JULY 20, 2021

ASSIGNMENT

DBI202 – DATABASE SYSTEM OF LEAGUE OF LEGENDS CHAMPIONS KOREA

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I) INTRODUCE THE PROBLEM

1) DESCRIBE THE PROBLEM

Nowadays, E-sport is more popular and a lot of tournaments are organized in many countries around the world, attract millions of viewers. **League of Legends Champions Korea (LCK)** is the primary competition for League of Legends esports in South Korea. Contested by ten teams, the league runs two seasons per year (Spring and Summer). The LCK has been long considered one of the strongest League of Legends leagues in the world, with the game's World Championship having been won by teams from the league from 2013 through 2017. With the great attraction from the league, we decided to create a database to manage the LCK tournament.

Format:

- The tournament has 10 teams, competing 2 season per year (Spring and Summer).
- In regular season, 10 teams compete in a round robin group stage, matches are best of three and top 6 teams qualify for Playoffs.
- In Playoffs, top 2 teams play from the semi-final, the other four start from the quarter-finals.
  All matches in Playoffs are best of five.
- The winner of the Spring Season qualify for the Mid-Season Invitational.
- The winner of the Summer Season (seed 1), the team with the most championship points (seed 2), and the winner of the regional qualifier (seed 3) qualify for the World Championship.

Request:

- View player information, team information.
- View organize team (Teachnical, referee..).
- View matches, result, point of every team.
- View winning team, MVP.

2) MANAGEMENT OBJECTIVES

- ✓ Manage player and team.
- ✓ Manage every matches of tournament.
- ✓ Manage matches, time, result.
- ✓ Manager organize team.

Important output

- ➢ Information of all player and team.
- ➢ Result of every matches in tournament.
- ➢ Information of team organize for each match.

II) ENTITY – RELATIONSHIP – ER

1) DIFINITION ENTITY – ATTRIBUTE

Base on the problem description and management objectives, we can present several entities and attributes of the entity as follow:

- Player: **ID**, **TeamID, RoleID**, Name, Country.
- Role: **ID**, Description.
- Match: **ID**, **Team1, Team2**, Team1Result, Team2Result, MatchMVP, Date.
- Team: **Name**, Coach.
- Organize: **OrganizeID, MatchID, TakecareID,** Technican, RefereeName, MCName
- Take care: **ID, OrganizeID**, Position

2) SET-UP ENTITY – RELATIONSHIP

* Some symbols used in the model

- Key / identifier attribute

- Attribute description / description

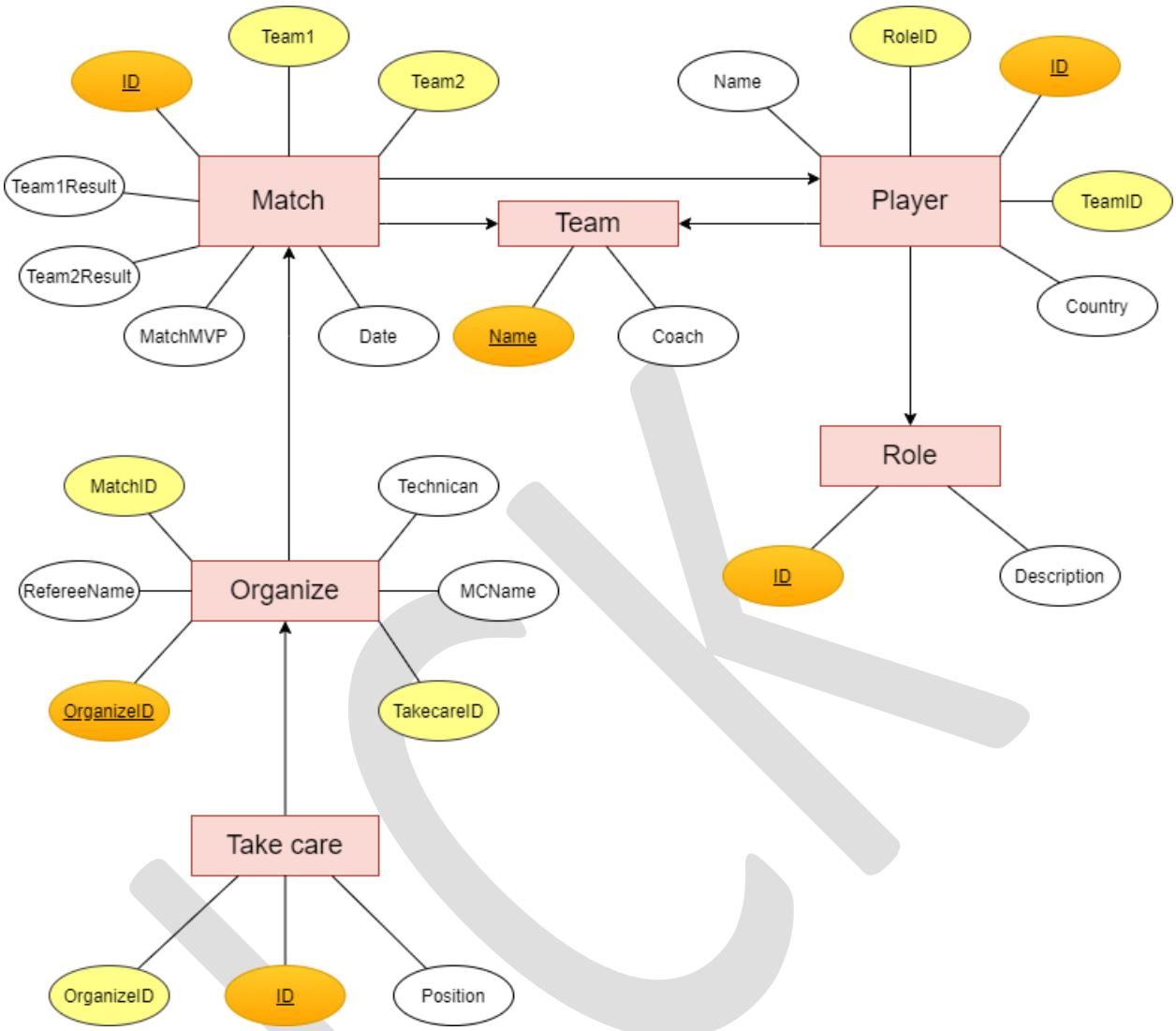
- Entity

- Weak entity

- Relationship

- Connectivity (force) = 1

- Connectivity = N



LINK: HTTPS://DRIVE.GOOGLE.COM/FILE/D/1IKP_4ACUC-PDL0CU-L5UWHSAHNEQTQZN/VIEW?USP=SHARING

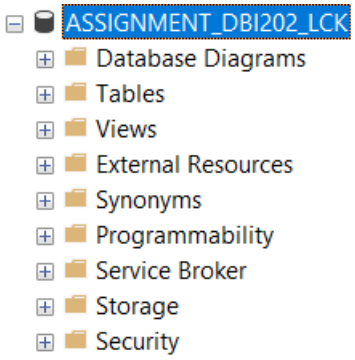
III) DATA DICTIONARY

1) DATABASE AND TABLE

A. CREATE DATABASE **ASSIGNMENT_DBI202_LCK**

--create database

CREATE DATABASE ASSIGNMENT_DBI202_LCK



B. CREATE TABLE PLAYER

Column Name	Data Type	Key/ Index/ Constraint
ID	Nvarchar(30)	Primary key
Name	Nvarchar(30)	Not null
Role	Nvarchar(10)	Not null, FOREIGN KEY(RoleID) REFERENCES dbo.Role(ID)
Country	Nvarchar(10)	Not null
Team	Nvarchar(10)	FOREIGN KEY(TeamID) REFERENCES dbo.Team(ID)

Code:

```
--create table player
CREATE TABLE Player
(
	ID NVARCHAR(15),
	[Name] NVARCHAR(30) not null,
	RoleID NVARCHAR(10) not null,
	Country NVARCHAR(10) not null,
	TeamID NVARCHAR(10),

	PRIMARY KEY(ID),
	FOREIGN KEY(RoleID) REFERENCES dbo.Role(ID),
	FOREIGN KEY(TeamID) REFERENCES dbo.Team(ID)
)
```

Example:

GuardID	Name	Role	Country	TeamID
5kid	Park Jeong-hyeon	Bot Laner	KR	KT
Arthur	Park Mi-reu	Jungler	KR	HLE
Bang	Bae Jun-sik	Bot lane	KR	AF

C. CREATE TABLE ROLE

Column Name	Data Type	Key/ Index/ Constraint
ID	Nvarchar(10)	Primary key
Description	Text	Not null

Code:

```
--create table role
CREATE TABLE [Role]
(
	ID NVARCHAR(10) not null,
	[Description] TEXT not null

	PRIMARY KEY(ID)
)
```

Example:

ID	Description
Top Laner	
Jungler	
Mid Laner	
Bot Laner	
Support	

D.CREATE TABLE MATCH

Column Name	Data Type	Key/ Index/ Constraint
ID	Int	Primary key
Team 1	Nvarchar(10)	Not null, FOREIGN KEY(Team1) REFERENCES dbo.Team(ID)
Team 2	Nvarchar(10)	Not null, FOREIGN KEY(Team2) REFERENCES dbo.Team(ID),
Team 1 Result	Int	Not null
Team 2 Result	Int	Not null
Date	Date	
MatchMVP	Nvarchar(15)	Not null, FOREIGN KEY(MatchMVP) REFERENCES dbo.Player(ID)

Code:

```
CREATE TABLE [Match]
(
	ID INT,
	Team1 NVARCHAR(10) NOT NULL,
	Team2 NVARCHAR(10) NOT NULL,
	Team1Result INT,
	Team2Result INT,
	[Date] DATE,
	MatchMVP NVARCHAR(15),

	PRIMARY KEY(ID),
	FOREIGN KEY(Team1) REFERENCES dbo.Team(ID),
	FOREIGN KEY(Team2) REFERENCES dbo.Team(ID),
	FOREIGN KEY(MatchMVP) REFERENCES dbo.Player(ID)
)
```

Example:

ID	Team 1	Team 2	Team 1 result	Team 2 result	Date	Match MVP
1	KT	T1	0	2	1/9/2021	Hoit
2	NS	DRX	1	2	1/7/2021	Effort
3	HLE	NS	1	2	1/5/2021	Dove

E. CREATE TABLE TEAM

Column Name	Data Type	Key/ Index/ Constraint
ID	Nvarchar(10)	Primary key
Coach	Nvarchar(10)	Not null

Code:

```
--create table manager team
CREATE TABLE Team
(
```

```
    ID NVARCHAR(10),
    Coach NVARCHAR(10)

    PRIMARY KEY(ID)
)
```

Example:

ID	Coach
AF	8571
BRO	55141
DRX	87469

F. CREATE TABLE ORGANIZE

Column Name	Data Type	Key/ Index/ Constraint
OrganizeID	Int	Primary key
MatchID	Int	FOREIGN KEY(MatchID) REFERENCES dbo.Match(ID)
TakecareID	Int	
RefereeName	Nvarchar(20)	
Technican	Nvarchar(20)	
MCName	Nvarchar(20)	

Code:

```
--create table register
CREATE TABLE Organize
(

    OrganizeID INT,
    MatchID INT,
    TakecareID INT,
    RefereeName NVARCHAR(10),
    Technican NVARCHAR(20),
    MCName NVARCHAR(30)

    PRIMARY KEY(OrganizeID)
    FOREIGN KEY(MatchID) REFERENCES dbo.Match(ID),
)
```

Example:

OrganizeID	MatchID	TakecareID	RefereeName	Technican	MC name
1	69	43	Melvin	LI 39 11 60 I	Salvatore0
2	83	99	Harvey	OA 35 40 14 S	Larry
3	4	52	Malcolm	QM 72 75 59 K	Marshall

G. CREATE TABLE TAKE CARE

Column Name	Data Type	Key/ Index/ Constraint
ID	Int	Primary key
Position	Nvarchar(20)	
OrganizeID	Int	FOREIGN KEY(OrganizeID) REFERENCES dbo.Organize(OrganizeID)

Code:

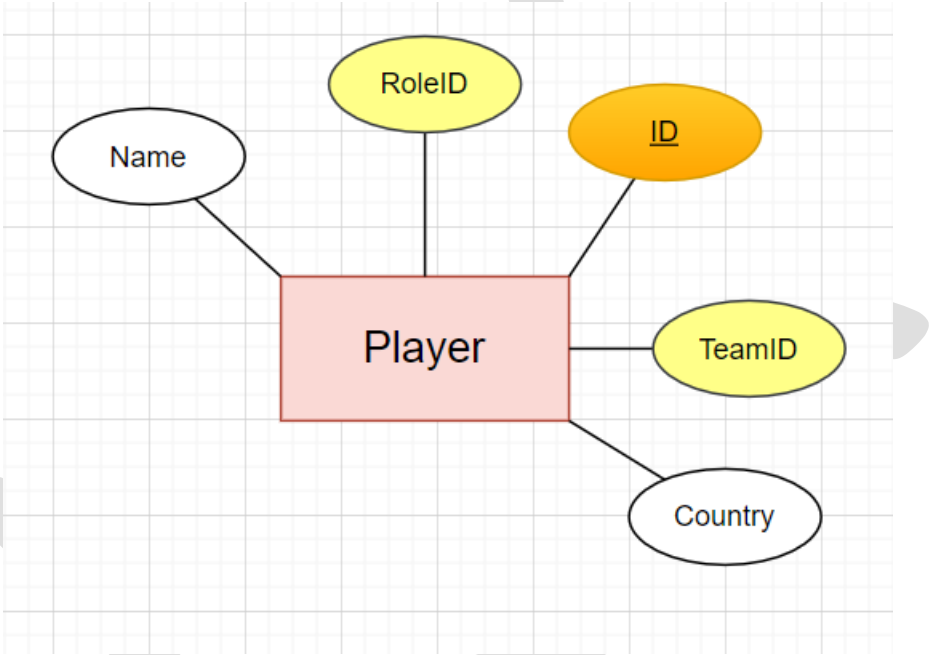
```
--create table items
CREATE TABLE [Take care]
(
	ID INT,
	Position NVARCHAR(20),
	OrganizeID INT,

	PRIMARY KEY(ID),
	FOREIGN KEY(OrganizeID) REFERENCES
dbo.Organize(OrganizeID)
)
```

Example:

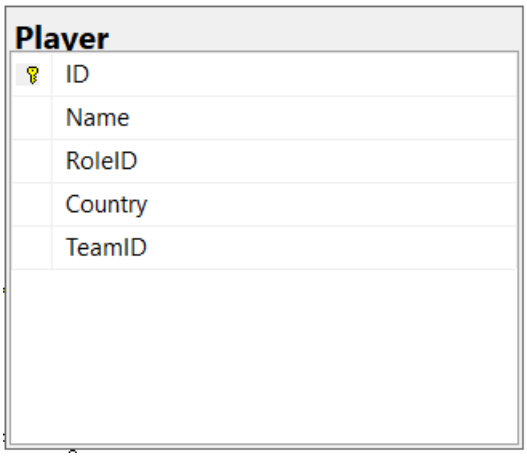
ID	Position	OrganizeID
1	Technical	5
2	Prepaid Customer	6
3	Prepaid Customer	17

IV. ENTITY RELATIONSHIP DIAGRAM (ERD)

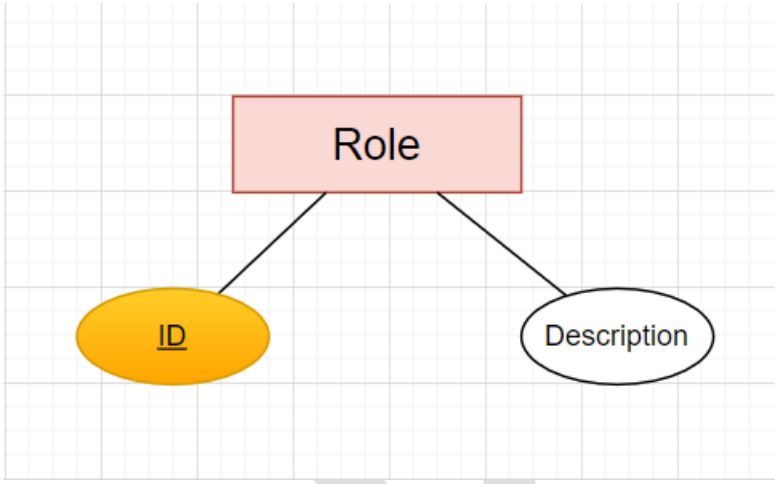
A. PLAYER



This is the Player entity. Entity has 5 attributes. The ID attribute is the primary key of this entity. Each player has a Name, Role, Team and Country. In which, Role is RoleID, Team is TeamID.

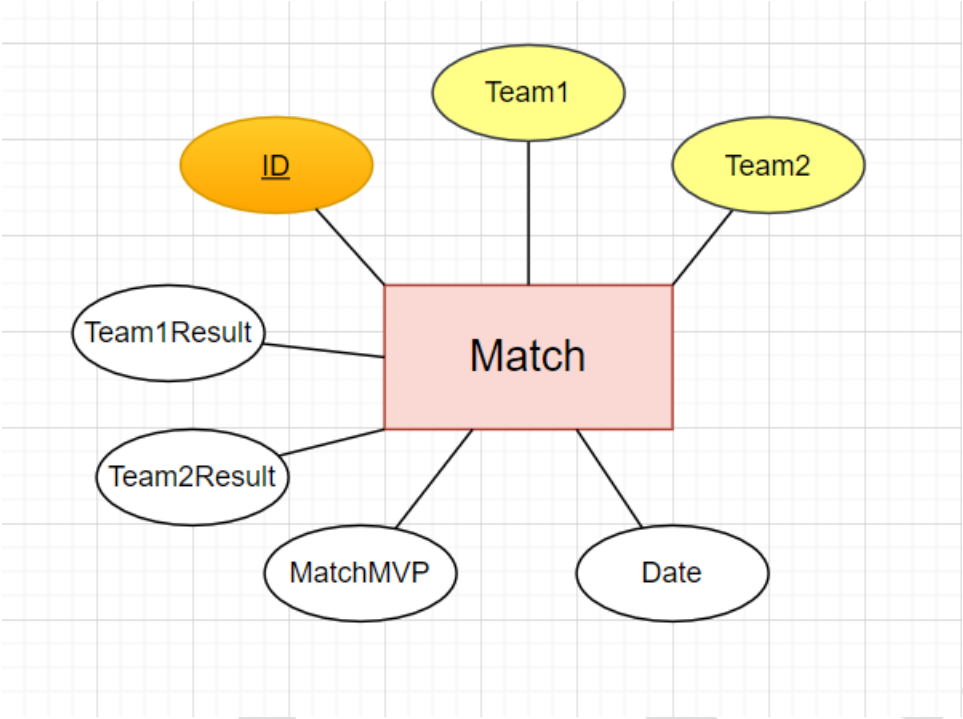


B. ROLE

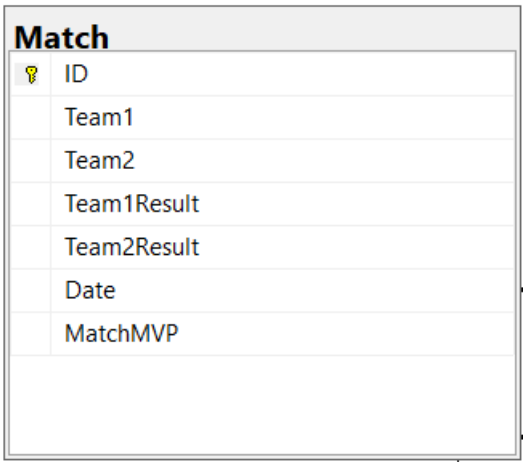


This is the Role entity. Entity has 2 properties. The ID attribute is the primary key of this entity. Each role has a description describing that role.

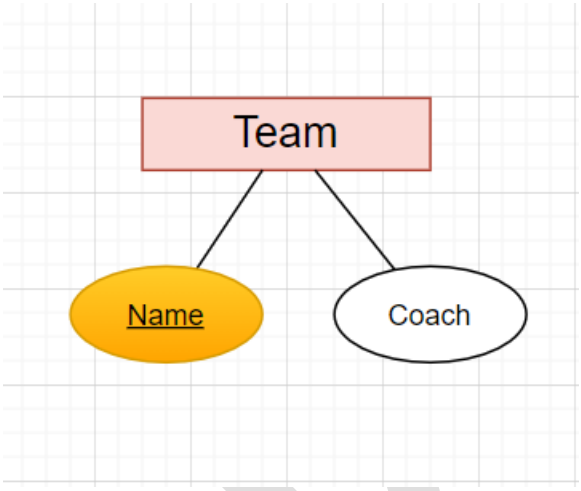
C. MATCH



Two teams play against each other called a match. It knows the names of two teams that play against each other like Team1 and Team2. The ID is the primary key to know which match it is and Day indicates what day the match will take place. Finally, Team1Result and Team2Result are the number of games won by the two teams after the match.

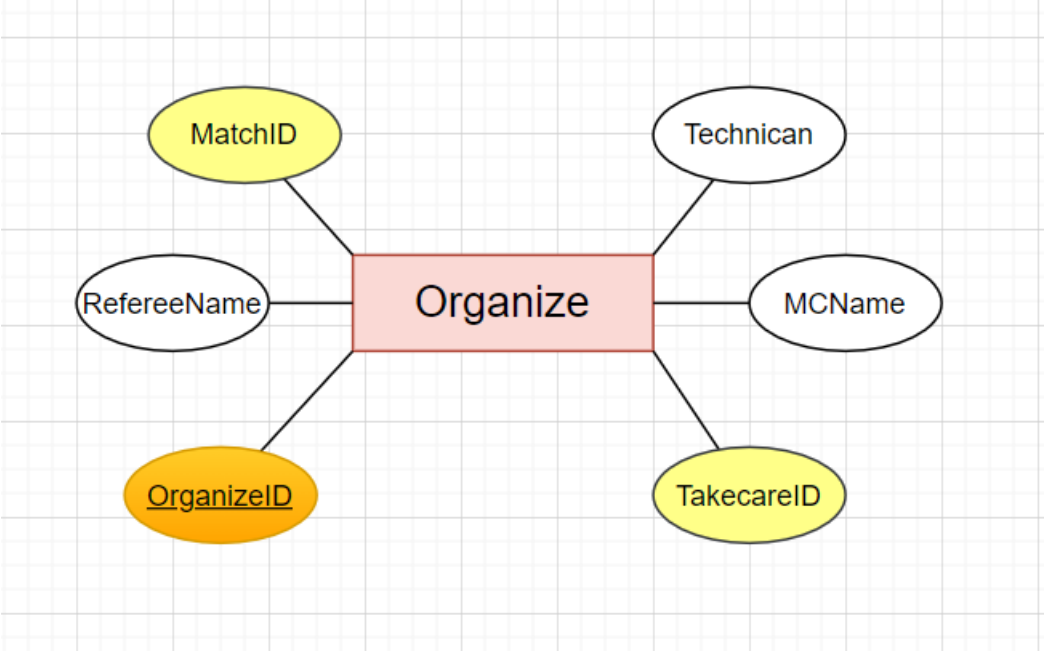


D. TEAM

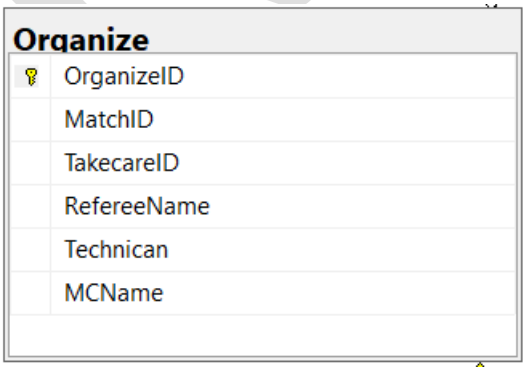


The Team entity has 2 properties. Name is the name of the team and is the primary key. Each team will have a Coach.

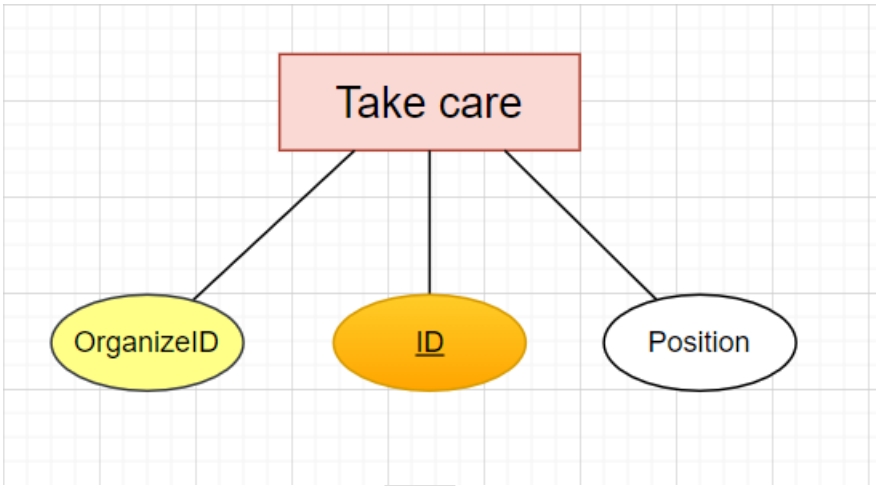
E. ORGANIZE



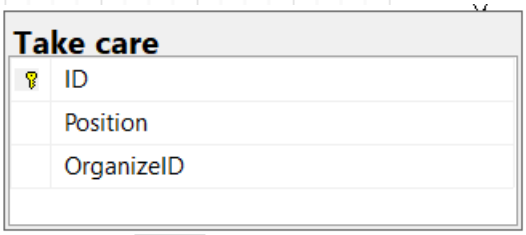
The Organize entity has 6 properties. Each organization of a match needs technicians, referees, MCs, Take Care. With OrganizeID as the primary key.



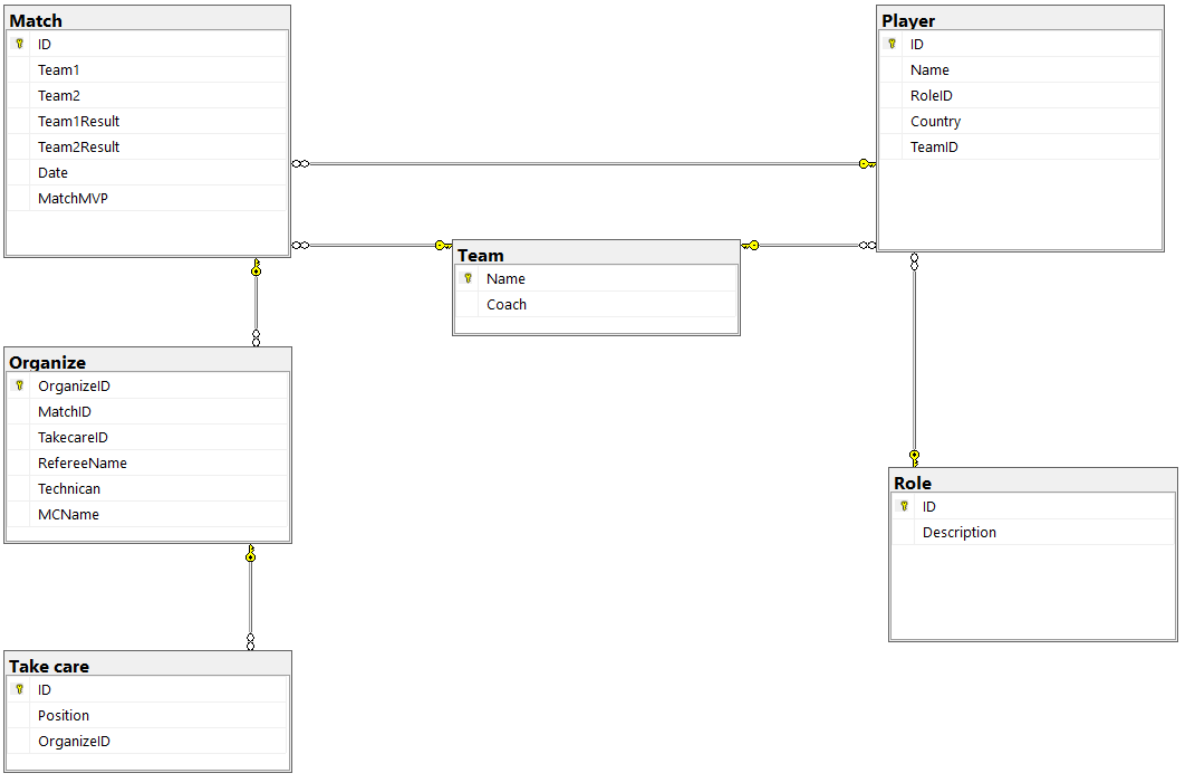
F. TAKE CARE



Each Take Care squirrel has a Position. Take Care entity has 3 properties where ID is primary key which is the name of the caregiver and the OrganizeID indicates which organization the caregiver works for.



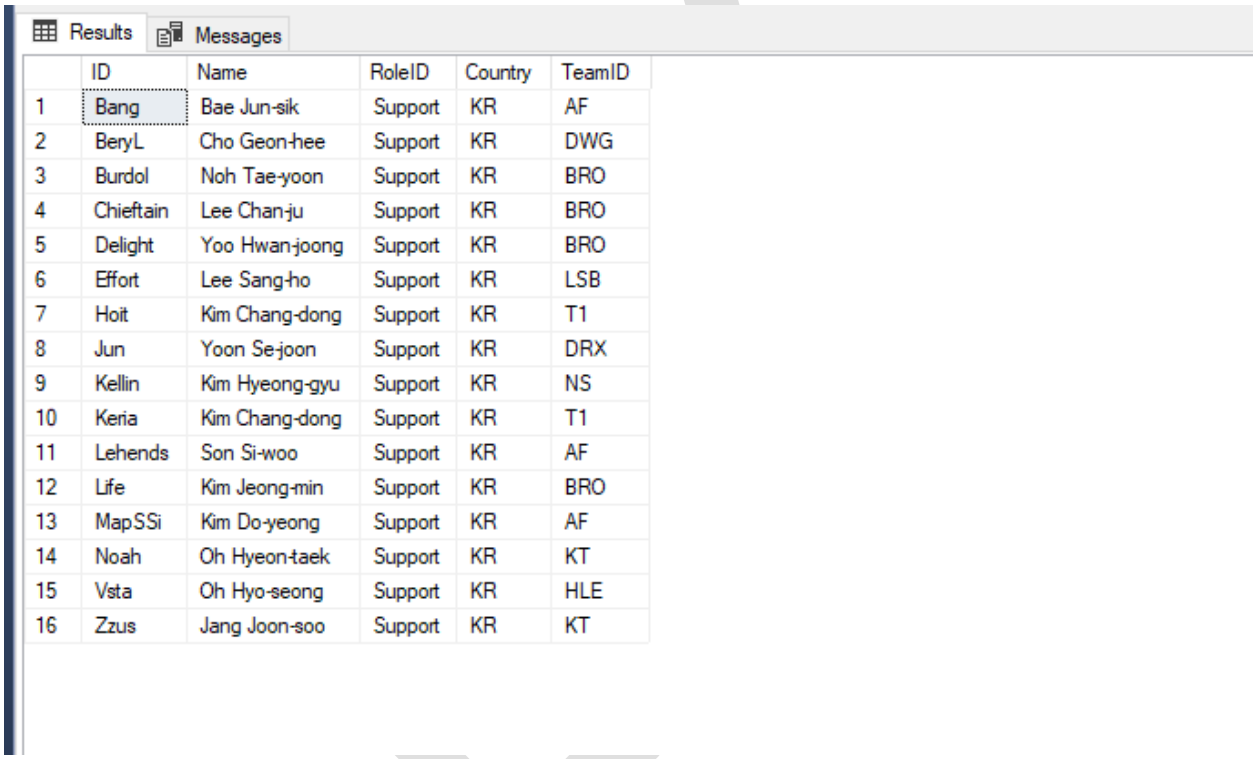
G. FULL DIAGRAM



V. SQL COMMAND

***SETUP QUERY**

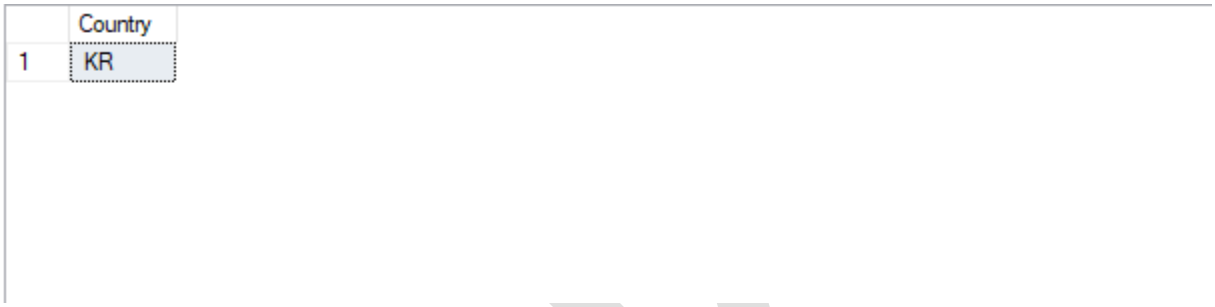
```
-- lay ra cac thong tin bang Player khi RoleID bang
support
SELECT * from Player
   WHERE ROLEID = 'SUPPORT'
```



Results | Messages

	ID	Name	RoleID	Country	TeamID
1	Bang	Bae Jun-sik	Support	KR	AF
2	BeryL	Cho Geon-hee	Support	KR	DWG
3	Burdol	Noh Tae-yoon	Support	KR	BRO
4	Chieftain	Lee Chan-ju	Support	KR	BRO
5	Delight	Yoo Hwan-joong	Support	KR	BRO
6	Effort	Lee Sang-ho	Support	KR	LSB
7	Hoit	Kim Chang-dong	Support	KR	T1
8	Jun	Yoon Se-joon	Support	KR	DRX
9	Kellin	Kim Hyeong-gyu	Support	KR	NS
10	Keria	Kim Chang-dong	Support	KR	T1
11	Lehends	Son Si-woo	Support	KR	AF
12	Life	Kim Jeong-min	Support	KR	BRO
13	MapSSi	Kim Do-yeong	Support	KR	AF
14	Noah	Oh Hyeon-taek	Support	KR	KT
15	Vsta	Oh Hyo-seong	Support	KR	HLE
16	Zzus	Jang Joon-soo	Support	KR	KT

```
-- Các tuyển thủ đến từ các quốc gia nào?

SELECT DISTINCT Country FROM dbo.Player
```

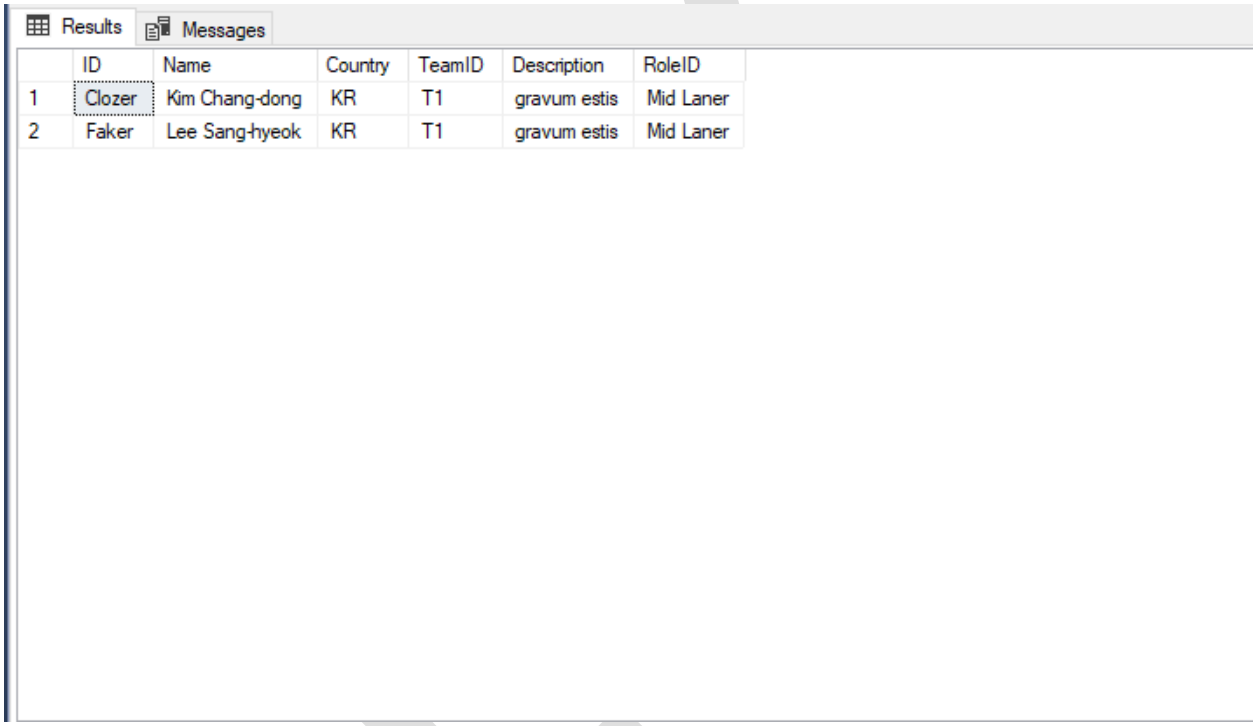


	Country
1	KR

```
-- lấy ra thông tin takecare và MC trong các trận đấu diễn ra trong 5 trận đầu tiên của giải đấu
SELECT TOP(5) o.MCName, o.TakecareID, m.Date
from Organize o  inner join Match m
on o.OrganizeID = m.ID
ORDER BY m.Date ASC
```

	MCName	TakecareID	Date
1	Jaime17	28	2021-01-01
2	Candy018	35	2021-01-02
3	Hilary	33	2021-01-02
4	Alan4	6	2021-01-03
5	Jody5	54	2021-01-03

```sql
-- Viet mot cau truy van lay ra thong tin (ID, Name, Country, Team, Description, Role) cu tuyen thu den tu team T1 và Role bat dau bang M
select p.ID , p.Name, p.Country, p.TeamID, r.Description , p.RoleID
from Role r inner join Player p
on r.ID = p.RoleID
where p.TeamID = 'T1' and p.RoleID like 'M%'
```



Results | Messages

	ID	Name	Country	TeamID	Description	RoleID
1	Clozer	Kim Chang-dong	KR	T1	gravum estis	Mid Laner
2	Faker	Lee Sang-hyeok	KR	T1	gravum estis	Mid Laner

```
-- Lấy ra thông tin trận đấu vào ngày cuối cùng của
diễn ra giải đấu


select *
from Match
where Date in
(
 select top 1 Date
 from Match
 order by Date DESC
)
```

	ID	Team1	Team2	Team1Result	Team2Result	Date	MatchMVP
1	51	BRO	GEN.G	2	2	2021-02-28	Noah
2	78	HLE	LSB	2	2	2021-02-28	BeryL
3	80	BRO	T1	1	2	2021-02-28	Malrang

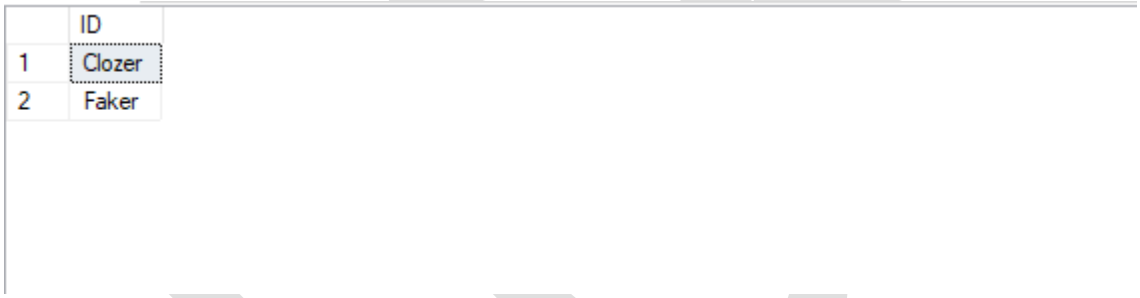
```
-- Tạo view tính tổng số trận thắng của đội T1 trong cả giải đấu


CREATE VIEW [totalWinGames] AS
SELECT DISTINCT
(
    SELECT SUM(M.Team1Result)
    FROM dbo.Match M
    WHERE M.Team1 = 'T1'
)
+
(
    SELECT SUM(M.Team2Result)
    FROM dbo.Match M
    WHERE M.Team2 = 'T1'
)
AS 'Total Win Games'
FROM dbo.Match

SELECT * FROM totalWinGames
```

	Total Win Games
1	25

```
--Lấy ra thông tin của tuyển thủ (Name , RoleID, Country) và số lượt MVP trong đó số lượt MVP cao nhất giải đấu
select p.ID,p.Name , p.RoleID, p.Country,
count(m.MatchMVP) as 'Number of MVP'
from Match m inner join Player p
on p.ID = m.MatchMVP
Group by p.ID, p.Name , p.RoleID, p.Country
Having count(m.MatchMVP) >= All
(
    SELECT  count(m.MatchMVP) as 'Number of MVP'
    FROM Match m inner join Player p
    ON p.ID = m.MatchMVP
    GROUP by p.ID
)
```

	ID	Name	RoleID	Country	Number of MVP
1	Delight	Yoo Hwan-joong	Support	KR	5
2	Dove	Kim Jae-yeon	Bot Laner	KR	5
3	Hoit	Kim Chang-dong	Support	KR	5

```
-- nhập vào tên 1 đội, in ra người đi đường giữa của đội đó
CREATE PROCEDURE midLanerOfTeam @teamID NVARCHAR(10)
AS
BEGIN
        SELECT P.ID FROM Player P
        WHERE P.TeamID = @teamID AND P.RoleID = 'Mid Laner'
END

EXEC dbo.midLanerOfTeam @teamID = N'T1' -- nvarchar(10)
```



	ID
1	Clozer
2	Faker

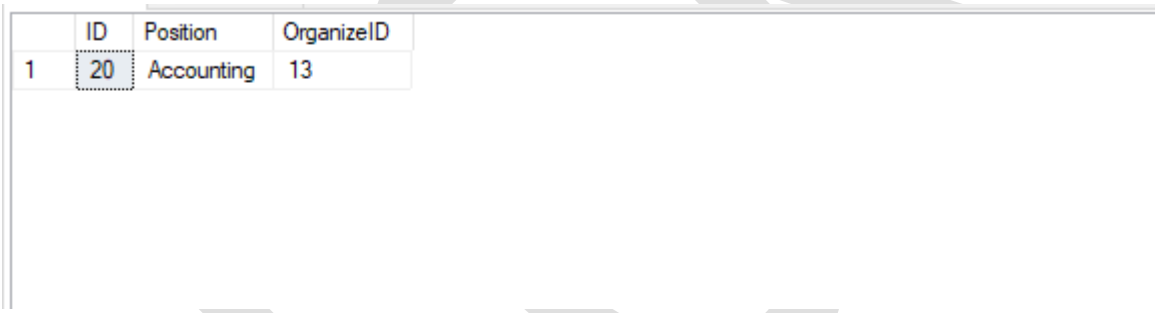
```
-- Tìm trận đấu của 1 đội tuyển theo ngày
CREATE PROCEDURE findScheduleTeam @teamID
NVARCHAR(10), @date DATE
AS
BEGIN
    SELECT m.ID,m.Team1, m.Team2, m.Date FROM
dbo.Match M
    WHERE (m.Team1 = @teamID OR m.Team2 = @teamID)
AND m.Date = @date
END

EXEC dbo.findScheduleTeam @teamID = N'T1',        --
nvarchar(10)
                          @date = '2021-01-28' --
date
```

	ID	Team1	Team2	Date
1	5	T1	DRX	2021-01-28

```sql
-- Tạo trigger khi insert 1 player sẽ hiện thị ra
team và coach của player đó
CREATE trigger Tr1
on Player
for insert
as
begin
    Select i.name,t.ID AS 'Team', t.Coach from
    inserted i
    inner join Team t on i.TeamID=t.ID
 END


-- Test
INSERT INTO dbo.Player
(
    ID,
    Name,
    RoleID,
    Country,
    TeamID
)
VALUES
(   N'Bo Trần', -- ID - nvarchar(15)
    N'Trần Đức Bo', -- Name - nvarchar(30)
    N'Support', -- RoleID - nvarchar(10)
    N'Việt Nam', -- Country - nvarchar(10)
    N'LSB'  -- TeamID - nvarchar(10)
    )
```

	name	Team	Coach
1	Trần Đức Bo	LSB	11805

```
-- Hiện thị ra thông tin Take care đã bị xóa
CREATE TRIGGER Tr2
ON [Take care]
AFTER DELETE
AS
BEGIN
    SELECT * FROM deleted
 END


DELETE FROM dbo.[Take care]
 WHERE ID = 20
```



	ID	Position	OrganizeID
1	20	Accounting	13

THE END