
| 1. 2 | CREATED | int | 201 |
| 1. 3 | FOUND | int | 302 |
| 1. 3 | BAD\_REQUEST | int | 400 |
|  | UNAUTHORIZED | int | 401 |
|  | PERMISSION\_DENIED | int | 403 |
|  | REQUEST\_TIMEOUT | int | 408 |
|  | INVALID\_EMAIL | int | 410 |
|  | DUPLICATED\_EMAIL | int | 411 |
|  | EMAIL\_NOT\_FOUND | int | 412 |
|  | DUPLICATED\_USERNAME | int | 413 |
|  | CORRUPTED\_FORM | int | 460 |
|  | USERNAME\_EXPECTED | int | 461 |
|  | PASSWORD\_EXPECTED | int | 462 |
|  | EMAIL\_EXPECTED | int | 463 |
|  | INVALID\_PASSWORD | int | 420 |
|  | INCORRECT\_PASSWORD | int | 421 |
|  | USER\_NOT\_FOUND | int | 430 |
|  | USER\_NOT\_ALLOW | int | 431 |
|  | USER\_INACTIVE | int | 432 |
|  | USER\_EXAMS\_NOT\_FOUND | int | 433 |
|  | USERNAME\_PASSWORD\_NOT\_MATCH | int | 470 |
|  | PASSWORD\_INCORRECT | int | 471 |
|  | QUESTION\_NOT\_FOUND | int | 440 |
|  | INTERNAL\_SERVER\_ERROR | int | 500 |
|  | UNSUPPORTED\_API | int | 600 |

### StatsLastExamResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | result | Double | private | Last exam result |

### StatsLessonsResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | numberOfLessons | Integer | private | The number of lesson in system. |

### StatsQuestionsResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | numberOfLessons | Integer | private | The number of question in system. |

### StatsSkillAvgResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | listening | Double | private | Average point in listening skills. |
| 2 | reading | Double | private | Average point in reading skills. |
| 3 | vocabulary | Double | private | Average point in vocabulary skills. |
| 4 | grammar | Double | private | Average point in grammar skills. |

### StatsUsersResponse Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | activeUser | Integer | private | The number of user who isn’t banned |
| 2 | totalUser | Integer | private | The number of user in system |

### UploadFileResponse Class

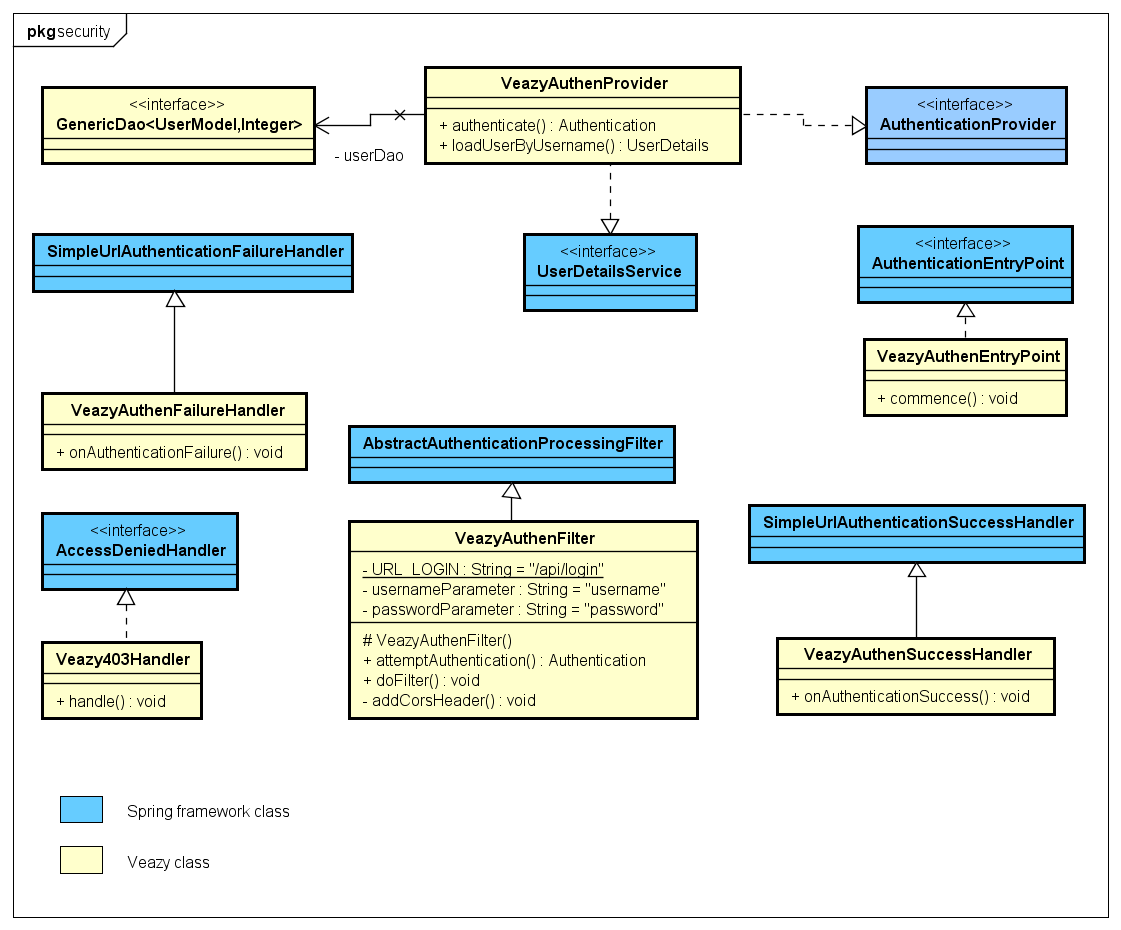
#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | link | String | private | Uploaded file url. |

### Sequence Diagram

## core.security package

### Class diagram



**Figure 8: Class diagram core.security package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | Veazy403Handler | Handles 403 forbidden error |
| 2 | VeazyAuthenEntryPoint | Handles anonymous requests |
| 3 | VeazyAuthenFailureHandler | Handles authentication failure requests |
| 4 | VeazyAuthenFilter | Filters authentication requests |
| 5 | VeazyAuthenProvider | Provides authentication mechanism |
| 6 | VeazyAuthenSuccessHandler | Handles authentication success requests |

### Veazy403Handler Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | handle() | Handles denied request |

### VeazyAuthenEntryPoint Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | commence() | Handles anonymous request |

### VeazyAuthenFailureHandler Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | onAuthenticationFailure() | Handles failed authentication event |

### VeazyAuthenFilter Class

#### Attributes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Attribute | Type | Note | Description |
| 1 | URL\_LOGIN | String | private | Defines url string to filter the authentication request |
| 2 | usernameParameter | String | private | Defines the username parameter for UsernamePasswordAuthentication |
| 3 | passwordParameter | String | private | Defines the password parameter for UsernamePasswordAuthentication |

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | attemptAuthentication() | Attempts to authenticate the requested principal |
| 2 | doFilter() | Filters the authentication request |
| 3 | addCorsHeader() | Adds CORS header to response if needed |

### VeazyAuthenProvider Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | authenticate() | Authenticates the requested principal |
| 2 | loadUserByUsername() | Loads user details from requested principal |

### VeazyAuthenSuccessHandler Class

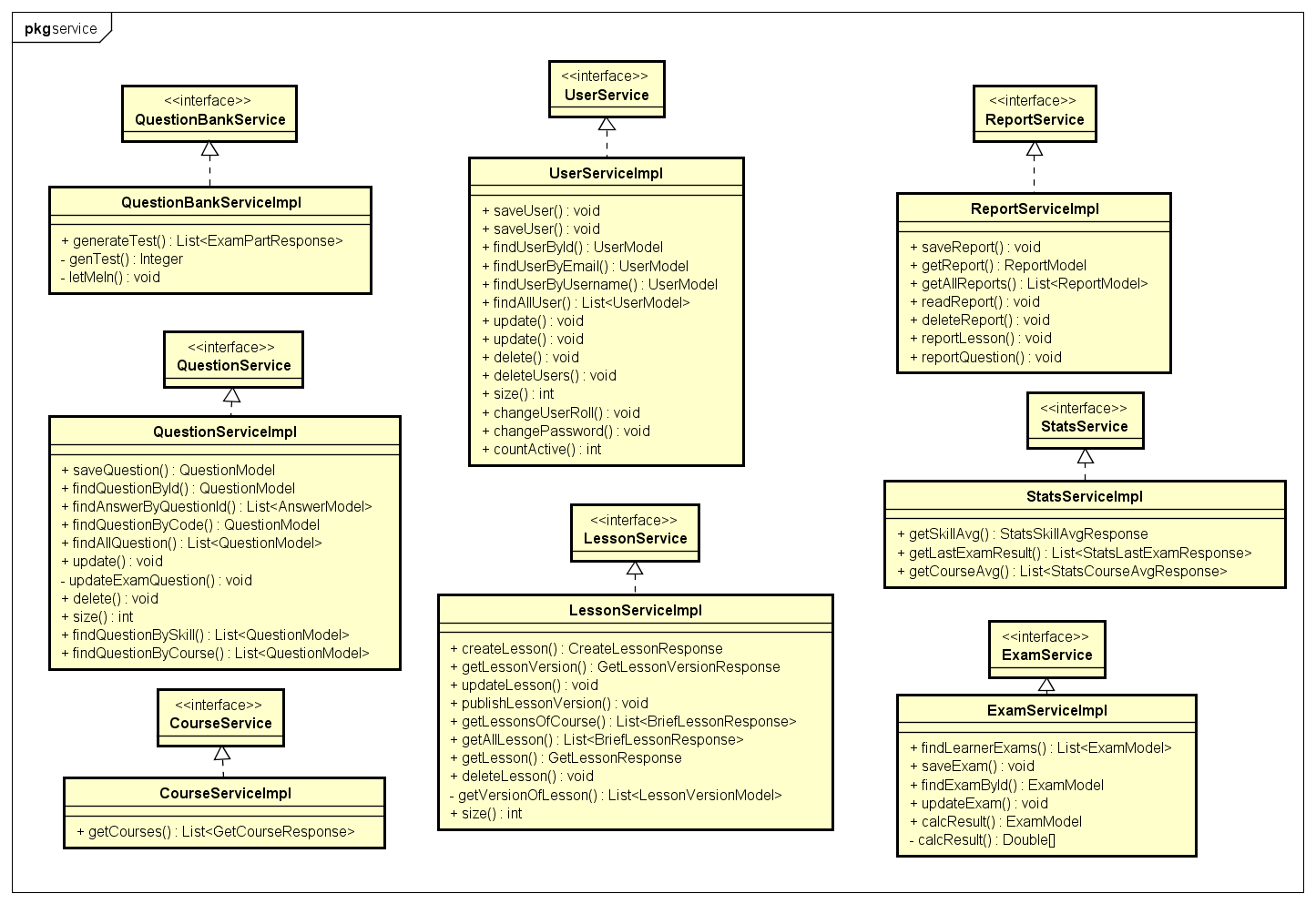
#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | onAuthenticationSuccess() | Handles successful authentication event |

### Sequence Diagram

## core.service Package

### Class diagram



**Figure 9: Class diagram core.service package**

|  |  |  |
| --- | --- | --- |
| No | Class Name | Description |
| 1 | CourseServiceImpl | Contains business logical functions for processing course data |
| 2 | ExamServiceImpl | Contains business logical functions for processing test data |
| 3 | LessonServiceImpl | Contains business logical functions for processing lesson data |
| ~~4~~ | QuestionBankServiceImpl | Contains business logical functions for processing question bank data |
| 5 | QuestionServiceImpl | Contains business logical functions for processing question data |
| 6 | ReportServiceImpl | Contains business logical functions for processing report data |
| 7 | StatsServiceImpl | Contains business logical functions for processing statistic data |
| 8 | UserServiceImpl | Contains business logical functions for processing user data |

### CourseServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getCourses() | Return list course |

### ExamServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | findLearnerExams() | Return all done exam of a user |
| 2 | saveExam() | Save an exam to database |
| 3 | findExamById() | Return an exam by its id |
| 4 | updateExam() | Update exam to database |
| 5 | calcResult() | Calculate exam result |

### LessonServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | createLesson() | Create new lesson |
| 2 | getLessonVersion() | Get a version of lesson |
| 3 | updateLesson() | Update a lesson |
| 4 | publishLessonVersion() | Make lesson as published version. Learner can see this lesson. |
| 5 | getLessonsOfCourse() | Return list lesson of a course. |
| 6 | getLesson() | Return a lesson. |
| 7 | deleteLesson() | Delete a lesson. |
| 8 | getAllLesson() | Return all lesson. |

### QuestionBankServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | generateExam() | Generates the exam response from the list of random questions |
| 2 | genExam() | Generates list of random questions |
| 3 | letMeIn() | Puts questions details to suitable list |

### QuestionServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | saveQuestion() | Save a question |
| 2 | findQuestionById() | Find a question by its id. |
| 3 | findAnswerByQuestionId() | Find all answer of a question by question id |
| 4 | findQuestionByCode() | Find a question by question code. |
| 5 | findAllQuestion() | Get all question. |
| 6 | update() | Update a question. |
| 7 | updateExamQuestion() | Update information of exam question what link to updated question. |
| 8 | delete() | Delete a question. |
| 9 | size() | Return the number of question in database. |
| 10 | findQuestionBySkill() | Find all question by a skill |
| 11 | findQuestionByCourse() | Find all question in a course |

### ReportServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | saveReport() | Save a report to database. |
| 2 | getReport() | Get a report. |
| 3 | getAllReports() | Get all report. |
| 4 | readReport() | Make a report as read state. |
| 5 | deleteReport() | Delete a report. |
| 6 | reportLesson() | User report a lesson. |
| 7 | reportQuestion() | User report a question |

### StatsServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | getSkillAvg() | Return average exam point for each skill of a user. |
| 2 | getLastExamResult() | Return last exam result of a user. |
| 3 | getCourseAvg() | Return average exam point for each course of a user. |

### UserServiceImpl Class

#### Methods

|  |  |  |
| --- | --- | --- |
| No | Method | Description |
| 1 | saveUser | Save new user. |
| 2 | findUserById | Find a user by id |
| 3 | findUserByEmail | Find a user by email |
| 4 | findUserByUsername | Find a user by user name |
| 5 | findAllUser | Get all user. |
| 6 | update | Update a user. |
| 7 | delete | Delete a user. |
| 9 | deleteUsers | Delete multiple user |
| 10 | size | Return the number of user in system. |
| 11 | changeUserRoll | Change user role |
| 12 | changePassword | Change user password |
| 13 | countActive | Return the number of active user |