Cairo University  
Faculty of Computers and Information



**CS251**

**Software Engineering I**

PN: edugame

Software Design

**TN: Gamers++**

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# Team

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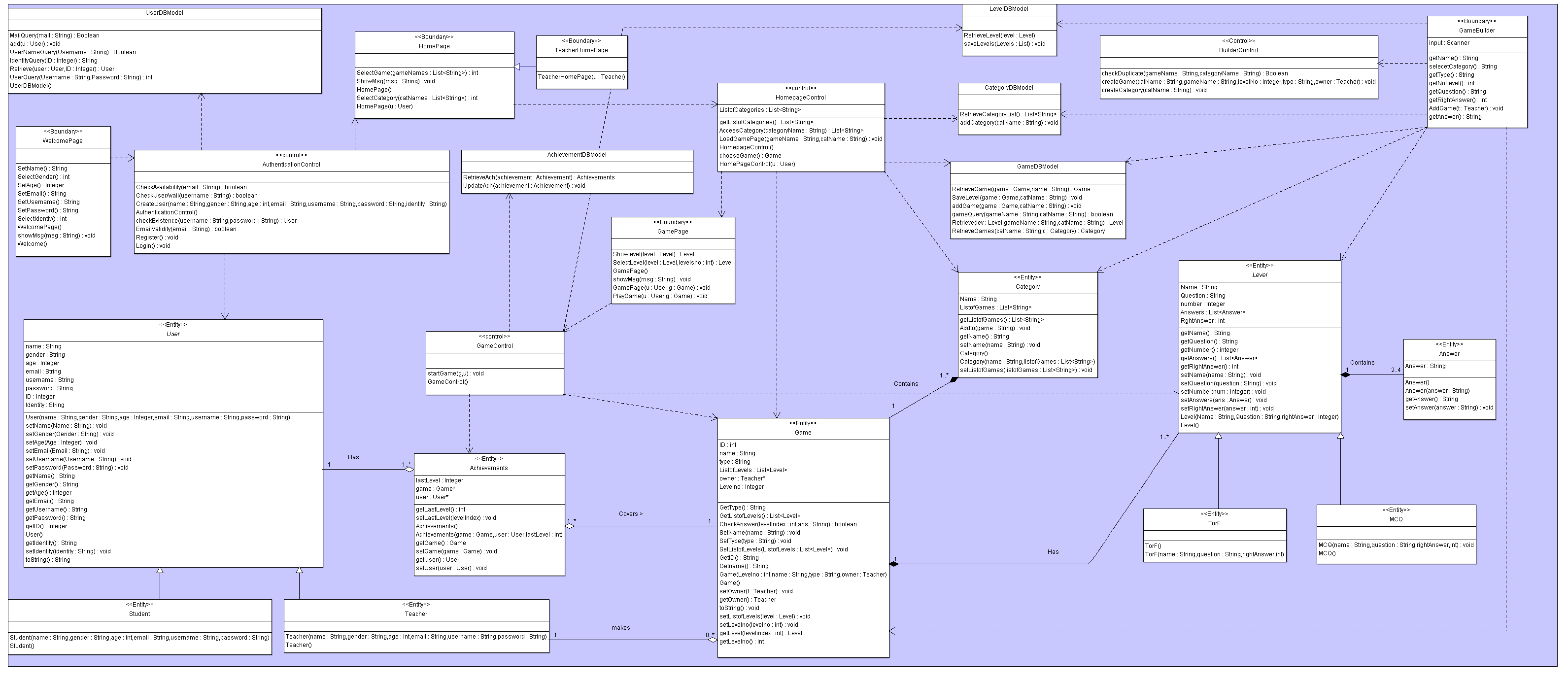
# Document Purpose and Audience

A fully detailed SRS document for a game-based educational website, targeting teenagers & teachers.

Expecting our professor and TAs to read this document for feedback. Also it will act as a reference for us during our working period. Our final version will be introduced to Computek for submission.

# System Models

## I. Class diagrams

****

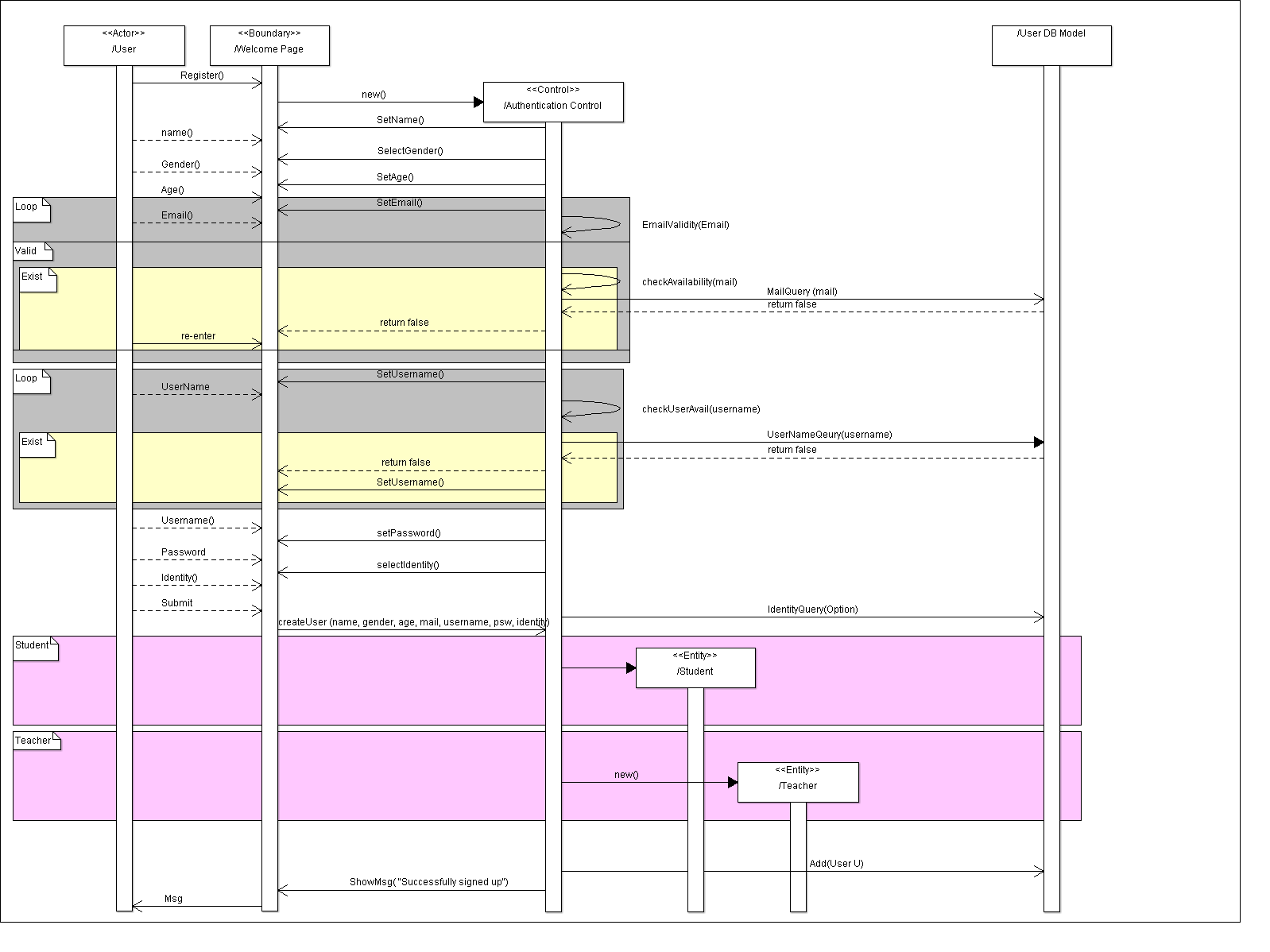
### Class Description

| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
| 1 | **User** | Entity abstract parent class containing all information about any user. |
| 2 | **Student** | Entity child class for student to control his authorization through the website. |
| 3 | **Teacher** | Entity child class for teacher to control his authorization through the website. |
| 4 | **Category** | Entity class for game categories. It separates between different game fields. It includes a list of games that belong to a certain category. |
| 5 | **Game** | Entity class for games. It contains information about the game as long as the list of levels creating this game. |
| 6 | **Level** | Entity abstract parent class contains the information about a single level in a certain game. It stores the level options and the right answer. |
| 7 | **MCQ** | Entity child class contains information about a MCQ level in a certain game. |
| 8 | **TorF** | Entity child class contains information about a true or false level in a certain game. |
| 9 | **Achievements** | Entity class contains all the achievements and scores for a certain user in a certain game. |
| 10 | **Answer** | Entity class contains a choice in a level of a certain game. |
| 11 | **WelcomePage** | Boundary class acts as an interface between the system and user whenever he visits it. It includes options for login or register. |
| 12 | **Homepage** | Boundary parent class after a successful login or registration for students. It gives option to choose category or a specific game. |
| 13 | **TeacherHomepage** | Boundary child class after a successful login or registration for teachers. It gives option to choose category or a specific game. Moreover, it allows the teacher to create a new game. |
| 14 | **GamePage** | Boundary class that contains the game frame, where a user can play, start or stop a game. |
| 15 | **GameBuilder** | Boundary class that enables the teacher to build a new game. It goes through step-by-step instructions to help him. |
| 16 | **GameControl** | Control class that acts as a middleware between the gamepage boundary and the game entity. It adds game, loads it, and validate answers through gameplay. |
| 17 | **AuthenticationControl** | Control class responsible for any registration or login process to authorize the user. |
| 18 | **HomepageControl** | Control class that handles choosing category, or a specific game to play. |
| 19 | **BuilderControl** | Control class that is responsible for making teacher’s orders to create a new game and adds it to its category, as long as its different levels. |
| 20 | **UserDBModel** | Control Class that controls all database operations required by the system that relates to users. It checks for availability and retrieve user data in registration and login. |
| 21 | **CategoryDBModel** | Control Class that controls all database operations required by the system that relates to categories. It retrieves the category names for the homepage boundary class. |
| 22 | **GameDBModel** | Control Class that controls all database operations required by the system that relates to games. It checks for availability and retrieve game data in a specific category or stores a new one. |
| 23 | **AchievementDBModel** | Control Class that controls all database operations required by the system that relates to achievements. It retrieves/adds achievements related to a certain user in a certain game. |
| 24 | **AppendingObjectOutputStream** | Class for preventing corrupted stream exception occurs during reading more than one object from a file, written with headers and by different ObjectOutputStream objects. |

## II. Sequence diagrams

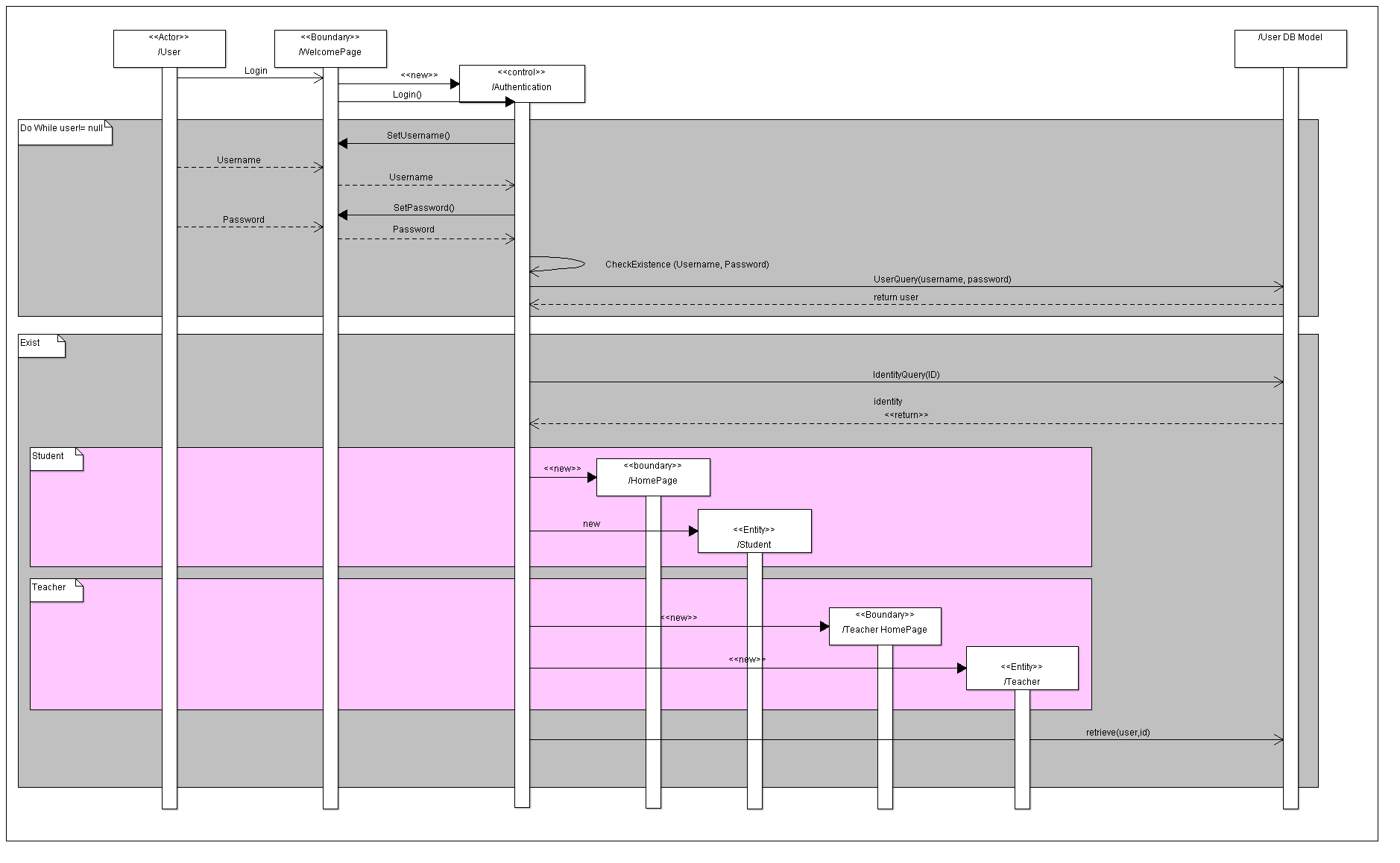
### Register Sequence Diagram

ID: 1

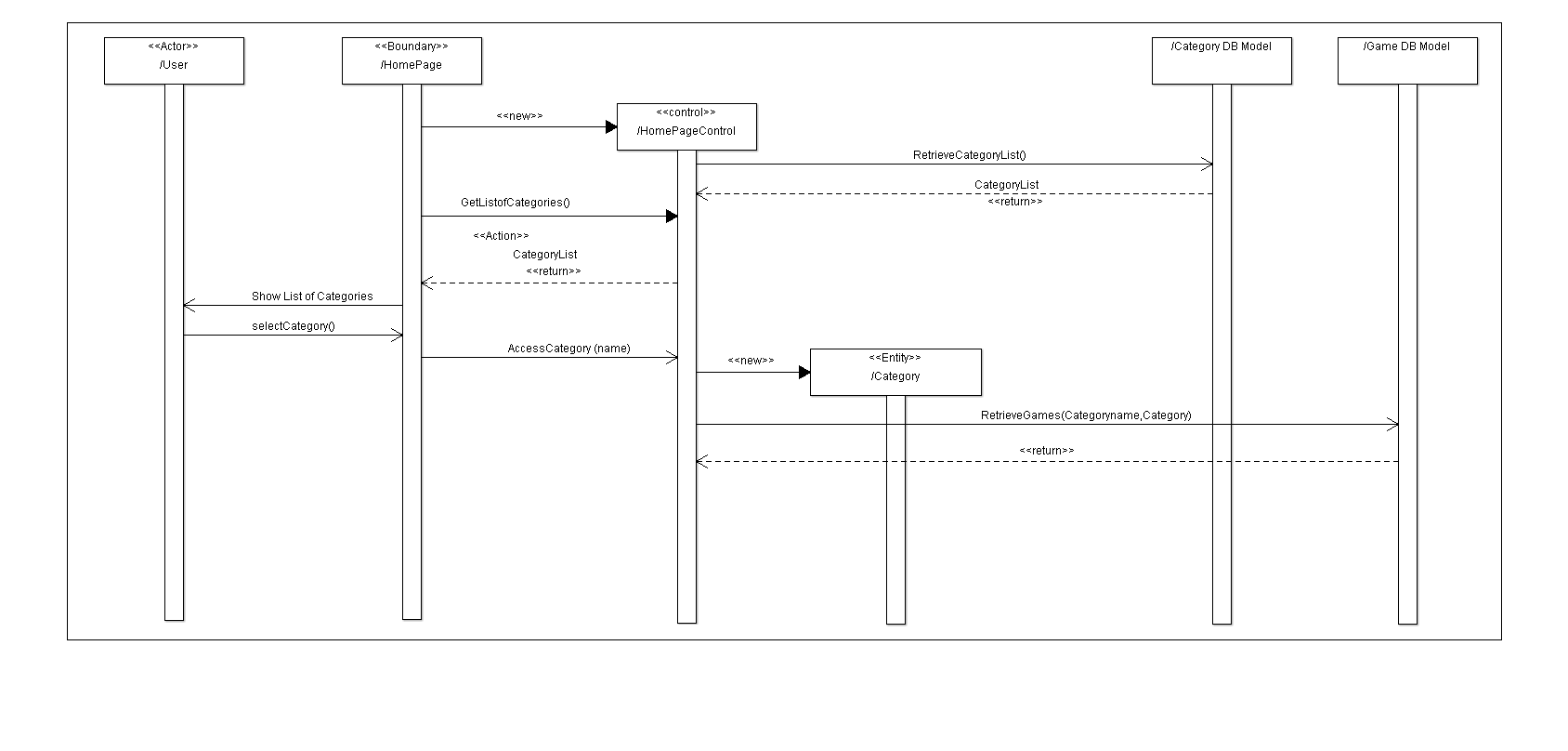


### Play game Sequence Diagram

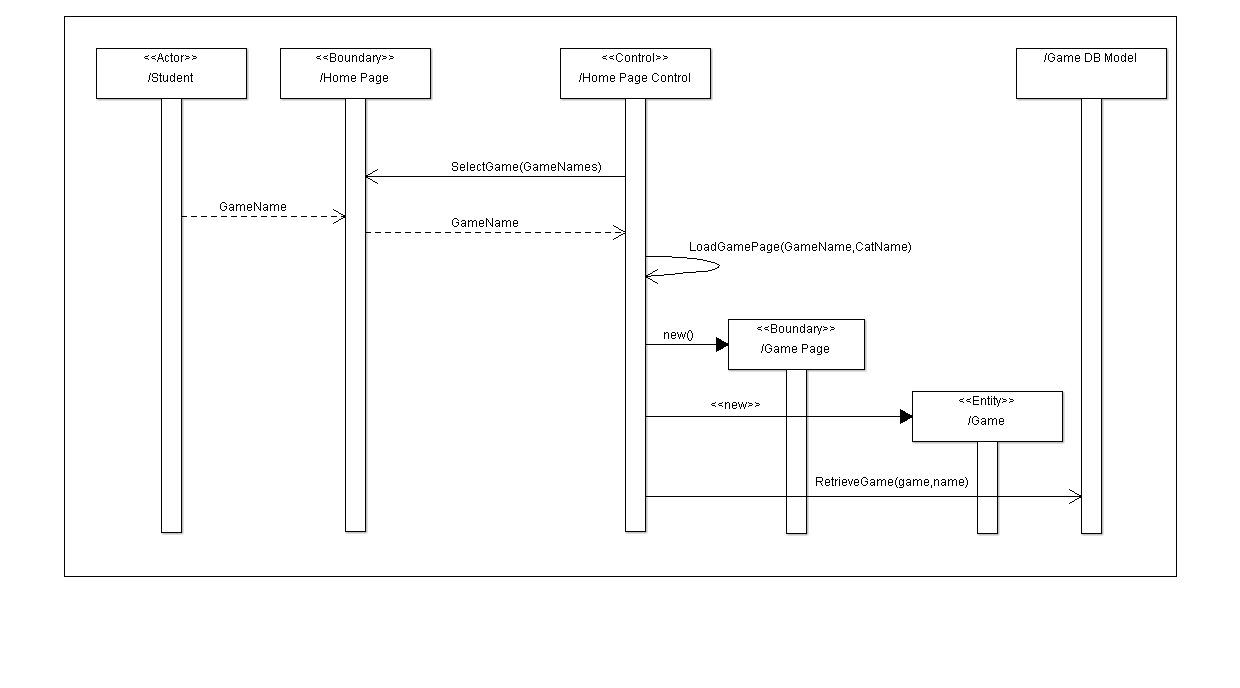
#### Login Pre-condition

ID: 2

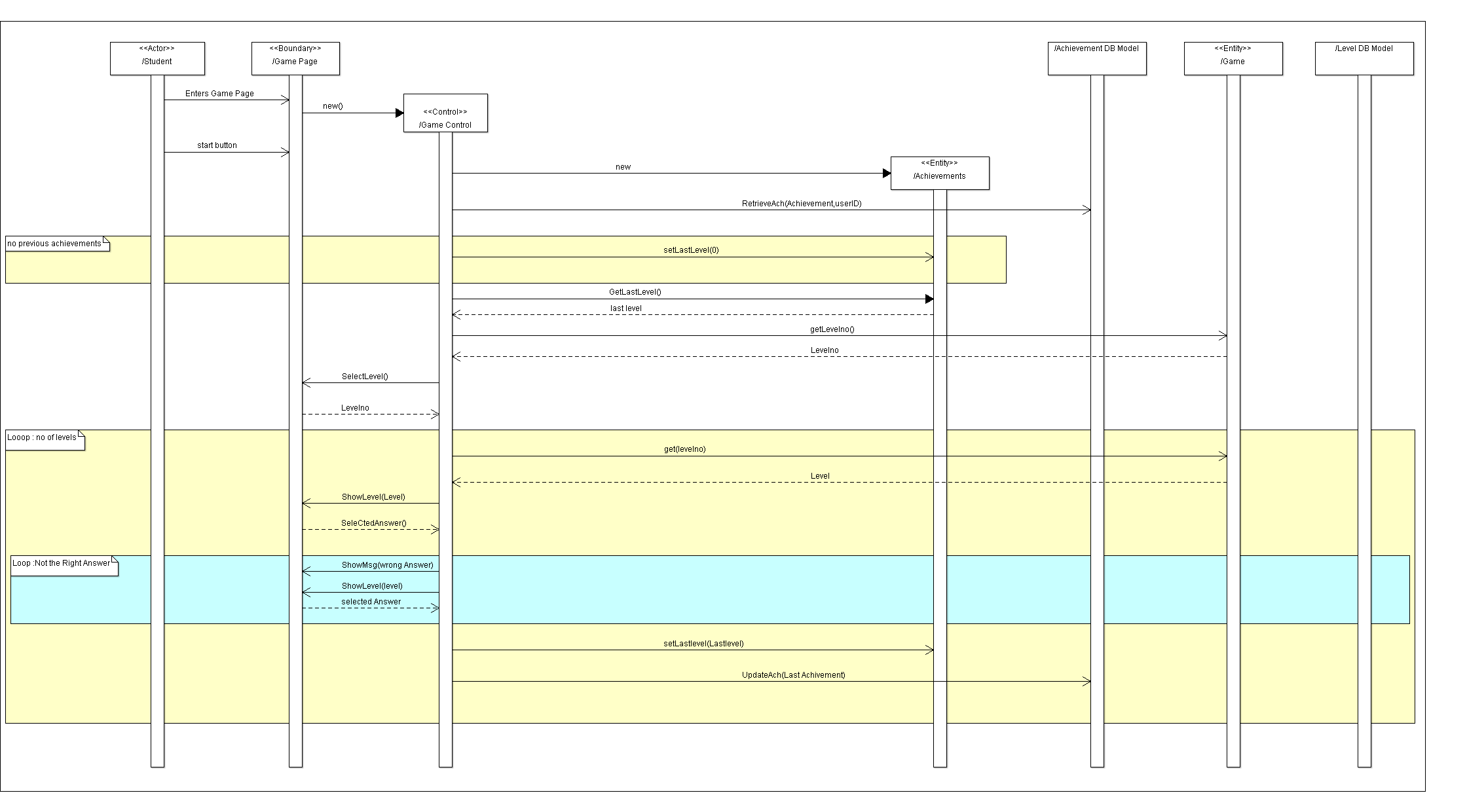
#### Choose Category Pre-condition

ID: 3  


#### Choose Game Pre-Condition

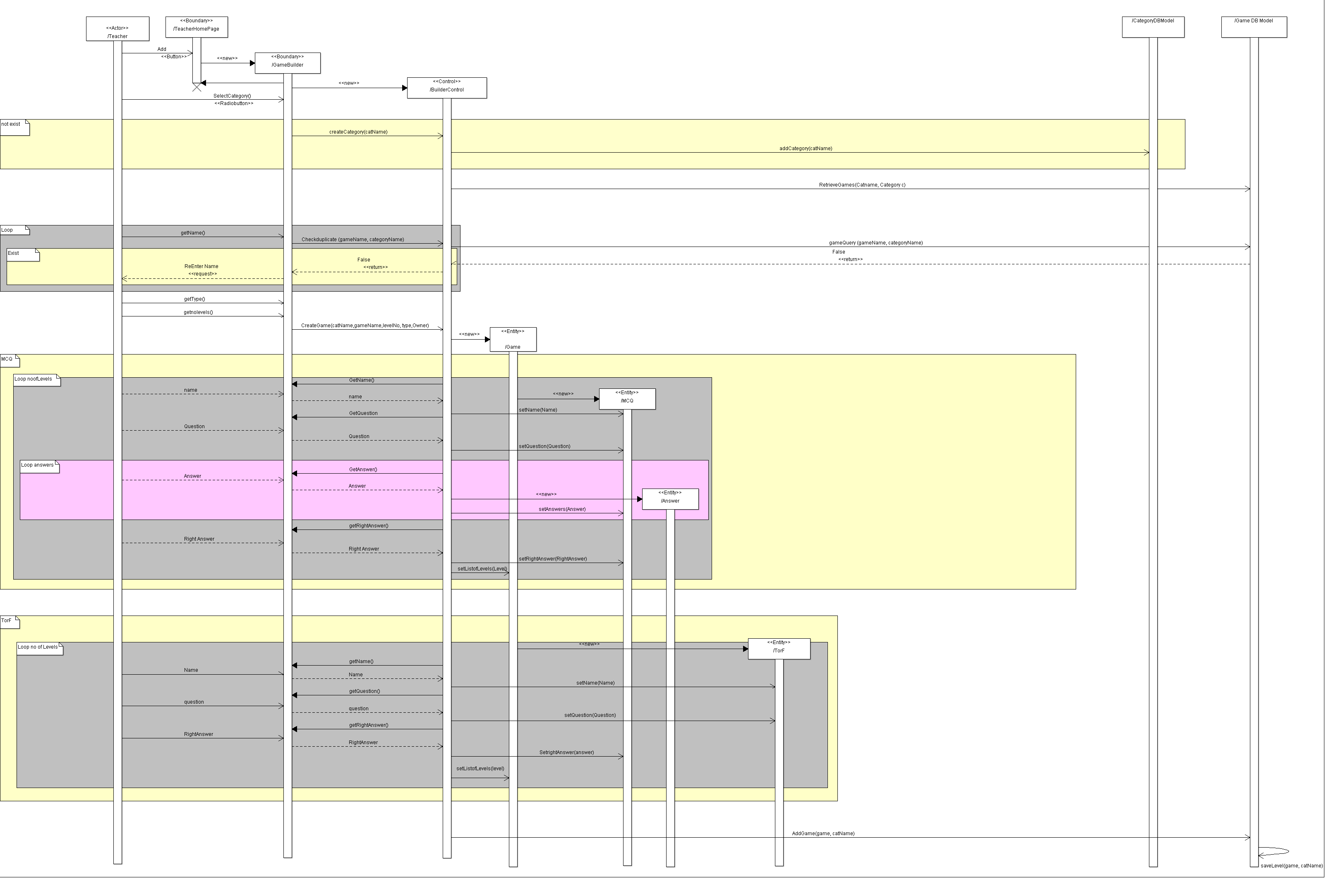
ID: 4  


#### Play

ID: 5  


### Add game Sequence Diagram

ID: 6



### Class - Sequence Usage Table

| **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| --- | --- | --- |
| **User** | 1, 2 | User |
| **Student** | 1, 2 | Student |
| **Teacher** | 1, 2 | Teacher |
| **Category** | 3 | Category |
| **Game** | 4, 5, 6 | Game, setListofLevels, getCategoriesList, getLevel |
| **Level** | 6 | Level |
| **MCQ** | 6 | MCQ, setAnswers |
| **TorF** | 6 | TorF |
| **Achievements** | 5 | Achievements, setLastLevel, getLastLevel |
| **Answer** | 6 | Answer |
| **WelcomePage** | 1, 2 | setUsername, setPassword, setName, setAge, setEmail, selectGender, selectIdentity, ShowMsg. |
| **Homepage** | 2, 3, 4 | HomePage, selectCategory, selectGame |
| **TeacherHomepage** | 2, 6 | TeacherHomePage |
| **GamePage** | 4, 5 | GamePage, selectLevel, ShowLevel, ShowMsg. |
| **GameBuilder** | 6 | SelectCategory, getName, getType, getnolevels, getName, getQuestion, getAnswer, getRightAnswer. |
| **GameControl** | 5 | GameControl |
| **AuthenticationControl** | 1, 2 | checkExistence, checkAvailability, checkUserAvail, EmailValidity |
| **HomepageControl** | 3, 4 | loadGamePage, GetListofCategories, AccessCategory |
| **BuilderControl** | 6 | createCategory, checkDuplicate, creategame |
| **UserDBModel** | 1, 2 | userQuery, identityQuery, retrieve, mailQuery, usernameQuery, Add. |
| **CategoryDBModel** | 3, 6 | retrieveCategoryList, addCategory |
| **GameDBModel** | 3, 4, 6 | retrieveGame, retrieveGame s, gameQuery, saveLevel, addGame. |
| **AchievementDBModel** | 5 | retrieveAch, updateAch |

# Ownership Report

|  |  |
| --- | --- |
| Item | Owners |
| Seq. diagrams ID 1, 2, 3 | **Alaa Atef Badr**  **Karim Ehab Ahmed** |
| Seq. diagram ID 4, 5 | **All the team** |
| Seq. diagram ID 6 | **Ismail Ahmed Mahmoud**  **Mostafa El Menshaway** |
| Class Description Table | **Ismail Ahmed Mahmoud**  **Alaa Atef Badr** |
| Class Diagram | **All the team** |
| Class Diagram Relations | **Mostafa El Menshawy** |
| Class – Sequence Usage Table | **All the team** |
| Git Connections | **Ismail Ahmed Mahmoud** |
| Documentation Work | **Alaa Atef Badr** |
| Implementation | **All the team** |

# Git Repository Link

https://github.com/IsmailAhmedIsmail/SWE-Project.git