

Semantic Analysis of SQL Statements in DES
Running Examples
Fernando Sáenz-Pérez
UCM, Madrid, Spain
fernan@sip.ucm.es

```
DES> CREATE TABLE employees(  
  ename VARCHAR(20),  
  dept VARCHAR(10),  
  salary INT CHECK salary BETWEEN 5000 AND 2000);  
Warning: Inconsistent condition.  
DES> DROP TABLE employees;  
DES> CREATE TABLE employees(  
  ename VARCHAR(20),  
  dept VARCHAR(10),  
  salary INT CHECK salary > 2000 OR salary < 5000);  
Warning: Tautological condition: (salary > 2000 OR salary < 5000)  
DES> DROP TABLE employees;  
DES> CREATE TABLE departments(  
  dept VARCHAR(10) PRIMARY KEY,  
  dname VARCHAR(20),  
  budget INT);  
DES> CREATE TABLE employees(  
  ename VARCHAR(20) PRIMARY KEY,  
  dept VARCHAR(10) REFERENCES departments,  
  salary INT CHECK salary BETWEEN 2000 AND 5000);  
DES> SELECT * FROM employees WHERE dept='IT' AND dept='HR';  
Warning: Inconsistent condition.  
answer(employees.ename:varchar(20),employees.dept:string,employees.salary:int)  
->  
{  
}  
Info: 0 tuples computed.  
DES> SELECT (SELECT ename FROM employees WHERE salary BETWEEN 5000 AND 1000)  
FROM departments  
WHERE dname='Human resources';  
Warning: Inconsistent condition.  
Warning: Missing join condition for [departments,employees].  
answer($a9:varchar(20)) ->  
{  
}  
Info: 0 tuples computed.  
DES> SELECT ename  
FROM employees  
WHERE salary<1000 AND salary > (SELECT salary FROM employees WHERE  
salary>2000);  
Warning: Inconsistent condition.  
answer(employees.ename:varchar(20)) ->  
{  
}  
Info: 0 tuples computed.  
DES> SELECT salary  
FROM employees  
WHERE salary>2000 AND salary IN
```

```

(SELECT salary from employees WHERE salary<1000);
Warning: Inconsistent condition.
answer(employees.salary:float) ->
{
}
Info: 0 tuples computed.
DES> CREATE TABLE gas_products(
  name      VARCHAR(20) PRIMARY KEY,
  butane    FLOAT CHECK butane    BETWEEN 0 AND 100,
  propane   FLOAT CHECK propane   BETWEEN 0 AND 100,
  olefins   FLOAT CHECK olefins   BETWEEN 0 AND 100,
  diolefins FLOAT CHECK diolefins BETWEEN 0 AND 100,
  CHECK     butane+propane+olefins+diolefins = 100);
DES> SELECT name FROM gas_products WHERE butane>60 AND propane>50;
Warning: Inconsistent condition.
answer(gas_products.name:varchar(20)) ->
{
}
Info: 0 tuples computed.
DES> SELECT butane, propane FROM gas_products WHERE butane-propane=10 AND
butane+propane=80;
Warning: Constant output column "butane" with value "45.0".
Warning: Constant output column "propane" with value "35.0".
answer(gas_products.butane:float,gas_products.propane:float) ->
{
}
Info: 0 tuples computed.
DES> SELECT ename, dname FROM employees, departments;
Warning: Missing join condition for [employees,departments].
answer(employees.ename:varchar(20),departments.dname:varchar(20)) ->
{
}
Info: 0 tuples computed.
DES> SELECT ename, d.dept FROM employees e, departments d WHERE e.dept=d.dept;
Warning: Unnecessary join with "departments". There is a foreign key relating
this with "employees", and non-key attributes are not accessed.
answer(e.ename:varchar(20),d.dept:varchar(10)) ->
{
}
Info: 0 tuples computed.
DES> SELECT ename, dept FROM employees NATURAL INNER JOIN departments;
Warning: Unnecessary join with "departments". There is a foreign key relating
this with "employees", and non-key attributes are not accessed.
answer(ename:varchar(20),dept:varchar(10)) ->
{
}
Info: 0 tuples computed.

```