Football Manager Game of 2015–16 UEFA Champions League

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Abstract

In this project, we implemented a football manager system with HTML, JavaScript and MySQL. In the system we are able to manage the data of football clubs in knockout phase and players in these clubs, including teams' attack, defense and players' age and ability. The match will be played automatically based on the ability of the whole team. The game player can choose a team, alter the lineup as the manager then compete to win the champion.

1. Introduction

The UEFA Champions League[1] is an annual continental club football competition organized by the Union of European Football Associations (UEFA) and contested by top-division European clubs. It is one of the most prestigious tournaments in the world and the most prestigious club competition in European football, played by the national league champion (and, for some nations, one or more runners-up) of each UEFA national association.

Football manager[2] is the world's most popular soccer manager series. It immerses you in a living world of football. It's the closest thing to doing the job for real. You can simply play a game using a current football club against another one. Or you can even manage your own team, trade football players as you wish as long as you win the bid for that player. Then build your own dream team and win as many championships as possible. This game contains huge amount of data in all kinds of formats including images, numbers and complex relationships. Although we may not be able to achieve a full version of football manager, a basic version of it could be done in this project. In this basic version, we are going to achieve such functions as list all the players with certain order, manage the lineup of a club as a manager, play the match to round by round. For database, we use MySQL to build the schema and insert data into system. For front-end, we use Html and JavaScript to run a website which can connect to our database and display all the functions we implemented.

2. Requirements

Since the game player is the only actor our project has, all the detailed use cases described below are for the game player.

a) Display all the football players with some order

Exposition: The game player views all football players' data with the order he likes.
Step-by-step Description: 1. [Player] The player clicks on the See Players button. 2. [System] The system displays all football players' data with a default ordered table with names of each column on the top. 3. Alternative Flow: #Check table with another order. 4. [Player] Exception: #Display a football player's data in details 5. [Player] Exception:#Display the comparison between two football players

Explanation: The game player is able to see all football players' data including age, number on the back, attack, defense, stamina, injury resistance, position and favored foot.

b) Display all the football clubs with the order of their overall ability.

Exposition: The game player views all clubs with the ascending or descending order of their overall.
Step-by-step Description: 1. [Player]The player clicks on the Start Game button. 2. [System] The system displays all clubs' data in ascending order 3. Alternative Flow: #Check table with descending order.
Explanation: The game player is able to choose one football club to play the championships based on its overall ability.

c) Display a football player's ability in details

Exposition: The game player views a football player's ability in a chart.
Step-by-step Description: 1. [Player] The player chooses one football player in a table. 2. [System] The system displays all attributes of that football player in a chart.
Explanation: The game player is able to check one football player's all ability including his attack, defense, stamina, overall, injury resistance in one chart.

d) Display the comparison between two football players

Exposition: The game player views the comparison between two football players in one chart.
Step-by-step Description: 1. [Player] The player chooses one football player in a table as reference. 2. [System] The system displays the data chart of that player. 3. [Player] The player chooses another football player in the table. 4. [System] The system shows the comparison between two football players in data chart. 5. Alternative Flow: #Choose a different football player comparing with reference
Explanation: When the game player wants to compare two football players, it is best to compare them in all data of them in one chart.

e) Choose a team which game player prefers

Exposition: The game player chooses a team he/she want to control
Step-by-step Description: 1. [System] The system provides all the team data for the player to choose. 2. [Player] The player chooses a team. 3. [System] The system remembers that team and proceed to the championships.
Explanation: This is the part where the game player choose a football club he prefers to compete in championships.

f) Choose lineup for player's team

Exposition: The game player chooses the lineup based on the football players' ability and the next opponent.
Step-by-step Description: 1. [System] The system provides all the football players' data(in the player's team) for the player to choose, given the name and ability of next opponent. 2. [Player] The player chooses the lineup and submit the changes to the system. 3. [System] The system calculates the team ability value for the player.
Explanation: In this part the game player can choose the best lineup against next opponent.

g) Perform the match

Exposition: Match will be played automatically by the system and result will be calculated mainly based on the abilities of two teams and other random factors.
Step-by-step Description: 1. [Player] The player confirms the lineup and click the match-begin confirmation. 2. [System] The system simulates the match base on the abilities and environment such as home advantage. 3. [System] The system provides the match results also with the next opponent.
Explanation: Our system will give the game player a final score of the match based on both clubs ability and home advantage.

Alternative Flows:

h) Check table with another order

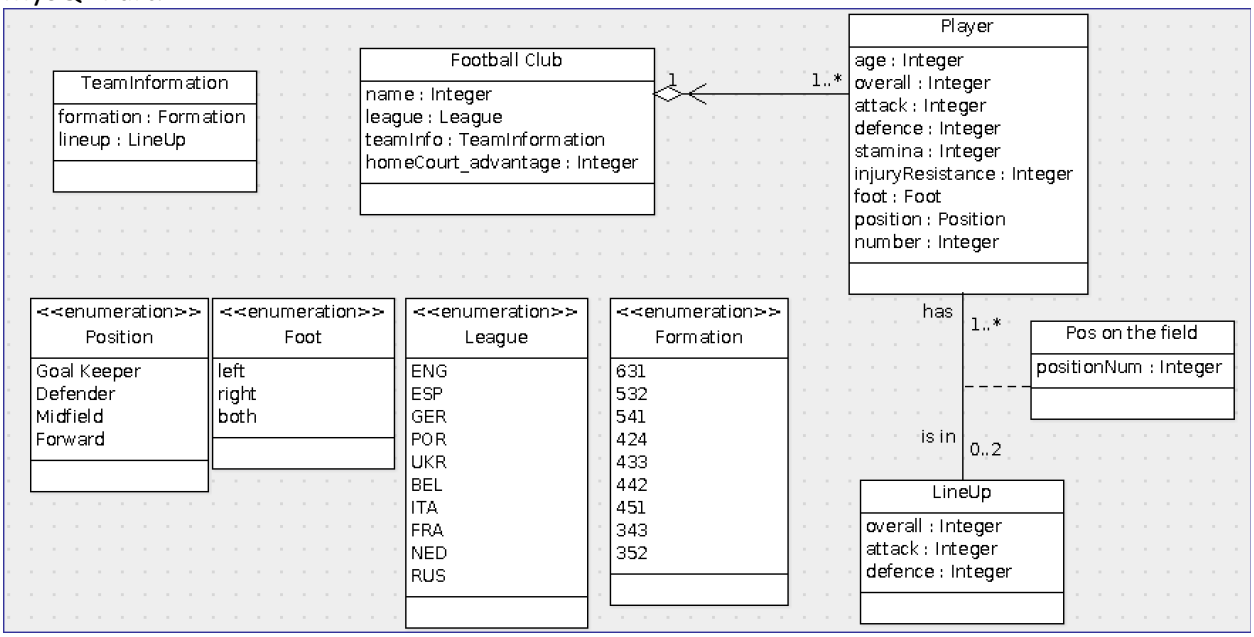
Exposition: The game player can check data in the table with another order(age, attack, etc.)
Step-by-step Description: 1. [Player] The player chooses another order type (click on the column header). 2. [System] The system redisplay the table with the player's order.

i) Choose a different football player comparing with reference

Exposition: The game player can choose any football player in the table to compare with reference.
Step-by-step Description: 1. [Player] The player chooses a football player in the table. 2. [System] The system shows the comparison between two football players in one chart. 3. Alternative Flow: #Choose a different footballer comparing with reference

3. Design

MySQL Part:



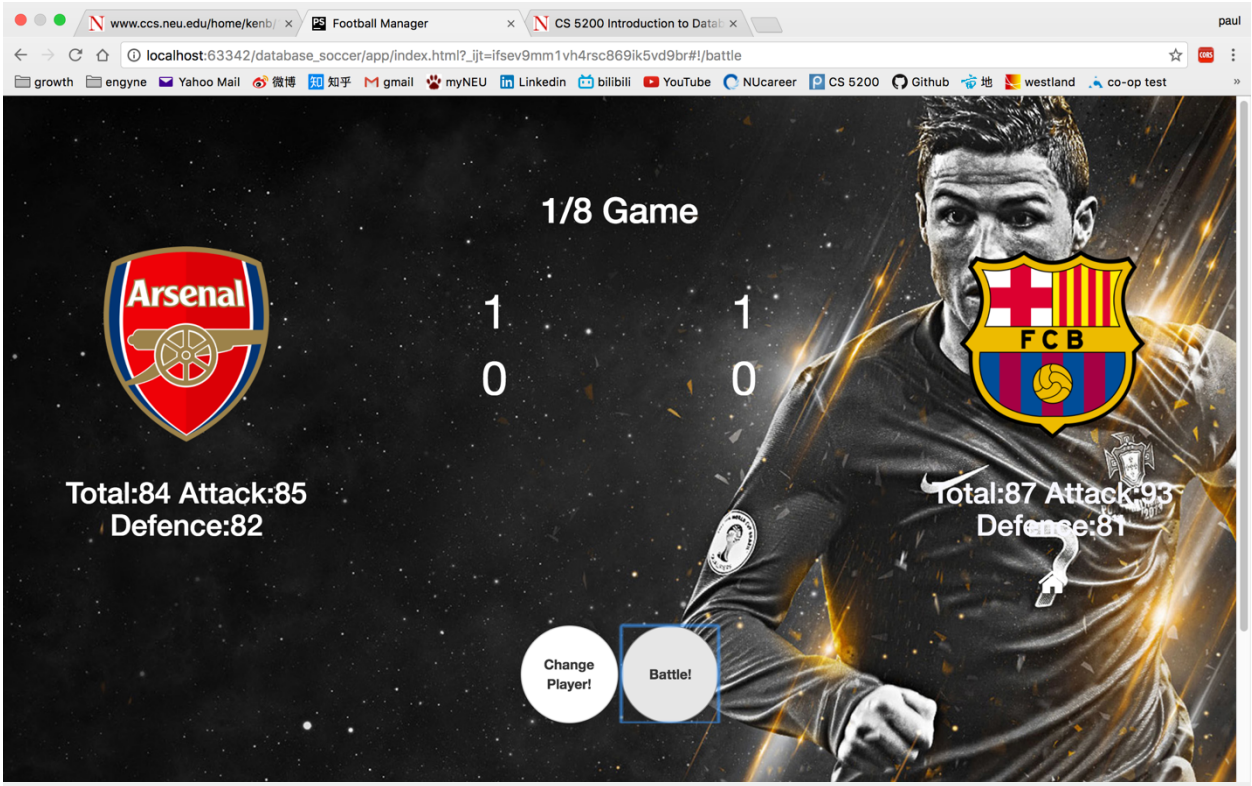
Front-end Part:

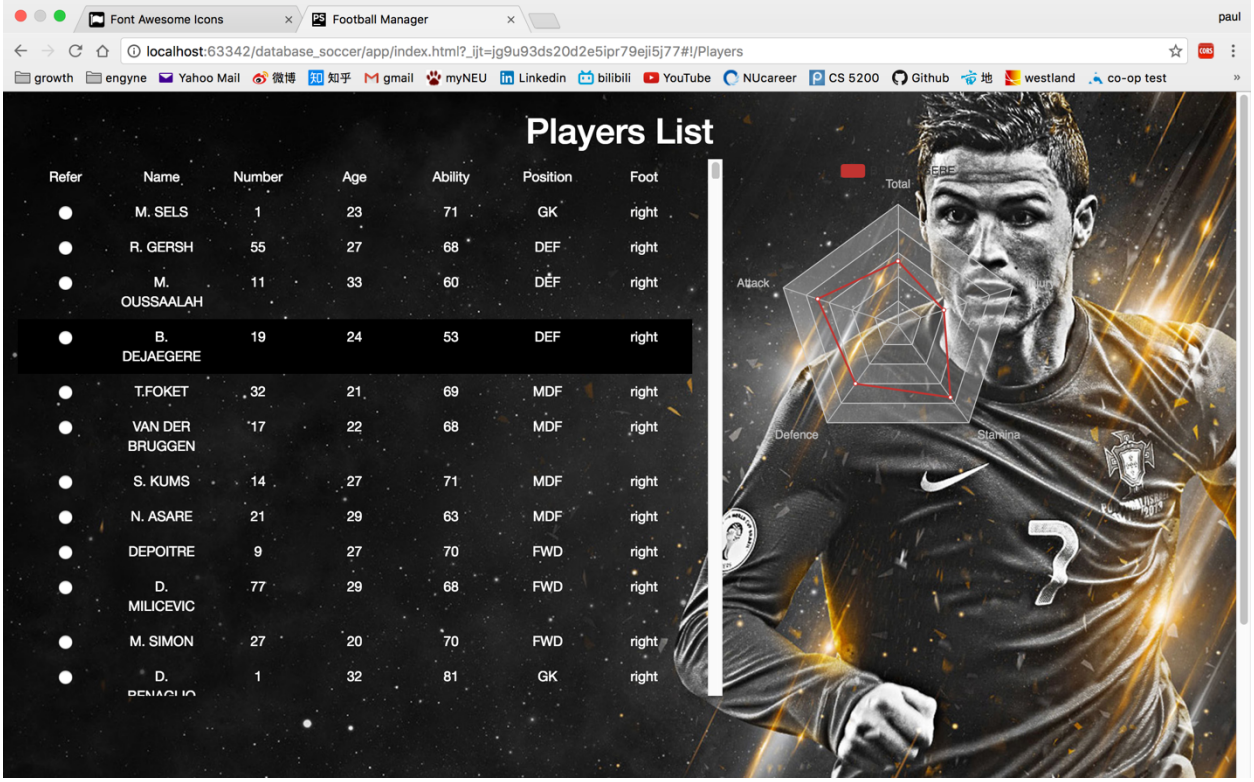
Created a little website with AngularJS & Bootstrap[4], containing 7 pages including index. Connected the website and database in socket with Node.js. Used some decorations like font-awesome[5] and e-charts.

4. Implementation

All the players' and football clubs' data comes from Pro Evolution Soccer 2016[3], a soccer game like FIFA on PC.

Database part is implemented by all the SQL files submitted. And here are screen shots of our website:


www.ccs.neu.edu/home/kenb/
Football Manager
CS 5200 Introduction to Datal
paul
localhost:63342/database_soccer/app/index.html?_ijt=ifsev9mm1vh4rsc869ik5vd9br#!/battle
growth
engyne
Yahoo Mail
微博
知乎
gmail
myNEU
Linkedin
bilibili
YouTube
NUcareer
CS 5200
Github
地
westland
co-op test
1/8 Game
Arsenal
1
0
1
0
FCB
Total:84 Attack:85
Defence:82
Total:87 Attack:93
Defence:81
Change Player!
Battle!


Font Awesome Icons
Football Manager
paul
localhost:63342/database_soccer/app/index.html?_ijt=jg9u93ds20d2e5ipr79eji5j77#!/Players
growth
engyne
Yahoo Mail
微博
知乎
gmail
myNEU
Linkedin
bilibili
YouTube
NUcareer
CS 5200
Github
地
westland
co-op test
Players List
Refer
Name
Number
Age
Ability
Position
Foot
M. SELS 1 23 71 GK right
R. GERSH 55 27 68 DEF right
M. OUSSAALAH 11 33 60 DEF right
B. DEJAEGERE 19 24 53 DEF right
T.FOKET 32 21 69 MDF right
VAN DER BRUGGEN 17 22 68 MDF right
S. KUMS 14 27 71 MDF right
N. ASARE 21 29 63 MDF right
DEPOITRE 9 27 70 FWD right
D. MILICEVIC 77 29 68 FWD right
M. SIMON 27 20 70 FWD right
D. 1 32 81 GK right
Total
Attack
Defence
Stamina

5. Discussion

All use cases described in the requirements have been fulfilled.

a) Display all the football players with some order

Exposition: The game player views all athletes' data with the order he likes.
Demonstration: 1. [Player] The player clicks on the See Players button. 2. [System] The system displays all football players' data with a default ordered table with names of each column on the top.

b) Display all the football clubs with the order of their overall ability.

Exposition: The game player views all clubs with the ascending or descending order of their overall.
Demonstration: 1. [Player] The player clicks on the Start Game button. 2. [System] The system displays all clubs in ascending order of their overall ability. 3. [Player] The player can view the list in descending order by clicking on the ability button.

c) Display a football player's ability in details

Exposition: The game player views a football player's ability in a chart.
Demonstration: 1. [Player] The player chooses one football player in a table by clicks on the football player row. 2. [System] The system displays all attributes of that football player in a chart.

d) Display the comparison between two football players

Exposition: The game player views the comparison between two football players in one chart.
Demonstration: 1. [Player] The player chooses one football players in a table as reference by clicking on the reference button and move the cursor to another football player. 2. [System] The system displays the data chart of that player. 3. [Player] The player chooses another football player in the table. 4. [System] The system shows the comparison between two football players in data chart.

e) Choose a team which game player prefers

Exposition: The game player chooses a team he/she want to control
Demonstration: 1. [System] The system provides all the team data for the player to choose. 2. [Player] The player chooses a team by clicking on that row. 3. [System] The system proceed to the championships with that team.

f) Choose lineup in the player's team

Exposition: The game player chooses the lineup based on the football players' ability and the next opponent.
Demonstration: 1. [System] The system provides all the football players' data(in the player's team) for the player to choose, also with the name and ability of next opponent. 2. [Player] The player chooses the lineup by choosing the player he wants to change in the lineup and then click on the player he would like to substitute from the bench. If the position of player does not match the position in lineup, the ability of that player will be deducted. 3. [System] The system calculates the team ability value for the player.

g) Perform the match

Exposition: Match will be played automatically by the system and result will be calculated mainly based on the abilities of two teams and other random factors.
Demonstration: 1. [Player] The player confirms the lineup and click the match-begin confirmation. 2. [System] The system simulates the match base on the abilities and environment such as home advantage. 3. [System] The system provides the match results also with the next opponent.

Alternative Flows:

h) Check table with another order

Exposition: The game player can check data in the table with another order(age, attack, etc.)
Demonstration: 1. [Player] The player chooses another order type by clicking on the column header. 2. [System] The system redisplay the table with the player's order.

i) Choose a different football player comparing with reference

Exposition: The game player can choose any football player in the table to compare with reference.
Demonstration: 1. [Player] The player chooses a football player in the table by clicking on the football player row. 2. [System] The system shows the comparison between two football players in one chart.

6. Conclusion

In this project, we designed and implemented a dynamic website with usage of MySQL database, which can be used to manage football clubs' and players' data. The project fulfilled all cases requirements. Future work could be to perfect the website with a better display and injury module that players may get injured after a match with a certain possibility based on injury resistance. Efforts should also be put to improve the security of the website and the database.

7. References

[1] https://en.wikipedia.org/wiki/UEFA_Champions_League
[2] http://www.guidetofootball.com/
[3] https://en.wikipedia.org/wiki/Pro_Evolution_Soccer_2016
[4] http://getbootstrap.com/css/
[5] http://fontawesome.io/icons/