Cairo University  
Faculty of Computers and Information



**CS251**

**Software Engineering I**

Game to Gain

Software Design

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December 2016

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# Team

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# Software Design Document

# 1. Document purpose and audience

## 1.1. Purpose

This document describe the architecture and the design of the software. It describes the dependencies of the classes and the relation between them. It also include description for most of the main functions of the software.

## 1.2. Audience

The audience of this documents are the engineers that are going to implement this software, as it will be a reference to facilitate understanding the functionality of the software. Also the engineers that may modify or extend the software after building it.

# 2. System Model

## 2.1. Class diagrams

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| **Class ID** | **Class Name** | **Description & Responsibility** |
| 1 | Account | It includes the common information between all the user such as; name, password, email …etc. |
| 2 | User | It includes the common information between all the users that are related to the user profile such as the pic, it also include the account information. |
| 3 | Student | It includes the total score of the player.It is responsible for updating student total score. |
| 4 | Teacher | It is responsible for creating a game. |
| 5 | Game | It contains information about the game such as the author, game description and so on.It is responsible for:Saving questionsReturning the questionsChecking answers |
| 6 | Question | It is made for abstraction so we could unify any return type related to the questions regardless to its type. |
| 7 | Runcode | It is one of the question types, it contains the run code question standard form. |
| 8 | MatchingPic | It is one of the question types, it contains the matching picture question standard form. |
| 9 | True&False | It is one of the question types, it contains the true and false question standard form. |
| 10 | MCQ | It is one of the question types, it contains the multiple choice question standard form. |
| 11 | Category | It contains the list of game for the specific category as there is an instance from it for each category contains its list of games. |
| 12 | ScoarBoard | It is responsible for updating the list of the top players on the website and retrieving it. |
| 13 | Demo | It contains the demo of the game as each game have a demo and it is generated by the controller after the teacher creates new game. |
| 14 | ControllerL | It is responsible for verifying the user’s username and password before linked him/her on his/her home page. |
| 15 | ControllerR | It is responsible for:Validating the user information while the registration.Verifying the teachers’ accounts before creating them.Create the users’ accounts. |
| **Class ID** | **Class Name** | **Description & Responsibility** |
| 16 | UserGameController | It controls the transactions between the user and the game.It is responsible for:Adding the last score to the list of scores related to a specific game and a specific user.Sorting this list. |
| 17 | ControllerG | It is responsible for returning the game to the user so he/she can play it. |
| 18 | ModelU | It is the database that contains all the users’ accounts.It is responsible for:Saving student user information on the database.Saving teacher user information on the database. |
| 19 | ModelG | It is the database that contains all the games’ information.It is responsible for:Saving the game to the database.Updating the category list which that game belongs to.Searching for a game in the database.Searching for the user game controller for a specific game and a specific user. |
| 20 | ModelP | It is responsible for returning the users’ home page after logging in |
| 21 | ViewP | It contains student profile form and teacher profile form.It is responsible for returning them to the user. |
| 22 | ViewR | It is responsible for:Returning the registration form to the user.Taking the submitted user data and send it to the registration controller. |
| 23 | ViewLG | It contains the games that are most played on the website and those which are shown to the user in her/his home page.It is responsible for letting the user select a game from this list. |
| **Class ID** | **Class Name** | **Description & Responsibility** |
| 24 | ViewG | It is responsible for:Returning the game form to the teacher when he/she wants to add a new game.Taking the submitted game data from the teacher and send it to the controller that responsible for adding a game ( the teacher).Notify the game that the user wants to start playing.Send the submitted answer from the user to the game to check it.Take the data of the question from the teacher and sent it to the game to save it. |
| 25 | ViewL | Responsible for taking the username and the password from the user and send them to the login controller to verify them. |

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## 2.2. Sequence diagrams

## 2.2.1. RegestrationS

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## 2.2.2 RegestrationT

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## 2.2.3 Add Game

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## 2.2.4 Play Game

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## 2.2.4 Log in

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* **Class - Sequence Usage Table**

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| --- | --- | --- |
| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| 1. Category | 3 | Add to Category List( String name, String id) : void |
| 2. ControllerG | 4 | Get Game( String id) : void |
| 3. ControllerL | 5 | Verfy( String username, String password) : boolean |
| 4. ControllerR | 1, 2 | Create Acc( String[] arr ) : Boolean  Validate( String[] arr ) : Boolean  Verfy() : boolean |
| 5. Demo | 3 |  |
| 6. Game | 3, 4 | SaveQ(String[] arr) : void  Get Question( int i) : void  Check Answer(String a) : boolean |
| 7. ModelG | 3, 4 | Update CL(String cid, String gid) : void  Save Game( Game g) : void  Search Game( String idg) : Game  Search UGC(String idg, String idu) : UserGameController |
| 8. ModelP | 5 | Get home page( User u ) : page |
| 9. ModelU | 1, 2, 5 | Save Student( Student s) : void  Save Teacher(Teacher T) : void  Search( String username, String password) : User |
| 10. Question | 3 |  |
| 11. ScoarBord | 4 | Update() : void |
| 12. Student | 1, 4 | Updat Student TS() : void |
| 13. Teacher | 2, 3 | Creat Game(String[] arr ) : Boolean |
| 14. UserGameController | 4 | Add This Score(int score) : void  Sort Score List() : int[] |
| 15. ViewG | 3, 4 | Add Game() : game form  Submit G() : String  SubmitQ() : void  Select Game() : void |
| 16. ViewL | 5 | Log in( String username, String password) : void |
| 17.ViewLG | 4 | Select Game() : void |
| 18. ViewP | 1, 2 |  |
| 19. ViewR | 1, 2 | Register() : void  Submit Data(Strin[] arr) : String |

# 3. Ownership Report

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| --- | --- |
| **Item** | **Owners** |
| Document Purpose and Audience | Monica Millad |
| Class diagrams | All the team members |
| Sequence diagrams | All the team members |

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### Git repository link:

### https://github.com/NadaAshrafAhmed/SWE\_1-project