

LMD : Langage de Manipulation des Données

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1 L'agence de voyage

1.1

- $R1 = \text{RESTRICT}(\text{Client} / \text{ville} = \text{'Nancy'} \vee \text{ville} = \text{'Metz'})$
- $R2 = \text{PROJECT}(R1 / \{\text{Nom}, \text{prénom}\})$

1.2

- $R1 = \text{RESTRICT}(\text{Voyage} / \text{durée} > 3\text{h} \wedge \text{prix} < 100)$
- $R2 = \text{PROJECT}(R1 / \{\text{codeVoya}, \text{Destination}\})$

1.3

- $R1 = \text{JOIN}(\text{Client}, \text{Reservation})$
- $R2 = \text{RESTRICT}(R1 / \text{DateRes} = \text{'12/11/2005'})$
- $R3 = \text{PROJECT}(R1 / \{\text{numCli}, \text{dateRes}, \text{nom}\})$

1.4

- $R1 = \text{JOIN}(\text{Client}, \text{Reservation})$
- $R2 = \text{JOIN}(R1, \text{Voyage})$
- $R3 = \text{RESTRICT}(R2 / \text{destination} = \text{'nice'} \wedge \text{prix} < 200)$
- $R4 = \text{PROJECT}(R3 / \{\text{nom}, \text{prenom}, \text{e-mail}\})$

1.5

- $R1 = \text{RESTRICT}(\text{Reservation} / \text{date} > 01/01/2000)$
- $R2 = \text{JOIN}(\text{Client}, R1)$
- $R3 = \text{MINUS}(\text{Client}, R2)$
- $R4 = \text{RESTRICT}(R3 / \{\text{Nom}, \text{prénom}, \text{adresse}\})$

2 L'agence de voyage (CRT)

1. $\{c.nom, c.prénom \mid Client(c) \wedge (c.ville = \text{"Nancy"} \vee c.ville = \text{"Metz"})\}$
2. $\{v.codeVoya, v.destination \mid VOYAGE(v) \wedge v.durée > 3 \wedge v.prixbillet < 100\}$
3. $\{c.nom, c.numcli \mid Client(c) \wedge \exists r \text{ tq } Reservation(R) \wedge (c.numcli = r.numcli \wedge r.dateres = \text{"12/11/2005"})\}$
4. $\{c.nom, c.prénom, c.e-mail \mid Client(c) \wedge \exists r, v \text{ tq } Reservation(r) \wedge Voyage(v) \wedge r.codeVoya = v.codeVoya \wedge c.numCli = r.numcli \wedge v.destination = \text{"Nice"} \wedge v.prixBillet < 200\}$
5. $\{c.nom, c.prénom, c.e-mail \mid Client(c) \wedge \neg(\exists r \text{ tq } Reservation(r) \wedge r.dateRes > 01/01/2005 \wedge r.numCli = c.numcli)\}$
6. $\{c.Numcli \mid Client(c) \wedge \forall v \text{ tq } Voyage(v) \Rightarrow \exists r \text{ tq } Reservation(r) \wedge c.numCli = r.numCli \wedge r.codeVoya = v.codeVoya\}$