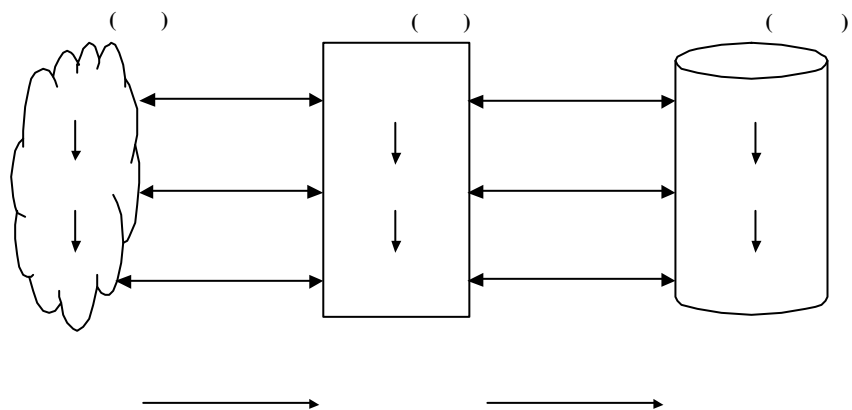


5.

5.1

□ 3



- (conceptual design)

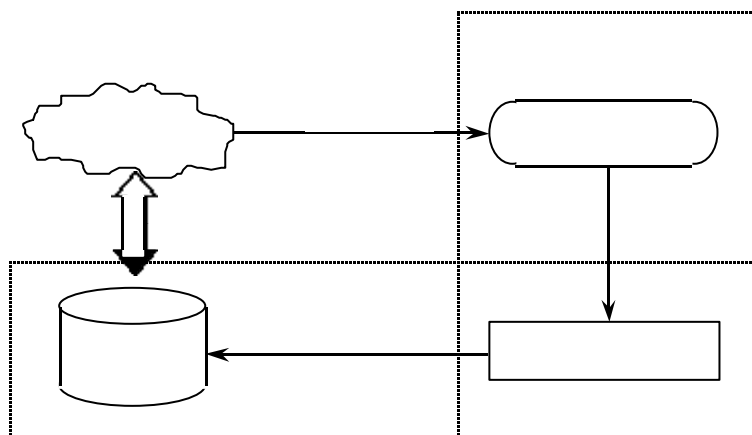
- :
- Entity type & attribute

- (logical design)

- (data modeling) :
- (access method)

- (physical design)

- (data structuring) :
-



5.2



$D = \langle S, O, C \rangle$

- S : (structure)
 - ◆ ()
 - ◆
- O : (operation)
 - ◆
 - ◆
 - ◆
- C : (constraint)
 - ◆
 -
 - (S)
 -
 - ◆

5.3



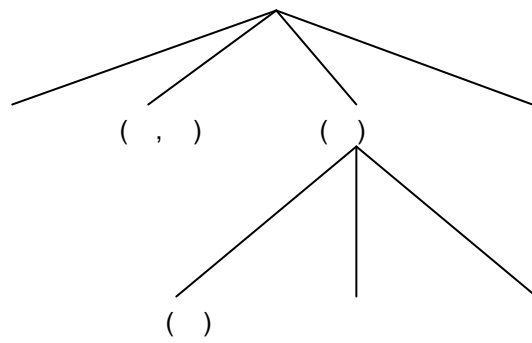
(entity type)

-
- (entity set) :



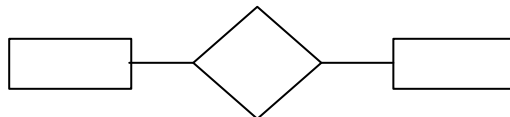
(attribute)

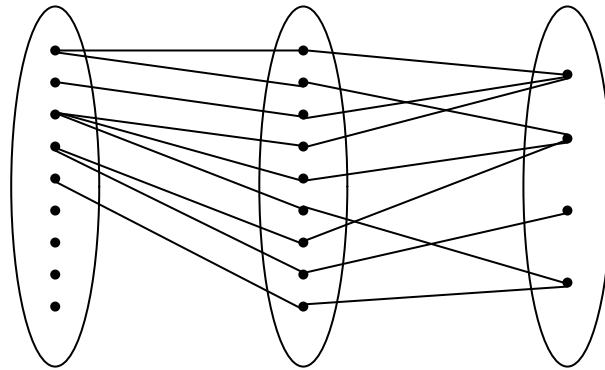
- i. (simple) (composite)
- ii. (single-valued) (multivalued)
- iii. (stored) (derived)
- iv. (null)
 - not applicable
 - unknown: missing, not known



5.4

- (relationship type)
 - (correspondence)
 - (mapping)





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□

—

– 1 : 1 ()

$f_x : x \rightarrow y$ and

$f_y : y \rightarrow x$

marriage : bridegroom bride

– 1 : n ()

$f_x : x \rightarrow y$ or

$f_y : y \rightarrow x$ (but not both)

motherhood : mother children

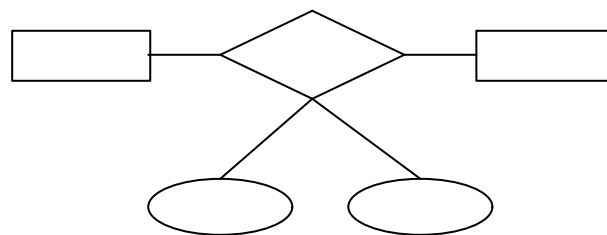
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-
- $n : 1$ ()
 $fx : x \rightarrow y$ or
 $fy : y \rightarrow x$ (but not both)
 position : professor department
 - $n : m$ ()
 $fx : x \rightarrow y$
 $fy : y \rightarrow x$ (neither)
 enrollment : student course

Note : (functionality)

□ 가 가 .



□

– (total participation)

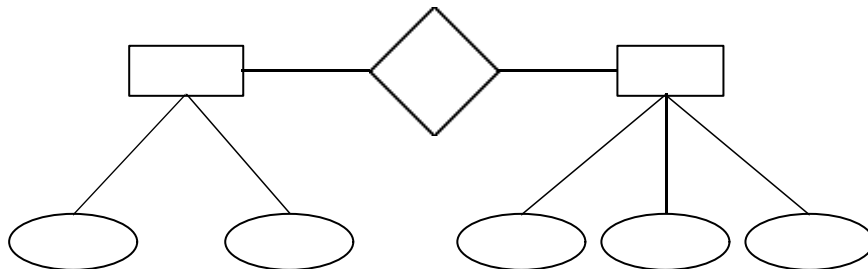
◆ A-B B 가 A-B
B A-B .
◆ ex) –

– (partial participation)

◆ A-B B A-B
B A-B .
◆ ex) – ()

□ (existence dependence)

– b 가 a
– b a
– a : (dominant entity)
– b : (subordinate entity)



(: , :)

5.5 –

□

□

□ :

□ :

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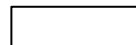


E - R

□ 1976. Peter Chen

□ E - R

– (entity type)



– (relationship type)



– (attribute)



– (link)

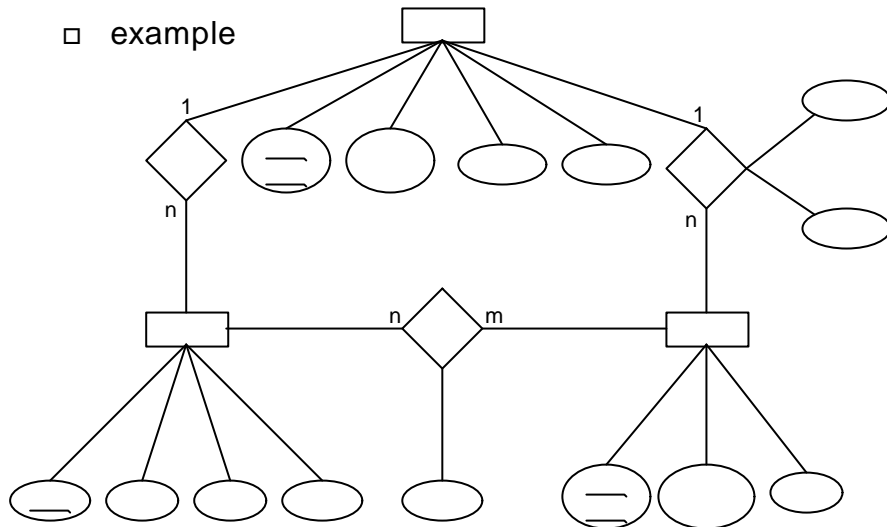


– (label) : (1:1), (1:n), (n:m)

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□ example



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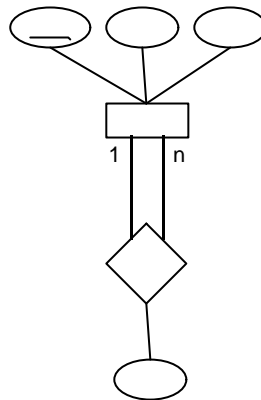
□ E-R

- (attribute) 가
- (m:n)
- (n - ary relationship)
- ◆ 가
- (multiple relationship)
- ◆ 가 가

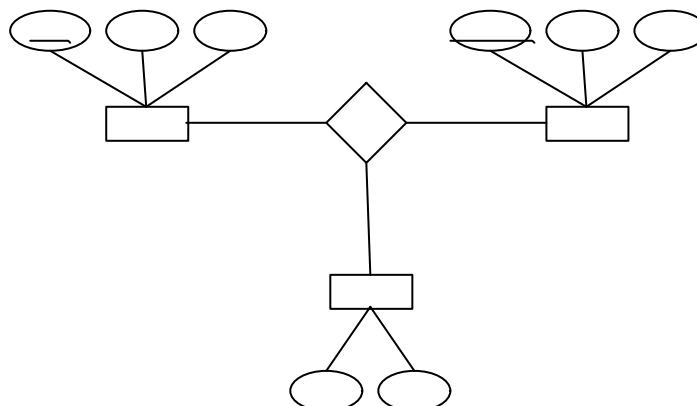
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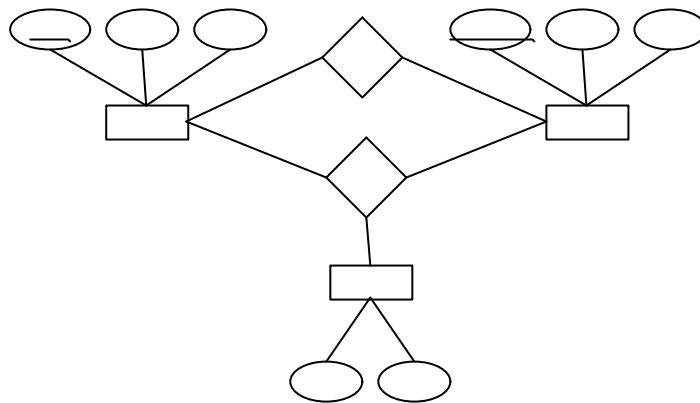
□ Example



□ Example: - (ternary)



□ Example:



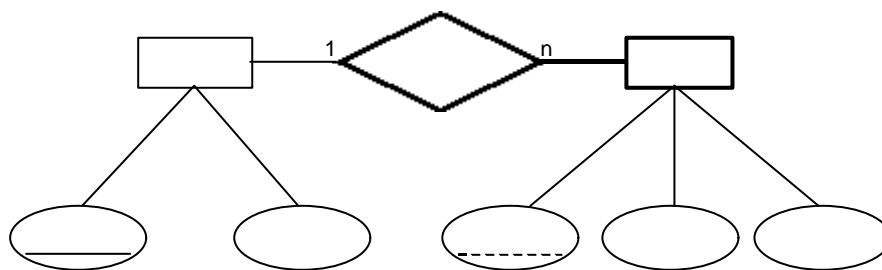
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□ (key attribute)

- (key)
- ◆
-
- ◆
- E-R

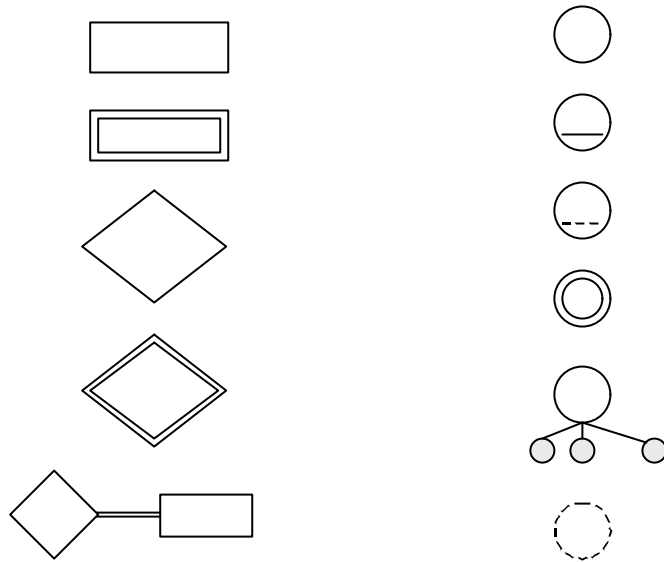
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-
- (weak entity type)
 - \leftrightarrow (strong entity type)
 - :
 - :
 - (identifying relationship type)
 -
 - (discriminator)
 -
 - (partial key)
 -



E-R

E - R



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(Extended E - R model)



—

—

- ◆ (specialization)
- ◆ (generalization)
- ◆ (aggregation)

—

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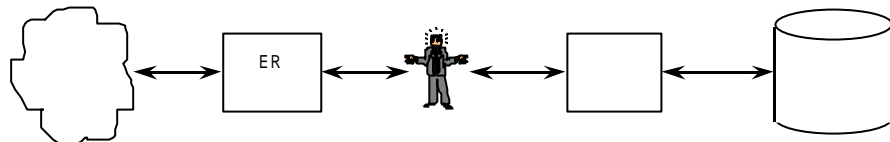


5.6

□



□



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□

(Relational Data Model)

□

(Hierarchical Data Model)

□

(Network Data Model)

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□

– ()

– ,

□

(Relation Scheme)

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ER

□

- Entity type
- Relationship

□

– 가

◆

– Entity type mapping

◆ 1:1 : relationship

◆ 1:n : relationship

가 (many)

◆ m:n : 가

– Null

◆

null

◆

가

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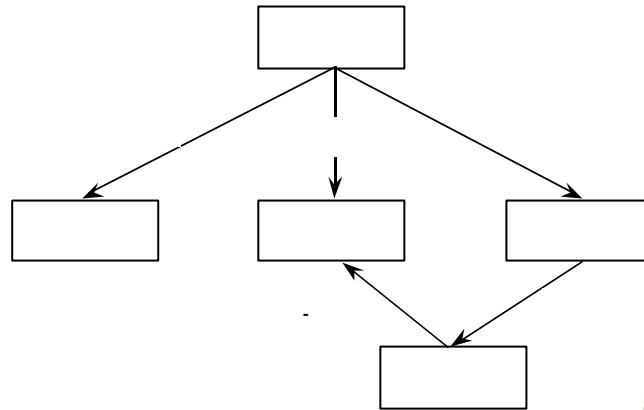


Note:

□ Bachman (1969)

□

— : (1:n)



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□

— : ()
 — (link;arc) : (1:n)
 — :

□

가

— ,
 — :
 — :

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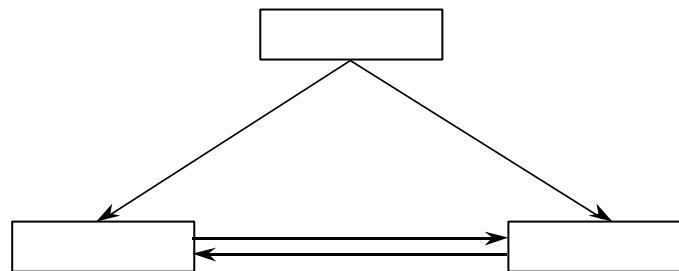


□ Network()

□ ,

□ Owner - member

– 1:n



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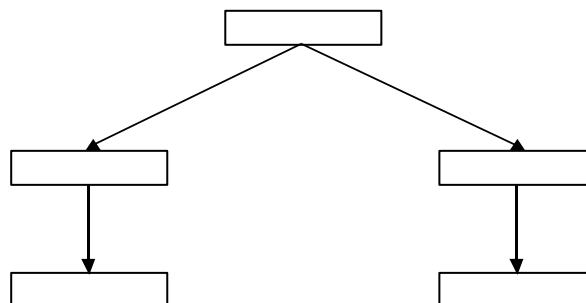


□ No Cycle

□ ,

□ - (Parent - Child)

– 1:n



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