Cairo University  
Faculty of Computers and Information



**CS251**

**Software Engineering I**

ST-Comm

Software Requirements Specifications

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# Team

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# Document Purpose and Audience

The document explains system major components and functionalities. It shows up system limitations and who can use the system.

The document also lists different usage scenarios and functions that each type of users can go through.

# Introduction

## Software Purpose

"ST-Comm" is an educational website that provides multiple game categories, each category has simple graphics games that aim to illustrate basic concepts in different fields to students.

## Software Scope

* The categories provided in "ST-Comm" are math, science, technology and engineering. These categories can include subcategories such as python, logic gates and Linux OS.
* "ST-Comm" is a web application that can be used on PCs as well as PMDs.
* Provided games are either Multiple choice, Coding or Picture matching.
* "ST-Comm" targets students whose age ranges from 10 to 25 years.

## Definitions, acronyms, and abbreviations

|  |  |
| --- | --- |
| **ST-Comm** | Student and Teacher Community |
| **AmbCamp** | Ambitious Camp |
| **OS** | Operating System |
| **PC** | Personal Computer |
| **PMD** | Personal Mobile Device |

# Requirements

## Functional Requirements

* Users can play games according to the following rules:
* **Administrator and Teacher:** can try any game.
* **Student:** can play unlocked games according to his/ her level (badge).
* **Guest:** can try only beginner games.
* Score is saved only for students. Others who try a game see the score instantly without being saved.
* Each student should have a badge that describes his/ her level, which changes according to student score. Levels are: beginner – mature – specialist – expert

Each game requires a minimum level to be unlocked.

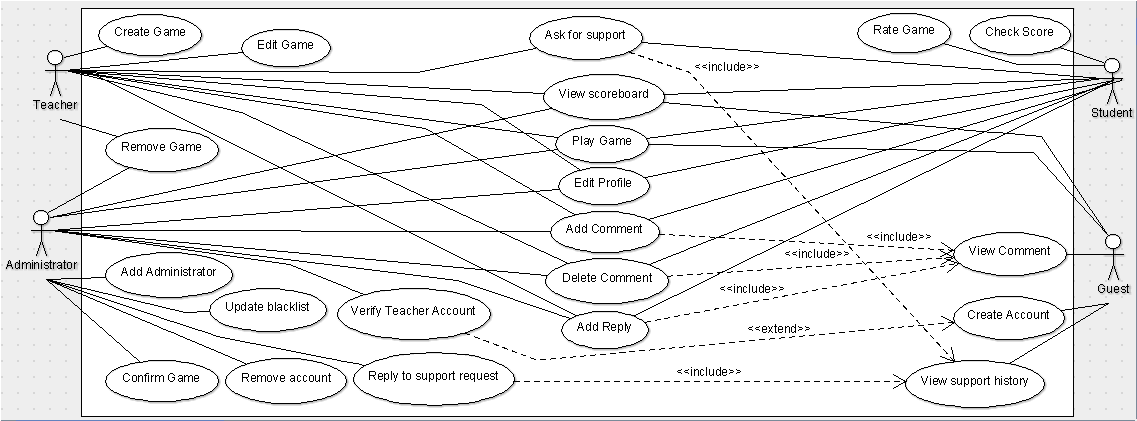
* Each student should have a rank in the website scoreboard. Student, Teacher, Administrator and Guest users can view the scoreboard.
* Student can rate any game as interesting, normal or boring, then the system recalculates average rating.
* Guest can sign up either as a student or as a teacher. Signing up as a teacher requires approval from administrator (a teacher account confirmation request will be sent to all administrators).
* Administrator can verify/delete teacher account confirmation requests. In case of verification, the administrator chooses the request and the system sends verification e- mail to the teacher who made the request.
* Registrants can view, write or delete comments on games following these rules:
* **Administrator:** can view, add or delete any comment on any game.
* **Teacher:** can delete any comment on his/ her games only.
* **Student:** can delete comments added by him/ her only.
* **Guest:** can only view comments (cannot delete or add any comments).
* A registrant can change his/her profile information.
* Teacher can create or edit a game in any category using template provided for each one. Created or edited game must be approved by administrator before being released.
* Teacher can remove or edit games created by him/ her only.
* Teacher, Student and administrator can reply to comments.
* Student and Teacher can ask for support by sending a message to administration. Administrator can reply to those messages.
* Administrator can create an account for a new administrator.
* Guest and all registrants can view history of support requests and administrator’s replies.
* Administrator can remove the account of a teacher or a student, he can also add e- mails to the blacklist. A blacklisted e- mail cannot be used to create a new account.

## Non Functional Requirements

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| --- | --- |
|  | **Details** |
| **Usability** | * The number of clicks does not exceed 5 clicks to reach any web page in the website * users are able to try all games without logging in to the website |
| **Security** | * The website will automatically log out from user's account when it receives no changes for one hour |
| **Reliability** | * The probability of error in calculating user's score and evaluating the correctness of the user's solutions does not exceed 0.001% |
| **Performance** | * The website takes no more than 2 seconds as a response time for all user navigations except for loading games * The website takes no more than 6 seconds to load any game |
| **Supportability** | * Website administration solves any problem that faces a website user in no more than one day |
| **Availability** | * The website will be available 24 hours all days |
| **Price** | * The website will be available for free |
| **Scalability** | * 5,000 users can play the same game concurrently without affecting website stability |

# System Models

## Use Case Model



## Use Case Tables

|  |  |  |
| --- | --- | --- |
| **Use Case ID:** | 1 | |
| **Use Case Name:** | Create Account | |
| **Actors:** | Guest | |
| **Pre-conditions:** | The Guest is opening website home page (but not logged in) | |
| **Post-conditions:** | The Guest is logged in to his/her new account | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to ‘Sign Up’ |  |
|  | 2- System displays sign up form with editable fields for each data item |
| 3- User fills sign up form |  |
|  | 4- System validates data  5- System logs the user into his/her new account |
| **Exceptions:** | **User Action** | **System Action** |
| 1 - User Enters invalid input or the e- mail is blacklisted |  |
|  | 2- System notifies user and waits for new valid input |
| 1- User Signs up as a Teacher |  |
|  | 2- Teacher account confirmation request is sent to all administrators |
| 1- User cancels operation |  |
|  | 2- System returns to home page |
| **Use Case ID:** | 2 | |
| **Use Case Name:** | Add administrator | |
| **Actors:** | Administrator | |
| **Pre-conditions:** | The administrator is logged in to the website | |
| **Post-conditions:** | New administrator account is created | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Admin chooses to add new administrator |  |
|  | 2- System asks the administrator to enter an e- mail and a password for the new administrator |
| 3- Administrator enters e- mail and password for the new administrator |  |
|  | 4- System validates inputs and creates the new account |
| **Exceptions:** | **User Action** | **System Action** |
| 1 - User Enters invalid input or the e- mail is blacklisted |  |
|  | 2- System notifies user and waits for new valid input |

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| **Use Case ID:** | 3 | |
| **Use Case Name:** | Remove Account | |
| **Actors:** | Administrator | |
| **Pre-conditions:** | The administrator is logged in to the website | |
| **Post-conditions:** | Account is removed | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Administrator chooses to remove an account |  |
|  | 2- System displays list of all registrants |
| 3- Administrator chooses the account to be deleted |  |
|  | 4- System asks the administrator to confirm removal |
| 5- Administrator confirms removal |  |
|  | 6- System removes selected account |
| **Exceptions:** | **User Action** | **System Action** |
| 1- Administrator cancels operation |  |
|  | 2- System returns to home page |

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| --- | --- | --- |
| **Use Case ID:** | 4 | |
| **Use Case Name:** | Edit Profile | |
| **Actors:** | -Administrator  -Teacher  - Student | |
| **Pre-conditions:** | The user is Logged in to the website | |
| **Post-conditions:** | User’s profile has been updated | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to ‘Edit Profile’ |  |
|  | 2- System displays user’s profile with current data being in editable mode |
| 3- User changes zero or more values in his/her data and submits changes |  |
|  | 4- System validates new data  5- System saves changes |
| **Exceptions:** | **User Action** | **System Action** |
| 1- User Enters invalid input |  |
|  | 2- System notifies the user and waits for new valid values |

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| **Use Case ID:** | 5 | |
| **Use Case Name:** | View scoreboard | |
| **Actors:** | - Administrator  - Teacher  - Student  - Guest | |
| **Pre-conditions:** | User is opening website | |
| **Post-conditions:** | Scoreboard is displayed | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to view scoreboard |  |
|  | 2- System displays scoreboard |

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| **Use Case ID:** | 6 | |
| **Use Case Name:** | Play Game | |
| **Actors:** | -Student  -Teacher  -Guest  -Administrator | |
| **Pre-conditions:** | The user is Logged in to the website (Guest only has to open website home page) | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User selects game category |  |
|  | 2- System displays list of all games in the category |
| 3- User starts Desired game |  |
|  | 4- System displays problems to be solved |
| 5- User solves problems one by one |  |
|  | 6- System shows the results one by one |
|  | 7- System changes the score of student then finishes the game |
| **Exceptions:** | **User Action** | **System Action** |
| 1- User cancels the game |  |
|  | 2- System finishes the game without changing user’s score |

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| **Use Case ID:** | 7 | |
| **Use Case Name:** | Rate Game | |
| **Actors:** | Student | |
| **Pre-conditions:** | The Student is Logged in to the website | |
| **Post-conditions:** | The rate is saved | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User selects game category |  |
|  | 2- System displays list of all games in the category (with ability to rate any game) |
| 3- User rates the game |  |
|  | 4- System saves the rate |

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| **Use Case ID:** | 8 | |
| **Use Case Name:** | Create Game | |
| **Actors:** | Teacher | |
| **Pre-conditions:** | The Teacher is logged in to the website | |
| **Post-conditions:** | Game is pending Administrator confirmation | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Teacher selects game category |  |
|  | 2- System displays list of all games in the category |
| 3-Teacher chooses to Create Game |  |
|  | 4- System displays ‘Create Game Template ‘ |
| 5-Teacher fills the template and chooses Try Game |  |
|  | 6-System Runs the game |
| 7-Teacher ends the game and Chooses to Submit it |  |
|  | 8-System asks Teacher to confirm submission |
| 9-Teacher Confirms submission |  |
|  | 10- System Sends the game to Administrator to confirm and release it |
| **Exceptions:** | **User Action** | **System Action** |
| 1- Teacher Cancels the Template |  |
|  | 2- System will return to the game list |
| 1-Teacher Does not confirm the creation of the game |  |
|  | 2- System returns to the game template |

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| --- | --- | --- |
| **Use Case ID:** | 9 | |
| **Use Case Name:** | Edit Game | |
| **Actors:** | Teacher | |
| **Pre-conditions:** | The Teacher is logged in to the website | |
| **Post-conditions:** | Game is pending Administrator confirmation | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Teacher selects game category |  |
|  | 2- System displays list of all games in the category |
| 3-Teacher chooses to desired game to edit |  |
|  | 4- System displays ‘Edit Game Template |
| 5-Teacher fills the template and chooses Try Game |  |
|  | 6-System Runs the game |
| 7- Teacher ends the game and Chooses to Submit it |  |
|  | 8-System Asks Teacher to confirm changes |
|  | 9-Teacher confirms changes |  |
|  |  | 10- System Sends the game to the Administrator to confirm and release it |
| **Exceptions:** | **User Action** | **System Action** |
| 1- Teacher Cancels the Template |  |
|  | 2- System will return to the game list |
| 1- Teacher does not confirm the modifications on the Game |  |
|  | 2- System Returns to the Game Template |

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| **Use Case ID:** | 10 | |
| **Use Case Name:** | Remove Game | |
| **Actors:** | - Administrator  - Teacher | |
| **Pre-conditions:** | The user is logged in to the website | |
| **Post-conditions:** | Game is removed | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Teacher selects game category |  |
|  | 2- System displays list of all games in the category |
| 3- User chooses to delete game |  |
|  | 4- System displays list of games created by the user |
| 5- User chooses the game he/she wants to remove |  |
|  | 6- System asks user to confirm removal |
| 7- User confirms removal |  |
|  | 6- System removes the selected game |
| **Exceptions:** | **User Action** | **System Action** |
| 1- Teacher did not create any game |  |
|  | 2- System Displays empty list |
| 1-User does no confirm removal or cancels operation |  |
|  | 2- System returns to the list of games created by the user without removing any |
| **Notes and Issues:** | Teacher can remove games created by him/ her only | |

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| **Use Case ID:** | 11 | |
| **Use Case Name:** | View Comments | |
| **Actors:** | -Administrator  -Teacher  -Student  -Guest | |
| **Pre-conditions:** | The user is logged in to the website (Guest only has to open website home page) | |
| **Post-conditions:** | Comments on a game are displayed | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User selects game category |  |
|  | 2- System displays list of all games in the category |
| 3- User chooses to view comments on a game |  |
|  | 4- System displays the comments on the game |

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| **Use Case ID:** | 12 | |
| **Use Case Name:** | Add Comment | |
| **Actors:** | -Administrator  -Teacher  -Student | |
| **Pre-conditions:** | The user is already viewing comments | |
| **Post-conditions:** | Comment is added to the game | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to add comment |  |
|  | 2- System displays empty field for user to write a comment |
| 3- User writes and submits the comment |  |
|  | 4- System saves the new comment and views it with other comments |
| **Exceptions:** | **User Action** | **System Action** |
| 1-User cancels operation |  |
|  | 2- System removes comment field |
| **Includes:** | View Comments | |

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| --- | --- | --- |
| **Use Case ID:** | 13 | |
| **Use Case Name:** | Delete Comment | |
| **Actors:** | -Administrator  -Teacher  -Student | |
| **Pre-conditions:** | The user is already viewing comments | |
| **Post-conditions:** | Comment is deleted | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses desired comment to delete |  |
|  | 2- System deletes the comment and all replies on that comment |
| **Includes:** | View Comments | |
| **Notes and Issues:** | User can only delete the comment written by him / her | |

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| **Use Case ID:** | 14 | |
| **Use Case Name:** | Add Reply | |
| **Actors:** | - Administrator  - Teacher  - Student | |
| **Pre-conditions:** | The user is already viewing comments | |
| **Post-conditions:** | Reply is added to the Comment | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to add reply |  |
|  | 2- System displays empty field for user to write a reply |
| 3- User writes and submits the reply |  |
|  | 4- System saves the new reply and views it with ender chosen comment |
| **Exceptions:** | **User Action** | **System Action** |
| 1-User cancels operation |  |
|  | 2- System removes reply field |
| **Includes:** | View Comments | |

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| --- | --- | --- |
| **Use Case ID:** | 15 | |
| **Use Case Name:** | Check score | |
| **Actors:** | Student | |
| **Pre-conditions:** | The Student is logged in to the website | |
| **Post-conditions:** | Score is displayed | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User selects game category |  |
|  | 2- System displays list of all games in the category |
| 3- User opens desired game |  |
|  | 4- System opens the game |
| 5- User chooses to display score of this game |  |
|  | 6- System displays the score |

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| --- | --- | --- |
| **Use Case ID:** | 16 | |
| **Use Case Name:** | Confirm Game | |
| **Actors:** | Administrator | |
| **Pre-conditions:** | The administrator is logged in and a game is pending confirmation | |
| **Post-conditions:** | The game will be released | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- The user opens game requests |  |
|  | 2- System displays list of requested games |
| 3- The user chooses a game to try, then confirm it |  |
|  | 4- The releases the game |
| **Exceptions:** | **User Action** | **System Action** |
| 1- The user rejects the game request |  |
|  | 2- The system removes the game request |

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| **Use Case ID:** | 17 | |
| **Use Case Name:** | View support history | |
| **Actors:** | -Administrator  -Teacher  -Student  -Guest | |
| **Pre-conditions:** | User is opening the website | |
| **Post-conditions:** | Support history is displayed | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to view support history |  |
|  | 2- System displays support history |

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| **Use Case ID:** | 18 | |
| **Use Case Name:** | Ask for support | |
| **Actors:** | -Teacher  -Student | |
| **Pre-conditions:** | User is already viewing support history | |
| **Post-conditions:** | Support request is sent | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- User chooses to contact administration |  |
|  | 2- System displays a template for the user to type his/ her message |
| 3- User types and submits the message |  |
|  | 4- System sends the message to all administrators |
| **Exceptions:** | **User Action** | **System Action** |
| 1-User cancels operation |  |
|  | 2- System returns to previous page |
| **Includes:** | View support history | |

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| --- | --- | --- |
| **Use Case ID:** | 19 | |
| **Use Case Name:** | Reply to support request | |
| **Actors:** | Administrator | |
| **Pre-conditions:** | Administrator is already viewing support history | |
| **Post-conditions:** | Administrator reply is sent | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Administrator chooses to reply on a specific support request |  |
|  | 2- System displays a template for the administrator to type his/ her reply |
| 3- Administrator types and submits the reply |  |
|  | 4- System publishes administrator’s reply |
| **Exceptions:** | **User Action** | **System Action** |
| 1-Administrator cancels operation |  |
|  | 2- System returns to support requests list |
| **Includes:** | View support history | |

|  |  |  |
| --- | --- | --- |
| **Use Case ID:** | 20 | |
| **Use Case Name:** | Update blacklist | |
| **Actors:** | Administrator | |
| **Pre-conditions:** | Administrator is logged in to the website | |
| **Post-conditions:** | Blacklist is updated | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Administrator chooses to update blacklist |  |
|  | 2- System displays blacklisted e- mails |
| 3- Administrator adds or removes zero or more e- mails to/ from the list and submits changes |  |
|  | 4- System saves changes to the blacklist |
| **Exceptions:** | **User Action** | **System Action** |
| 1-Administrator cancels operation |  |
|  | 2- System ignores changes and returns to previous page |

|  |  |  |
| --- | --- | --- |
| **Use Case ID:** | 21 | |
| **Use Case Name:** | Verify Teacher account | |
| **Actors:** | Administrator | |
| **Pre-conditions:** | Administrator is logged in to the website | |
| **Post-conditions:** | Confirmation e- mail is sent to the teacher | |
| **Flow of events:** | **User Action** | **System Action** |
| 1- Administrator chooses to view teacher account confirmation requests |  |
|  | 2- System displays the list of requests |
| 3- Administrator chooses the e- mail he wants to verify |  |
|  | 4- System sends confirmation e- mail to the teacher |
| **Exceptions:** | **User Action** | **System Action** |
| 1-Administrator chooses to delete teacher account confirmation request |  |
|  | 2- System removes the request from the list |

# Ownership Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Document Purpose and Audience | *All Team Members* |
| Introduction |
| Functional and Non-Functional requirements | *Mariam Ashraf* |
| Use cases 1, 2, Use Case Model, 19 | *Ahmed Hussein* |
| Use Cases 3, 14,15, 16, 20 | *Mariam Ashraf* |
| Use Case 4, 5, 13, 17,18 | *Ahmed Mohamed* |
| Use Cases 6 through 12, 21 | *Andrew Emad* |

GitHub Repository: <https://github.com/AndrewEmad/ST-Comm.git>