

t05o01: Tuple Relational Calculus (TRC)

Relevant Schemas:

DEPARTMENT	<u>DeptNum</u>	DeptName	ManagerID	ManagerStartDate
------------	----------------	----------	-----------	------------------

EMPLOYEE	Surname	GivenName	<u>EmpNum</u>	DeptID	Salary
----------	---------	-----------	---------------	--------	--------

S	<u>S#</u>	Sname	Status	City
---	-----------	-------	--------	------

P	<u>P#</u>	Pname	Color	Weight	City
---	-----------	-------	-------	--------	------

SP	<u>S#</u>	<u>P#</u>	Qty
----	-----------	-----------	-----

1. *What is the content of the Employee relation?*

$$\{e \mid Employee(e)\}$$

2. *What are the names and salaries of the people in department 5?*

$$\{e.givenname, e.surname, e.salary \mid Employee(e) \wedge e.deptid = 5\}$$

3. *What are the names of the parts that can be supplied by individual suppliers in quantity > 200?*

$$\{p.pname \mid P(p) \wedge (\exists q)(SP(q) \wedge q.p\# = p.p\# \wedge q.qty > 200)\}$$

4. *What are the names of the active suppliers of nuts?*

$$\{s.sname \mid S(s) \wedge s.status > 0 \wedge$$

$$(\exists q)(SP(q) \wedge q.s\# = s.s\# \wedge$$

$$(\exists p)(P(p) \wedge p.p\# = q.p\# \wedge p.pname = 'Nut'))\}$$

t05o02: Domain Relational Calculus (DRC)

	a	b	c	d	
DEPARTMENT	<u>DeptNum</u>	DeptName	ManagerID	ManagerStartDate	
	e	f	g	h	i
EMPLOYEE	Surname	GivenName	<u>EmpNum</u>	DeptID	Salary
	j	k	l	m	
S	<u>S#</u>	Sname	Status	City	
	n	o	p	q	r
P	<u>P#</u>	Pname	Color	Weight	City
	s	t	u		
SP	<u>S#</u>	<u>P#</u>	Qty		

1. What is the content of the Employee relation?

$$\{ \langle efghi \rangle \mid \langle efghi \rangle \in Employee \}$$

2. What are the names and salaries of the people in department 5?

$$\{ \langle fei \rangle \mid (\exists h)(\langle efghi \rangle \in Employee \wedge h = 5) \}$$

3. What are the names of the parts that can be supplied by individual suppliers in quantity > 200?

$$\{ \langle o \rangle \mid (\exists n)(\langle nopqr \rangle \in P \wedge (\exists ut)(\langle stu \rangle \in SP \wedge n = t \wedge u > 200)) \}$$

4. What are the names of the active suppliers of nuts?

$$\{ \langle k \rangle \mid (\exists j l)(\langle jklm \rangle \in S \wedge l > 0 \wedge$$

$$(\exists t)(\langle jtu \rangle \in SP \wedge$$

$$(\exists o)(\langle topqr \rangle \in P \wedge o = 'Nut')) \}$$