Ministerul Educației și Cercetării al Republicii Moldova

Universitatea Tehnică a Moldovei

Facultatea Calculatoare, Informatică și Microelectronică

Departamentul Ingineria Software și Automatică

**Lucrare individuală**

la disciplina **”Baze de Date”**

Tema: **Expresii ale Algebrei Relaționale**

Efectuat de: studentul gr.**TI-211** **Popa Cătălin**

Verificat de: **Olga Grosu** profesor

Chișinău-2023

**Lucrare individuală** la disciplina **”Baze de Date”**

Tema: **Expresii ale Algebrei Relaționale**

**Sarcina :**

Fie relaţiile ***r*** şi ***s*** definite pe schemele respective ***R=ABC*** şi ***S=ABC***:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***r*** | ***A*** | ***B*** | ***C*** |  |  | ***s*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b3* | *c2* |  |  |  | *a2* | *b1* | *c3* |
|  | *a2* | *b1* | *c2* |  |  |  | *a2* | *b2* | *c2* |
|  | *a1* | *b1* | *c1* |  |  |  | *a2* | *b1* | *c2* |
|  | *a2* | *b2* | *c2* |  |  |  | *a2* | *b2* | *c1* |
|  | *a1* | *b2* | *c2* |  |  |  | *a1* | *b2* | *c1* |
|  | *a1* | *b2* | *c1* |  |  |
|  | *a2* | *b1* | *c1* |  |  |

Să se găsească relaţia reprezentată de expresia algebrei relaţionale:

***σ(C=c2) & (A=a2)(~r∪ s)oπS(r*** ***∩S)***

***Rezolvare***

Divizam expresia dată în părți și le rezolvăm pe fiecare aparte:

1. ***q1=~r***
2. ***q2=(~r∪ s)***
3. ***q3= σ(C=c2) & (A=a2)(~r∪ s)***
4. ***q4= r*** ***∩S***
5. ***q5= πS(r*** ***∩S)***
6. ***q6= REZ = σ(C=c2) & (A=a2)(~r∪ s)oπS(r*** ***∩S)***
7. Operația ***q1*** se calculează după formula : ***~r = atup(R)\r***

Pentru a calcula ***atup(R)***, identificăm domeniile active ale atributelor relației ***r(ABC) :***

***adom(A)****={a1,a2}*

***adom(B)****={b1,b2,b3 }*

***adom(C)****={ c1,c2}*

Formăm relația ***atup(R)*** din valorile domeniilor active :

***atup(R)=adom(A)×adom(B) ×adom(C)***

|  |  |  |  |
| --- | --- | --- | --- |
| ***atup(R)*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b1* | *c1* |
|  | *a1* | *b1* | *c2* |
|  | *a1* | *b2* | *c1* |
|  | *a1* | *b2* | *c2* |
|  | *a1* | *b3* | *c1* |
|  | *a1* | *b3* | *c2* |
|  | *a2* | *b1* | *c1* |
|  | *a2* | *b1* | *c2* |
|  | *a2* | *b2* | *c1* |
|  | *a2* | *b2* | *c2* |
|  | *a2* | *b3* | *c1* |
|  | *a2* | *b3* | *c2* |

Calculăm

***q1= ~r=atup(R)\r***

|  |  |  |  |
| --- | --- | --- | --- |
| ***~r=atup(R)\r*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b1* | *c2* |
|  | *a1* | *b3* | *c1* |
|  | *a2* | *b2* | *c1* |
|  | *a2* | *b3* | *c1* |
|  | *a2* | *b3* | *c2* |

1. Calculăm

***q2=(~r∪ s)***

|  |  |  |  |
| --- | --- | --- | --- |
| ***(~r∪ s)*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b1* | *c2* |
|  | *a1* | *b2* | *c1* |
|  | *a1* | *b3* | *c1* |
|  | *a2* | *b1* | *c2* |
|  | *a2* | *b1* | *c3* |
|  | *a2* | *b2* | *c1* |
|  | *a2* | *b2* | *c2* |
|  | *a2* | *b3* | *c1* |
|  | *a2* | *b3* | *c2* |

1. Calculăm

***q3=σ(C=c2) &(A=a2)(~r∪ s)***

|  |  |  |  |
| --- | --- | --- | --- |
| ***σ(C=c2) &(A=a2)(~r∪ s)*** | ***A*** | ***B*** | ***C*** |
|  | *a2* | *b1* | *c2* |
|  | *a2* | *b2* | *c2* |
|  | *a2* | *b3* | *c2* |

1. Calculăm

***q4= r*** ***∩S***

|  |  |  |  |
| --- | --- | --- | --- |
| ***r*** ***∩S*** | ***A*** | ***B*** | ***C*** |
|  | *a2* | *b1* | *c2* |
|  | *a2* | *b2* | *c2* |
|  | *a1* | *b2* | *c1* |

1. Calculăm

***q5= πS(r*** ***∩S)***

|  |  |  |  |
| --- | --- | --- | --- |
| ***πS(r*** ***∩S)*** | ***A*** | ***B*** | ***C*** |
|  | *a2* | *b1* | *c2* |
|  | *a2* | *b2* | *c2* |
|  | *a1* | *b2* | *c1* |

***6)*** Calculăm

***qn= REZ = σ(C=c2) & (A=a2)(~r∪ s)oπS(r*** ***∩S)***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***REZ*** | ***A*** | ***B*** | ***C*** | ***A*** | ***B*** | ***C*** |
|  | *a2* | *b3* | *c2* | *NULL* | *NULL* | *NULL* |
|  | *a2* | *b2* | *c2* | *a2* | *b2* | *c2* |
|  | *a1* | *b2* | *c1* | *a1* | *b2* | *c1* |

**Unele simboliru din AR:**

***σ(C=c1)(A≠a1) (~r∪ s)πAB(s\~r)***

|>O<| O|> <| |> <|O |><|