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| Sports Score Tracker |
| Design Specification Report |
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Contents

[Sports Score Tracker at a glance 3](#_Toc225539975)

[System Requirements 4](#_Toc225539976)

[Functional Requirements 4](#_Toc225539977)

[Non functional Requirements 6](#_Toc225539978)

[Use Cases 8](#_Toc225539979)

[Use Case Diagram 8](#_Toc225539980)

[Use Case Descriptions 9](#_Toc225539981)

[Use Case Validation 11](#_Toc225539982)

[**Domain** 12](#_Toc225539983)

[**Domain Diagram** 12](#_Toc225539984)

[**Domain Explanation** 12](#_Toc225539985)

[Class: ClassName 12](#_Toc225539986)

[**Domain Validation** 12](#_Toc225539987)

Introduction

## Problem Statement

The Southeastern Cal Ripken Baseball League based in Lexington, KY, needs to have a way to track their leagues via the World Wide Web. The current system in place calls for manual entry of all leagues and teams into a hand-created spreadsheet. Each year’s schedule is entered along with the outcome of each game. The records of each team must then be manually updated to reflect the scores. The standings of each league must then be manually updated to show which teams are currently ranked first, second, and so on. Additionally, the Southeastern Cal Ripken Baseball League also has several other age groups of leagues that work in conjunction with them. These leagues would also be interested in an online league tracking environment.

The Executive Board for the Southeastern Cal Ripken Baseball League would need to be able to add multiple leagues into an online tracking system of some sort. These leagues would need to be able to track multiple teams. Schedules, scores, and standings of these teams would also need to be able to be updated and viewed. The Executive Board would also like the coaches, parents, players, and even the general public to have the ability to view the schedules, scores, and standings for all of the teams in the Southeastern Cal Ripken Baseball league. Additionally, the Executive Board would need to be able to easily add other leagues and teams into the system.

## Proposal

The Sports Score Tracker is designed to function as a web-based application. The sports score tracker will be flexible enough to allow registered users to input their own data for their own custom sports, leagues, and teams. This data includes a full daily schedule, as well as league standings. Users will be able to click on individual games, and follow the score. Within the in-depth view of an individual game, users will also be able to post comments on this game. User comments will be filed under the tags of Injuries, Score, and Other. Users could choose to view only those comments within a given tag, or they can choose to view all comments. The site will not require users to login unless they would like to post comments, vote on outcomes of games, or manage their own teams/leagues. Additionally, within the chosen game, users can vote on which team they think will win. All users that access the site will be given the option to view the opinions of all users that voted via vote percentages corresponding to each game. Additionally, the sports score tracker will feature a smart system that calculates the most logical choice for the victor of the game. The smart outcome detection will take into account the winning percentage for each team. All users that access the site will be able to see the computer selection.

# System Requirements

## Functional Requirements

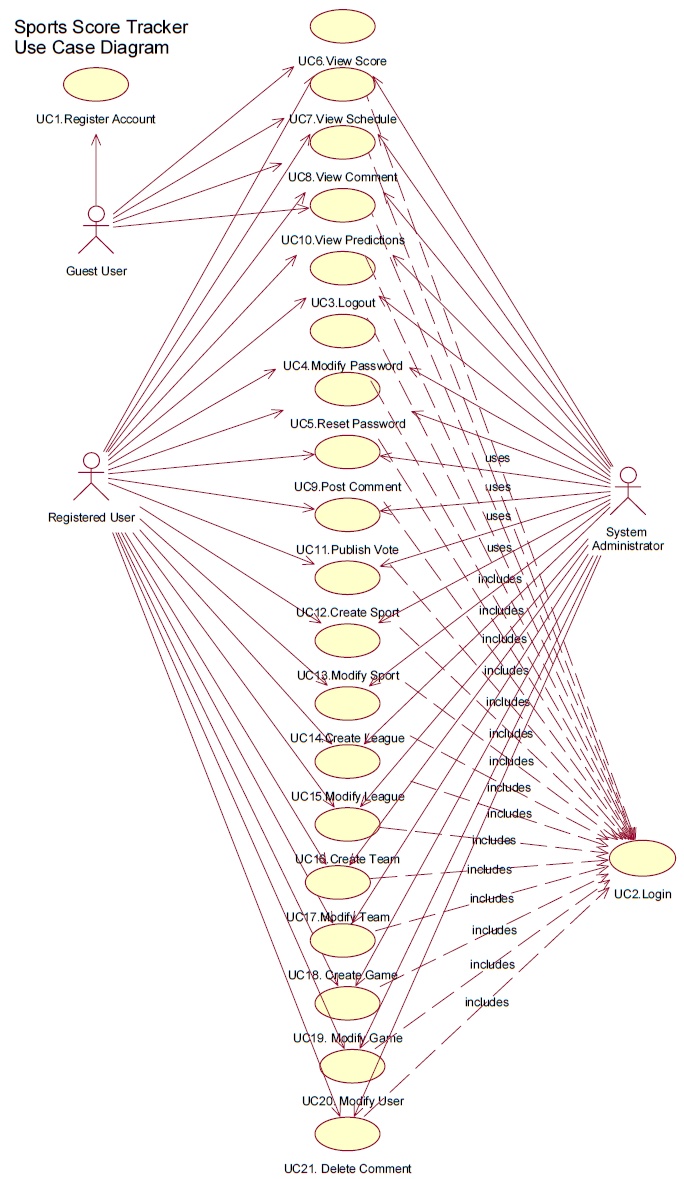
1. The system **must** provide a means for a guest to **register** for a new account**.**
   1. The guest **shall** be provided with the facilities to register for an account.
      1. The guest **must** provide a valid **email address**, **password**, and **first name** to register for an account.
      2. Upon registering, the system **must** ensure the email address is not already registered in the system.
      3. The email address entered **shall** be used as **account Id/login ID**.
      4. The user **shall** be provided with confirmation of their registration, via an email to the email address used for registration.
2. The system **must** provide a means for a registered user to **login/logout.**
   1. The user **shall** be provided with the facilities to login.
      1. The user **must** provide a valid **login ID** and **password** combination to login.
      2. The user **shall** be provided with facilities to confirm the request.
      3. The user **shall** be provided with confirmation that the request has been processed.
   2. The user **shall** be provided with the facilities to logout.
      1. The user **shall** be provided with facilities to logout after successful login.
3. The system **must** provide a means to **modify password.**
   1. Registered members **shall** be provided with facilities to **update current password**.
      1. The user **must** **login.**
      2. The user **must** supply current password and new password.
      3. The user **shall** be provided with facilities to confirm the request.
      4. The user **shall** be provided with confirmation that the request has been processed.
   2. The system **must** provide a means to **reset password.**
      1. Users **shall** be provided with facilities to **reset** their **password**.
      2. The user **shall** be provided with facilities to request a temporary password using their **email address**.
      3. Temporary password **shall** be emailed to the user email on file, if the login ID and email match.
      4. User **must login** with the temporary passwordand **update password**.
4. The system **must** provide a means to **view game scores.**
   1. Guests, registered users and administrators **shall** be able to view game scores.
   2. Game scores can be retrieved via league(s), sport(s) and/or teams.
5. The system **must** provide a means to **view game schedules.**
   1. Guests, registered users and administrators **shall** be able to view game schedules.
   2. Schedules can be retrieved via league(s), sport(s) and/or teams.
6. The system **must** provide a means to **view comments.**
   1. Guests, registered users and administrators **shall** be able to view comments per game.
7. The system **must** provide a means to **post** **comments.**
   1. Registered users and administrators **shall** be able to post comments per game.
   2. The **user** must **login** to be able to post comments.
8. The system **must** provide a means to vote which team the user predicts will win the game**.**
   1. Registered users and administrators **shall** be provided with facilities to vote per game.
   2. The **user** must **login** to be able to vote.
9. The system must provide a means to **view** the system and user **estimated** **winning** **team** predictions.
   1. Guests, registered users and administrators **shall** be able to view the system prediction and the user predicted winning team.
   2. The system prediction **shall** take into account the winning percentage for each team.
   3. The system **shall** sum the user votes to view the user estimated winning team.
      1. The results **shall** be represented as a percentage chart that will show which team in a game will win.
10. The system **must** provide a means to **create / modify** ***custom*** **sports.**
    1. Registered users and administrators **shall** be provided with the facilities to **create** *custom* sports.
       1. Theuser **must** login to be able to create *custom* sports.
       2. Theuser **shall** be provided with the facilities to input a **sport name**.
       3. The user **shall** be provided with facilities to confirm the request.
       4. The user **shall** be provided with confirmation that the request has been processed.
    2. Administrators **shall** be provided with the facilities to **delete** *custom* sports.
       1. Theuser **must** login to be able to **delete** *custom* sports.
       2. Theuser **shall** be provided with the facilities to select a sport for deletion by sport name.
       3. The user shall be informed that all leagues, teams, games, and comments related information to the sport will also be deleted.
       4. The user **shall** be provided with facilities to confirm the request to delete the sport.
       5. The user **shall** be provided with confirmation that the request has been processed (successfully deleted).
11. The system **must** provide a means to **create/modify** ***custom*** **leagues.**
    1. Registered users and administrators **shall** be provided with the facilities to **create** *custom* leagues.
       1. Theuser **must** login to be able to create *custom* leagues.
       2. Theuser **shall** be provided with the facilities to select a sport and input a new **league name**.
       3. The user **shall** be provided with facilities to confirm the request.
       4. The user **shall** be provided with confirmation that the request has been processed.
    2. Registered users and administrators **shall** be provided with the facilities to **update** *custom* leagues.
       1. Theuser **must** login to be able to update *custom* leagues.
       2. Theuser **shall** be provided with the facilities to look up a custom league by league name.
       3. Theuser **shall** be provided with the facilities to input a new league name.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.
    3. Registered users and administrators **shall** be provided with the facilities to **delete** *custom* leagues.
       1. Theuser **must** login to be able to **delete** *custom* leagues.
       2. Theuser **shall** be provided with the facilities to select a league for deletion by league name.
       3. The user shall be informed that all teams, games, and comments related information to the league will also be deleted.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.
12. The system **must** provide a means to **create/modify** ***custom*** **teams.**
    1. Registered users and administrators **shall** be provided with the facilities to **create** *custom* teams.
       1. Theuser **must** login to be able to create *custom* teams.
       2. Theuser **shall** be provided with the facilities to select a sport and input a new **team name**, and join the team into an existing **league**.
       3. The user **shall** be provided with facilities to confirm the request for adding a new team.
       4. The user **shall** be provided with confirmation that the request has been processed.
    2. Registered users and administrators **shall** be provided with the facilities to **update** *custom* teams.
       1. Theuser **must** login to be able to update *custom* teams.
       2. Theuser **shall** be provided with the facilities to look up a custom team by team name.
       3. Theuser **shall** be provided with the facilities to input a new team name and modify the league.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.
    3. Registered users and administrators **shall** be provided with the facilities to **delete** *custom* teams.
       1. Theuser **must** login to be able to **delete** *custom* teams.
       2. Theuser **shall** be provided with the facilities to select a team for deletion by team name.
       3. The user shall be informed that all games and comments related information to the team will also be deleted.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.
13. The system **must** provide a means to **create/modify** ***custom*** **games.**
    1. Registered users and administrators **shall** be provided with the facilities to **create** *custom* games.
       1. Theuser **must** login to be able to create *custom* games.
       2. Theuser **shall** be provided with the facilities to select two teams and input the game details of date, home score and away score if known.
       3. The user **shall** be provided with facilities to confirm the request for adding a new game.
       4. The user **shall** be provided with confirmation that the request has been processed.
    2. Registered users and administrators **shall** be provided with the facilities to **update** *custom* games.
       1. Theuser **must** login to be able to update *custom* games.
       2. Theuser **shall** be provided with the facilities to view games.
       3. Theuser **shall** be provided with the facilities to update the home and away score, and date.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.
    3. Registered users and administrators **shall** be provided with the facilities to **delete** *custom* games.
       1. Theuser **must** login to be able to **delete** *custom* games.
       2. Theuser **shall** be provided with the facilities to select a game for deletion.
       3. The user shall be informed that all comments related to the game will also be deleted.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.
14. The system **must** provide a means to **delete** **comments.**
    1. Administrators **shall** be able to delete comments per game.
    2. The **user** must **login** to be able to delete comments.
15. The system must provide a means to modify a user.
    1. Administrators shall be provided with the facilities to modify a user.
    2. Theuser **must** login to be able to modify users.
       1. Theuser **shall** be provided with the facilities to look up a user by email address.
       2. Theuser **shall** be provided with the facilities to input a new email address, login ID, and/or password.
       3. The user **shall** be provided with facilities to confirm the request.
       4. The user **shall** be provided with confirmation that the request has been processed.
    3. Administrators **shall** be provided with the facilities to **delete** users.
       1. Theuser **must** login to be able to **delete** *users*.
       2. The user **shall** be provided with the facilities to select a user for deletion.
       3. The user shall be informed that all leagues, teams, games, and comments related to the user will also be deleted.
       4. The user **shall** be provided with facilities to confirm the request.
       5. The user **shall** be provided with confirmation that the request has been processed.

# Non functional Requirements

1. The system **shall** **ensure that login credentials meet minimum security specifications**
   1. The system **shall ensure that emails meet minimum requirements.**
      1. The system **shall** **ensure** email addresses are unique.
      2. The system **shall** **ensure** email addresses adhere to the standard Fully Qualified Domain Address format - *username*@*domain***.**
   2. The system **shall ensure that passwords meet minimum requirements.**
      1. The system **shall** **ensure** passwords are at least 8 characters in length.
      2. The system **shall** **ensure** passwords contain alphanumeric and special characters.
2. The system **shall** **ensure that comments are filtered before posting.**
   * 1. The system **shall** **ensure** comments do not exceed the 300 character limit.
3. The system **shall** **ensure that custom teams can only be modified by creator.**
4. The system **shall** **ensure that custom sports can only be modified by creator.**
5. The system **shall** **ensure that custom leagues can only be modified by creator.**
6. The system **shall ensure that custom games can only be modified by creator.**

# Use Cases

## Use Case Diagram

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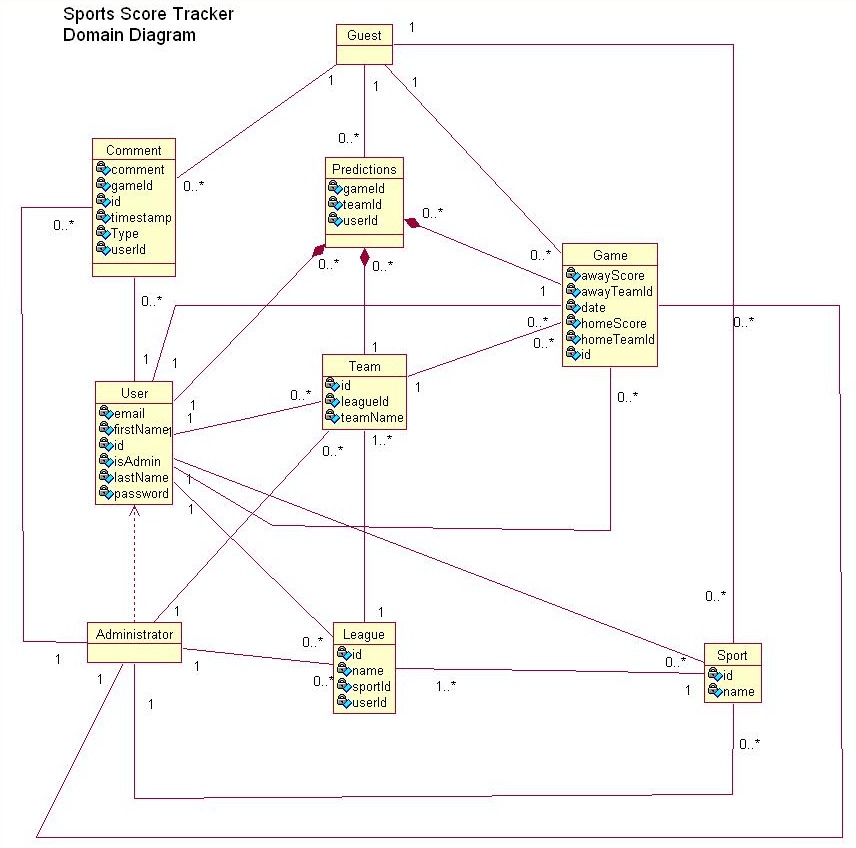
## Use Case Descriptions

|  |  |  |
| --- | --- | --- |
| **UC1.** | *Register User* | This system use is intended for guests to become registered members receive member privileges such as voting, creating and maintaining custom sports, leagues and teams.  **Dependencies: None.** |
| **UC2.** | *Login User* | This system use is intended for registered users to gain access to those modules of the system which require registration to use.  **Dependencies: UC1.** |
| **UC3.** | *Logout User* | This system use is intended for registered users to exit the system. User must first be logged in to access this option.  **Dependencies: UC2.** |
| **UC4.** | *Modify Password* | This system use is intended for registered users to update their current password and requires.  **Dependencies: UC2.** |
| **UC5.** | *Reset Password* | This system use is intended for users to request that the password for an account be reset and emailed to the account using the account id.  **Dependencies: None** |
| **UC6.** | *View Score* | This system use is intended for users to view game scores.  **Dependencies: None** |
| **UC7.** | *View Schedule* | This system use is intended for users to view game schedules.  **Dependencies: None** |
| **UC8.** | *View Comment* | This system use is intended for users to view user comments.  **Dependencies: None** |
| **UC9.** | *Post Comment* | This system use is intended for registered users and administrators to post comments.  **Dependencies: UC2.** |
| **UC10.** | *View Predictions* | This system use is intended for guests, registered users, and administrators to view the predicted estimated winners based on user prediction and system prediction.  **Dependencies: None** |
| **UC11.** | *Publish Vote* | This system use is intended for registered users and administrators to post comments.  **Dependencies: UC2.** |
| **UC12.** | *Create Sport* | This system use is intended for registered users and administrators to create a custom sport.  **Dependencies: UC2.** |
| **UC13.** | *Modify Sport* | This system use is intended for registered users and administrators to update or delete a custom sport created by that user.  **Dependencies: UC11.** |
| **UC14.** | *Create League* | This system use is intended for registered users and administrators to create a custom league.  **Dependencies: UC2.** |
| **UC15.** | *Modify League* | This system use is intended for registered users and administrators to update or delete a custom league created by that user.  **Dependencies: UC13.** |
| **UC16.** | *Create Team* | This system use is intended for registered users and administrators to create a custom team.  **Dependencies: UC2.** |
| **UC17.** | *Modify Team* | This system use is intended for registered users and administrators to update or delete a custom team created by that user.  **Dependencies: UC15.** |
| **UC18.** | *Create Game* | This system use is intended for registered users and administrators to create a custom game.  **Dependencies: UC2.** |
| **UC19.** | *Modify Game* | This system use is intended for registered users and administrators to update or delete a custom game for teams in a league owned by that user.  **Dependencies: UC15.** |
| **UC20.** | *Modify User* | This system use is intended for administrators to update or delete a user.  **Dependencies: UC2.** |
| **UC21.** | *Modify Users* | This system use is intended for administrators to delete a comment.  **Dependencies: UC2.** |
|  |  |  |

## Use Case Validation

**Requirements vs. Use Cases**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **R1** | **R2** | **R3** | **R4** | **R5** | **R6** | **R7** | **R8** | **R9** | **R10** | **R11** | **R12** | **R13** | **R14** | **R15** |
|  |  | Register New Account | Login/Logout | Modify Password | View Game Scores | View Game Schedules | View Comments | Post Comments | Vote | View Predictions | Create Sport | Create League | Create Team | Create / Modfiy Game | Delete Comment | Modify User |
| **UC1** | Register Account | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **UC2** | Login user | **X** | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **UC3** | Logout user |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **UC4** | Modify Password |  | **X** | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
| **UC5** | Reset password |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
| **UC6** | View Score |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |
| **UC7** | View Schedule |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  |
| **UC8** | View Comment |  |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |
| **UC9** | Post Comment |  |  |  |  |  |  | **X** |  |  |  |  |  |  |  |  |
| **UC10** | View Predictions |  |  |  |  |  |  |  |  | **X** |  |  |  |  |  |  |
| **UC11** | Publish Vote |  | **X** |  |  |  |  |  | **X** |  |  |  |  |  |  |  |
| **UC12** | Create Sport |  | **X** |  |  |  |  |  |  |  | **X** |  |  |  |  |  |
| **UC13** | Modify Sport |  | **X** |  |  |  |  |  |  |  | **X** |  |  |  |  |  |
| **UC14** | Create League |  | **X** |  |  |  |  |  |  |  |  | **X** |  |  |  |  |
| **UC15** | Modify League |  | **X** |  |  |  |  |  |  |  |  | **X** |  |  |  |  |
| **UC16** | Create Team |  | **X** |  |  |  |  |  |  |  |  |  | **X** |  |  |  |
| **UC17** | Modify Team |  | **X** |  |  |  |  |  |  |  |  |  | **X** |  |  |  |
| **UC18** | Create Game |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |
| **UC19** | Modify Game |  | **X** |  |  |  |  |  |  |  |  |  |  | **X** |  |  |
| **UC20** | Modify User |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  | **X** |
| **UC21** | Delete Comment |  | **X** |  |  |  |  |  |  |  |  |  |  |  | **X** |  |



## Domain Explanation

**Class: User**

The User object stores all attributes, functions, and operations related to the user.

**Class: Guest**

The Member object is used to store attributes, functions, and operations related to a member. This object will inherit properties of the User, but with more attributes and operations that require elevated privileges.

**Class: Administrator**

The Administrator object is used to store attributes, functions, and operations related to the administrator. This object will inherit properties of the User, but with more operations that require elevated privileges.

**Class: Sport**

The Sport is used to store attributes, functions, and operations related to a Sport.

**Class: League**

The League is used to store attributes, functions, and operations related to a League.

**Class: Team**

The Team is used to store attributes, functions, and operations related to a Team.

**Class: Game**

The Game is used to store attributes, functions, and operations related to a Game.

**Class: Predictions**

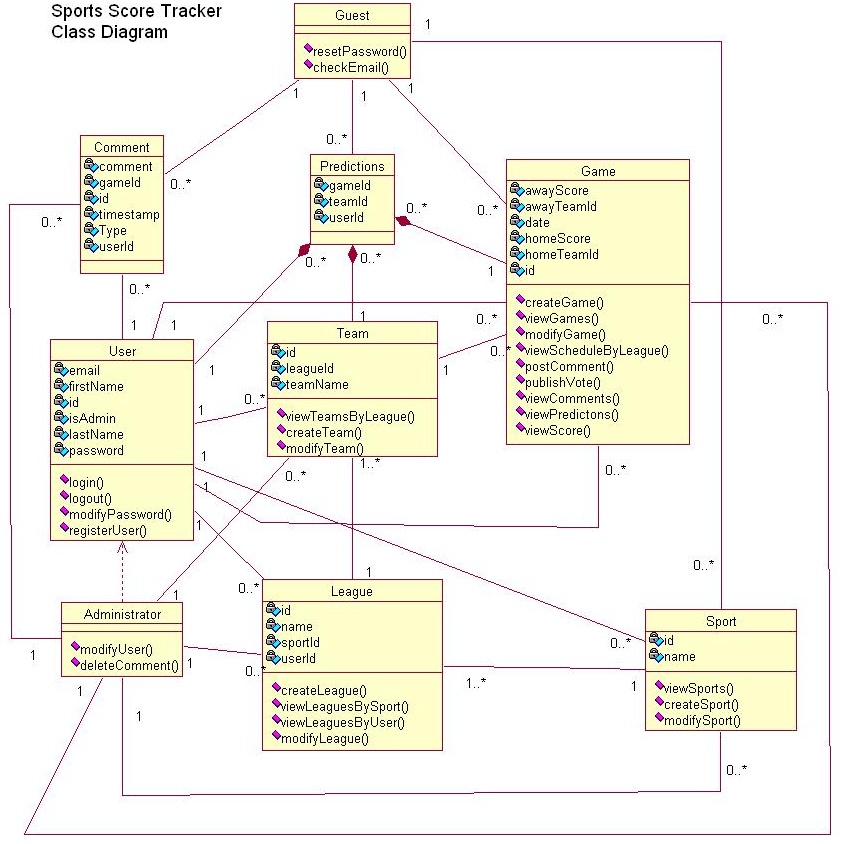
The Prediction is used to store attributes, functions, and operations related to a Prediction.

**Class: Comment**

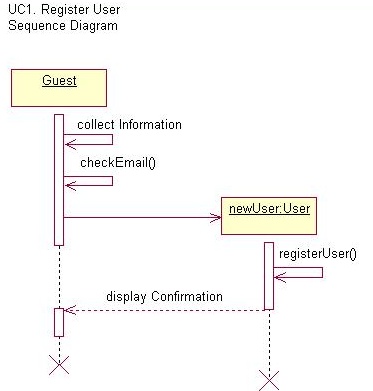
The Comment is used to store attributes, functions, and operations related to a Comment.

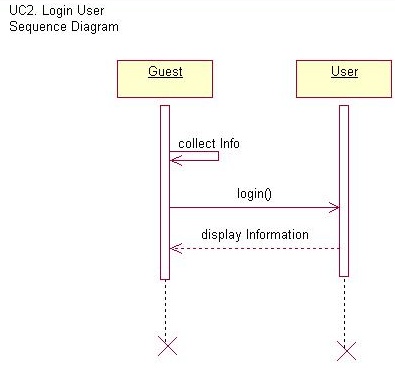
**Domain Validation**

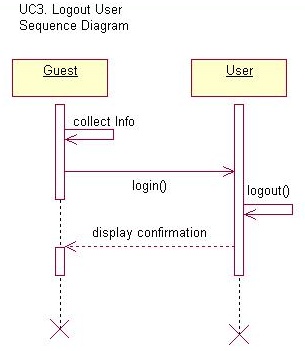
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **R1** | **R2** | **R3** | **R4** | **R5** | **R6** | **R7** | **R8** | **R9** | **R10** | **R11** | **R12** | **R13** | **R14** | **R15** |
|  | Register New Account | Login/Logout | Modify Password | View Game Scores | View Game Schedules | View Comments | Post Comments | Publish Vote | View Predictions | Create Sport | Create League | Create Team | Create / Modfiy Game | Delete Comment | Modify User |
| **Class: User** |  | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** |
| **Class: Guest** | **X** |  | **X** | **X** | **X** | **X** |  |  | **X** |  |  |  |  |  |  |
| **Class: Administrator** |  | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| **Class: Sport** |  |  |  | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| **Class: League** |  |  |  | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** | **X** |
| **Class: Team** |  |  |  | **X** | **X** | **X** | **X** | **X** | **X** |  |  | **X** | **X** | **X** | **X** |
| **Class: Game** |  |  |  | **X** | **X** | **X** | **X** | **X** | **X** |  |  |  | **X** | **X** | **X** |
| **Class: Prediction** |  |  |  |  |  |  |  | **X** | **X** |  |  |  | **X** |  | **X** |
| **Class: Comment** |  |  |  |  |  | **X** | **X** |  |  |  |  |  | **X** | **X** | **X** |

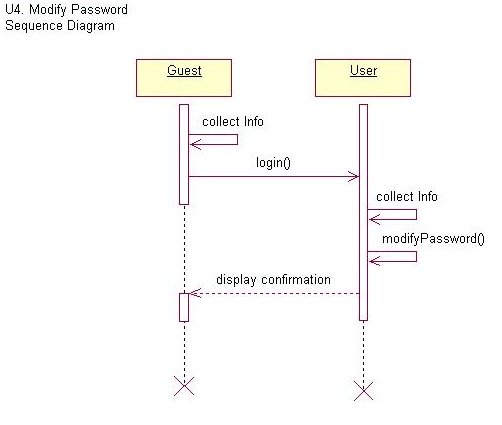
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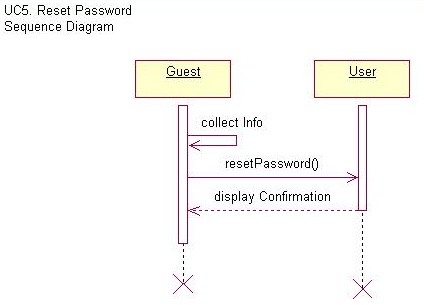
## Sequence Diagram

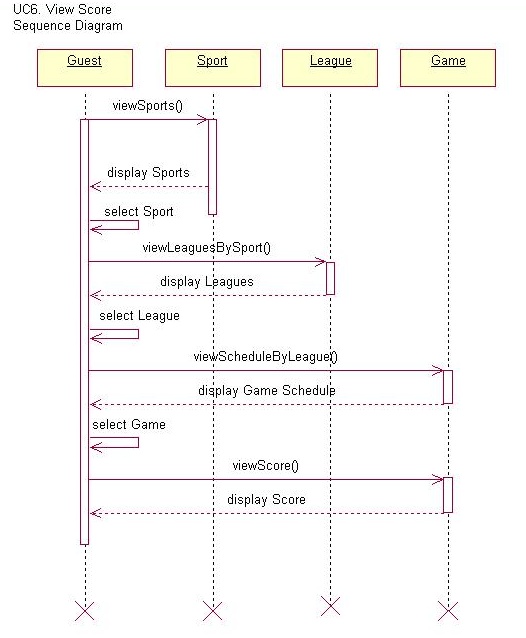


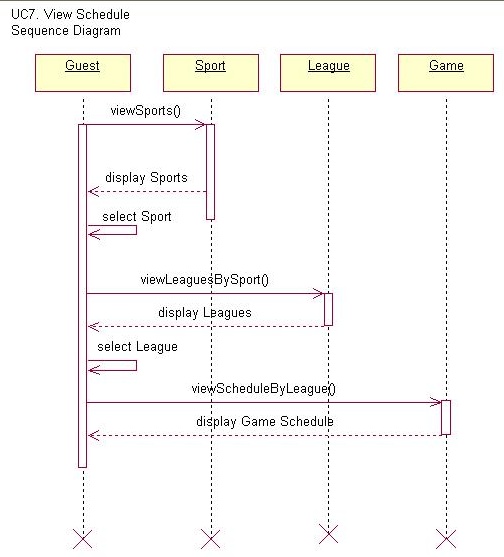


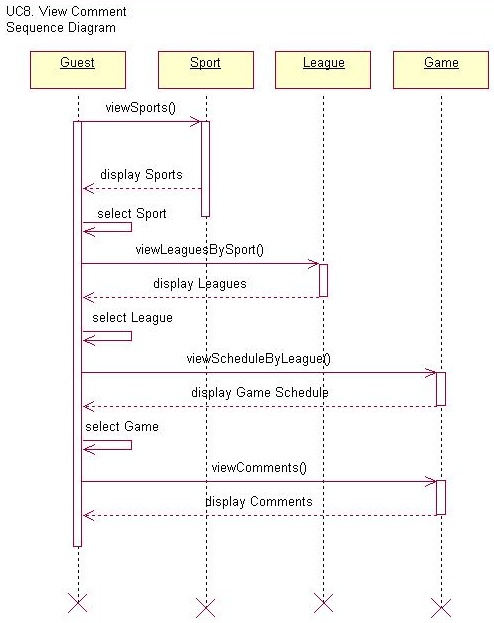


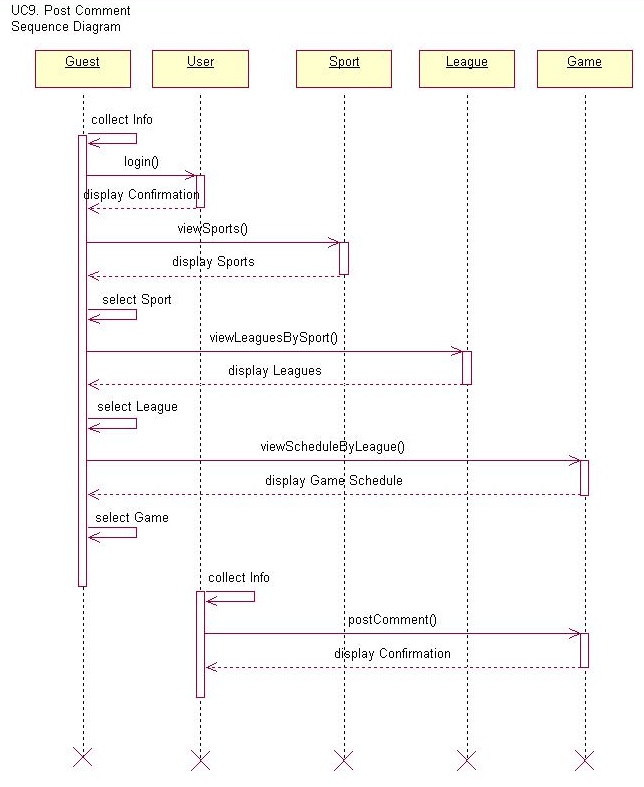


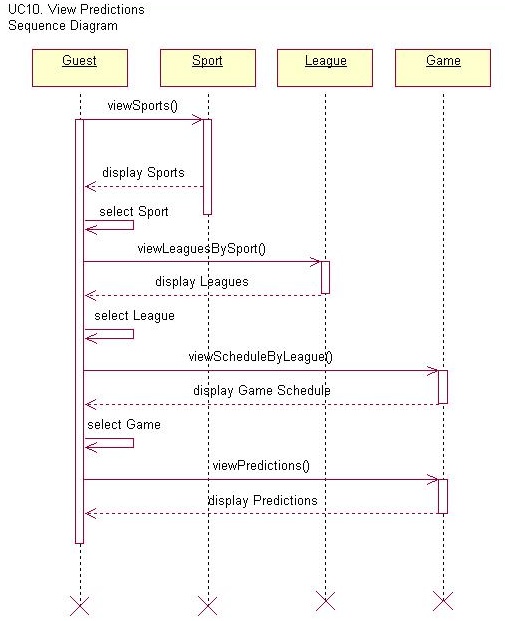
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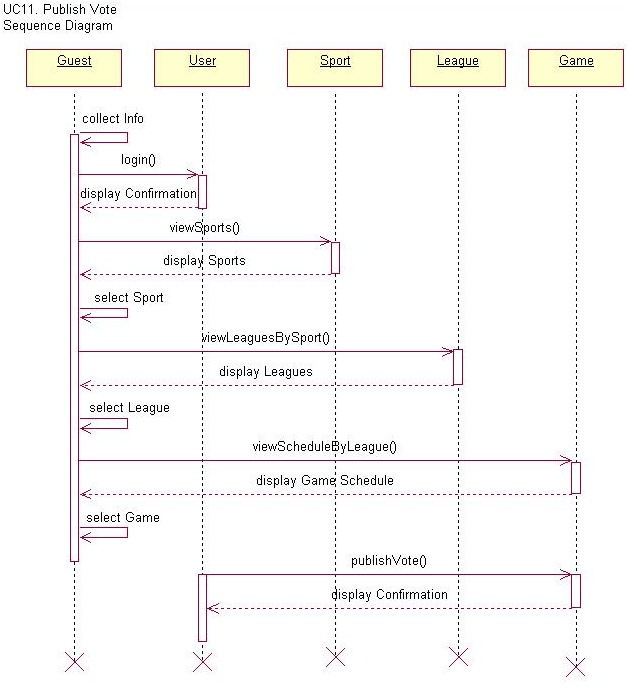


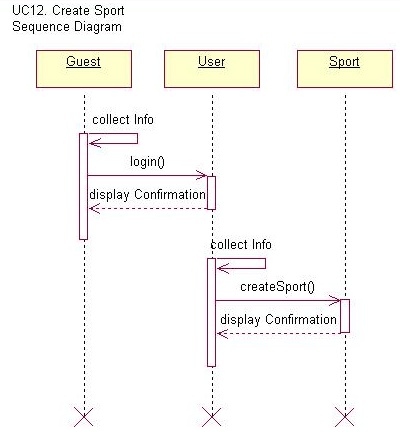


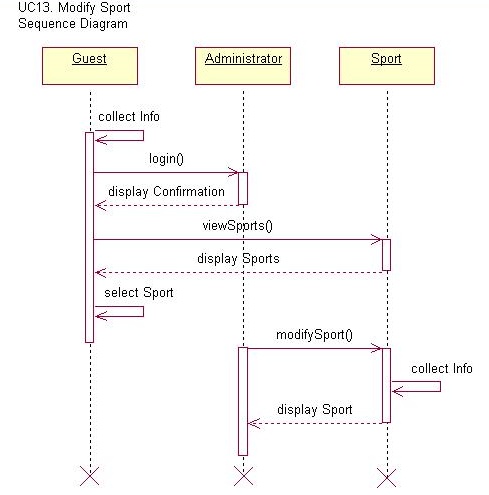


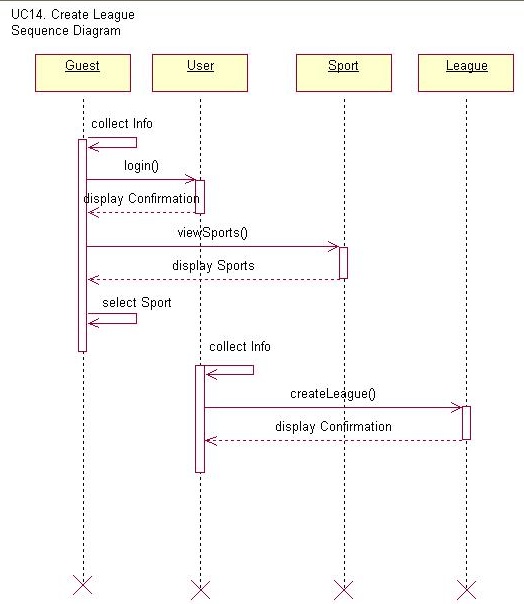


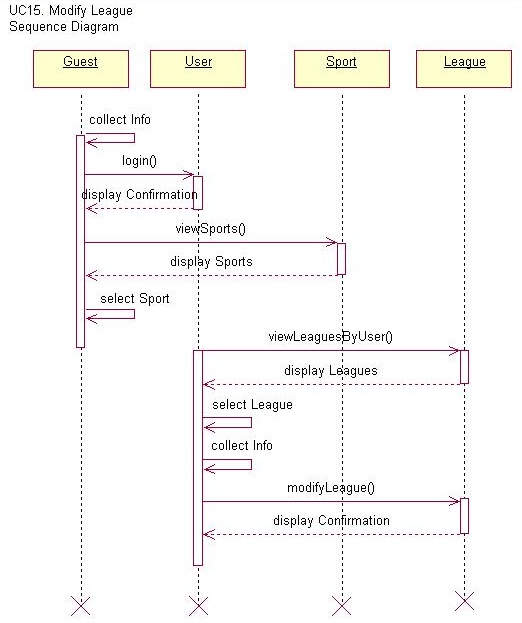


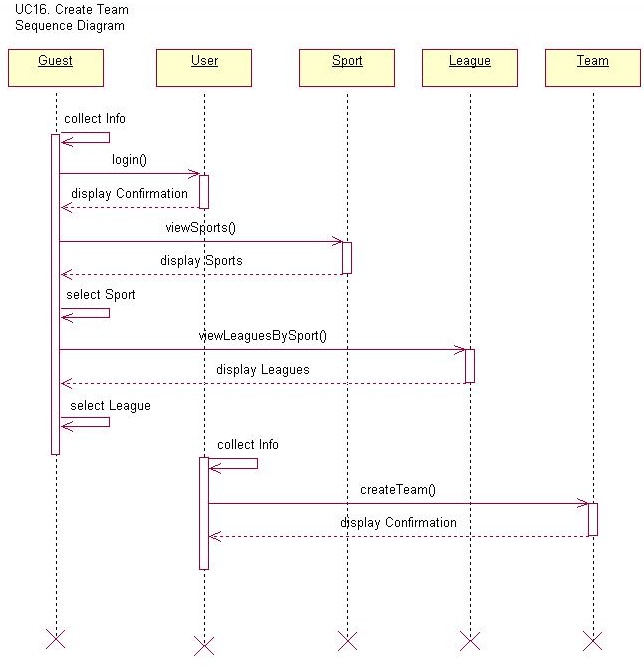


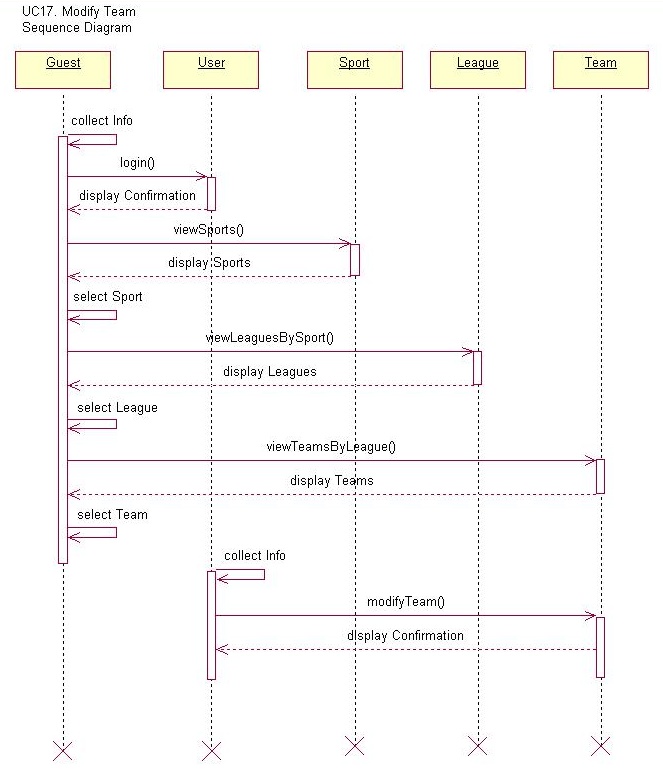


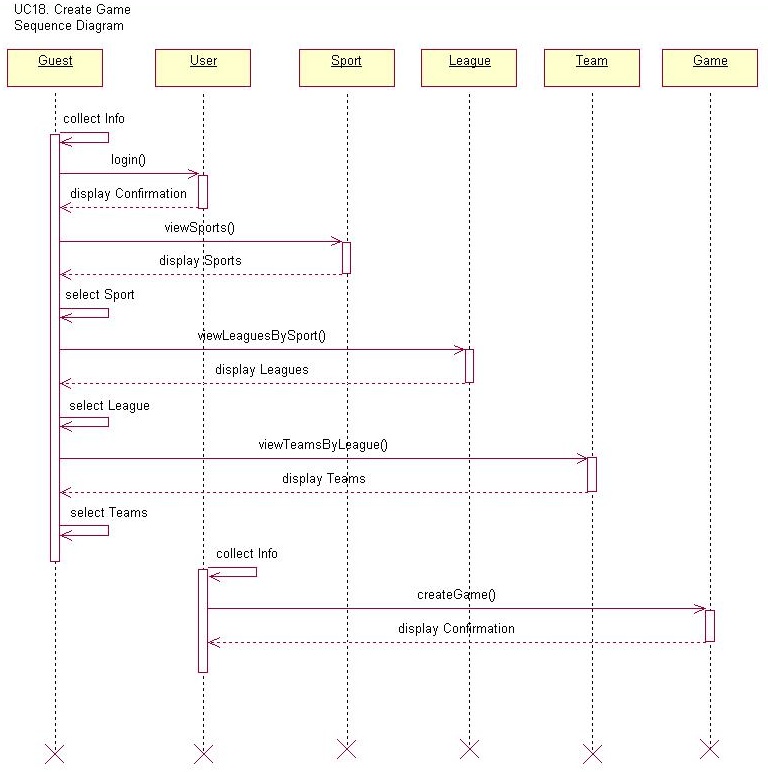
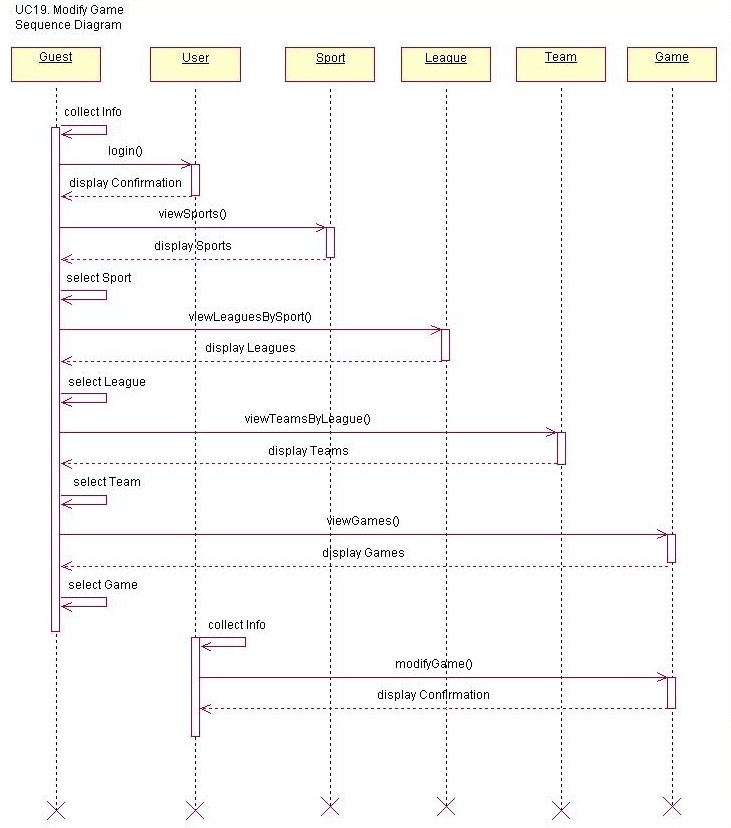
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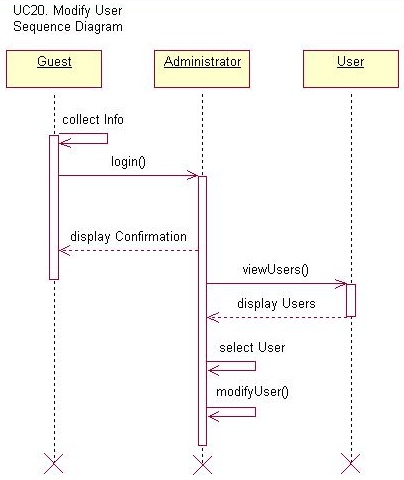
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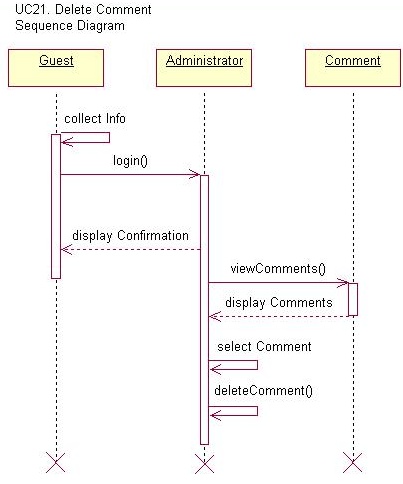
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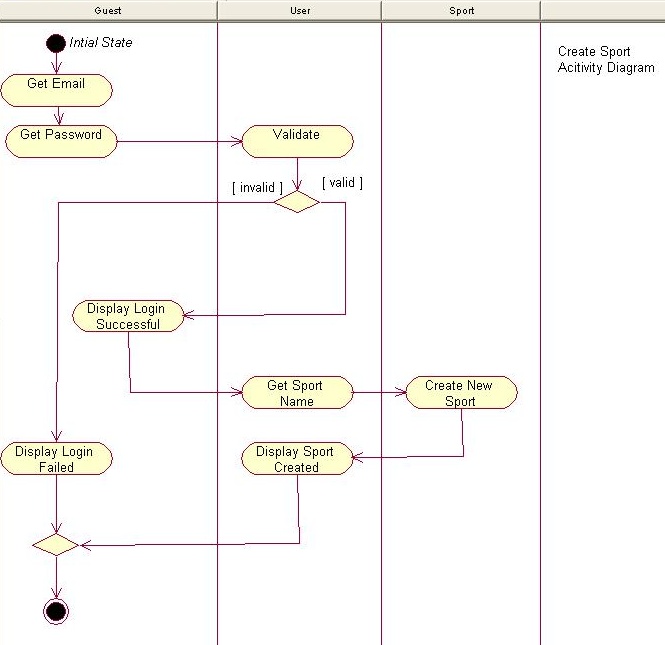




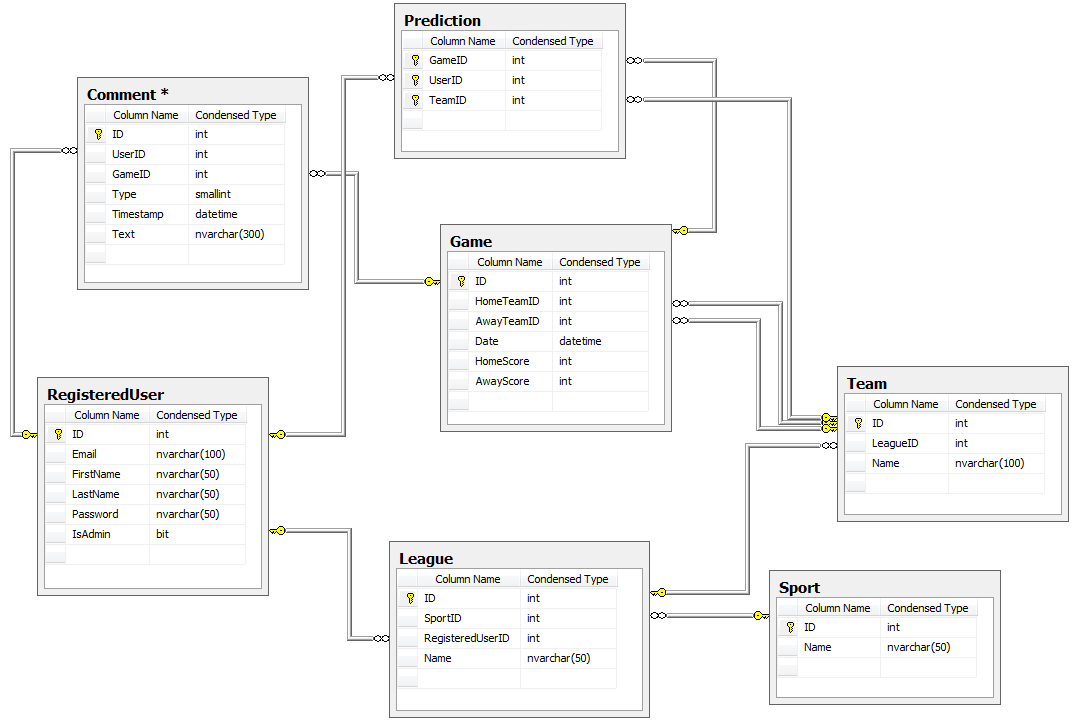














Conclusion

In conclusion, The Sports Score Tracker fulfilled all of the requirements of the problem posed by the Southeastern Cal Ripken Baseball League.

Instead of having to hand enter and update all of the league data, Southeastern officials can now track all league and team information on the Internet in the Sports Score Tracker. The system handled all of the leagues and teams within Southeastern Cal Ripken, as well as all of the leagues and teams that work hand-in-hand with Southeastern.

Furthermore, the Sports Score Tracker allows for the addition of other sports that can also be tracked via the World Wide Web.