Université Toulouse III – Paul sabatier
L2 Informatique

Système d'informations et applications web – TD

Semestre 4

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Chapitre 1

Rappel sur le SQL – LDD/LMD

```sql
create table PROJET(
  NP varchar(4),
  nomP varchar(32),
  ne varchar(4),
  pbudget decimal(16),
  constraint pk_projet PRIMARY KEY(np),
  constraint fk_projet_ne FOREIGN KEY(ne) REFERENCES equipe(ne),
  constraint ck_projet_pbudget CHECK(ne >= 0)
);
```

```sql
update PROJET set pbudget = pbudget * 0.80;
update PROJET set pbudget = pbudget + 5000 where ne='e1';
```

```sql
delete from AFF where nc=(select nc from chercheur where nomc='Jean');
```

```sql
alter table EQUIPE ADD (
  np decimal(3),
  bt decimal(3),
  constraint ck_equipe_bt check(bt >= 0),
  constraint ck_equipe_np check(np >= 0)
);

update equipe e1 set np = (select count(*) from projets WHERE projets.ne=e1.ne),
          bt = (select sum(pbudget) from projets where projets.ne=e1.ne);
```

Chapitre 2

Projection – Sélection – Agrégation

1. $R = \Pi_{ne}\ equipe$ $R[ne]$

```
select distinct NE from equipe;
```

2. $R = \Pi_{nomP,\ pBudget}(\sigma_{Ne='e1'}\ equipe)$ $R[nomp,\ pbudget]$

```
select distinct nomp, pbudget from projet where ne='e1';
select distinct nomp, pbudget from (select * from projets where ne='e1');
```

3. $R = \Pi_{nomC,\ nc}(\sigma_{nomc\ like\ '\%a\%'}\ chercheur)$ $R[nomc]$

```
select distinct nomc from chercheur where nomC like '%a%';
select distinct nomc from (select * from chercheur where nomC like '%a%');
```

4. $R = \texttt{COUNT}(projet,\ ne,\ np)$ $R[ne,\ count(np)]$

```
select ne, count(np) as COUNT_NP from projet group by ne;
```

5. $R = \texttt{COUNT}(aff,\ np,\ nc)$ $R[np,\ count(nc)]$

```
select np, count(nc) as COUNT_NC from aff group by np;
```

6. $R = \texttt{SUM}(projet,\ ne,\ pBudget)$ $R[ne,\ count(pBudget)]$

```
select ne, sum(pBudget) as SUM_PBUDGET from projet group by ne;
```

7. $R = \texttt{COUNT}(aff,\ nc;\ ;\ count(np) = 2)$ $R[nc]$

```
select nc from aff group by nc having count(np) = 2;
```

Chapitre 3

Imbrication – Ensembliste

R Interdiction d'utiliser les jointures

1. $R = \Pi_{nome}(\sigma_{ne \in (\Pi_{ne}\ Projet)})$

```
select distinct nome from equipe e1
where e1.ne in (select distinct ne from projet);
```

2. $R = \Pi_{nomc}(\sigma_{nc \in (\Pi_{nc}(\sigma_{np='p1'}aff)}Chercheur)$

```
select distinct nomc from chercheur
where nc in (select distinct nc from aff where np='p1');
```

3.

$$\begin{aligned} R &= \Pi_{nomc}(\sigma_{nc \in R_1} chercheur) \\ R_1 &= \Pi_{nc}(\sigma_{np \in R_2} aff) \\ R_2 &= \Pi_{np}(\sigma_{ne='e1'} Projet) \end{aligned}$$

```
select distinct nomc from chercheur
where nc IN (select nc from aff
             where np in (select np from projet where ne = 'e1'));
```

4. $\Pi_{nomc}(\sigma_{nc \in (\Pi_{nc}\ aff)}chercheur)$

```
select distinct nomc from chercheur where nc in (select distinct n from aff);
```

5. $\Pi_{nomc}(\sigma_{nc \notin (\Pi_{nc}\ aff)}chercheur)$

```
select distinct nomc from chercheur where nc not in (select distinct n from aff);
```

6.

R À partir de cette question la notation algébrique n'est pas indispensable. L'utilisation des opérateurs ensembliste est indispensable, chercher ensuite une requete non ensembliste

```
select nomc from chercheur where nc in (
  select ne from aff
  where np in(select np from projet where nomp = 'SRI')
)
intersect
select nomc from chercheur where nc in (
  select ne from aff
  where np in(select np from projet where nomp = 'BIG')
)
```

7.

```
(select nomc from chercheur where nc in (
  select ne from aff
  where np in(select np from projet where nomp = 'SRI')
)
intersect
select nomc from chercheur where nc in (
  select ne from aff
  where np in(select np from projet where nomp = 'BIG')
))
except
(select nomc from chercheur where nc in (
  select ne from aff
  where np in(select np from projet where nomp <> 'SRI' and nomp <> 'BIG')
)
);
```

Chapitre 4

Jointure

1. $R = \Pi_{np,nomp,pbudget}(projet \overset{\bowtie}{a} equipe)$

```
select ne, nome, pbudget from equipe, projet
where equipe.ne = projet.ne and equipe.ne = 'e1';
```

2.

```
select nomc, nome from equipe, chercheur, aff
where aff.nc = chercheur.nc and aff.ne = equipe.ne;
```

3.

```
select count(nc) from equipe, aff group by equipe,aff having equipe.nc = aff.nc
```