Marmara University – Faculty of Engineering – Department of Computer Engineering

Fall 2021 – CSE3055 Database Systems
Homework #3

Consider the *Turkish Super League* database accompanied with this homework.

Player (*PlayerID*: int, FirstName: nvarchar(25), LastName: nvarchar(25), Nationality: varchar(25), Birthdate: smalldatetime, Age: smallint, Position: varchar(25))

Team (*TeamID*: int, Name: nvarchar(50), City: nvarchar(25))

PlayerTeam (*PlayerID*: int, *TeamID*: int, *Season*: varchar(5))

Match (*MatchID*: int, HomeTeamID: int, VisitingTeamID: int, DateOfMatch: smalldatetime, Week: tinyint)

Goals (*MatchID*: int, *PlayerID*: int, IsOwnGoal: bit, *Minute*: tinyint)

Notes:

- Table *Match* stores data only for season 2013-2014.
- Table *Goals* stores data only for season 2013-2014.

6) [100 pts] Implement a stored procedure *sp_GetStandingsUpToDate (aDate)* such that

exec sp_GetStandingsUpToDate (aDate) computes and shows the standings table, same as in the following figure, up to the date *aDate* (inclusive).

Calling with any invalid date causes an error with a message "Invalid date!" All transactions that have been done will be rolled back and stop doing further operations.

	Pos	Team Name	GP	W	T	L	GF	GA	GD	Pts
1	1	Fenerbahçe	34	23	5	6	72	33	39	74
2	2	Galatasaray	34	18	11	5	58	33	25	65
3	3	Beşiktaş	34	17	11	6	53	32	21	62
4	4	Trabzonspor	34	14	11	9	53	39	14	53
5	5	Sivasspor	34	16	5	13	60	55	5	53
6	6	Kasımpaşa	34	13	12	9	56	38	18	51
7	7	Kardemir Karabükspor	34	13	10	11	31	35	-4	49
8	8	Bursaspor	34	12	10	12	40	45	-5	46
9	9	Çaykur Rizespor	34	11	12	11	40	42	-2	45
10	10	Gençlerbirliği	34	13	6	15	39	43	-4	45
11	11	Akhisar Belediye	34	12	8	14	44	55	-11	44
12	12	Torku Konyaspor	34	11	9	14	48	44	4	42
13	13	Eskişehirspor	34	10	12	12	33	35	-2	42
14	14	Kayseri Erciyesspor	34	10	7	17	34	50	-16	37
15	15	Gaziantepspor	34	10	7	17	38	57	-19	37
16	16	Elazığspor	34	10	4	20	38	61	-23	34
17	17	Medical Park Antalyaspor	34	6	12	16	33	47	-14	30
18	18	Kayserispor	34	7	8	19	30	56	-26	29

Notes:

- Invalid date: any date not between 2013-08-16 and 2014-07-31.
- The order of the table: Firstly, Pts; secondly, GT; thirdly, GF.
- Pos will be automatically generated according to the order. Study on ranks.
- GP (Games Played): the number of matches that a team has played.
- W (Wins): the number of wins of a team in all games that have been played.

- T (Ties/Deuce): the number of ties of a team in all games that have been played.
- L (Losts): the number of losts of a team in all games that have been played.
- GF (Goals For/Forward): the number of goals scored of a team in all games that have been played, including own goals of the other team.
- GA (Goals Against): the number of goals scored by the other teams in all games that have been played, including own goals of the team.
- GD (Goals Difference): GF-GA.
- Pts (Points): the points accumulated by a team. For each win, a team gets 3 points; for each tie, a team gets 1 point; and, for each lost, a team gets 0 points.

```
Create Procedure sp_GetStandingsUpToDate
  @aDate smalldatetime
As
Begin
--homework 6
  If (@aDate<'20130816' or @aDate>'20140731')
  Begin
    raiserror ('Invalid date!', 10, 1)
    --rollback tran
  End
  Else
  Begin
    Select Rank() Over(Order By Sum(dt.hPoints) desc, Sum(dt.hGoalsFA) desc, Sum(dt.hGoals)
desc) Pos,
      t.Name "Team Name", Count(*) GP, Sum(dt.hWin) W, Sum(dt.hTie) T, Sum(dt.hLost) L,
      Sum(dt.hGoals) GF, Sum(dt.vGoals) GA,
      Sum(dt.hGoalsFA) GD, Sum(dt.hPoints) Pts
    From
    (
    (Select 'h' DefOf, h.hm MatchID, h.ht HomeTeamID,
      h.hgw+v.vga hGoals, v.vgw+h.hga vGoals,
      Iif(h.hgw+v.vga > v.vgw+h.hga, 1, 0) hWin,
      Iif(h.hgw+v.vga = v.vgw+h.hga, 1, 0) hTie,
      Iif(h.hgw+v.vga < v.vgw+h.hga, 1, 0) hLost,
      ((h.hgw+v.vga) - (v.vgw+h.hga)) hGoalsFA,
      Iif(h.hgw+v.vga > v.vgw+h.hga, 3, Iif(h.hgw+v.vga = v.vgw+h.hga, 1, 0)) hPoints
    From
    (Select m.MatchID hm, m.HomeTeamID ht, Count(g.PlayerID) hgw, Count(g2.PlayerID) hga
    From Match m inner join PlayerTeam pt
      on (m.HomeTeamID=pt.TeamID and pt.Season='13-14')
      left outer join Goals g
      on (pt.PlayerID=g.PlayerID and m.MatchID=g.MatchID and g.IsOwnGoal=0)
      left outer join Goals g2
      on (pt.PlayerID=g2.PlayerID and m.MatchID=g2.MatchID and g2.IsOwnGoal=1)
    Where m.DateOfMatch<=@aDate
    Group By m.MatchID, m.HomeTeamID
    ) h,
    (Select m.MatchID vm, m.VisitingTeamID vt, Count(g.PlayerID) vgw, Count(g2.PlayerID)
vga
    From Match m inner join PlayerTeam pt
      on (m.VisitingTeamID=pt.TeamID and pt.Season='13-14')
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    left outer join Goals g
    on (pt.PlayerID=g.PlayerID and m.MatchID=g.MatchID and g.IsOwnGoal=0)
    left outer join Goals g2
    on (pt.PlayerID=g2.PlayerID and m.MatchID=g2.MatchID and g2.IsOwnGoal=1)
Where m.DateOfMatch<=@aDate
Group By m.MatchID, m.VisitingTeamID
) v
Where h.hm=v.vm
)
Union
(Select 'v' DefOf, h.hm MatchID, v.vt VisitingTeamID,
    v.vgw+h.hga vGoals, h.hgw+v.vga hGoals,
    Iif(v.vgw+h.hga > h.hgw+v.vga, 1, 0) vWin,
    Iif(v.vgw+h.hga = h.hgw+v.vga, 1, 0) vTie,
    Iif(v.vgw+h.hga < h.hgw+v.vga, 1, 0) vLost,
    ((v.vgw+h.hga) - (h.hgw+v.vga)) vGoalsFA,
    Iif(v.vgw+h.hga > h.hgw+v.vga, 3, Iif(v.vgw+h.hga = h.hgw+v.vga, 1, 0)) vPoints
From
(Select m.MatchID hm, m.HomeTeamID ht, Count(g.PlayerID) hgw, Count(g2.PlayerID) hga
From Match m inner join PlayerTeam pt
    on (m.HomeTeamID=pt.TeamID and pt.Season='13-14')
    left outer join Goals g
    on (pt.PlayerID=g.PlayerID and m.MatchID=g.MatchID and g.IsOwnGoal=0)
    left outer join Goals g2
    on (pt.PlayerID=g2.PlayerID and m.MatchID=g2.MatchID and g2.IsOwnGoal=1)
Where m.DateOfMatch<=@aDate
Group By m.MatchID, m.HomeTeamID
) h,
(Select m.MatchID vm, m.VisitingTeamID vt, Count(g.PlayerID) vgw, Count(g2.PlayerID) vga
From Match m inner join PlayerTeam pt
    on (m.VisitingTeamID=pt.TeamID and pt.Season='13-14')
    left outer join Goals g
    on (pt.PlayerID=g.PlayerID and m.MatchID=g.MatchID and g.IsOwnGoal=0)
    left outer join Goals g2
    on (pt.PlayerID=g2.PlayerID and m.MatchID=g2.MatchID and g2.IsOwnGoal=1)
Where m.DateOfMatch<=@aDate
Group By m.MatchID, m.VisitingTeamID
) v
where h.hm=v.vm
)
) dt
left outer join Team t
on dt.HomeTeamID=t.TeamID
Group By t.TeamID, t.Name
Order By Pts desc, GD desc, GF desc
    End
End
```