CMSC 23500 Introduction to Database Systems - Spring 2009 S. Salveter

Homework 5

Electronic copy due Wednesday 6 May 2009 7:00 pm via hwsubmit
Hard copy due Thursday 7 May in class

Make sure to put your CS account name and your real name on your hard copy.

1. Consider the following parts-suppliers-jobs database:

   part(p#, pname, color, weight, city)
   supplier(s#, sname, status, city)
   job(j#, jname, city)
   spj(s#, p#, j#, qty)

   Which of the following pairs of relational algebra expressions are equivalent?

   (a) $\text{supplier} \bowtie (\sigma_{\text{city}='\text{London}'}(\text{part} \bowtie \text{job}))$

   $\sigma_{\text{city}='\text{London}'}(\text{part}) \bowtie (\text{job} \bowtie \text{supplier})$

   (b) $\pi_{\text{s\#,city}}(\text{supplier} - (\pi_{\text{s\#,sname,status,city}}(\sigma_{\text{p\#}='\text{p2}'}(\text{supplier} \bowtie \text{spj}))))$

   $\pi_{\text{s\#,city}}(\text{supplier}) - (\pi_{\text{s\#,city}}(\text{supplier}) \bowtie (\pi_{\text{s\#,city}}(\sigma_{\text{p\#}='\text{p2}'}(\text{spj}))))$

   (c) $(\sigma_{\text{s\#}='\text{s1}'}(\text{spj}) \cup \sigma_{\text{p\#}='\text{p1}'}(\text{spj})) \cap (\sigma_{\text{j\#}='\text{j1}'}(\text{spj}) \cup \sigma_{\text{s\#}='\text{s1}'}(\text{spj}))$

   $\sigma_{\text{s\#}='\text{s1}'}(\text{spj}) \cup (\sigma_{\text{p\#}='\text{p1}'}(\text{spj}) \cap \sigma_{\text{j\#}='\text{j1}'}(\text{spj}))$

2. Text Exercise 15.13 part b, page 590-91

3. Text Exercise 15.14, page 591