ISYS2077 – Database Concepts

ASSIGNMENT 2

Relational Algebra

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Given the academics database provided in the file academics.sql, answer the following queries in relational algebra.

1. Find the family and given names of academics who are interested in the field number 292.

$$\pi_{FAMNAME,GIVENAME}\left(\sigma_{FIELDNUM=292}(Academic \bowtie_{a.ACNUM=i.ACNUM} Interest)\right)$$

2. Find the paper number and title of papers containing the word "database" in their title.

$$\pi_{PANUM,TITLE}\left(\sigma_{TITLE\ like\ "\%database\%"}(Paper)\right)$$

3. Find the family and given names of academics who have authored at least one paper with the word "database" in the paper's title.

$$\pi_{FAMNAME,GIVENAME}\left(Academic \bowtie_{ac.ACNUM=au.ACNUM} Author \bowtie_{au.PANUM=p.PANUM} \left(\sigma_{TITLE\ like\ "\%database\%"}(Paper)\right)\right)$$

4. Find the family and given names of academics who have not authored any paper.

$$\pi_{FAMNAME,GIVENAME}(Academic \ltimes_{ac.ACNUM=au.ACNUM} Author$$
$$- Academic \bowtie_{ac.ACNUM=au.ACNUM} Author)$$

5. Find the family and given names of academics who are working for the "University of Canberra" who have not authored any paper.

$$\pi_{FAMNAME,GIVENAME}\left(\pi_{ACNUM,FAMNAME,GIVENAME}\left(\sigma_{INSTNAME="University\ of\ Canberra"}(Academic)\right)\right.$$
$$\cap\ \pi_{ACNUM,FAMNAME,GIVENAME}(Academic \ltimes_{ac.ACNUM=au.ACNUM} Author$$
$$\left.- Academic \bowtie_{ac.ACNUM=au.ACNUM} Author)\right)$$