Additional Relational Algebra Examples

The following example illustrates how to solve aggregation problems in the Relational Algebra. Consider if you begin with a relation VISITED:

VISITED	JHEDnum	Country
	D331427	Croatia
	D331427	Italy
	D331427	Romania
	D331427	Japan
	D331427	China
	D548792	Mexico
	D548792	Peru
	D123366	Portugal
	D123366	Spain
	D123366	France

NUM_VISITED ←
$\quad \rho_{NUM\_VISITED(JHEDnum,NumCountries)}$ JHEDnum $\mathcal{G}$ COUNT(Country) VISITED

NUM_VISITED	JHEDnum	NumCountries
	D331427	5
	D548792	2
	D123366	3

MAX_NUM_VISITED ← $\rho_{MAX\_NUM\_VISITED(MaxNum)}$ $\mathcal{G}$ MAX(NumCountries) NUM_VISITED

MAX_NUM_VISITED	MaxNum
	5

MAX_VISITOR ←
$\quad \Pi_{JHEDnum,NumCountries}$ (NUM_VISITED $\bowtie_{NumCountries=MaxNum}$ MAX_NUM_VISITED)

MAX_VISITOR	JHEDnum	NumCountries
	D331427	5

Note that if there were two JHEDnum's who have visited 5 countries, then *both* would be listed in MAX_VISITOR as two rows. Hence both JHEDnum and NumCountries are needed as candidate key attributes.