Milestone 4 Code Implementation

Soccer Game Manager is a website that tracks one season of the UEFA Champion's League, an annual football (soccer) competition that is played by the greatest football clubs in Europe. The website has a database that contains tables with information for the players, clubs, teams, coaches, sponsors, agents, stadiums, and games involved.

A user can see each table and change the tables by adding, deleting, or updating tuples. The user is also able to identify specific information by selecting only tables or attributes that match their condition. In addition, statistics for the competition such as min, max, average, can be calculated within the different tables. For example, a user can find all players who play a certain position or see which coaches in each country have the least amount of experience.

By using Soccer Game Manager, a user has all the information they need about their favourite tournament in a simple to use, all-in-one website.

The ISA relationship for stage was removed and stage was changed into a single entity with the attribute StageType that contains the children of the former ISA relationship. This was done to avoid a trivial ISA relationship. A new ISA relationship was created with Football_Person as the parent and Player, Coach as the children. Player and coach now inherit their ID primary key from Football_Person.

A list of all queries used in this project:

```
Display tables:
     SELECT * FROM Player
     SELECT * FROM Team
     SELECT * FROM Club
     SELECT * FROM Coach C1
     SELECT * FROM Coach C2
     SELECT * FROM Agent
     SELECT * FROM Sponsor
     SELECT * FROM Game
     SELECT * FROM Stadium PNAS
     SELECT * FROM Stadium PCI
     SELECT * FROM Stadium PCO
     SELECT * FROM Stage
     SELECT * FROM PlayerPlaysForTeam
     SELECT * FROM teamPlaysInGame
     SELECT * FROM GameIsInStage
     SELECT * FROM Player p, PlayerPlaysForTeam pt
     WHERE p.PID = pt.PID
     SELECT DISTINCT g.GID, g.address, g.postal code, g.date played,
     g.referee, g.winner, g.goals scored, gis.SID
     FROM Game g, GamelsInStage gis
     WHERE g.GID = gis.GID
     ORDER BY g.date played
Insertion:
     INSERT INTO Team (ClubID, team name) VALUES ('ARS', 'UBC')
Update:
     UPDATE Club
     SET country = 'Canada'
     WHERE clubID = 'JUV' AND country = 'Italy'
     UPDATE Club
```

SET city = 'Vancouver'
WHERE clubID = 'JUV' AND city = 'Turin'

UPDATE Club

SET ownership = 'Public'

WHERE clubID = 'JUV' AND ownership = 'Private'

Deletion:

DELETE FROM Agent WHERE AID = 'A1'

Selection:

SELECT club_name FROM Club WHERE Country = 'Spain'

Projection:

SELECT GID, winner, goals_scored FROM Game

<mark>Join:</mark>

SELECT DISTINCT *
FROM teamPlaysInGame G, Team T
WHERE G.goals>1 AND G.team name=T.team name

Division:

SELECT DISTINCT T.team_name FROM teamPlaysInGame T WHERE NOT EXISTS (SELECT SID

FROM Stage MINUS SELECT G2.SID

FROM GameIsInStage G2

WHERE

G2.team name=T.team name)

Aggregation with Group By:

SELECT nationality, MIN(years_of_experience) AS Years_of_experience FROM Coach_C2 GROUP BY nationality SELECT nationality, MAX(years_of_experience) AS Years_of_experience FROM Coach_C2 GROUP BY nationality

Aggregation with Having:

SELECT position, MIN(date_of_birth) AS date_of_birth
FROM Player p, PlayerPlaysForTeam pt
WHERE p.PID = pt.PID AND \$year-pt.year_started >= \$years_spent
GROUP BY position
HAVING COUNT(p.PID) >= \$entries

Nested Aggregation with Group By:

CREATE VIEW AvgGoalsPerStage(SID, goals_scored) AS SELECT gis2.SID, AVG(g2.goals_scored) FROM Game g2, GameIsInStage gis2
WHERE g2.GID = gis2.GID
GROUP BY gis2.SID

SELECT DISTINCT g.GID, gis.SID, g.goals_scored
FROM Game g, GameIsInStage gis
WHERE g.GID = gis.GID AND g.goals_scored >= ALL(SELECT goals_scored FROM AvgGoalsPerStage)
ORDER BY gis.SID desc

Basic queries (INSERT, UPDATE, DELETE)

INSERT: You can insert new teams to Team table:

Before

Selule.			
Table Tear	m		
CLUBID	TEAM_NAME		
ARS	Arsenal		
ASM	AS Monaco		
ATM	Atletico Madrid		
BAS	Basel		
вми	Bayern Munich		
BVB	Borussia Dortmund		
CHE	Chelsea		
FCB	Barcelona		
FCP	FC Porto		
JUV	Juventus		
LEV	Bayer 04 Leverkusen		
MCI	Manchester City		
PSG	Paris Saint-Germain		
RMA	Real Madrid		
SCH	FC Schalke 04		
SHA	Shakhtar Donetsk		

The number of tuples in Team Table: 16

The # of tuples in Team table now is 16

Run the query:

Insert Teams into Table
ClubID: ARS
Team Name: uBC
Insert

After:

Aiter.					
Table Tear	Table Team				
CLUBID	TEAM_NAME				
ARS	Arsenal				
ARS	UBC				
ASM	AS Monaco				
ATM	Atletico Madrid				
BAS	Basel				
BMU	Bayern Munich				
BVB	Borussia Dortmund				
CHE	Chelsea				
FCB	Barcelona				
FCP	FC Porto				
JUV	Juventus				
LEV	Bayer 04 Leverkusen				
MCI	Manchester City				
PSG	Paris Saint-Germain				
RMA	Real Madrid				
SCH	FC Schalke 04				
SHA	Shakhtar Donetsk				

A new tuple added

The # of tuples in Team table is increased by 1 now

The number of tuples in Team Table: 17

UPDATE: You can update any information (must identify the tuple by providing its ClubID) in Club table:

Before:

Table Club					
CLUBID	CLUB_NAME	COUNTRY	CITY OWNERSHIP		
JUV	Juventus	Italy	Turin	Private	
BVB	Borussia Dortmund	Germany	Dortmund	Private	
ARS	Arsenal	England	London	Private	
ASM	AS Monaco	France	Monaco	Private	
ATM	Atletico Madrid	Spain	Madrid	Private	
LEV	Bayer 04 Leverkusen	Germany	Leverkusen	Private	
SCH	FC Schalke 04	Germany	Gelsenkirchen	Public	
RMA	Real Madrid	Spain	Madrid	Public	
PSG	Paris Saint-Germain	France	Paris	Private	
CHE	Chelsea	England	London	Private	
MCI	Manchester City	England	Manchester	Private	
FCB	Barcelona	Spain	Barcelona	Public	
BAS	Basel	Switzerland	Basel	Private	
FCP	FC Porto	Portugal	Porto	Public	
SHA	Shakhtar Donetsk	Ukraine	Lviv	Private	
BMU	Bayern Munich	Germany	Munich	Public	

Run the query:



Here enter new values

Old values

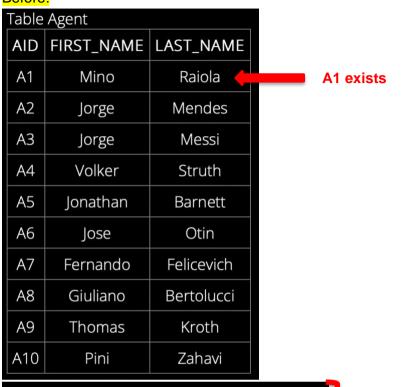
After:

Table Club						
CLUBID	CLUB_NAME COUNTRY CITY		OWNERSHIP			
JUV	Juventus	Canada	Vancouver	Public		
BVB	Borussia Dortmund	Germany	Dortmund	Private		
ARS	Arsenal	England	London	Private		
ASM	AS Monaco	France	Monaco	Private		
ATM	Atletico Madrid	Spain	Madrid	Private		
LEV	Bayer 04 Leverkusen	Germany	Leverkusen	Private		
SCH	FC Schalke 04	Germany	Gelsenkirchen	Public		
RMA	Real Madrid	Spain	Madrid	Public		
PSG	Paris Saint-Germain	France	Paris	Private		
CHE	Chelsea	England	London	Private		
MCI	Manchester City	England	Manchester	Private		
FCB	Barcelona	Spain	Barcelona	Public		
BAS	Basel	Switzerland	Basel	Private		
FCP	FC Porto	Portugal	Porto	Public		
SHA	Shakhtar Donetsk	Ukraine	Lviv	Private		
BMU	Bayern Munich	Germany	Munich	Public		

Values updated

DELETE: You can delete any agents in Agent table; at the meantime, any tuples in Player table that reference the deleted agent will also be deleted. (ON DELETE CASCADE)

Before:



The number of tuples in Agent Table: 10

The number of tuples in Player Table: 80

Run the query:

Delete Agents from Table

AgentID: A1|

Delete

Before deletion, there are 10 tuples in Agent table, and 80 tuples in Player table.

After:

Table	Agent		
AID	FIRST_NAME	LAST_NAME	A1 is deleted
A2	Jorge	Mendes	AT is deleted
А3	Jorge	Messi	
A4	Volker	Struth	
A5	Jonathan	Barnett	
A6	Jose	Otin	
A7	Fernando	Felicevich	
A8	Giuliano	Bertolucci	
A9	Thomas	Kroth	
A10	Pini	Zahavi	

The number of tuples in Agent Table: 9
The number of tuples in Player Table: 67

After deletion, there are only **9** tuples in Agent table, and 67 tuples in Player table!

Selection

Club table before selection



Selection GUI

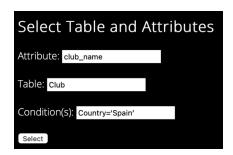


Table after selection

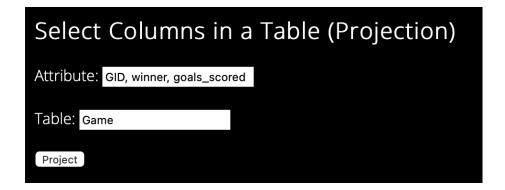


Projection

Game table before projection

Table	Table Game							
Retrie	Retrieved data:							
GID	ADDRESS	POSTAL_CODE	DATE_PLAYED	REFEREE	WINNER	GOALS_SCORED		
G1	Corso Gaetano Scirea 50	10151	24-FEB-15	Antonio Lahoz	JUV	6		
G2	Highbury House 75	51211	25-FEB-15	Deniz Aytekin	ASM	6		
G3	Paseo Virgen del Puerto 67	28005	17-MAR-15	Nicola Rizzoli	ATM	7		
G4	Av. de Concha Espina	28036	10-MAR-15	Damir Skomina	RMA	9		
G5	24 Rue du Commandant Guilbaud	75016	17-FEB-15	Cuneyt Cakir	PSG	6		
G6	Ar??stides Maillol 12	8028	18-MAR-15	Gianluca Rocchi	FCB	4		
G7	Via Futebol Clube do Porto	43504	10-MAR-15	Jonas Eriksson	FCP	6		
G8	25 Werner-Heisenberg-Allee	80939	11-MAR-15	William Collum	BMU	7		
G9	Corso Gaetano Scirea 50	10151	14-APR-15	Pavel Kralovec	JUV	1		
G10	Paseo Virgen del Puerto 67	28005	14-APR-15	Milorad Mazic	RMA	1		
G11	24 Rue du Commandant Guilbaud	75016	21-APR-15	Mark Clattenburg	FCB	6		
G12	Via Futebol Clube do Porto	43504	21-APR-15	Carlos Carballo	BMU	11		
G13	Av. de Concha Espina	28036	13-MAY-15	Martin Atkinson	JUV	5		
G14	25 Werner-Heisenberg-Allee	80939	06-MAY-15	Nicola Rizzoli	FCB	8		
G15	Ar??stides Maillol 12	8028	06-JUN-15	Cuneyt Cakir	FCB	4		

Projection GUI



Game table after projection

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GID	WINNER	GOALS_SCORED
G1	JUV	6
G2	ASM	6
G3	ATM	7
G4	RMA	9
G5	PSG	6
G6	FCB	4
G7	FCP	6
G8	вми	7
G9	JUV	1
G10	RMA	1
G11	FCB	6
G12	вми	11
G13	JUV	5
G14	FCB	8
G15	FCB	4

Join teamPlaysInGame table before join

Table teamPlaysInGame

Retrieved data:

CLUBID	TEAM_NAME	GID	GOALS
JUV	Juventus	G1	5
BVB	Borussia Dortmund	G1	1
ARS	Arsenal	G2	3
ASM	AS Monaco	G2	3
LEV	Bayer 04 Leverkusen	G3	3
ATM	Atletico Madrid	G3	4
SCH	FC Schalke 04	G4	4
RMA	Real Madrid	G4	5
PSG	Paris Saint-Germain	G5	3
CHE	Chelsea	G5	3
MCI	Manchester City	G6	1
FCB	Barcelona	G6	3
BAS	Basel	G7	1
FCP	FC Porto	G7	5
SHA	Shakhtar Donetsk	G8	0
вми	Bayern Munich	G8	7
JUV	Juventus	G9	1
ASM	AS Monaco	G9	0
ATM	Atletico Madrid	G10	0
RMA	Real Madrid	G10	1

PSG	Paris Saint-Germain	G11	1
FCB	Barcelona	G11	5
FCP	FC Porto	G12	4
BMU	Bayern Munich	G12	7
JUV	Juventus	G13	3
RMA	Real Madrid	G13	2
FCB	Barcelona	G14	5
BMU	Bayern Munich	G14	3
JUV	Juventus	G15	1
FCB	Barcelona	G15	3

Team table before join

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Retrieved data:

CLUBID	TEAM_NAME		
ARS	Arsenal		
ASM	AS Monaco		
ATM	Atletico Madrid		
BAS	Basel		
BMU	Bayern Munich		
BVB	Borussia Dortmund		
CHE	Chelsea		
FCB	Barcelona		
FCP	FC Porto		
JUV	Juventus		
LEV	Bayer 04 Leverkusen		
MCI	Manchester City		
PSG	Paris Saint-Germain		
RMA	Real Madrid		
SCH	FC Schalke 04		
SHA	Shakhtar Donetsk		

Join GUI

Join Tables
Attribute: *
First Table: teamPlaysInGame G
Second Table: Team T
Condition: G.goals>1 AND G.team_nar
Join

Condition: G.goals>1 AND G.team_name=T.team_name

Table after join

Retrieved	Retrieved data:					
CLUBID	TEAM_NAME	GID	GOALS	CLUBID	TEAM_NAME	
JUV	Juventus	G1	5	JUV	Juventus	
ARS	Arsenal	G2	3	ARS	Arsenal	
ASM	AS Monaco	G2	3	ASM	AS Monaco	
LEV	Bayer 04 Leverkusen	G3	3	LEV	Bayer 04 Leverkusen	
ATM	Atletico Madrid	G3	4	ATM	Atletico Madrid	
SCH	FC Schalke 04	G4	4	SCH	FC Schalke 04	
RMA	Real Madrid	G4	5	RMA	Real Madrid	
PSG	Paris Saint-Germain	G5	3	PSG	Paris Saint-Germain	
CHE	Chelsea	G5	3	CHE	Chelsea	
FCB	Barcelona	G6	3	FCB	Barcelona	
FCP	FC Porto	G7	5	FCP	FC Porto	
BMU	Bayern Munich	G8	7	BMU	Bayern Munich	
FCB	Barcelona	G11	5	FCB	Barcelona	
FCP	FC Porto	G12	4	FCP	FC Porto	
BMU	Bayern Munich	G12	7	BMU	Bayern Munich	
JUV	Juventus	G13	3	JUV	Juventus	
RMA	Real Madrid	G13	2	RMA	Real Madrid	
FCB	Barcelona	G14	5	FCB	Barcelona	
BMU	Bayern Munich	G14	3	BMU	Bayern Munich	
FCB	Barcelona	G15	3	FCB	Barcelona	

Division

$team Plays In Game\ table\ before\ division$

Table teamPlaysInGame Retrieved data:					
CLUBID	TEAM_NAME	GID	GOALS		
JUV	Juventus	G1	5		
BVB	Borussia Dortmund	G1	1		
ARS	Arsenal	G2	3		
ASM	AS Monaco	G2	3		
LEV	Bayer 04 Leverkusen	G3	3		
ATM	Atletico Madrid	G3	4		
SCH	FC Schalke 04	G4	4		
RMA	Real Madrid	G4	5		
PSG	Paris Saint-Germain	G5	3		
CHE	Chelsea	G5	3		
MCI	Manchester City	G6	1		
FCB	Barcelona	G6	3		
BAS	Basel	G7	1		
FCP	FC Porto	G7	5		
SHA	Shakhtar Donetsk	G8	0		
BMU	Bayern Munich	G8	7		
JUV	Juventus	G9	1		
ASM	AS Monaco	G9	0		
ATM	Atletico Madrid	G10	0		
RMA	Real Madrid	G10	1		

PSG	Paris Saint-Germain	G11	1
FCB	Barcelona	G11	5
FCP	FC Porto	G12	4
BMU	Bayern Munich	G12	7
JUV	Juventus	G13	3
RMA	Real Madrid	G13	2
FCB	Barcelona	G14	5
вми	Bayern Munich	G14	3
JUV	Juventus	G15	1
FCB	Barcelona	G15	3

GameIsInStage table before division

CLUBID	TEAM_NAME	GID	SID
JUV	Juventus	G1	S_1/8
BVB	Borussia Dortmund	G1	S_1/8
ARS	Arsenal	G2	S_1/8
ASM	AS Monaco	G2	S_1/8
LEV	Bayer 04 Leverkusen	G3	S_1/8
ATM	Atletico Madrid	G3	S_1/8
SCH	FC Schalke 04	G4	S_1/8
RMA	Real Madrid	G4	S_1/8
PSG	Paris Saint-Germain	G5	S_1/8
CHE	Chelsea	G5	S_1/8
MCI	Manchester City	G6	S_1/8
FCB	Barcelona	G6	S_1/8
BAS	Basel	G7	S_1/8
FCP	FC Porto	G7	S_1/8

SHA	Shakhtar Donetsk	G8	S_1/8
BMU	Bayern Munich	G8	S_1/8
JUV	Juventus	G9	S_1/4
ASM	AS Monaco	G9	S_1/4
ATM	Atletico Madrid	G10	S_1/4
RMA	Real Madrid	G10	S_1/4
PSG	Paris Saint-Germain	G11	S_1/4
FCB	Barcelona	G11	S_1/4
FCP	FC Porto	G12	S_1/4
BMU	Bayern Munich	G12	S_1/4
JUV	Juventus	G13	S_1/2
RMA	Real Madrid	G13	S_1/2
FCB	Barcelona	G14	S_1/2
BMU	Bayern Munich	G14	S_1/2
JUV	Juventus	G15	S_Final
FCB	Barcelona	G15	S_Final

Division GUI

Divide Tables
First Table:
Second Table:
Divide

Division result



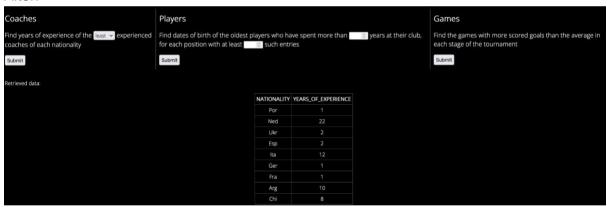
Aggregation queries.

Aggregation with Group By

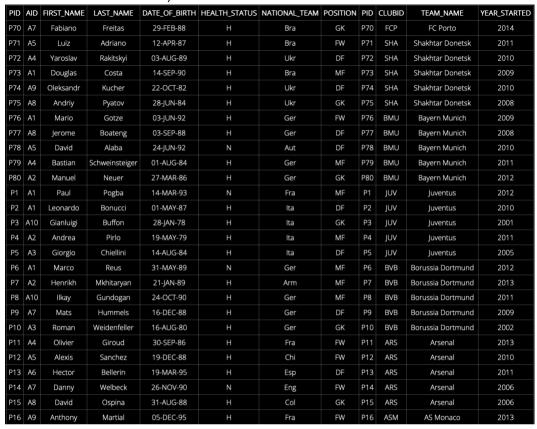
Before running the query for the least experienced coach of each nationality:

CID	FIRST_NAME	LAST_NAME	NATIONALITY	YEARS_OF_EXPERIENCE
C1	Massimiliano	Allegri	lta	12
C2	Jurgen	Klopp	Ger	8
C3	Arsen	Wenger	Fra	22
C4	Leonardo	Jardim	Por	1
C5	Diego	Simeone	Arg	10
C6	Roger	Schmidt	Ger	1
C7	Erwin	Smith	Ger	2
C8	Zinedine	Zidane	Fra	1
C9	Laurent	Blanc	Fra	1
C10	Guus	Hiddink	Ned	22
C11	Manuel	Pellegrini	Chi	8
C12	Luis	Enrique	Esp	2
C13	Levi	Ackerman	Fra	1
C14	Jose	Mourinho	Por	10
C15	Alexander	Schevchenko	Ukr	2
C16	Josep	Guardiola	Esp	8

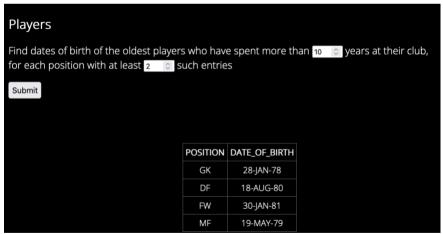
After:



Before the query for finding the dates of birth of the oldest players who have spent more than 10 years at their club, for each position with at least 2 such entries (a portion of the table is in the screenshot):



After:



Before finding the games with more scored goals than the average in each stage of the tournament:

GID	ADDRESS	POSTAL_CODE	DATE_PLAYED	REFEREE	WINNER	GOALS_SCORED	SID
G5	24 Rue du Commandant Guilbaud	75016	17-FEB-15	Cuneyt Cakir	PSG	6	S_1/8
G1	Corso Gaetano Scirea 50	10151	24-FEB-15	Antonio Lahoz	JUV	6	S_1/8
G2	Highbury House 75	51211	25-FEB-15	Deniz Aytekin	ASM	6	S_1/8
G4	Av. de Concha Espina	28036	10-MAR-15	Damir Skomina	RMA	9	S_1/8
G7	Via Futebol Clube do Porto	43504	10-MAR-15	Jonas Eriksson	FCP	6	S_1/8
G8	25 Werner-Heisenberg-Allee	80939	11-MAR-15	William Collum	BMU	7	S_1/8
G3	Paseo Virgen del Puerto 67	28005	17-MAR-15	Nicola Rizzoli	ATM	7	S_1/8
G6	Ar??stides Maillol 12	8028	18-MAR-15	Gianluca Rocchi	FCB	4	S_1/8
G9	Corso Gaetano Scirea 50	10151	14-APR-15	Pavel Kralovec	JUV	1	S_1/4
G10	Paseo Virgen del Puerto 67	28005	14-APR-15	Milorad Mazic	RMA	1	S_1/4
G11	24 Rue du Commandant Guilbaud	75016	21-APR-15	Mark Clattenburg	FCB	6	S_1/4
G12	Via Futebol Clube do Porto	43504	21-APR-15	Carlos Carballo	BMU	11	S_1/4
G14	25 Werner-Heisenberg-Allee	80939	06-MAY-15	Nicola Rizzoli	FCB	8	S_1/2
G13	Av. de Concha Espina	28036	13-MAY-15	Martin Atkinson	JUV	5	S_1/2
G15	Ar??stides Maillol 12	8028	06-JUN-15	Cuneyt Cakir	FCB	4	S_Final

After:

GID	SID	GOALS_SCORED
G3	S_1/8	7
G4	S_1/8	9
G8	S_1/8	7
G12	S_1/4	11
G14	S_1/2	8