COMP9311 Ass3q23
Zeshi Wu
Z5102175

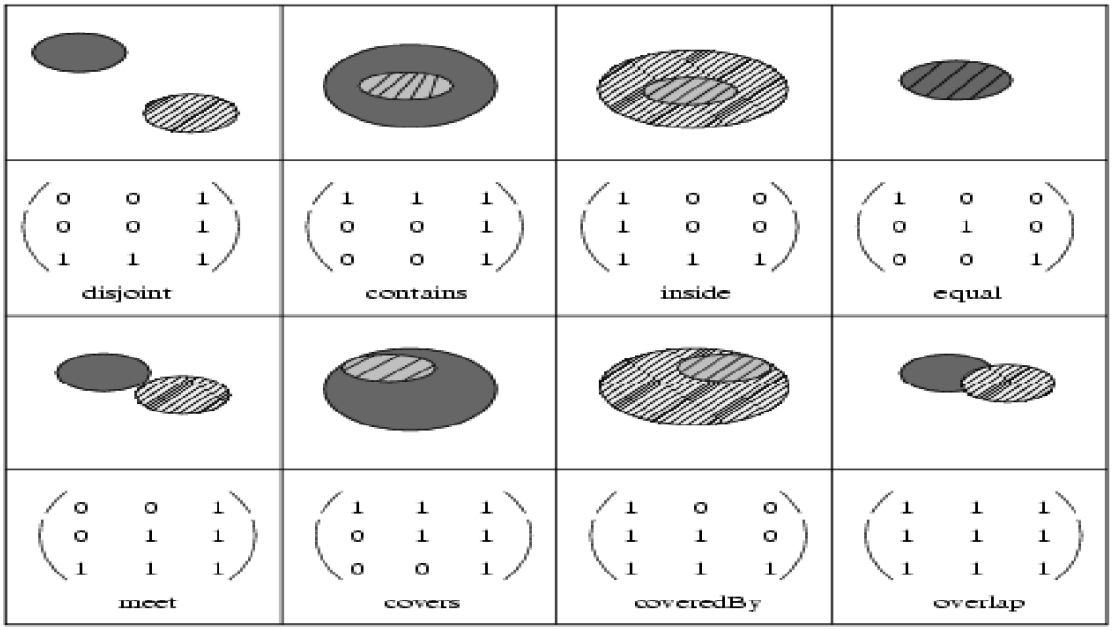
Q2:

The 9-intersetion-schema can be simplify as 4-intersection-schema.

$$\Gamma 4 = \begin{pmatrix} \mathbf{A}^\circ \cap \mathbf{B}^\circ & \mathbf{A}^\circ \cap \partial\mathbf{B} \\ \partial\mathbf{A} \cap \mathbf{B}^\circ & \partial\mathbf{A} \cap \partial\mathbf{B} \end{pmatrix}$$

Disjoint $\begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$	**Contains** $\begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix}$	**Inside** $\begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}$	**Equal** $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
Meet $\begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}$	**Cover** $\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$	**CoveredBy** $\begin{pmatrix} 1 & 0 \\ 1 & 1 \end{pmatrix}$	**Overlop** $\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$

Figure2.1 The original 9-intersection



Q3:

(1)

```
SELECT r.NAME
FROM Road r , Building b
WHERE b.NAME = ”Computer Science and Engineering”
AND cross(r.GEOMETRY, b.GEOMETRY) = 1;
```

(2)

```
SELECT b.NAME
FROM Building b, HelpPoint p
WHERE p.CODE=001
AND overlap(b.geometry, Buffer(p. Geometry,1))=1;
```

- ** If ‘totally cover’ means that cover whole building **
- ** OVERLAP operation should be replaced by CONTAINS **

(3)

```
SELECT b1.NAME
FROM Building b1, Building b2
WHERE touch(b1.GEOMETRY,b2.GEOMETRY) =0;
```

(4)

```
SELECT p.NAME
FROM Building b, HelpPoint p
WHERE b.NAME = ”Computer Science and Engineering”
AND Distance (b.GEOMETRY,p.GEOMETRY) <=
      ALL ( SELECT Distance(b.GEOMETRY,p2.GEOMETRY)
                  FROM HelpPoint p2
                  WHERE p.Name <> p2.Name
            );
```