Lab 6,7 & 8:Database Management System

Normalization and Schema Refinement

Student id: 201912029-32

1) In the match with match id 201901, list the innings , over and runs scored where at most 7 runs were scored. Order the over in decreasing order of runs scored. Resolve ties by listing the over in increasing order.

WITH derived4 AS (SELECT match_id, over, innings, total_run AS runs FROM scoreboard_201901)
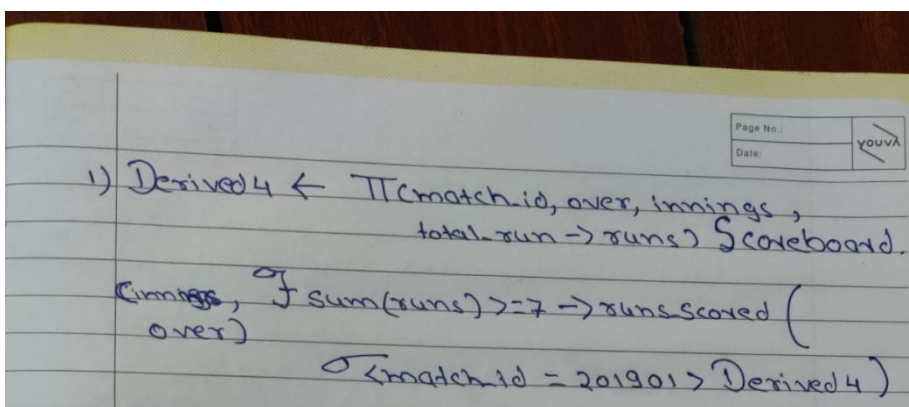
SELECT innings,over, SUM(runs) AS runs_scored FROM derived4

WHERE match_id = 201901 GROUP BY innings, over HAVING SUM(runs)<=7 ORDER BY innings ,runs_scor ed DESC, over ASC;

	innings integer	over integer	runs_scored bigint
1	1	14	7
2	1	10	6
3	1	16	6
4	1	11	5
5	1	15	5
6	1	12	4
7	1	18	4
8	1	5	3
9	1	9	3
10	1	3	2
11	1	6	2
12	1	4	1

	innings integer	over integer	runs_scored bigint
13	1	13	1
14	1	1	0
15	1	17	0
16	7	4	7
17	7	15	7
18	7	5	6
19	7	9	6
20	7	1	5
21	7	6	5
22	7	3	4
23	7	8	4
24	7	10	4

25	7	11	4
26	7	13	4
27	7	7	3
28	7	16	3
29	7	12	2
30	7	17	2
31	7	14	0
32	7	18	0

2) List the player id ,names of those batsmen who balled at least once in alphabetical order of their names.

SELECT pid,pname FROM player WHERE balls>0 and isbatsman='true' ORDER BY pname;

	pid [PK] integer	pname character varying (50)
1	84	AJINKYA RAHANE
2	11	AMBATI RAYDU
3	56	COLIN MUNRO
4	32	GUKEERAT MANN SINGH
5	60	HANUMA VIHARI
6	93	LIAM LIVINGSTONE
7	22	MOHEEN ALI
8	15	MURALI VIJAY
9	71	SARFARAZ KHAN
10	54	SHERFANE RUTHERFORD
11	37	SHIVAM DUBE
12	8	SURESH RAINA
13	25	VIRAT KOHLI

3) $\Pi_{(pid, pname)} (\sigma_{(balls>0 \land isbatsman=true)} Player)$

3) List the match wise total for the entire series. The output should be match id, total runs. Return the results in increasing order of match ids.

SELECT match_id , sum(total_run) FROM scoreboard group BY match_id order by match_id;

	match_id integer	sum bigint
1	201901	150
2	201902	390
3	201903	345

3). $\mathcal{F}$ sum(total-run)->total Scoreboad
(match_id)

4)Find the venue where the maximum extra runs have been given.In case of ties, return the one that comes before in alphabetical ordering.

WITH derived13_1 AS (SELECT match.stadium_id AS venue, sum(derived13.num) AS max_num FROM match, (SELECT match_id, count(extra_run) AS num FROM scoreboard GROUP BY match_id) AS derived13 WHERE match.mid= derived13.match_id GROUP BY match.stadium_id ORDER BY max_num DESC, venue ASC)

SELECT venue,name,max_num as extra_runs FROM derived13_1 join stadium on derived13_1.venue=stadium.std_id WHERE derived13_1.max_num = (SELECT max(max_num) FROM derived13_1) LIMIT 1;

	venue integer	name character varying (100)	extra_runs numeric
1	1012	JSCA International Cricket Stadium	455

5)List match ids and venues where Rajasthan Royals has lost the game. Order result in increasing order of match ids.

WITH teamLost AS ((SELECT mid, stadium_id, team_id1 AS loser FROM match WHERE result != team_id1)

UNION (SELECT mid, stadium_id, team_id2 AS loser FROM match WHERE result != team_id2))

SELECT mid, stadium_id FROM teamLost WHERE loser = (SELECT team_id FROM team WHERE team_name = 'Rajasthan Royals') ORDER BY mid;

| mid | stadium_id |
integer	integer
1	201902	1012

5) $R_1 \leftarrow \Pi_{(mid,\ stadium\_id,\ team\_id 1 \to loser)}$
$$(\sigma_{(result\ !=\ team\_id1)} Match);$$

$R_2 \leftarrow \Pi_{(mid,\ stadium\_id,\ team\_id 2 \to loser)}$
$$(\sigma_{(result\ !=\ team\_id2)} Match)$$

$R_3 \leftarrow R_1 \cup R_2$

$\Pi_{(mid,\ stadium\_id)} (\sigma_{(team\_name\ =\ 'Rajasthan\ Royals')}$
$$(R_3 \bowtie_{(loser=team\_id)} Team))$$

6) list all stadium that has capacity more than 50000;
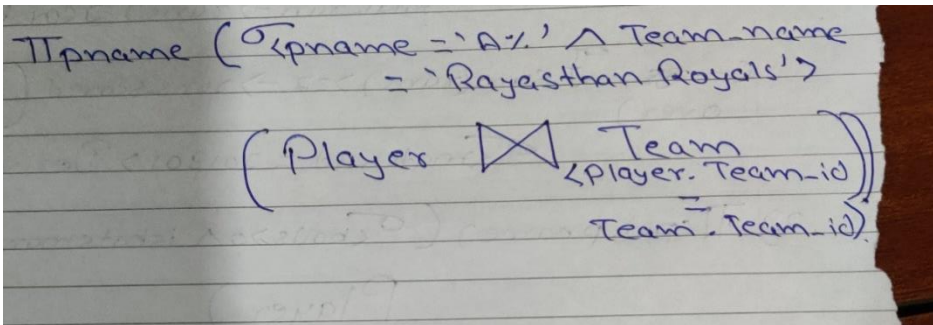
select name from stadium where capacity >50000;

| | name |
	character varying (100)
1	Eden Gardens
2	Rajiv Gandhi International Cricket Stadium

$\Pi_{name} (\sigma_{(capacity > 50000)} Stadium$

7) List all players of rajasthan royals whose name start with A;

select pname from player join team on player.team_id= team.team_id where pname like 'A%'and team.team_name = 'Rajasthan Royals';

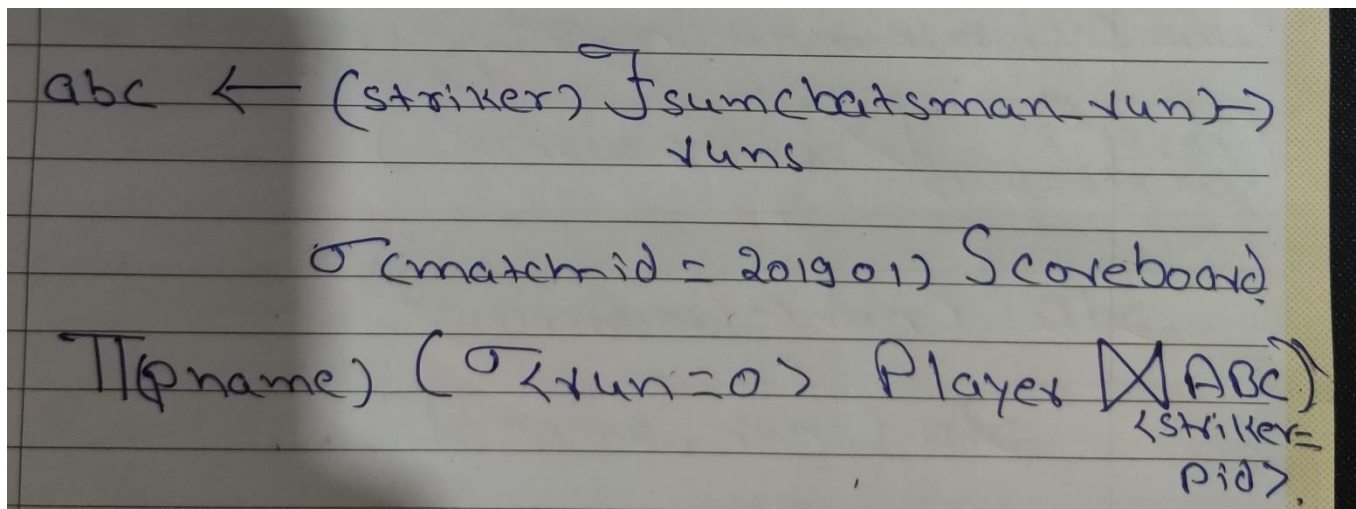| pname character varying (50) |
|---|
| 1 AJINKYA RAHANE |
| 2 ASHTON TURNER |

8) find player name who scored 0 in given match.

with abc as (select striker,sum(batsman_run) as run from scoreboard where scoreboard.match_id=201901 group by striker)

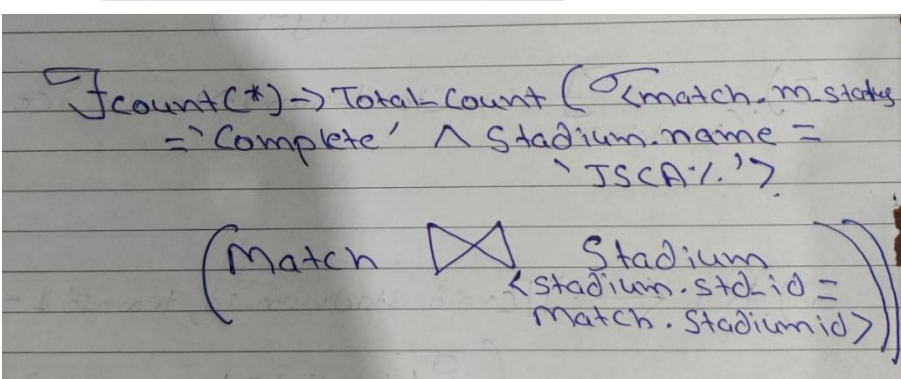select pname from abc join player on abc.striker=pid where run=0;

pname character varying (50)
1 MOHAMMED SIRAJ
2 SHIMRON HETMYER

9) Count total number of matches played in "JSCA International Cricket Stadium" Stadium in 2019.

select 'JSCA International Cricket Stadium' as name, count(*) from match join stadium on match.stadium_id = stadium.std_id

where match.m_status ='Complete' and stadium.name='JSCA International Cricket Stadium';

name text	count bigint
1 JSCA International Cricket Stadium	2

10) List team name ,player name,score of all the batsman of any given match who scored more than 70 runs.

with abc as(

select player.team_id as team_name,player.pname as player_name ,sum(scoreboard.batsman_run) as run from player join scoreboard

on pid=striker where match_id = 201902 group by pid having sum(batsman_run)>70)

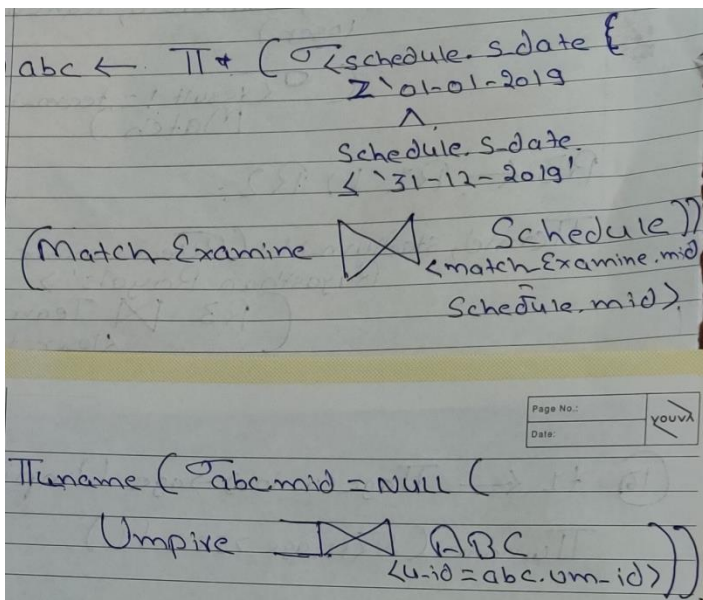select team.team_name,abc.player_name,abc.run from team,abc where team_id=abc.team_name;

team_name character varying (30)	player_name character varying (50)	run bigint
1 Delhi Captials	RISHABH PANT	79
2 Rajasthan Royals	AJINKYA RAHANE	108

11)List all those umpires who has not umpired in any match of this edition.

   with abc as (select * from match_examine join schedule on match_examine.m_id=schedule.mid where schedule.s_date between '01-01-2019' and '31-12-2019')

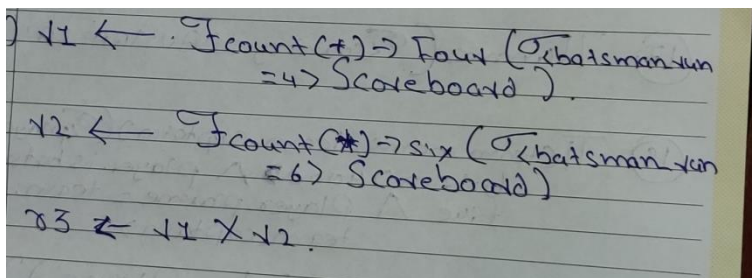select u_name from umpire left outer join abc on u_id=abc.um_id where abc.m_id is null;

u_name character varying (30)
1 Javagal Srinath
2 Kumar Dharmasena
3 Marais Erasmus
4 Chris Gaffaney

$abc \leftarrow \Pi * \left(\sigma_{\langle \text{schedule.s\_date} \\ \geq `01-01-2019 \\ \wedge \\ \text{Schedule.s\_date} \\ \leq `31-12-2019' } \right.$

$\left(\text{Match\_Examine} \bowtie_{\langle \text{match\_Examine.mid} = \text{Schedule.mid} \rangle} \text{Schedule} \right) \rangle$

Page No.:
Data:
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$\Pi_{\text{uname}} \left(\sigma_{\text{abc.mid} = \text{NULL}} \left(\text{Umpire} \bowtie \text{ABC} \\ \langle u\text{-}id = abc.um\text{-}id \rangle \right) \right)$

12) Count total number of sixes and fours scored in this edition of IPL.

Select 'Sixes' , count(*) ,'Four', (select count(*) from scoreboard where batsman_run = 4) as four from scoreboard where batsman_run = 6 ;
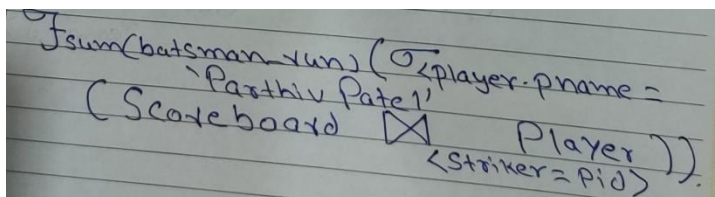
?column? text	count bigint	?column? text	four bigint
1 Sixes	24	Four	81

$\gamma 1 \leftarrow \mathcal{F}_{\text{count}(*) \to \text{four}} \left(\sigma_{\langle \text{batsman\_run} = 4 \rangle} \text{Scoreboard} \right).$

$\gamma 2 \leftarrow \mathcal{F}_{\text{count}(*) \to \text{six}} \left(\sigma_{\langle \text{batsman\_run} = 6 \rangle} \text{Scoreboard} \right)$

$\gamma 3 \leftarrow \gamma 1 \times \gamma 2.$

13) Runs scored by parthiv patel in this ipl edition.

select 'score : ' || sum(batsman_run) from Scoreboard where striker = (select pid from player where pname like UPPER('Parthiv Patel'));

?column? text
1 score : 32

$\mathcal{F}_{\text{sum}(\text{batsman\_run})} \left(\sigma_{\langle \text{player.pname} = `\text{Parthiv Patel}' \rangle} \left(\text{Scoreboard} \bowtie_{\langle \text{striker} = \text{Pid} \rangle} \text{Player} \right) \right).$

14) Display name and runs of the player who has scored highest run in this edition till now.

with abc as(select player.pname as name,sum(batsman_run) as runs from Scoreboard join player on pid= striker group by player.pname)

select name, runs from abc where runs in(select max(abc.runs) from abc);

name character varying (50)	runs bigint
1 SHIKHAR DHAWAN	116

$abc \leftarrow _{(player.pname \rightarrow name)} \mathcal{J}_{Sum(batsman\_run) \rightarrow runs}$
$(Scoreboard \bowtie_{(Pid = Striker)} Player)$

$r1 \leftarrow \mathcal{J}_{(max(runs) \rightarrow run)} \ abc$
$r2 \leftarrow \Pi_{(name, runs)} \ abc$
$r3 \leftarrow r1 \bowtie_{(run = runs)} r2$

15) List all the umpire with age greater than 55 years.

select u_name from umpire where age(u_dob)>interval '55 years';

	u_name character varying (30)
1	David Boon
2	Chris Broad
3	Ranjan Madugalle
4	Andy Pycroft
5	Richie Richardson
6	Marais Erasmus

$t1 \leftarrow \Pi_{age(u\_dob) \rightarrow age} \ Umpire$
$\Pi_{u\_name} (\sigma_{t1.age > 55} > t1)$

16) List all umpires who belongs to the country "australia"

Select u_name from Umpire where country like upper('australia');

	u_name character varying (30)
1	David Boon
2	Andy Pycroft

$\Pi_{u\_name} (\sigma_{(country = 'AUSTRALIA')} \ Umpire)$

17)List the captian of those team who is a batsman and scored more than 4000 runs;

select team_name,team_captain from team join player on team.team_id=player.team_id

where Player.bat_run>4000 and player.isbatsman=true and upper(team.team_captain) like upper(player.pname);

	team_name character varying (30)	team_captain character varying (30)
1	Chennai super kings	MS DHONI
2	Royal Challangers Banglore	VIRAT KOHLI

$\Pi(\text{team\_name}, \text{team\_captain})(\sigma_{\text{player}}.$
$\text{batrun} > 4000 \land \text{player.is batsman} =$
$\text{true} \land \text{Player.pname} = \text{team.}$
$\text{team\_captain})$

$(\text{Team} \bowtie_{\langle \text{Team.teamid} = \text{Player.}} \text{Player}))$
$\text{Team\_id} \rangle$

18) Display total number of Batsman, WicketKeeper, Bowler and all rounder are there in this IPL edition.

select 'Bowler : ' || count(isbowler) ,'Batsman : ' || count(isbatsman),'All Rounder : ' || count(isallrounder),'Wicket Keeper :' || count(iswicketkeeper) from player where team_id != null;
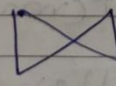
?column? text	?column? text	?column? text	?column? text
1 Bowler : 41	Batsman : 35	All Rounder : 32	Wicket Keeper :9

$\text{Count}(\text{isbowler}) \rightarrow \text{Bowler}, \text{count}(\text{isbatsman})$
$\text{Batsman}, \text{Count}(\text{isallrounder}) \rightarrow \text{Allrounder},$
$\text{Count}(\text{iswicket keeper}) \rightarrow \text{wicket keeper}$
$(\sigma_{\langle \text{team\_id} \langle \rangle \text{NULL} \rangle} \text{Player}).$

19) Total number of sixes scored by Rishabh pant in this edition of ipl.

select 'sixes : ' || count(*) from scoreboard where total_run = 6 and striker = (select pid from player where pname like upper('Rishabh Pant'));

?column? text
1 sixes : 5

$\pi count(*) \left(\sigma_{\text{(total\_run} = 6 \land \text{Player.}} \atop \text{pname} = \text{'Risabh Panth'}} \right)$

$\left(\text{Player} \bowtie_{\langle \text{striker} = \text{pid} \rangle} \text{Scoreboard} \right)$

20) List all the players who is playing under MS Dhoni Captaincy.

select pname from player join Team on player.team_id = team.team_id where team.team_captain like 'MS DHONI';

	pname character varying (50)
1	DEEPAK CHAHAR
2	IMRAN TAHIR
3	RAVINDRA JADEJA
4	SHANE WATSON
5	HARBAJAN SINGH
6	MS DHONI
7	FAF DU PLESSIS
8	SURESH RAINA
9	DWAYNE BRAVO
10	SHARDUL THAKUR
11	AMBATI RAYDU

12	KEDAR JADHAV
13	MITCHELL SANTNER
14	SCOTT KUGGELEIJN
15	MURALI VIJAY
16	MOHIT SHARMA
17	KARAN SHARMA
18	SAM BILLINGS
19	DHRUV SHOREY

$\pi_{\text{pname}} \left(\sigma_{\text{(team captain} = \text{'MSDhoni'})} \right.$

$\left. \left(\text{Team} \bowtie_{\langle \text{Player.team\_id} = \atop \text{Teams.teamid} \rangle} \text{Player} \right) \right)$

21) find all the matches which have not been postponed.

Select * from match where m_status != 'Postpone';

mid [PK] integer	team_id1 integer	team_id2 integer	m_status character varying (20)	stadium_id integer	result integer
1	201906	6	8	Scheduled	1007	[null]
2	201907	7	4	Scheduled	1006	[null]
3	201908	8	3	Scheduled	1009	[null]
4	201901	7	1	Complete	1012	1
5	201902	2	6	Complete	1012	2
6	201910	2	1	Scheduled	1012	[null]
7	201904	4	1	OnGoing	1001	[null]
8	201903	2	3	Complete	1011	2

$$\Pi * (\sigma_{match.status <> 'Postpone'} (Match))$$

22) select team name whose any of the player scored more than 2 fifty and hundred.

SELECT team_name,pname FROM team join player on team.team_id=player.team_id WHERE player.hundred>2 and player.fifty>2 ;

	team_name character varying (30)	pname character varying (50)
1	Chennai super kings	SHANE WATSON
2	Royal Challangers Banglore	AB DE VILLERS
3	Royal Challangers Banglore	VIRAT KOHLI
4	Kings XL punjab	CHRIS GAYLE

$$\Pi_{(team.name, pname)} (\sigma_{player.hundred>2 \wedge player.fifty>2} (Team \bowtie_{team.teamid = player.teamid} Player))$$