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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**

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**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

|  |  |
| --- | --- |
| **3.** | ***BC(~s*** ***r)*** | ***(C=c3) &(B=b2) (~s\~r).*** |

# Rezolvare

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

# 1. q1= ~s

***2. q2= (~s***∩ ***r)***

***3. q3=*** ***BC(~s∩r)***

***4. q4=*** ~r

# 5. q5=~s\~r

***6. q6=*** ***(C=c3)***  ***(B=b2)***(***~***s\~r***)***

***7. q7= REZ=*** ***BC(~s∩r) )*** |***(C=c3)***  ***(B=b2)***(***~***s\~r)

1. Operația ***~s*** se calculează după formula :

~s = atup(S)\s

Pentru a calcula ***atup(S)***, identificăm domeniile active ale atributelor relației

# s(ABC) :

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

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

***adom(C)****={c1, c2,c3}*

Formăm relația ***atup(S)*** din valorile domeniilor active /

# atup(S)=adom(A)×adom(B) ×adom(C)

|  |  |  |  |
| --- | --- | --- | --- |
| ***atup(S)*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b1* | *c1* |
| *a1* | *b1* | *c2* |
| *a1* | *b1* | *c3* |
| *a1* | *b2* | *c1* |
| *a1* | *b2* | *c2* |
| *a1* | *b2* | *c3* |
| *a2* | *b1* | *c1* |
| *a2* | *b1* | *c2* |
| *a2* | *b1* | *c3* |
| *a2* | *b2* | *c1* |
| *a2* | *b2* | *c2* |
| *a2* | *b2* | *c3* |

Calculăm

# q1= ~s = atup(S)\s

|  |  |  |  |
| --- | --- | --- | --- |
| ***~s =atup(S)\s*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b1* | *c1* |
| *a1* | *b1* | *c2* |
| *a1* | *b1* | *c3* |
| *a1* | *b2* | *c2* |
| *a1* | *b2* | *c3* |
|  | *a2* | *b1* | *c1* |
|  | *a2* | *b2* | *c3* |

1. Calculăm

***q2= (~s***∩ ***r)***

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

1. Calculăm

***q3=*** ***BC(~s∩r)***

|  |  |  |
| --- | --- | --- |
| ***BC(~s∩r)*** | ***B*** | ***C*** |
|  | *b1* | *c1* |
| *b2* | *c2* |

1. Calculăm

***q4=*** ~r

Operația ***~s*** 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

# q4= ~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* |

# Calculam

# q5=~s\~r

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

6)

|  |  |  |  |
| --- | --- | --- | --- |
| ***C=c3)***  ***(B=b2)***(***~***s\~r) | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b2* | *c3* |
| *a2* | *b2* | *c3* |

Calculam q6 ***C=c3)***  ***(B=b2)***(***~***s\~r)

7)Calculam ***REZ=*** ***BC(~s∩r) )*** |***(C=c3)***  ***(B=b2)***(***~***s\~r)

REZ =Ø

|  |  |  |  |
| --- | --- | --- | --- |
| ***(C=c3)***  ***(B=b2)***(***~***s\~r***)*** | ***A*** | ***B*** | ***C*** |
|  | *a1* | *b2* | *c3* |
| *a2* | *b2* | *c3* |

|  |  |  |
| --- | --- | --- |
| ***BC(~s∩r)*** | ***B*** | ***C*** |
|  | *b1* | *c1* |
| *b2* | *c2* |