Umeå University
Department of Computing Science

Parallel Programming 7.5 p
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Exercises, Chapter/Topic 1

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1 Query 1

Find the code of each airport which is located either in Greece or else in Germany

Relational Algebra

$X_1 \leftarrow \sigma_{(Country=\text{`}Germany\text{'})\wedge(Country=\text{`}France\text{'})}(Airport)$
$X_2 \leftarrow \pi_{(Code)}(X_1)$

Relational Tuple Calculus

$\{a.Code|Airport(a)$
$\wedge((a.Country = \text{`}Germany\text{`}) \vee (a.Country = \text{`}France\text{`}))\}$

2 Query 2

Find the name and abbreviation of each airline which has a flight with destination the airport with the code 'TXL' but no flight with destination the airport with code 'SXF'

Relational Algebra

$X_1 \leftarrow \pi_{Airline}(\sigma_{Destination=\text{`}TXL\text{'}}(Flight))$
$X_2 \leftarrow \pi_{Airline}(\sigma_{Destination=\text{`}SXF\text{'}}(Flight))$
$X_5 \leftarrow X_1 \setminus X_2$
$X_6 \leftarrow X_5 \bowtie_{Airline=Abbreviation} Airline$
$X_7 \leftarrow \pi_{Name,Abbreviation}(X_6)$

Relational Tuple Calculus

3 Query 3

Find the name and abbreviation of those airlines which do not have any flights to an airport in Germany or France

4 Relational Algebra

5 Relational Tuple Calculus

6 Query 4

Find the codes of those airports which have flights to every airport in France. (Note that no French airport will normally qualify because, for example, there is no flight from 'CDG' to 'CDG'.)

7 Relational Algebra

8 Relational Tuple Calculus

9 Query 5

Find the codes of those airports which have departures (i.e. fligths with origin at that airport) for exactly two distinct airines.

10 Relational Algebra

11 Relational Tuple Calculus