TD 2 - Manipulation des Données (1/2)

Algèbre relationnelle – Calcul relationnel de tuples – SQL

# Exercice 1

* A.R.
  + PROJECT(RESTRICT(CLIENT, ville= « Nancy » v « Metz ») / {nom, prenom})
* CRT
  + {C.nom, c.prenom | Client ( c ) ^ {c.ville = ‘Nancy’ v c.ville = ‘Metz’) }
* SQL
  + SELECT nom,prenom FROM Client WHEN UPPER(VILLE)=’NANCY’ OR UPPER(ville)=’METZ’



* A.R.
  + PROJECT( RESTRICT(Voyages, duree >3 ^ prixBillet < 100) /{codeVoya, destination})
* CRT
  + {v.codeVoya, v.destination | Voyage ( v ) ^ { v.duree > 3 ^ v. prixBillet < 100 ) }
* SQL
  + SELECT codeVoya, destination FROM Voyage WHERE duree > 3 AND prixBillet < 100;



* AR
  + R1 = RESTRCIT(Reservation ; dateRes=’12/11/2005’)
  + R2 = JOIN(R1, Client)
  + R3 = Project (R1/{num, nom})
* CRT
  + {c.num, c.nom | Client ( c ) ^ r tel que (Reservation ( r ) ^ r.numCli = c.numCli ^ r.dateRes = ‘12/11/2005’)}
* SQL
  + SELECT Client.Num, Client.Nom from Client, Reservation WHERE Client.numCli = Reservation.numCli AND Reservation.dateRes = ’12/11/2005’



* AR
  + R1 = RESTRCT(VOYAGES; destination=’Nice’ ^ prix < 200)
  + R2 = Join(Voyage,R1)
  + R3 = UNIQUE(PROJECT(Join(R2, Client) /{ nom, prénom, e-mail)
* CRT
  + {c.num, c.nom, c.email | Client ( c ) ^ r, v tq (Voyage ( v ) ^ Reservation ( r ) ^ r.codevoyage = v.codevoyages ^ c.numCli = v.numCli ^v.destination = ‘Nice’ ^ v.prixBillet<200}
* SQL
  + SELECT UNIQUE c.num, c.nom, c.email  
    FROM voyages INNER JOIN (Reservation INNER JOIN CLIENT Reservation.numCli = client.numCli) on voyages.codeVoya = reservation.codeVoya   
    WHERE prixBillet < 200 AND destination=’Nice’)
  + SELECT c.num, c.nom, c.email  
    FROM voyages Reservation CLIENT   
    WHERE Reservation.numCli = client.numCli AND voyages.codeVoya = reservation.codeVoya   
    AND prixBillet < 200 AND destination=’Nice’)



* AR
  + R1 = Project(Client / {numcli})
  + R2 = PROJECT(Restrict(RESVATION ; dateRes > ‘1/1/2000’)/numCli)
  + R4 = MINUS(R3, R1)
  + R5 = JOIN(R3, Client)
  + R6 = PROJECT(CLIENT, {nom, prenom, email})
* CRT
  + {C.nom, c.prenom, c.email | Client ( c ) ^ ¬(t tq (Reservation (v) ^ v.dateRes > ‘1/1/2000’)}
* SQL
  + SELECT c.prenom, c.nom, c.email  
    FROM CLIENT  
    WHERE c.numCli NOT IN {SELECT numCli FROM Reservation WHERE dateRes > ‘01/01/2000’)



* AR
  + R = PROJECT(RESERVATION; {NUMCLI, codeVoya})
  + S = PROJECT (Voyage; { codeVoyage })
  + Res = R ÷ S
* CRT
  + { c.numCli | Client ( c ) ^ v (Voyage ( v ) ^ v tq Reservation ( r ) ^ r.codevoya = v.codevoya ^ r.numCli = c.numCli})
* SQL
  + SELECT CLIENT.numCli  
    FROM CLIENT