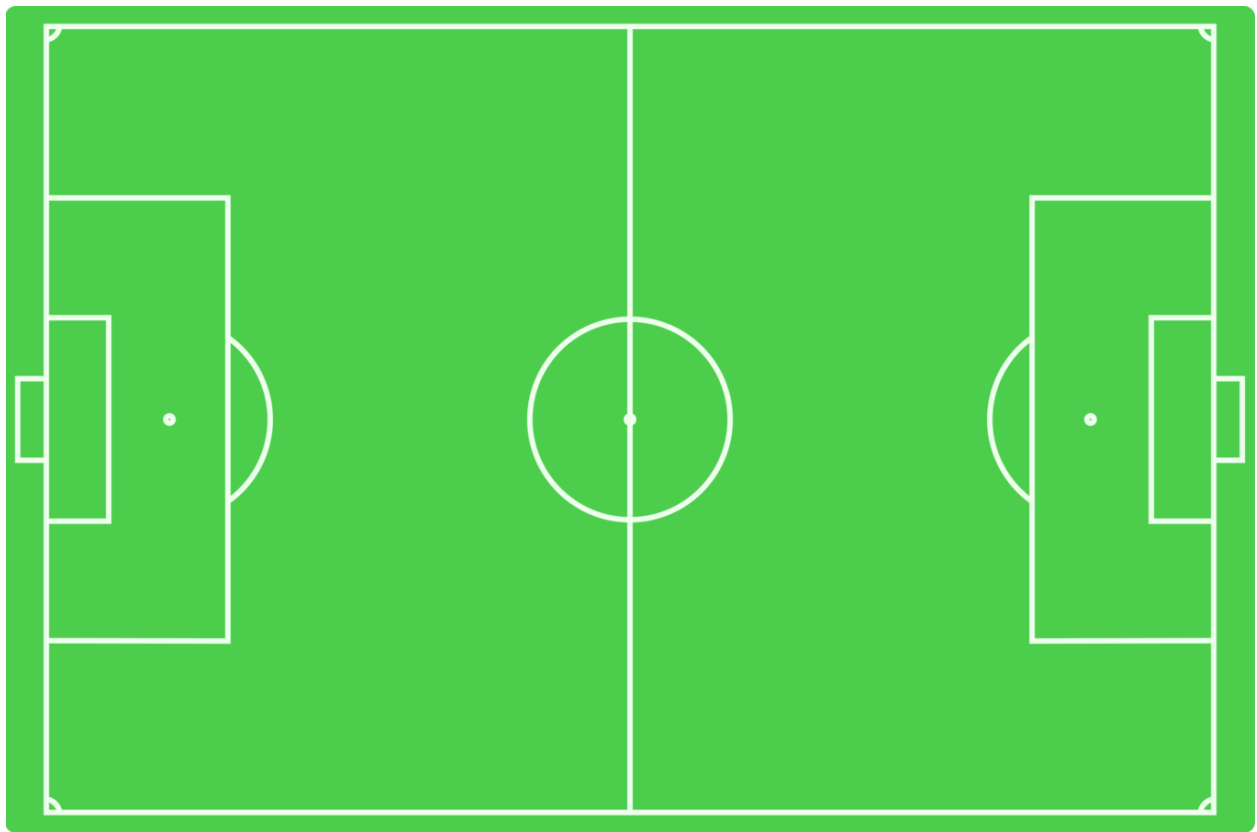




Advance Database Management System [C]

Football Team Management [Forca Barca] Final Term Project Report



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System Summery

This project is based on one of the Spanish club – Football Club Barcelona and it's team management database system. FCB participates in numerous tournament (Laliga, European league Cup, Domestic league Cup and so on). In La liga, the team takes part in 38 matches. Also, in other tournament's matches. Each of the matches are known as Match-day. Developing this vast connection. time and man-power are required.

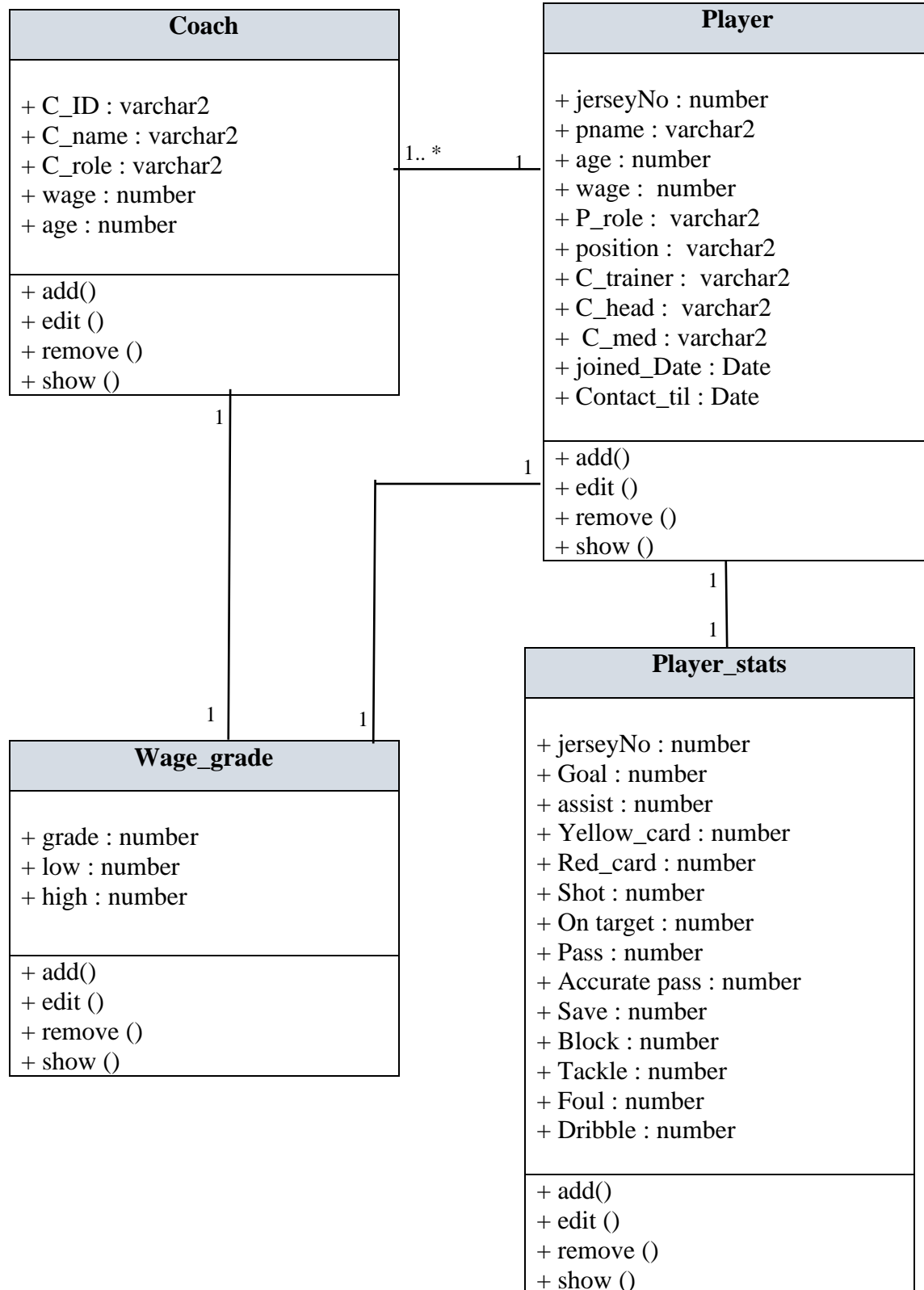
The motivation was to create a fully connected and automated Team Management System. However, depending on the circumstances the goal became to analyze player-coach relationship and their performance.

- The database has 5 tables which are interconnected. Login info, Coach, Player, Wage of the employees and Player's statistics.
- 3 tables to store trigger values.
- LOGIN_INFO has the 4 columns. userID as primary key, username, password, role.
- COACH table has a primary key ID as C_ID and other attributes (which are later discussed in the Database Schema section).
- The PLAYER table has one foreign key and a primary key. The primary key is 'Jersey no' as it's unique for every player. The foreign keys are distributed in three (3) columns, which are c_head, c_trainer, c_medical which are referenced by COACH table's primary key (C_ID). Since there are three different categories of coach (c_role) so, it's divided into three columns in PLAYER table.
- In PLAYER_STATS table JerseyNo is the foreign key, referenced by PLAYER table. In this table the attributes are different stats (goal, assist, save, block, etc.) of a player.
- The WAGE_GRADE tables have 3 columns. Every coach and player wage's grade are distributed here by a low and high range. There are 5 different values of grade which are low, below avg, avg, above avg and high (in ascending order).
- A VIEW is created to select players in squad. (**squad_view**)
- When player/coach/user's info is changed, the modification is stored as log. (Trigger)

Another table MATCH_DAY was planned to create but wasn't implemented. For every matchday a table would be generated and the attributes of the table would be team's performance in that game/match. For example, Ball possession, Cards, Shots, Goal scored, Goal concede etc. by a team. FCB plays almost 50+ games in a season. So, generating and maintaining MATCH_DAY tables would be complex. In the project this tables are excluded for the time being.

To conclude project details, this database can improve player-coach relationship by analyzing the performance of them. Tactics can be developed by coaches to improve the performance of the team and select appropriate players into the squad.

Class Diagram



P_stats table:

Column Name	Data Type	Nullable	Default	Primary Key
JERSEYNO	NUMBER	No	-	-
GOAL	NUMBER	Yes	-	-
ASSIST	NUMBER	Yes	-	-
YELLOW_CARD	NUMBER	Yes	-	-
RED_CARD	NUMBER	Yes	-	-
SHOT	NUMBER	Yes	-	-
SHOT_ONTARGET	NUMBER	Yes	-	-
PASS	NUMBER	Yes	-	-
ACCURATE_PASS	NUMBER	Yes	-	-
DRIBBLE	NUMBER	Yes	-	-
TACKLE	NUMBER	Yes	-	-
FOUL	NUMBER	Yes	-	-
SAVE	NUMBER	Yes	-	-
BLOCK	NUMBER	Yes	-	-
MATCH_PLAYED	NUMBER	Yes	-	-
MINS_PLAYED	NUMBER	Yes	-	-
1 - 16				

VIEW

Views

SQUAD_VIEW

SQUAD_VIEW

View Code Data Grants UI Defaults Dependencies SQL

Compile Drop

Column Name	Data Type	Nullable
JERSEYNO	NUMBER	No
NAME	VARCHAR2(400)	No
ROLE	VARCHAR2(4000)	No
POSITION	VARCHAR2(4000)	No
RATING	NUMBER	Yes

Sequence In Primary Key

Auto increment is used in C_ID and JerseyNO attribute of COACH and PLAYER table.

The screenshot shows the Oracle SQL Developer interface. On the left, a tree view under 'Sequences' lists COACH_SEQ1, JERSEYNO_SEQ, and PLAYER_SEQ. COACH_SEQ1 is selected. On the right, the 'Object Details' tab is active, showing the following properties:

Property	Value
Min Value	1
Max Value	99
Increment By	1
Cycle Flag	N
Order Flag	N
Cache Size	20
Last Number	21

The screenshot shows the Oracle SQL Developer interface. On the left, a tree view under 'Sequences' lists COACH_SEQ1, JERSEYNO_SEQ, PLAYER_SEQ, and USER_INFO_SEQ. JERSEYNO_SEQ is selected. On the right, the 'Object Details' tab is active, showing the following properties:

Property	Value
Min Value	1
Max Value	99
Increment By	1
Cycle Flag	N
Order Flag	N
Cache Size	0
Last Number	1

Application Interface

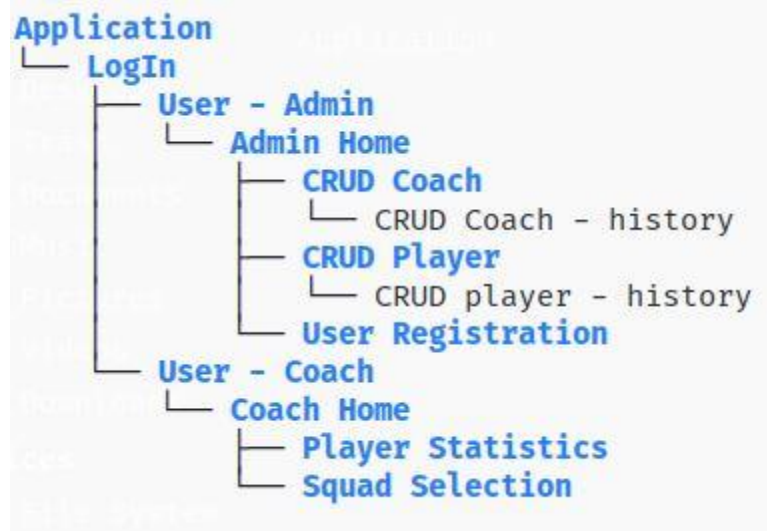
Two types of users are in the application, i. Admin, ii. Coach. Based on credentials of user's role Forms are shown.

Different types of functionalities of the users are:

Admin – *Create new users. *Modify (Create, Update, Remove) coach/player. *Browse history.

Coach – *Select players to squad. *Analyze player's statistics.

Overview of the application directory is shown below:



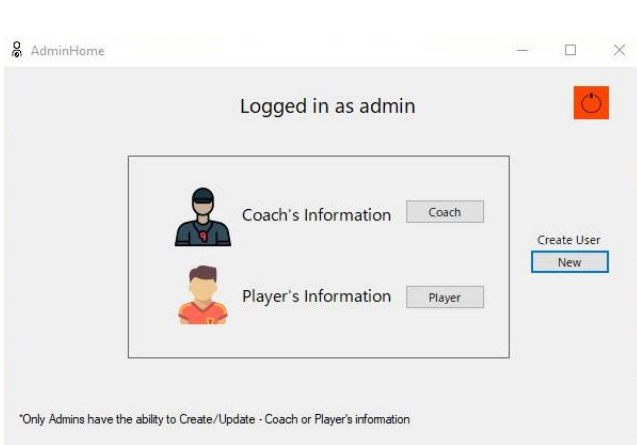
Log In:

The screenshot shows a 'Log In' window with a title bar containing a soccer ball icon and the text 'Log In'. On the left side of the window is the FC Barcelona (FCB) logo. In the center, there is a box titled 'Log in with your credentials' containing two input fields: 'User ID' and 'Password'. Below these fields is a 'Log In' button with a right-pointing arrow icon.

After logging in Connection to Oracle Database is established. User will be redirected to its accessible pages.

Admin Panel

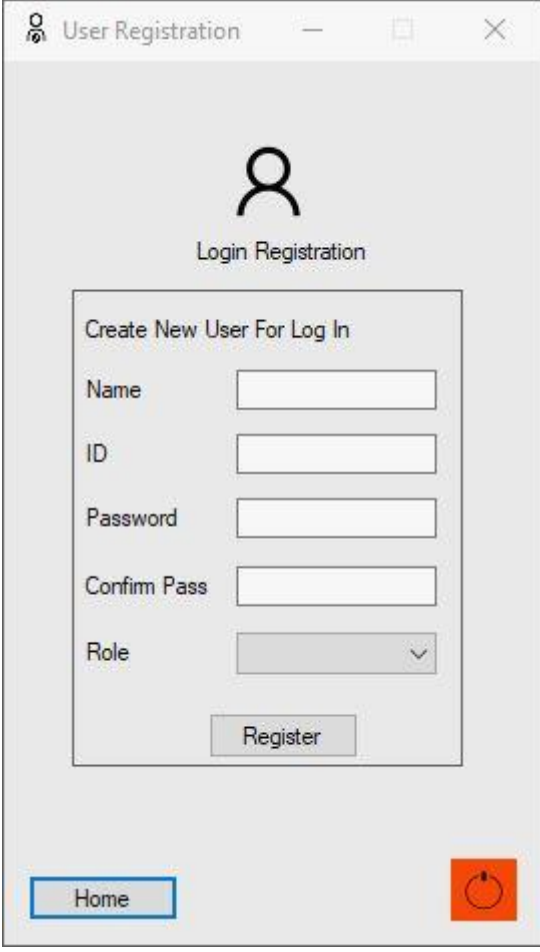
Home –



The Admin Home interface shows a user logged in as 'admin'. It features a central panel with two sections: 'Coach's Information' with a 'Coach' button and 'Player's Information' with a 'Player' button. To the right of this panel is a 'Create User' button with a 'New' sub-button. A footer note states: '*Only Admins have the ability to Create/Update - Coach or Player's information'. A red apple icon is in the top right corner.

After clicking 'New' button, new user can be registered.

Registration-



The User Registration interface is titled 'User Registration' and 'Login Registration'. It contains a form titled 'Create New User For Log In' with the following fields: 'Name', 'ID', 'Password', 'Confirm Pass', and 'Role' (a dropdown menu). A 'Register' button is at the bottom of the form. A 'Home' button and a red apple icon are located at the bottom of the page.

Functionalities:

- ^ Text box can't be empty.
- ^ All the values to be inserted into textbox are Capitalized while typing. So that the problem with case sensitivity is avoided.
- ^ ID is primary key with dot (.) separating values, no space. (ex. mono.stro)
- ^ Password and Confirm Password should match.
- ^ Role can only be selected from drop down box, can't be edited.
- ^ After registration values will be inserted in Database Table. Because of trigger log data is also inserted in Table.

CRUD coach

Coach Info

Coach's Information

Select search by option accordingly

Search By - Name ▾

ID	Name	ROLE	WAGE	AGE
1	XAVI	HEAD	50000	42
5	A BD	GOALIE	300	22
7	PM	DEFENSE	3500	42
8	C. ATTACKER 8	ATTACK	3000	36
2	A. 2	ATTACK	33000	43
6	A. 6	ATTACK	30	44
46	PABLO MALDINI	DEFENSE	35000	48
4	GIGI BUFON	GOALIE	30000	49
9	A	ATTACK	30	22

Double Click on a Row to modify

Name

Role

Age

Wage

Delete

Clear Save

Show All

Home History

Functionalities:

- ^ After selecting a row to modify, ID field is visible. (ID – auto incremented after insertion)
- ^ Searching data based on every existing field.
- ^ History of CRUD operations.
- ^ Constraint for Head coach. Can't be more than one. ID 1 is designated. Can't be removed.

Coach Info

Coach's Information

Select search by option accordingly

Search By - Name ▾

ID	Name	ROLE	WAGE	AGE
1	XAVI	HEAD	50000	42
5	A BD	GOALIE	300	22
7	PM	DEFENSE	3500	42
8	C. ATTACKER 8	ATTACK	3000	36
2	A. 2	ATTACK	33000	43
6	A. 6	ATTACK	30	44
46	PABLO MALDINI	DEFENSE	35000	48
4	GIGI BUFON	GOALIE	30000	49
9	A	ATTACK	30	22

Double Click on a Row to modify

ID

Name

Role

Age

Wage

Delete

Clear Save

Show All

Home History

Can't delete head coach with ID 1.

OK

CRUD Player

Info_Player

Player's Information

Search By - Positi Select search by option accordingly

Jersey No	Name	Age	Wage	Position	Role
1	TER STEGEN	30	150000	GK	GOALKEEPER
13	INAKI PENA	22	158000	GK	GOALKEEPER

Double Click on a Row to modify

Show All

Home

Clear Save Delete

Jersey No: 1
Name: TER STEGEN
Age: 30
Wage: 150000
Role: GOALKEEPER
Position: GK
Head Coach: 1
Trainer Coach: 9
Medical Coach: 3
Join Date: 01-01-2014
Contact Ends: 07-01-2024
Rating: 92

Functionalities:

- ^ Searching while typing in textbox.
- ^ Multiple fields for searching.
- ^ Position (RB..LB) can't be selected without selecting Role (Defender..Attacker) first.

Info_Player

Player's Information

Search By - Positi Select search by option accordingly

Jersey No	Name	Age	Wage	Position	Role
1	TER STEGEN	30	150000	GK	GOALKEEPER
13	INAKI PENA	22	158000	GK	GOALKEEPER

Double Click on a Row to modify

Show All

Home

Clear Save Delete

Jersey No:
Name:
Age:
Wage:
Role:
Position:
Head Coach:
Trainer Coach:
Medical Coach:
Join Date: 20-05-2023
Contact Ends: 20-05-2023
Rating:

Please select a Role first

OK

Coach Panel

Home –



Purpose of the buttons:

Squad – Go to Squad Form to select players to squad.

Player - Go to Player Stats Form to analyze player's statistics.

Squad Selection Form in the next page
(functionalities)

- By clicking 'Best 11' button select best players in the squad.
- By searching depending on different categories (Name, Jersey No, Position, Role, Rating) player can be found and then selected in the squad.
- Without selecting role, position can't be selected.
- When position is selected, the targeted position in squad is highlighted (RW in the example). So that user can visualize the position and select the player appropriately.
- Player's position can be modified.
(RW → CF or, CDM → CM)
- 'Add To Squad' button to add the selected player into squad

Squad Selection –

The interface shows a soccer field diagram with positions labeled: LW, LM, RM, RW, CF, CM, LB, RB, LCB, RCB, and GK. A 'Squad Selection' panel on the right contains input fields for 'Jersey No', 'Name', 'Role', and 'Position', along with 'Clear' and 'Add To Squad' buttons. A table on the right lists players with columns: JERSEY..., NAME, POSITION, ROLE, and RATING. A search bar is at the top right.

Squad Selection

Select search by option accordingly

Search By - Name

JERSEY...	NAME	POSITION	ROLE	RATING
2	DANI AL...	RB	DEFEND...	88
4	RONALD...	RCB	DEFEND...	85
9	ROBERT...	CF	ATTACK...	86
10	LEO MES...	RW	ATTACK...	98
1	TER STE...	GK	GOALKE...	92
7	OSMANE...	LW	ATTACK...	86
12	RIQI PUIG	CM	MIDFIEL...	78
5	SERGIO ...	CDM	MIDFIEL...	86
6	GAVI	RM	MIDFIEL...	83
11	FERAN T...	LW	ATTACK...	80
13	INAKI PE...	GK	GOALKE...	72
33	PIQUE	LCB	DEFEND...	84
34	HALAND	CF	ATTACK...	88
8	PEDRO ...	LM	MIDFIEL...	85
35	DE JONG	CM	MIDFIEL...	88
36	ALBA	LB	DEFEND...	82
37	BALDE	LB	DEFEND...	82
38	KOUNDE	LCB	DEFEND...	85

Best 11

Home

The interface shows the same soccer field diagram, but now populated with player names. The 'Squad Selection' panel has 'Jersey No' set to 10, 'Name' to LEO MESSI, 'Role' to ATTACKER, and 'Position' to RW. The table on the right has row 10 highlighted. A search bar is at the top right.

Squad Selection

Select search by option accordingly

Search By - Name

JERSEY...	NAME	POSITION	ROLE	RATING
2	DANI AL...	RB	DEFEND...	88
4	RONALD...	RCB	DEFEND...	85
9	ROBERT...	CF	ATTACK...	86
10	LEO MES...	RW	ATTACK...	98
1	TER STE...	GK	GOALKE...	92
7	OSMANE...	LW	ATTACK...	86
12	RIQI PUIG	CM	MIDFIEL...	78
5	SERGIO ...	CDM	MIDFIEL...	86
6	GAVI	RM	MIDFIEL...	83
11	FERAN T...	LW	ATTACK...	80
13	INAKI PE...	GK	GOALKE...	72
33	PIQUE	LCB	DEFEND...	84
34	HALAND	CF	ATTACK...	88
8	PEDRO ...	LM	MIDFIEL...	85
35	DE JONG	CM	MIDFIEL...	88
36	ALBA	LB	DEFEND...	82
37	BALDE	LB	DEFEND...	82
38	KOUNDE	LCB	DEFEND...	85

Best 11

Home

Trigger

Trigger is implemented for DML operation for Player, Coach and for Login User creation.

- After trigger is triggered, values are inserted in designated table. For which the history can be checked and maintain.
- Before trigger is triggered to secure operations from unwanted day/time operations.

The triggers that are used –

COACH_INFO_TRIGGER, PLAYER_INFO_TRIGGER, LOGIN_INFO_TRIGGER

Conclusion

The application can be used to display squad members when there is a football event in the campus. It will be easier for coaches/moderators to plan their strategy as well as audience can have visualization about the team's squad members. Since using the application, the teams squad members (11 players) can be easily implemented.

THE END
