Assignment 2

Name : Rohan Javed
Roll No : L21-5625
Section : BDS-4C

Q1)

SQL:

```
SELECT Teamname, City
FROM Team
WHERE Teamnum > 15
ORDER BY Teamname ASC;
```

RA:

$\Pi_{Teamname, City}(\sigma_{Teamnum > 15}(Team))$

Q2)

SQL:

```
SELECT Playersname
FROM Players
WHERE Age < 18
```

RA:

$\Pi_{Playersname}(\sigma_{age < 18}(Players))$

Q3)

```
SELECT Coachname
FROM Work Experience
WHERE Coachname LIKE '%.R' AND Experience
Type = 'college' AND YearsExperience >= 5 AND
Years Experience <= 10;
```

$\Pi_{Coachname}(\sigma_{Coachname\ like\ '\%.R'\ AND\ Experience\ Type = 'college'\ AND\ YearsExperience >= 5\ or\ Years\ Experience <= 10}(WorkExperience))$

Q4)

```
SELECT SUM (Years Experience)
FROM Work Experience
WHERE Coachname = 'Wafas' and Teamname = 25;
```

$\Im_{SUM(YearsExperience)}(\sigma_{Coachname = 'Wafas'\ AND\ Teamnumber = 25}(WorkExperience))$

Q5)

```
SELECT  COUNT(DISTINCT ExperienceType)
FROM    WORKExperience
WHERE   Coachname = 'Wopat' AND Teamnumber = 3 ;
```

$\mathcal{F}_{COUNT(ExperienceType)}(\sigma_{Coachname='Wopat' \text{ AND } Teamnumber=3}(WorkExperience))$

Q6)

```
SELECT Coachname , SUM(Years Experience)
FROM   Work Experience
WHERE  Teamnumber = 3
GROUP BY  Coachname ;
```

$\pi_{Coachname, \mathcal{F}_{SUM(Years\ Experience)}}(\sigma_{Teamnumber=3}(Work\ Experience))$

Q7)

```
SELECT  COUNT(DISTINCT Manufacturer)
FROM    BATS
```

$\mathcal{F}_{COUNT(DISTINCT\ manufacturers)}(Bats)$

Q8)

```
SELECT P.Playersname
FROM   Player AS P
JOIN   Affiliation A ON P.Playersnum = A.Playersnum
JOIN   Team T ON T.Teamnum = A.Teamnom
WHERE  T.Teamname = 'Yankees' AND A.Years >= 5
```

$\pi_{P.Playersname}(Players\ P \bowtie_{<P.Playersnum = A.Playersnum>} Affiliation \bowtie_{<T.Teamnum = A.Playersnum>} Team\ T)$

$(\sigma_{T.Teamname = 'Yankees' \text{ AND } A.Years \geq 5})$

Q9)

```
SELECT C.Coachname, Sum(YearsExperience)
FROM Team, Coach, WorkExperience
JOIN Coach as C on T.Num = C.Teamnum
JOIN WorkExperience AS W ON C.Coachname = W.Coachname
WHERE Teamname = 'Royals' AND Work.YearsExperience
>8
GROUP BY C.Coachname
```

$\Pi_{Coachname, \mathcal{F}sum(YearsExperience)}(\sigma_{Teamname = 'Royals' AND\ Years\ Experience > 8}(WorkExperience \bowtie Team \bowtie Coach))$

Q10)

```
SELECT * FROM Players
WERE Age = ( SELECT min(Age) FROM Players)
ORDER BY Age ASC
```

$\pi_{Playersnum, Playersname, Age}(\mathcal{F}_{min(age)}(Players))$

Q11)

```
SELECT Playersname FROm Players
WHERE Playersname LIKE '%M%' AND
  Age = ( SELECT min(Age FROM
  Players)WHERE Playersname LIKE '%m%');
```

$\Pi_{Playersname}($
$\sigma_{Playersname\ LIKE\ '\%m\%'\ AND\ Age=(}$
$\rho_{(min\_age)}(\Pi_{Age}(\sigma_{playersname\ LIKE\ '\%m\%'}$
$(Players))) \bowtie Age = minAge(Players))$

Q12)

```
SELECT Playersname FROM Players AS P
INNER JOIN Affiliation AS A ON P.Playersname
=A.Playersname
GROUP BY P.Playersnum, Playersname
HAVING COUNT( DISTNCT (A.Teamnum)) > 2;
```

~~$\Pi_{Playersname}(\sigma_{COUNT(DISTINCT\ A.Teamnum)>2}$~~

RA:

$\pi_{Playersname}\ \mathcal{J}_{COUNT(DISTINCT\ A.Teamnum)}$

$\pi_{Playersname}\ Players \bowtie_{<COUNT(A.Teamnum)>2>} Affiliation$

Q13)

```
SELECT Playersname FROM Player AS P
LEFT OUTER JOIN Affiliation AS A
ON P.Playernum = A.Playersnum
WHERE A.Teamnum is NULL
```

$\pi_{Playername}(Player) - (Players \bowtie Affiliation)$

Q14)

```
SELECT Playername, COUNT(DISTINCT(Teamnum)) AS T
FROM Player AS P
INNER JOIN AffiliationAON P.Playernum = A.Playernum
ORDER BY P.Playername
```

$\pi_{Playername}\ \mathcal{J}_{COUNT(Teamnum)}$

$\pi\ Playername\ Players \bowtie_{<P.Playernum = A.Playernum>} Affiliation$

Q15)

```
SELECT T.Teamname, A.Batting Avg
FROM TEAM AS T
INNER JOIN Affiliation AS A ON T.Teamnum =
A.Teamnumbers
ORDER BY Teamname ;
```

$\rho_{Team(Teamnum, Teamname, City, Manager)}(Team)$

$\rho_{Affiliation(Playernum, Teamnum, Yes, Batting Avg)}(Affiliation)$

$\pi\ Teamname, Batting Avg$

$Team \bowtie_{<T.teamnum = A.Teamnum>} Affiliation$