Conditions in SQL

Examples (company)
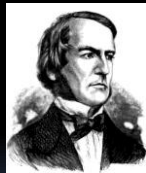
```
SELECT lname, SSN
FROM employee
WHERE salary > 40000


SELECT lname, SSN
FROM employee, department
WHERE dno = dnumber and
      dname = 'Research'
```

Boolean Logic

George Boole (1815-1864): Laws of Thought (1854)

Operators and
or
not

Truth-tables

p	not p
false	true
true	false

p	q	p and q
false	false	false
false	true	false
true	false	false
true	true	true

p	q	p or q
false	false	false
false	true	true
true	false	true
true	true	true

DeMorgan's rule

Condition examples

Company

- Female employees who make less than 30000
- Employees who are older than 40 and employees younger than 30
- Employees who are older than 60, unless they make more than 45000
- Names of dependents who are not spouses

More examples

Company

- Male employees which work for administration or research departments
- Employees working on both the Newbenefits and the ProjectX projects
- Departments with locations in Houston and Stafford
- Names of employees with dependent children
- We want to add a new rule: all managers must make at least $30,000. Is there anybody who violates that rule?

Even More examples

Company

- Departments not located in Houston?
- Employees without dependents?

Set Operations

UNION	(union)
INTERSECT	(intersection)
EXCEPT (MINUS)	(set difference)

{Alice, Queen} UNION {Alice, King}
     = {King, Alice, Queen}

{Alice, Queen} INTERSECT {Alice, King}
     = {Alice}

{Alice, Queen} EXCEPT {Alice, King}
     = {Queen}

Duplicates with Set Operations

Duplicates are eliminated if we use set operations like

UNION	(union)
INTERSECT	(intersection)
EXCEPT	(set difference)

Example (Company):
• List the SSN of all employees working for the research department, or supervising somebody in the research department
• List employees working on both ProductX and ProductY
• Departments not located in Houston

Intersection and Difference

Not supported by either Access or SQLServer.

Example workaround for intersection:

Managers that are supervisors

SELECT fname, lname, ssn
FROM employee AS e, employee AS s,
     department AS d
WHERE s.ssn = e.superssn AND
     s.ssn = d.mgrssn

Better solution (also works for difference) later.

Null Values

Comparisons with null values always fail.

SELECT *　　　　　　　　　　　　　will not list
FROM employee ←　　　　　　　　James Borg
WHERE superssn = superssn;

Use **is null** and **is not null**

SELECT *　　　　　　　　　　SELECT *
FROM employee　　　　　　　FROM employee
WHERE superssn is null;　　WHERE superssn is not null;

Example
- All employees for which we have address info
- Employees which are missing first or last name

Examples

Henry Books

- List paperback books, unless they are more expensive that $15 (with sales tax).
- List books that have both Stephen King and Peter Straub among their authors
- List hardcover book titles in the following genres: horror, sci/fi and fantasy.
- List non-fiction, non-travel books by John Steinbeck