

Qunfong Wang

1.

$$\alpha \rightarrow \beta$$
$$\gamma \rightarrow \delta$$

Augmentation

$$\alpha\gamma \rightarrow \beta\gamma$$
$$\alpha\gamma \rightarrow a\delta$$

Union

$$\alpha\gamma \rightarrow \beta\gamma\delta$$

Decomposition

$$\alpha\gamma \rightarrow \beta\delta$$
$$\alpha\gamma \rightarrow \gamma$$

Trivial $\alpha\gamma \rightarrow \gamma$

$$\alpha\gamma \rightarrow \beta\delta$$

2.

$$G = \{ A \rightarrow CD, E \rightarrow AH \}$$

$$F = \{ A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H \}$$

G to F

Decomposition on

$$A \rightarrow CD \text{ and } E \rightarrow AH$$

Result :

$$A \rightarrow C$$

$$E \rightarrow H$$

$$E \rightarrow A$$

$$A \rightarrow D$$

Transitivity on

$$E \rightarrow A \text{ and }$$

$$A \rightarrow D$$

Result :

$$E \rightarrow D$$

After that union on

$$E \rightarrow D \text{ and }$$

$$E \rightarrow A$$

Result :

$$E \rightarrow AD$$

Decomposition on $A \rightarrow CD$

$$A \rightarrow D$$

$$A \rightarrow C$$

Union on

$$A \rightarrow D$$

$$A \rightarrow C$$

Result :

$$AC \rightarrow D$$

F to G

Reflexivity

$$AC \rightarrow C$$

Given

$$AC \rightarrow D$$

Union on

$$AC \rightarrow C$$

$$AC \rightarrow D$$

Result :

$$AC \rightarrow CD$$

Given

$$A \rightarrow C$$

reflexivity

$$A \subseteq AC$$

transitivity on

$$AC \rightarrow A$$

$$AC \rightarrow D$$

Result :

$$A \rightarrow D$$

Union

$$A \rightarrow C$$

$$A \rightarrow D$$

Result :

$$A \rightarrow CD$$

Given

$$E \rightarrow AD$$

Given

$$E \rightarrow H$$

Union on :

$$E \rightarrow AD$$

$$E \rightarrow H$$

Result :

$$E \rightarrow ADH$$

Reflexivity

$$AH \subseteq ADH$$

Transitivity on :

$$ADH \rightarrow AD$$

$$E \rightarrow ADH$$

Result :

$$E \rightarrow AH$$

3.

Select distinct cName

From Pustomer c, Purchase p, Store s

Where p.Cid = c.Cid AND s.Sid = p.Sid AND s.SName = "Albert Heijn";

4.

Select distinct SName

From Store as s1, Store as s2

Where s1.Sid <> s2.Sid AND S1.SName = s2.SName

EXCEPT

Select SName

From Store

Where city = "Eindhoven"

5.

List the names and ID's of all the customers who in some store bought the whole stock of a certain product.