DSE201 FINAL

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Change log:

Prob 1:

#9: changed to true

Prob 2:

#4: among the teams that are undefeated only by teams that are scoreboard leaders, the query now also includes teams that have not played any games

Problem 1:

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Problem 2:

This is the DDL I used:

CREATE TABLE teams

(

"name" varchar(30) primary key NOT NULL,

coach varchar(30) NOT NULL

);

create table matches

( hTeam varchar(30) references teams(name) NOT NULL check (hTeam != vTeam),

vTeam varchar(30) references teams(name) NOT NULL check (hTeam != vTeam),

hScore integer NOT NULL,

vScore integer NOT NULL,

primary key(hTeam, vTeam)

);

Question 1:

Count the victories of team ”San Diego Sockers”. Return a single column

called ”wins”.

select count(\*) as wins

from (

select hTeam from matches where hTeam = 'San Diego Sockers' and hScore > vScore

union all

select vTeam from matches where vTeam = 'San Diego Sockers' and vScore > hScore) tt

Question 2:

For each team, return its name and total number of points earned. Output

a table with two columns: name and points.

select tt.team as "Name", SUM(tt.Points) as Points from (

select hTeam as team, case

when hScore > vScore then 2

when hScore = vScore then 1

end as Points

from matches

union all

select vTeam as team,

case when hScore < vScore then 3

when hScore = vScore then 1

end as Points

from matches

) tt

group by tt.team

order by points DESC

Question 3:

Return the names of undefeated coaches (that is, coaches whose teams

have lost no match). Output a table with a single column called ”coach”.

select teams.coach from teams except

select teams.coach from teams join (

select tt.team as "Name", Count(tt.outcome) as Losses from (

select hTeam as team,

case when hScore > vScore then 'W'

when hScore = vScore then 'T'

when hScore < vScore then 'L'

end as outcome

from matches

union all

select vTeam as team,

case when hScore < vScore then 'W'

when hScore = vScore then 'T'

when hScore > vScore then 'L'

end as outcome

from matches

) tt

where tt.outcome = 'L'

group by tt."team"

order by tt."team"

) as tt1

on teams."name" = tt1."Name"

Question 4:

Return the teams defeated only by the scoreboard leaders (i.e. ”if defeated,

then the winner is a leader”). The leaders are the teams with the highest

number of points (several leaders can be tied). Output a single column called

”name”.

Step 1: create scoreboard leaders view

create view scoreboard\_leaders as

select tbl."Name", tbl.Points from

(select tt.team as "Name", SUM(tt.Points) as Points from (

select hTeam as team, case

when hScore > vScore then 2

when hScore = vScore then 1

end as Points

from matches

union all

select vTeam as team,

case when hScore < vScore then 3

when hScore = vScore then 1

end as Points

from matches

) tt

group by tt.team

order by points DESC ) as tbl

where tbl.Points = (select max(tbl2.Points) from (select tt.team as "Name", SUM(tt.Points) as Points from (

select hTeam as team, case

when hScore > vScore then 2

when hScore = vScore then 1

end as Points

from matches

union all

select vTeam as team,

case when hScore < vScore then 3

when hScore = vScore then 1

end as Points

from matches

) tt

group by tt.team

order by points DESC ) as tbl2)

Step 2: among the ones who lost, filter the ones who have lost with more teams than the ones selected in step 1

select w."name" from

(

select loserstoleader.losingTeam as "name"

from

(select vTeam as losingTeam

from matches

where hScore > vScore

union all

select hTeam as losingTeam

from matches

where hScore < vScore

except

select tt.losingTeam as "name" from (

select vTeam as losingTeam, hTeam as winningTeam

from matches

where hScore > vScore

union all

select hTeam as losingTeam, vteam as winningTeam

from matches

where hScore < vScore ) as tt

where tt.winningTeam not in (select "Name" from scoreboard\_leaders)

) as loserstoleader

where loserstoleader.losingTeam not in (select "Name" from scoreboard\_leaders)

) as w

union

select tms."name" from teams tms

where tms."name" NOT IN (Select hTeam from matches union select vTeam from matches)

Question 5:

1.

I create a multicolumn index on hScore and vScore to access and make the score comparisons more quickly:

create index score on matches(hScore, vScore)

2.

My query is accessing the hScore and vScore simultaneously in order to assign points so as above I like the multicolumn index on score and vScore:

create index score on matches(hScore, vScore)

3.

Just as above, a multicolumn index on hScore and vScore. I also added an index on teams.coach with “create index coach on teams(coach)” but that probably doesn’t help so much since teams has a primary key on name and although there is no uniqueness constraint on the coach, it is unlikely that there be any duplicates in the coach column (however it is possible).

4.

Again just the multicolumn index on hScore and vScore

Question 6:

create trigger trig\_hscore as

after insert into matches

for each row

when new.hScore is not null

begin

update scoreboard

set hScore = new.hScore

where hTeam = new.hTeam and vTeam = new.vTeam

end

create trigger trig\_vscore as

after insert into matches

for each row

when new.vScore is not null

begin

update scoreboard

set vScore = new.vScore

where hTeam = new.hTeam and vTeam = new.vTeam

end