

**Bilkent University**  
**Department of Computer Engineering**

**CS 353**  
**Database Management Systems Project**



## **Final Report**

**Football Database System**

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### **Section 1 / Group 10**

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## 1. Project Description

Football Management System is a web application designed to maintain the information around the football world and also to provide football club directors and agents to make various types of transactions. The application has several features which according to user can or can't be accessed. There are some common features of the website which can be accessed by everyone and some by only specific users.

There are totally seven type of users, guest, fan, agent, coach, player, admin and director. All users except guests need to login to the system in order to use it. All users can view information about the clubs, transfer news which shows only completed transfers, players, and matches which displays the home and away clubs with the number of goals scored each. On top of that each user can use the search engine which given a search text searches for clubs, players, coaches and displays the information table like structure.

The guest user can only read the information and cannot make any actions in the website. These users don't have any special features.

The fan once logged in to the system goes to the homepage where favorite team's information is shown. Fans have three additional features, subscriptions, countries, leagues. In subscriptions page the fan user can view the clubs to which he/she is subscribed to. In countries page, the list of countries where the subscribed teams are playing listed. The league page lists all leagues of subscribed clubs. Similarly, all other common features are customized according to fans subscriptions. Fan can also subscribe to and unsubscribe from clubs.

The agent's homepage lists all the clients. Also agent users have two additional features, manage transfers and manage contracts. In these sections agents can accept or reject transfer offers or contract extension requests. Agents are also capable of creating new contract extension requests for their clients.

The coaches homepage shows the informations about him and his club. Coaches have additional feature, players transfers, where the completed transfers of his players are listed.

The player user views information about himself in the homepage. Similar to coach users it can view players transfers, all the completed transfers of his previous and future teammates.

The admin user can create leagues, all type of users, clubs and games. In each of these windows the admin fills out all the required information and creates a tuple in database. Admin also has countries and leagues features which simply list all countries and leagues.

The director's homepage displays information about his team. Similar to agent users directors have features manage transfers and manage contract where they can accept or reject transfer offers and contract extension requests. Directors can also request transfer offers and contract extensions for a specific player.

## **2. Contributions of Group Members**

- **Solehjon Ruziboev**  
Completed Fan, Director and Agent user pages and their features. Took part in developing a database and search engine. Conducted a test and debug of final version of the project.
- **Demit Topaktas**  
Completed Admin, Player and Coach user pages and their features. Took part in developing a database. Conducted a test and debug of final version of the project.
- **Shamil Ibrahimov**  
Completed Guest user page and their features. Also developed a search engine for all users. Took part in developing a database and filling the initial data. Conducted a test and debug of final version of the project.
- **Mehmet Eren Turanboy**  
Designed the UI of all the pages. Took part in filling the initial data of the database. Conducted a test and debug of final version of the project.

### 3. Final E/R Diagram

## 4. Relation Schemas

### 4.1 Admin

#### Relational Model

Admin(username,password)

### 4.2 Player

#### Relational Model

Player (ID, username,password, name,surname,age, salary,nationality, position,birthdate, agent\_ID)

FOREIGN KEY: agent\_ID REFERENCES Agent(ID)

### 4.3 Director

#### Relational Model

Director (ID, username,password, name,surname,age, salary,nationality,birthdate, club\_ID)

FOREIGN KEY: club\_ID references Club(ID)

### 4.4 Coach

#### Relational Model

Coach (ID, username,password, name,surname,age, salary,nationality,birthdate, AgentID,ClubID)

FOREIGN KEY: AgentID REFERENCES Agent(ID)

FOREIGN KEY: ClubID REFERENCES Club(ID)

#### 4.5 Fan

##### Relational Model

Fan (ID, username,password, name,surname,favTeamID)

FOREIGN KEY: favTeamID references Club(ID)

#### 4.6 Agent

##### Relational Model

Agent (ID, username,password, name,surname,age, salary,nationality,birthdate)

#### 4.7 Club

##### Relational Model

Club(ID,name,transfer\_budget,annual\_wage\_budget,city,establishment\_date,value,stadium)

#### 4.8 League

##### Relational Model

League(ID,name,start\_date,end\_date,countryName)

#### 4.9 Game

##### Relational Model

Game(ID,start\_time,end\_time,stadium,game\_date,home\_teamID,away\_teamID)

FOREIGN KEY: home\_teamID REFERENCES Club(ID)

FOREIGN KEY: away\_teamID REFERENCES Club(ID)

#### 4.10 Stats

##### Relational Model

Stats(time,action,type,gameID,playerID)

FOREIGN KEY: gameID REFERENCES Game(ID)

FOREIGN KEY: playerID REFERENCES Player(ID)

#### 4.11 League\_Game

##### Relational Model

League\_Game (leagueID,gameID)

FOREIGN KEY: leagueID REFERENCES League(ID)

FOREIGN KEY: gameID REFERENCES Game(ID)

#### 4.12 League\_Club

##### Relational Model

League\_Club (leagueID, clubID)

FOREIGN KEY: leagueID REFERENCES League(ID)

FOREIGN KEY: clubID REFERENCES Club(ID)

#### 4.13 Plays

##### Relational Model

Plays (clubID,playerID,startDate,endDate)

FOREIGN KEY: clubID REFERENCES Club(ID)

FOREIGN KEY: playerID REFERENCES Player(ID)



#### 4.14 Subscribe

##### Relational Model

Subscribe(fanID,clubID)

FOREIGN KEY: fanID REFERENCES Fan(ID)

FOREIGN KEY: clubID REFERENCES Club(ID)

#### 4.15 Transfer\_Offer

##### Relational Model

Transfer\_Offer(ID,price,transferDate,status,playerID,fromDirectorID,toDirectorID)

FOREIGN KEY: playerID REFERENCES Player(ID)

FOREIGN KEY: fromDirectorID REFERENCES Director(ID)

FOREIGN KEY: toDirectorID REFERENCES Director(ID)

#### 4.16 Contract

##### Relational Model

Contract (playerID,directorID,agentID,bonus,expirationDate,status)

FOREIGN KEY: playerID REFERENCES Player(ID)

FOREIGN KEY: directorID REFERENCES Director(ID)

FOREIGN KEY: agentID REFERENCES Agent(ID)

#### 4.17 Country

##### Relational Model

Country(name)

## 5. Implementation Details

The project is mainly composed of three parts database, backend and frontend.

We have used MariaDB relational database in our project. In order to create the tables and dependencies we used Java. The initial data was also added using Java and it was filled manually.

The backend part of the project is mainly consisted of PHP code. In order to operate between pages we used global arrays which PHP provides, such as *session* or *post*. We have used arrays in order to pass the current user type and the details of that user types so that we can show relevant information in each of the pages. As mentioned before some pages are shared between users thus we needed to know which user is logged in.

The error handling part of the backend was done primary using Javascript alerts. Everytime, the user types wrong password, director tries to create wrong transfer offer or any other incorrect action from users is stopped, and users are notified through Javascript alerts.

The frontend of the project and the User Interface was designed using bootspring library. It has built in designs and styles of various forms which was very convenient to use.

During the implementation phase we have faced a lot of issues. One of the most challenging issues was making a transfer market work. The problem was in number of participants in this action, to be exact three, two directors and an agent. After a long hours of discussion we came up with a conclusion to use states as a way of understanding the current status of transfer offers. Another issue we have faces was caused by global variable *post* of PHP. The issue was that *post* once some of its values are set were literally impossible (we tried everything) to reset which were causing some queries to re-run and modify the data in a wrong way. We have solved this problem by modifying the query such that it runs only when needed and fortunately we got over it.

## 6. Advanced Database Structures

### 6.1 Views

We have not created specifically view structures, however we have achieved a way of creating a view in other way.

### **6.1.1 Recent Matches View**

### **6.1.2 Subscribed Clubs Transfers View**

### **6.1.3 Financial Detail View**

#### **6.1.4 Ongoing Transfers View**

#### **6.1.5 Ongoing Contract Extensions View**

## **6.2 Reports**

### **6.2.1 Top Scoring Players**

### **6.2.2 Top Fouling Players**

### **6.2.3 Most Expensive Transfers**

## **7. User's Manual**

### **7.1 Login Page**

User can Log In as a Fan, Agent, Director, Coach, Player or Admin based on their already ready accounts. However, if User does not have any account he/she can use the system as a Guest.

### **7.2 Guest Page**

Guest can see the matches, clubs, transfer news and players. Besides, guest user can search for the specific club, player or coach. Also, clubs, transfer news, matches and players can be viewed by all the users.

### **7.3 Agent Page**

As a Home Page, Agent sees his clients when he/she enters the system.

To be able to make a completed transfer agent has to confirm with player's director. Manage Transfers page is for the agent's clients request. He can accept or reject the request. Also he can see the completed transfers.

Manage Contracts page of the agent shows the requests from to director for a specific player to extend the contract of that player with the team. Again, he can accept or reject the requests.

In manage contract page, Agent can send a contract extension request for his players to directors. In this case directors can accept or reject the request.

#### **7.4 Coach Page**

When the user enter as a coach he can see his team and its information. In Players Transfer section coach can see his players transfer news.



## **7.5 Player Page**

In player page every information regard to him is shown such as Name, Surname, Age and etc. He can also see his team mates transfer news and matches and so on.

## **7.6 Admin Pages**

Admin can look for countries,leagues,clubs,transfer news,matches and players by clicking menu items and can search for anything in search section. Admin can also log out from his/her account. This functionality is common for all following admin pages.

## **Admin Countries Page**

Admin can see all countries.

## **Admin Leagues Page**

Admin can see all leagues.

## **Admin Clubs Page**

Admin can see all clubs.

### **Admin Transfer News Page**

Admin can see all transfer news in this page.

## **Admin Matches Page**

## **Admin Players Page**

Admin can see all players in this page.

## **Admin Create League Page**

Admin can create league in this page. He/she can input name of the league, start date of the league and end date. Moreover, he/she can specify country of the league.

## **Admin Create Club Page**

Admin can create club in this page. He/she has to input name,transfer budget,annual wage budget,stadium, value, league,city and establishment date of the club in order to create club.

### **Admin Create Account Page**

Admin can create account(player,director,agent,coach) in this page. He/she has to input name,surname,age,salary,nationality,birthdate and password of the account. He/she can specify the type of the account(coach,player,director,agent). For example, if type is player he/she can specify club,agent and position of the player account.

### **Admin Create Game Page**

Admin can create game in this page. He/she has to input league of the game,start time, end time,stadium,date,home club,away club and stats in order to create a game. In stats, he/she can specify time,action,type and player. Action must be number; 0 means goal and 1 means card. Type means card's type; 0 means

red,etc.. Admin must be input name of the player such as Cristiano in player section. Admin can also add more stats to the game.

## **7.7 Fan Pages**

### **Fan Main Page**

In fan main page, fan can see his/her favorite team details. Fan can see coach, stadium, city, establishment date and league of his/her favorite team. Fan can also recent matches and players of his/her favorite team.

### **Fan Clubs Page**

In clubs page, fan can see all clubs details such as name,city and value. He/she can subscribe to other clubs in this page.

### **Fan Subscriptions Page**

Fan can see his/her subscriptions in this page.

### **Fan Countries Page**



Fan can see countries of his/her subscribed teams in this page.

### **Fan Leagues Page**

Fan can see leagues of his/her subscribed clubs and favorite club.

### **Fan Matches Page**

Fan can see matches of his/her subscribed clubs and favorite club.

### **Fan Transfer News Page**

Fan can see transfers of his/her subscribed clubs and favorite club.

### **Fan Players Page**

Fan can see his/her subscribed clubs players and also players of his/her favorite team.

### **Fan Settings Page**

Fan can edit his/her profile in this section. He/she can specify his/her new name,new surname,new username,password and favorite team.

## **7.8 Directors Pages**

### **Director Main Page**

Director can see his/her club details. He can see coach, stadium, city, establishment date and leagues of his/her club. Moreover, he can see recent matches and financial details of the club in this page.

### **Director Transfer Offers Page**

In manage transfers page, director can see his/her players transfer offers from other directors. Here, status shows that agent of Lionel Messi accepted the offer. And director can accept the offer by clicking buttons in action section.

### **Director Transfer Requests Page**

Director can see his/her requests to other players in clubs. Director can see status and price of requests. Moreover, director can cancel requests.

### **Director Create Transfer Offer Page**

Director can create transfer offer to other players in this page. He/she has to specify name,surname and offered value in order to create transfer offer.

### **Director Manage Contracts Page**

Director can see contracts in this page. Director can cancel his/her request for extending contract.

## **Director Extend Contracts Page**

Director can extend contract of his/her player in this page. Director has to specify name of player,surname,bonus and expiration date of the extended contract.