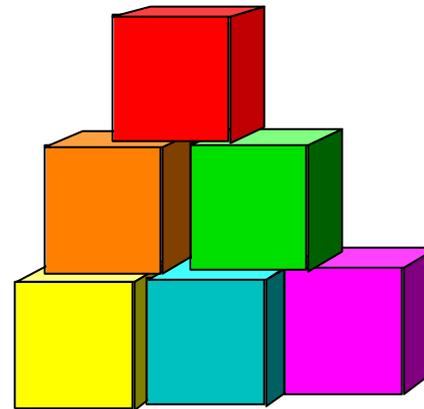


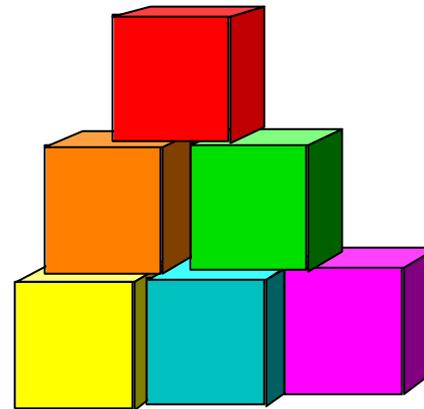
# I

- (Subject Area)
- (Entity Type)
- (Relationship)
- (Attribute)
- (Identifier)
- (Subtype)
- (Normalization)



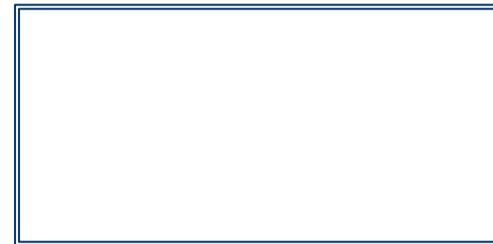
# (Subject Area)

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# (Definition)

- ( )
- (Decomposition)  
– (Top - down)
- (Entity Type)
- (Function)
- :
- (ISP)
- 

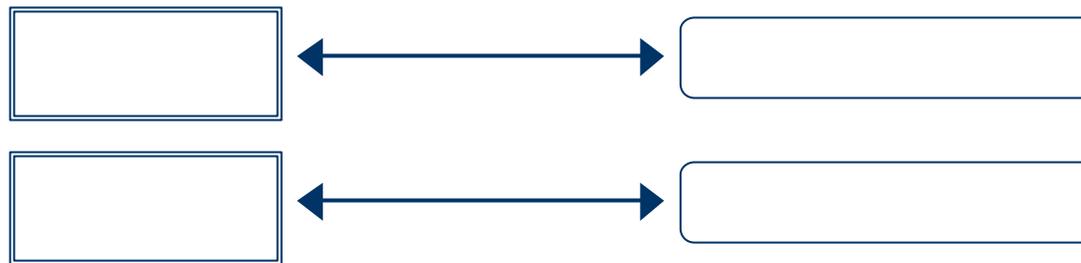


# (Naming)

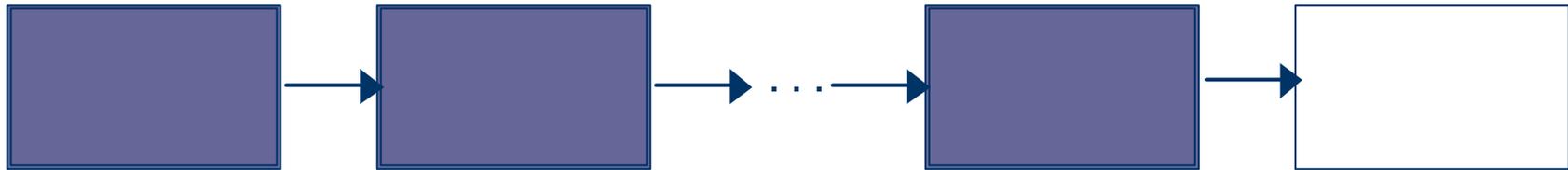
- - : , , , ,

- - (Central)
    - :

- - (Activity)



# (Hierarchy)



(Root Subject Area)

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• : “ ” “ ”

(Primitive Subject Area)

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( 3 4 가 )

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(Primitive Function)

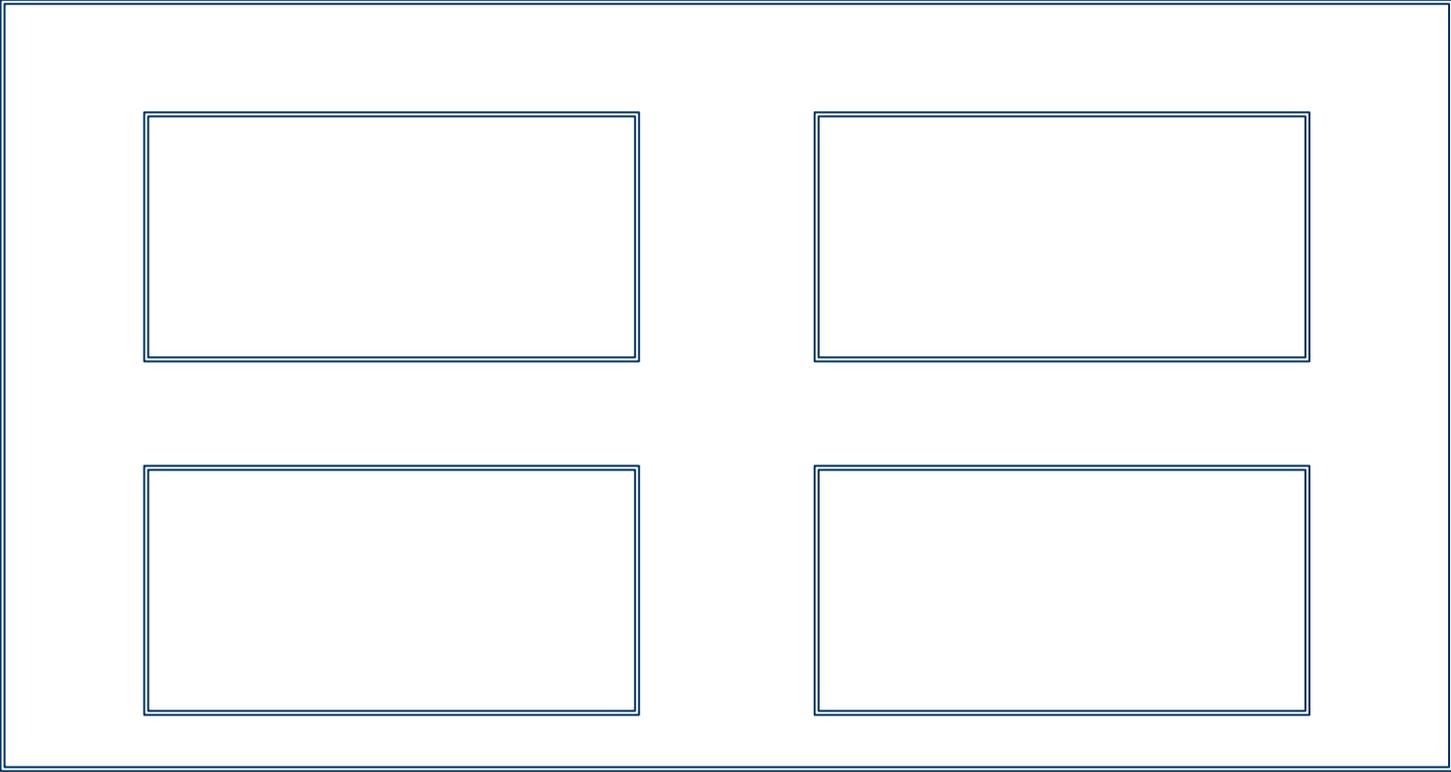
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• :

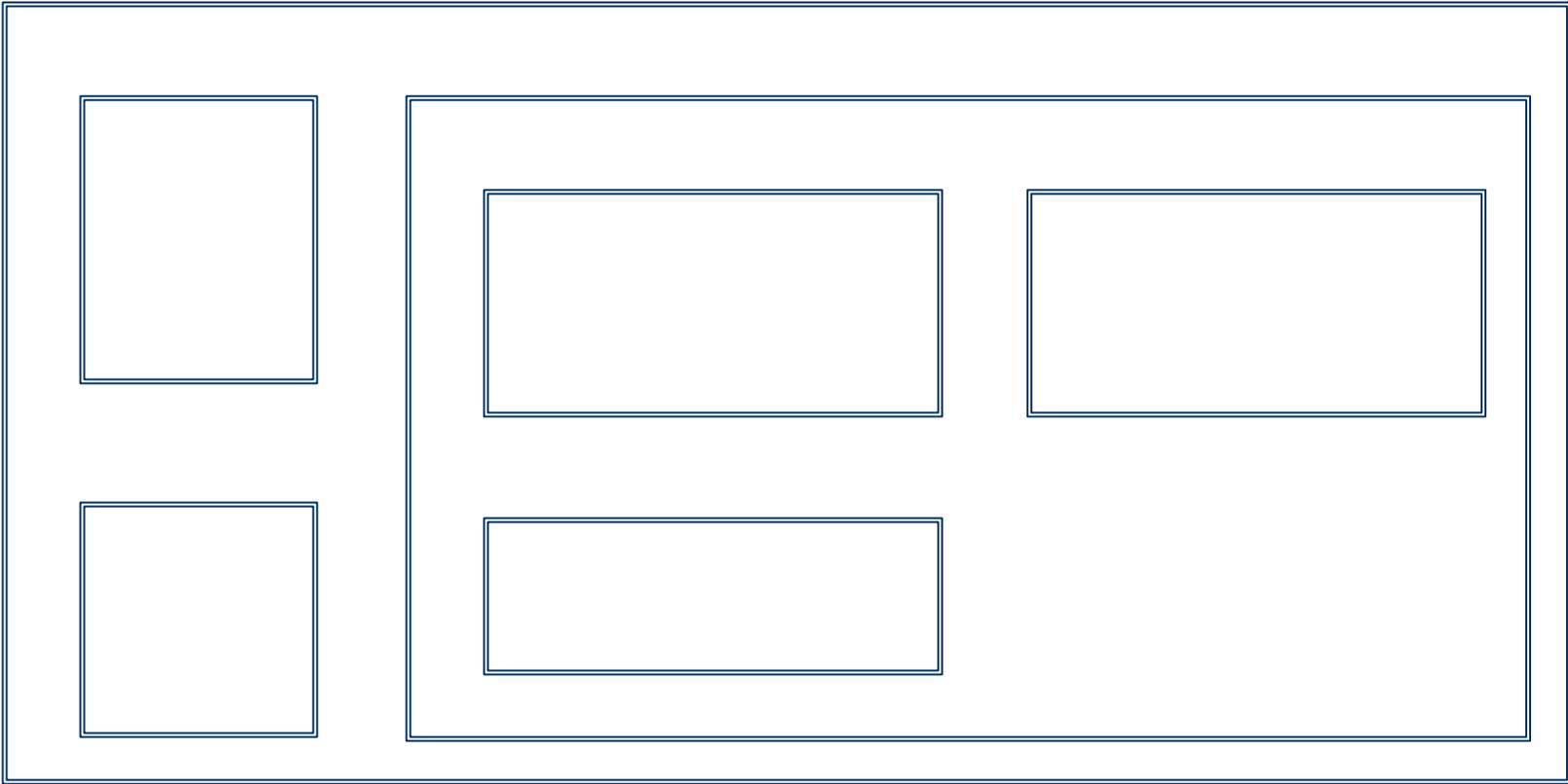
1



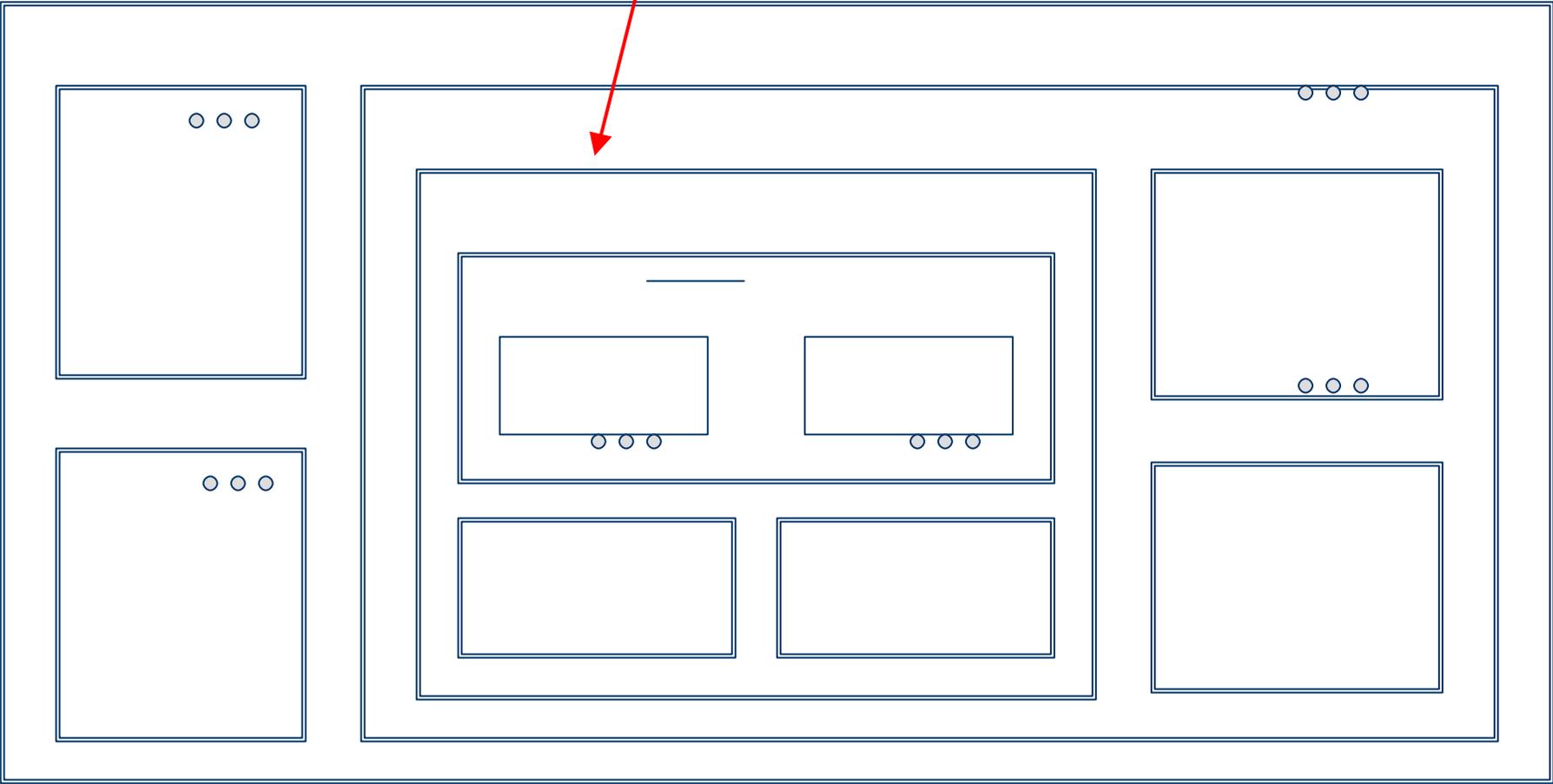
(Root Subject Area)



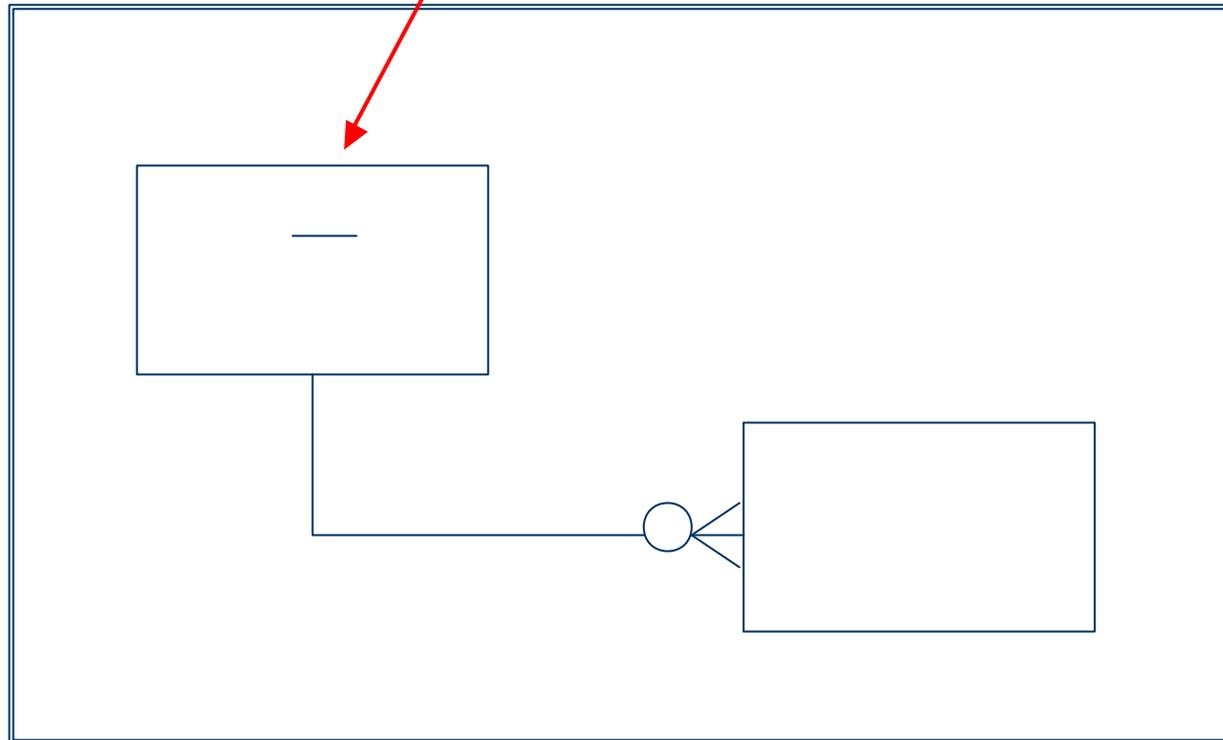
2

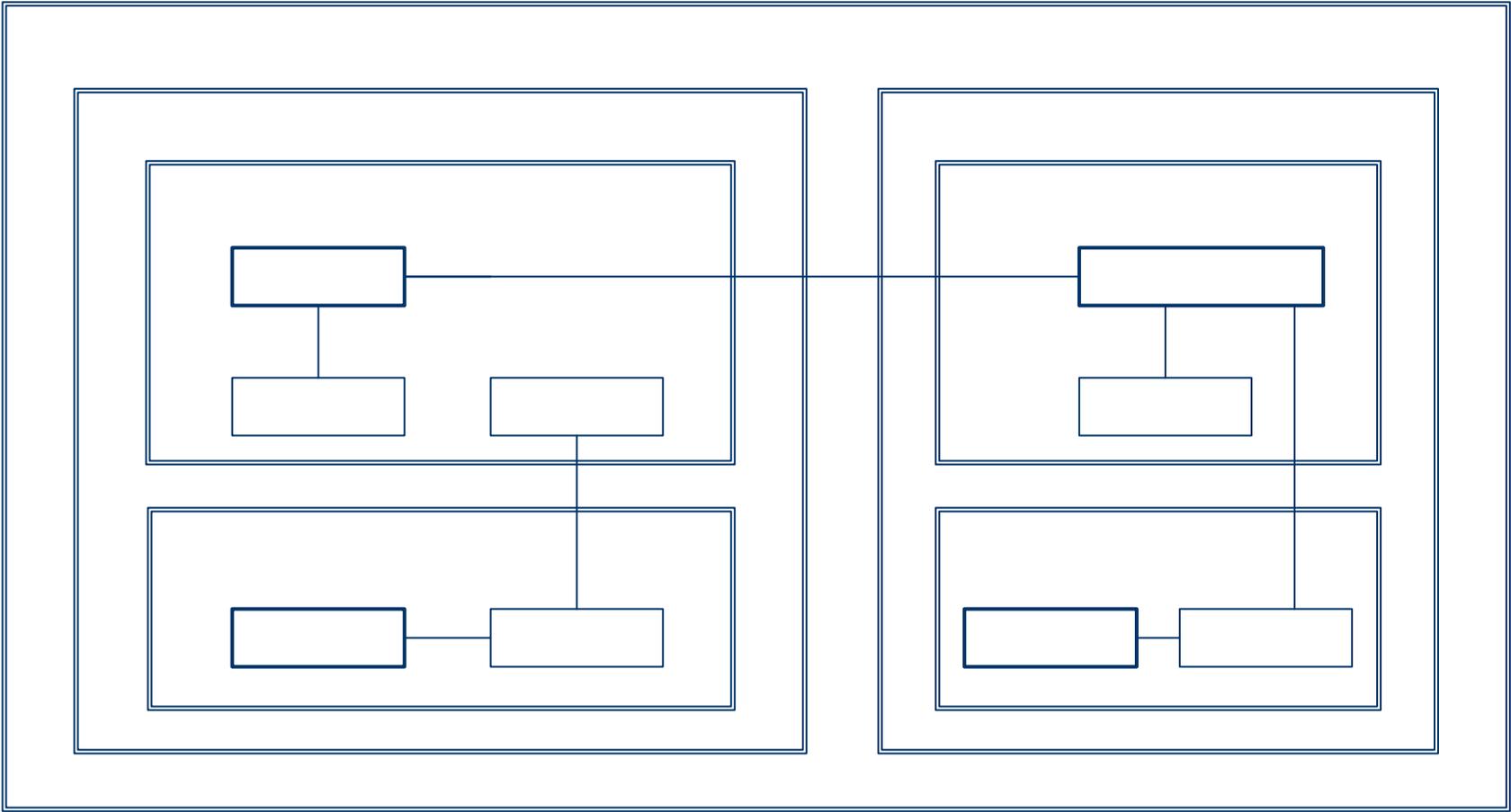


(Primitive Subject Area)



(Central Entity Type)





(Function)

(Quality Assurance)

(Project Management)

(Development Coordination)

(Repository)

가





(Top - down)



(Bottom - up)



(Architecture Model)



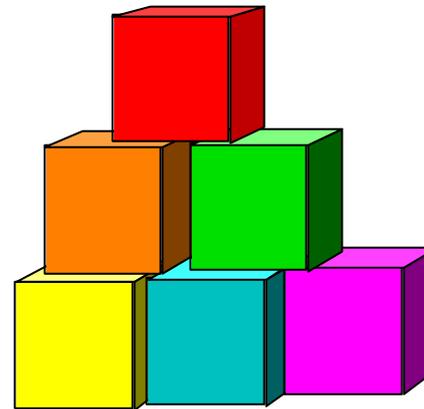
- 

- :
- (1 , 2 .. )
- ( )
- ( )

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# (Entity Type)

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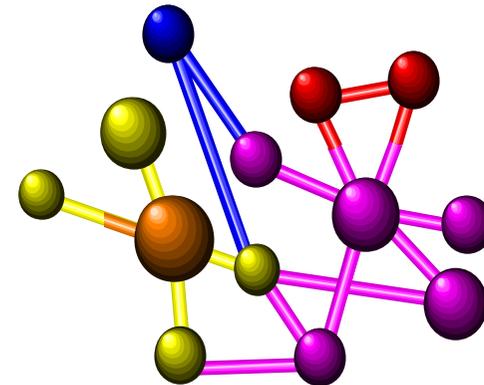
# (Definition)

- 
- - : , , ,
- (Primitive Subject Area)
- (Process)
- (ISP) , (BA)
- (Table)
- 



# (Classification)

- - (Tangible)
  - (Intangible)
  - (Conceptual)
  - (Active or Event)
- - (Central)
  - (Independent)
  - (Dependent)
  - (Characteristic)
  - (Associative or Intersection)



- (Tangible)

- 가

- ,

- ,

- : , ,

- (Conceptual)

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- : , , ,

- (Active or Event)

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- : , , , ,

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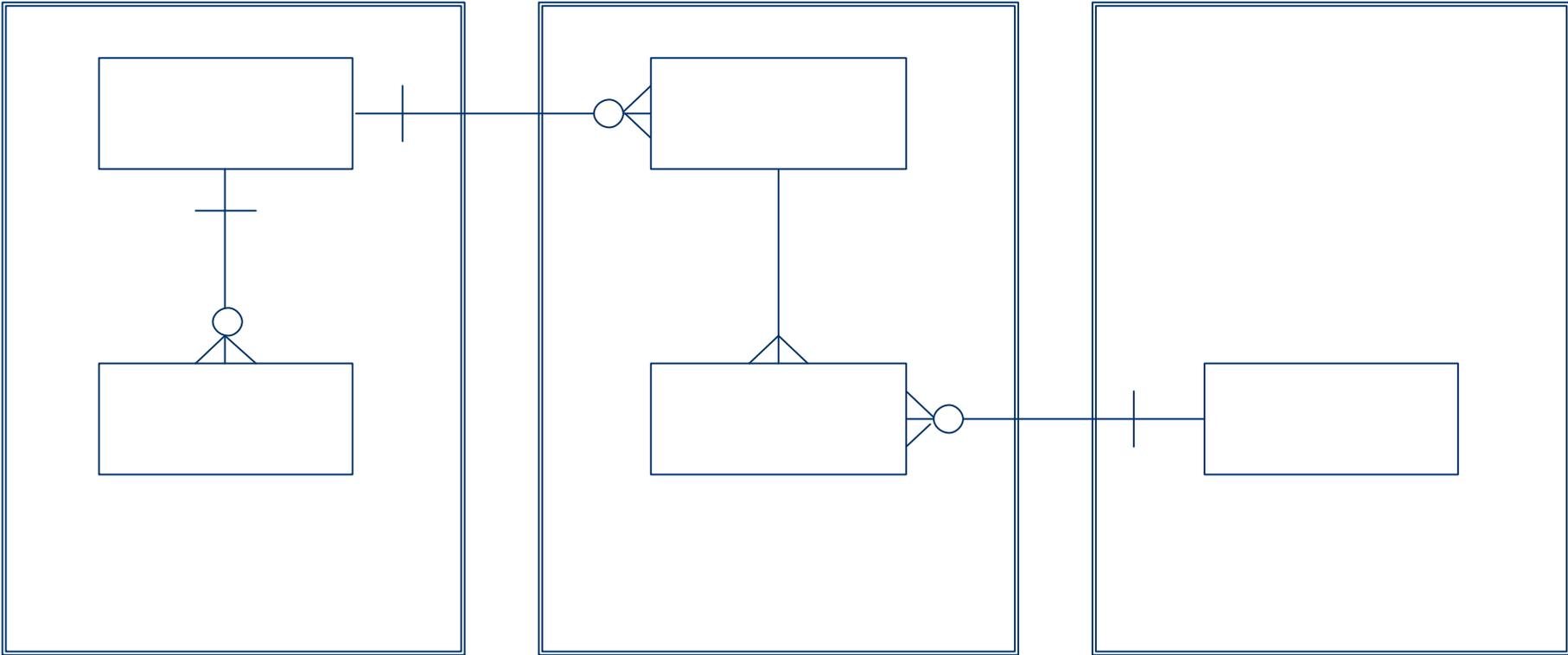
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# - (1)

- (Central)

- 가 ( )
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- : , ,

- (Independent)

- 가 가
- , 가
- : ,

- (Dependent)

- 가 가
- : , ,

- (2)

- (Characteristic)

- 
- 가 ( )
- 
- :

- (Associative)

- 
- (M:N)
- 
- :

Also When					
		N	U	N	N
	N		S	S	S
	S	S		N	S
	N	A	N		N
	N	A	S	N	

- A : (Always)
- U : (Usually)

- S : 가 (Sometimes)
- N : (Never)

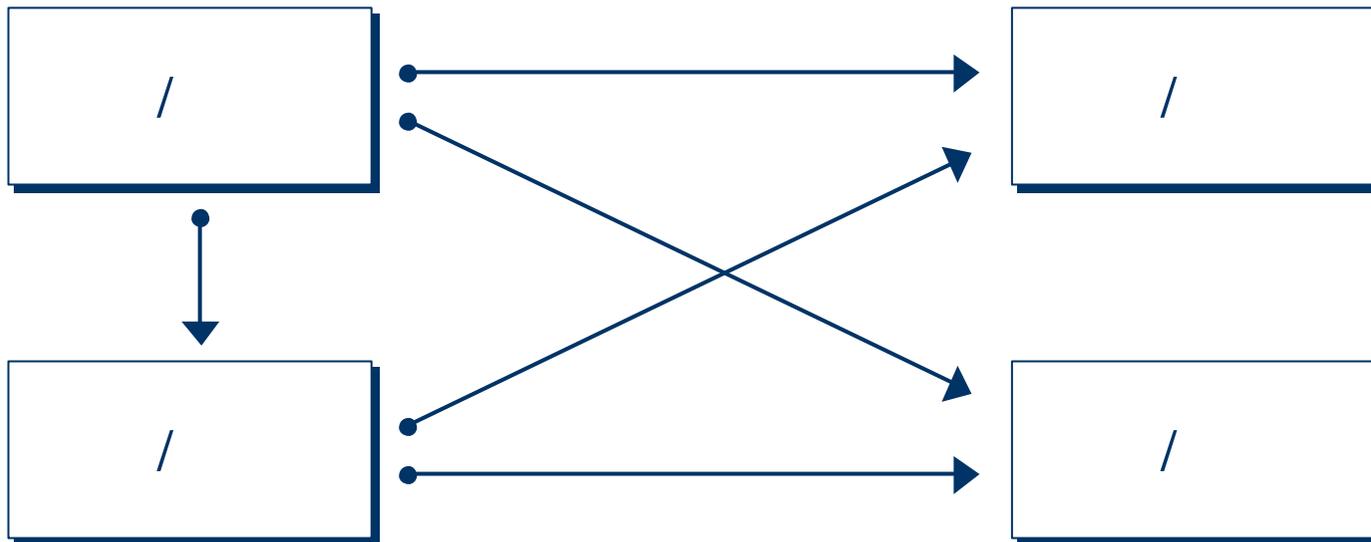
-

- (Top-down)

- / , /

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- ( ) 가

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(Entity)

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- 

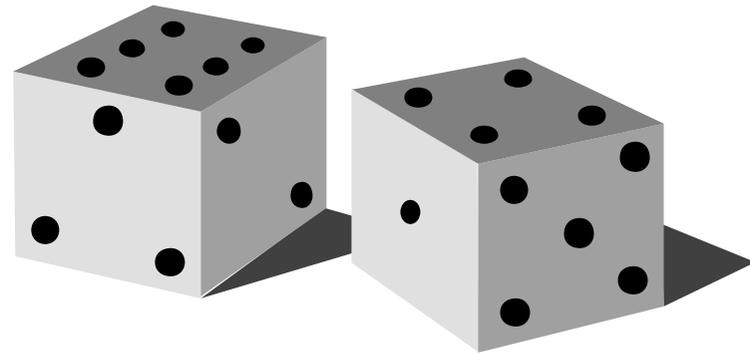
(Occurrence or Instance)

				...
123456		...	786-1114	...
123457		...	629-1111	...
...	...	...	...	...



(1)

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# (Naming)

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(Abbreviation)

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, (Aliases)

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- 1997 : , , ,

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- : (ISP)

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  - / , / , / , /

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- , ,

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(2)

가

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: PM-96-123

: 1998.5.28

:

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			가		

⋮

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- (Name)
- (Description)
- (Property)
- 
- 가
- (Table Name)
- 
- (Aliases)
- 가

# (Description)

- 

- 

- (Scope):

- (Qualification):

- 

(Sample)

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- :

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가 .

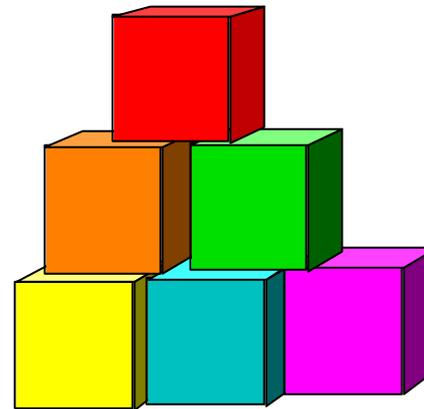
# (Property)

- - ( , , , )
  - / / ( : 200,000 / )
  - 가
  - 가/
  - : 10% /
- ( )
  - ( : INSACCTB)

# (Relationship)

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( )



# (Definition)

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(Business Rule)

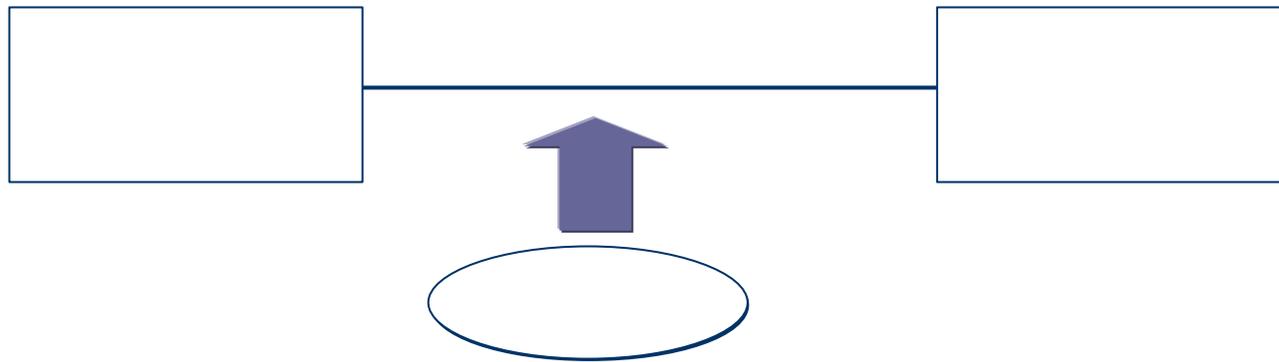
가

(Foreign Key)

(RI)

(Referential Integrity)

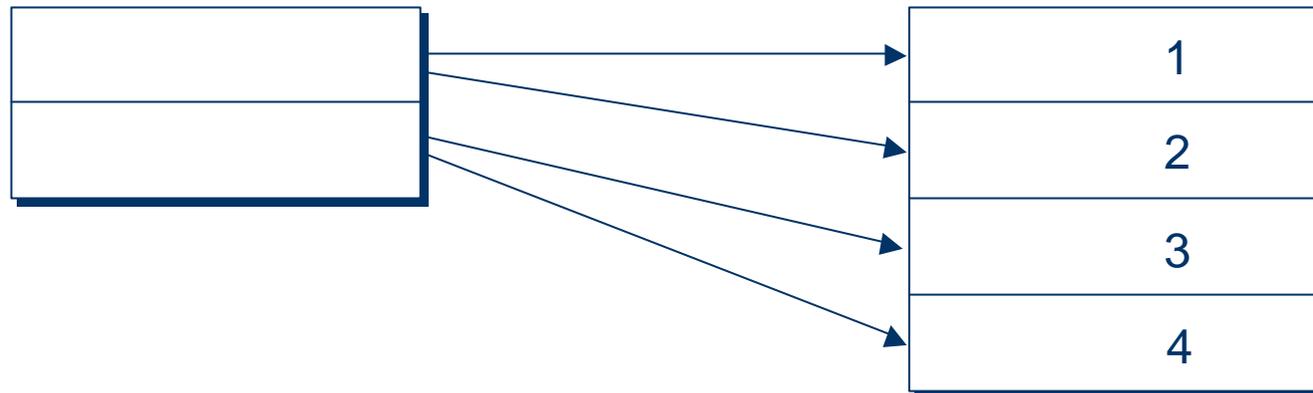
-



(Pairing)

(Relationship)

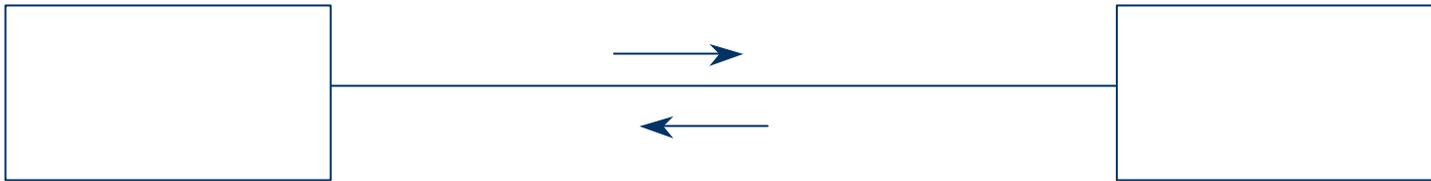
- :
  - :
  - :
- (Instance)  
?



# (Membership)

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( )



- (Cardinality)

- : 가 가

- : (1:1), (1:M), (M:N)

- (Optionality)

- :

- : (Mandatory), (Optional)

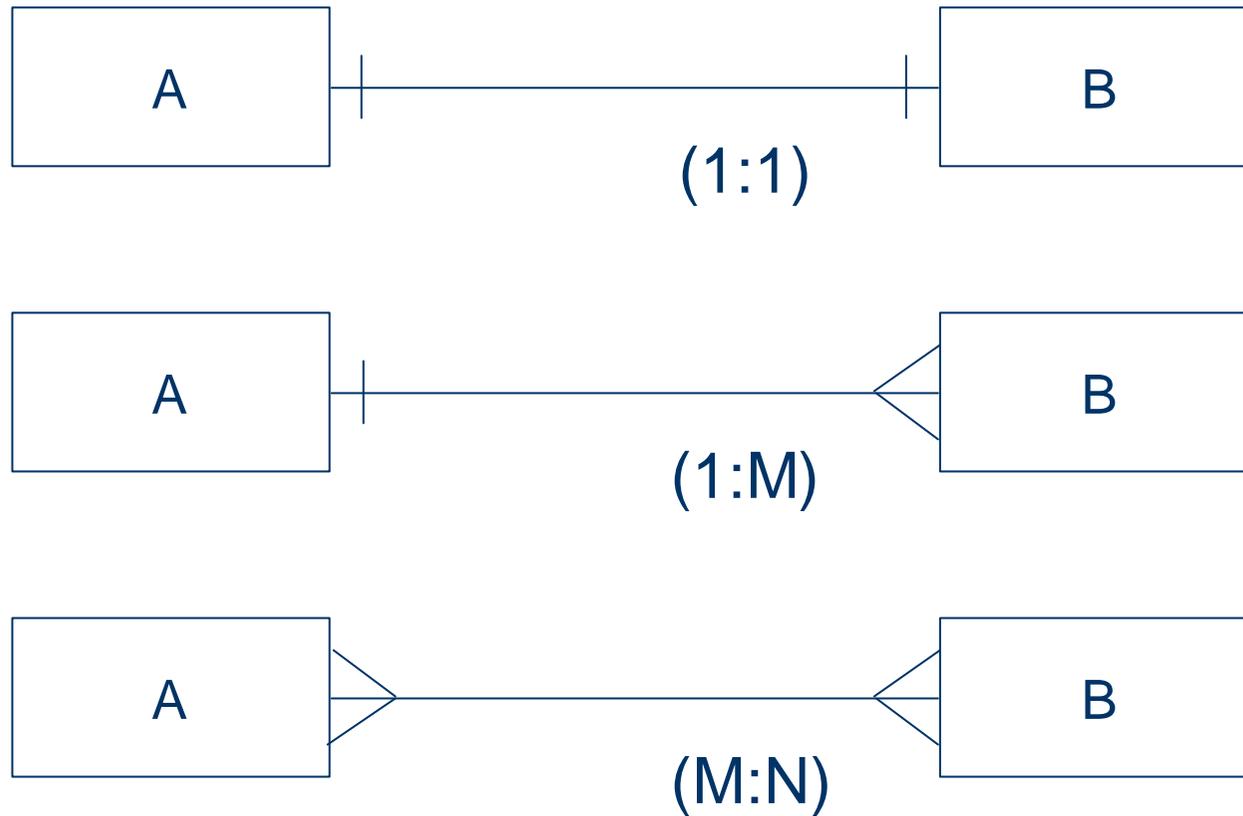
- 가 (Transferability)

- : 가

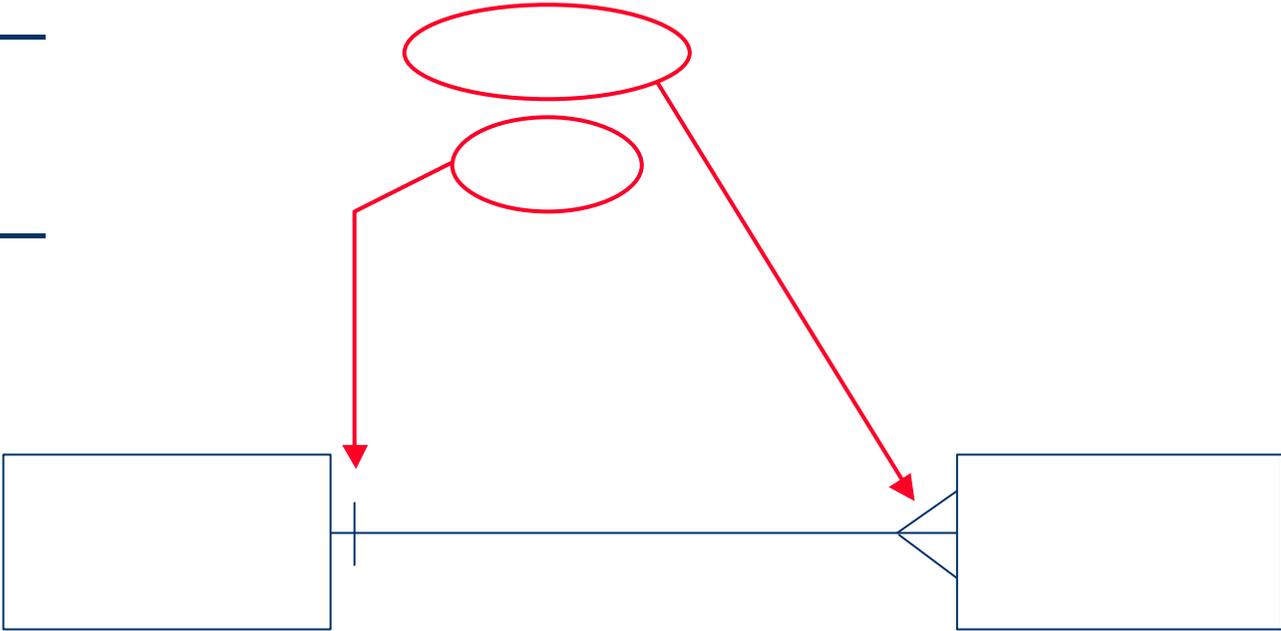
- : (Fixed or Non-transferable), 가 (Transferable)

-

# (Cardinality)



# (Cardinality)



**Only One**

**One or More**

# (Optionality)



(Fully Mandatory)

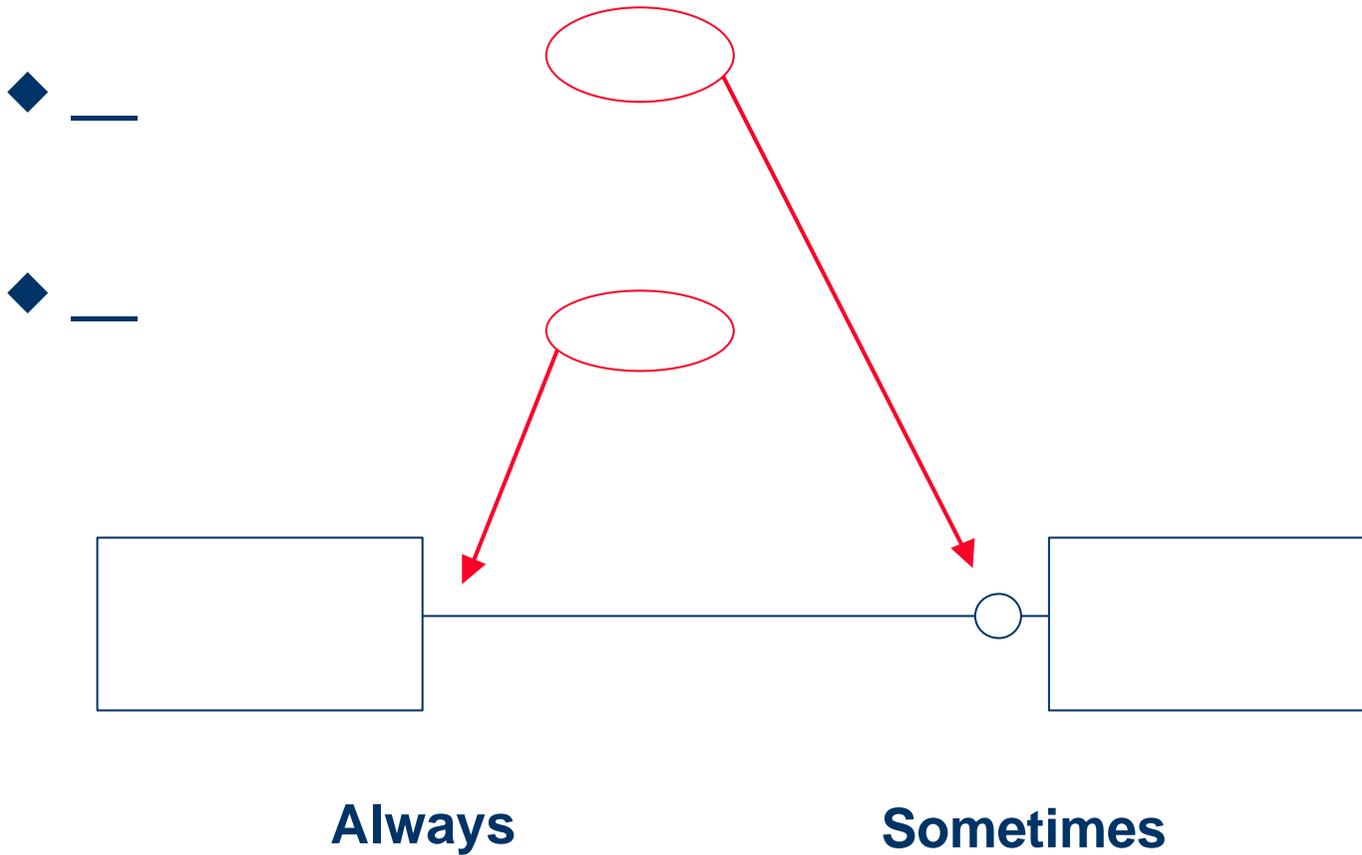


(Partly Optional)



(Fully Optional)

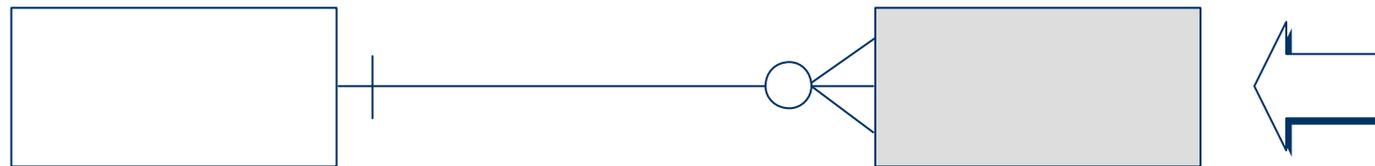
# (Optionality)



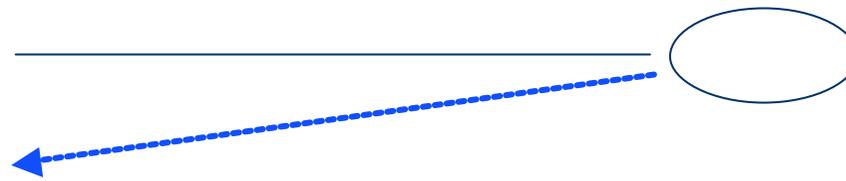
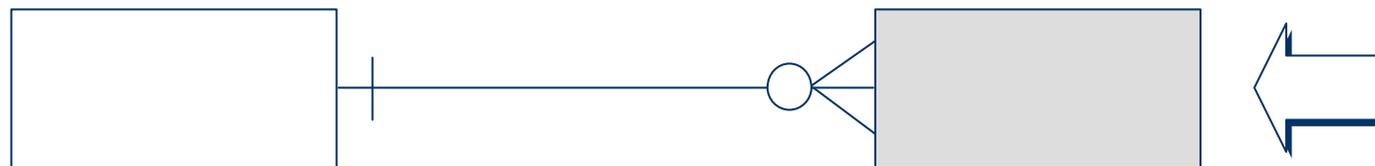


# 가 (Transferability)

- (Fixed):

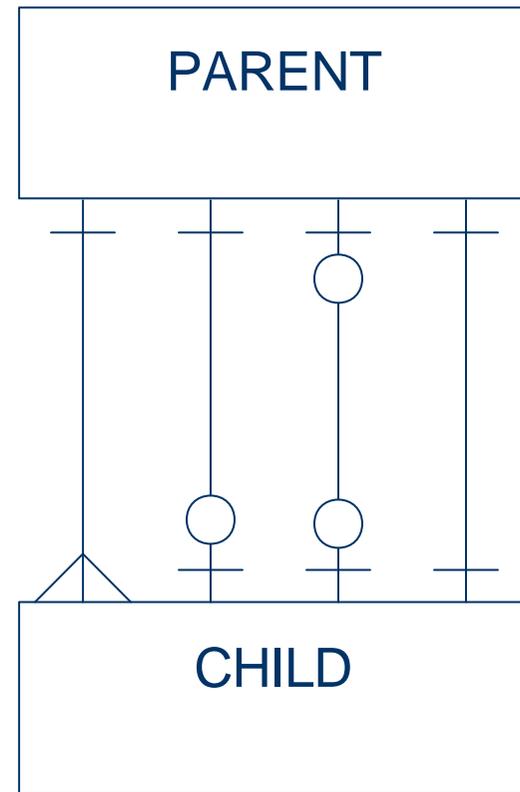


- 가 (Transferable):



	1:M (90%)	1:1 (10%)	M:N ( )
<b>1</b>			
<b>2</b>			
<b>3</b>			
<b>4</b>			

- (Parent)
  - ● (1:M) (1)
  - ● (1:1)
  - ● : (Mandatory)
  - ● :
  - ● :
- (Child)
  - (Foreign Key)



- (1)

- (Parent / Child )

-

(1 or M)

-

(Only 1)

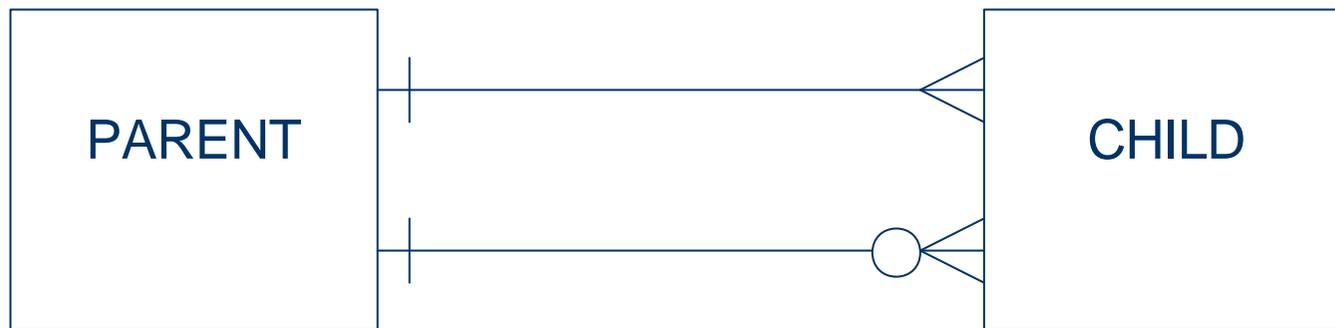
- (Parent / Child )

-

(0, 1, M)

-

(Only 1)



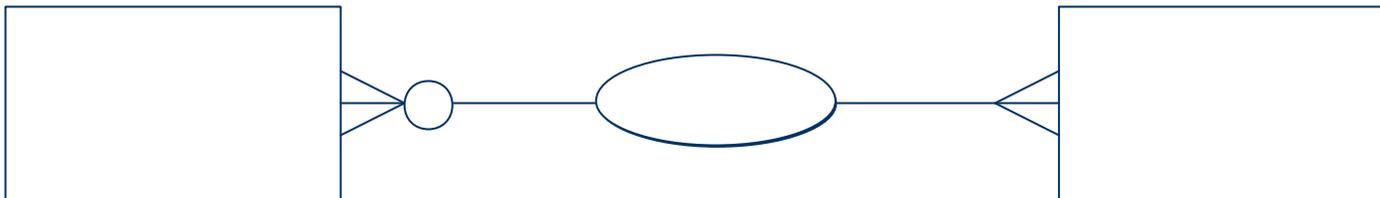
## (2)

- (Parent / Child )
  - (0, 1, M)
  - (0 or 1)
- (Parent / Child )
  - (1 or M)
  - (0 or 1)
- (Parent)가
  -



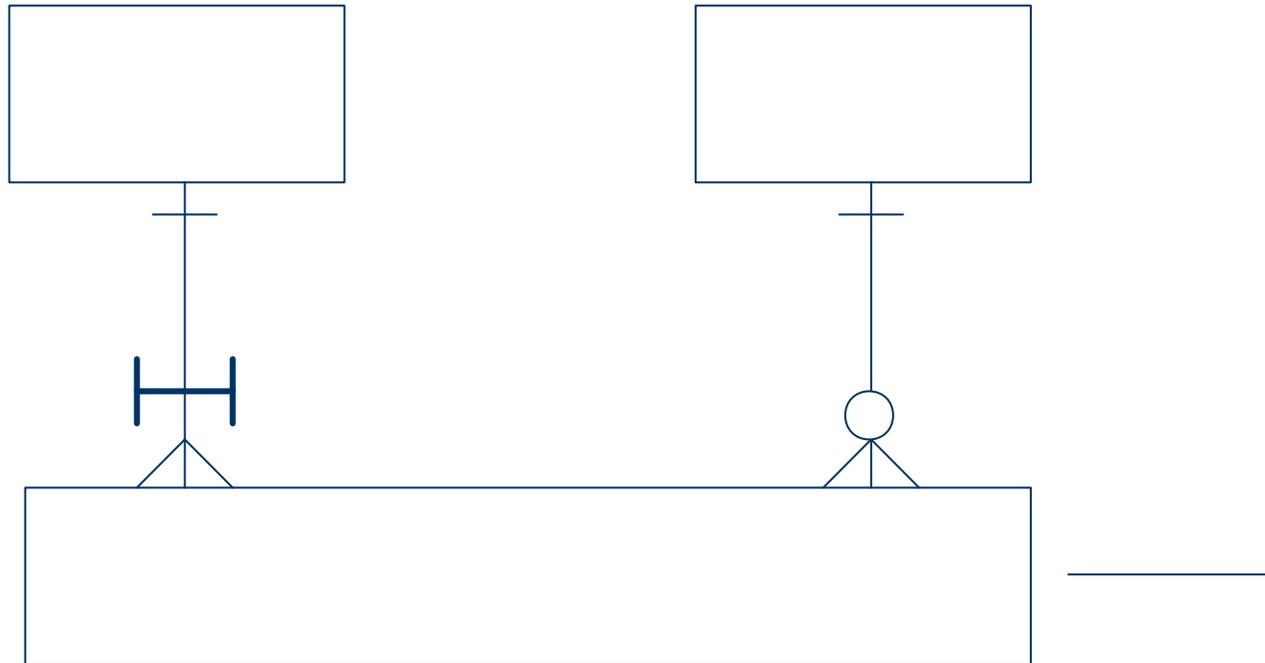
# (M:N)

- RDB 가
- - 가 ( )
  - 가 (M:N) (1:M)
  - 가 (1:M) ( )
  - 가



(M:N)

-



(Associative or Intersection)

( )

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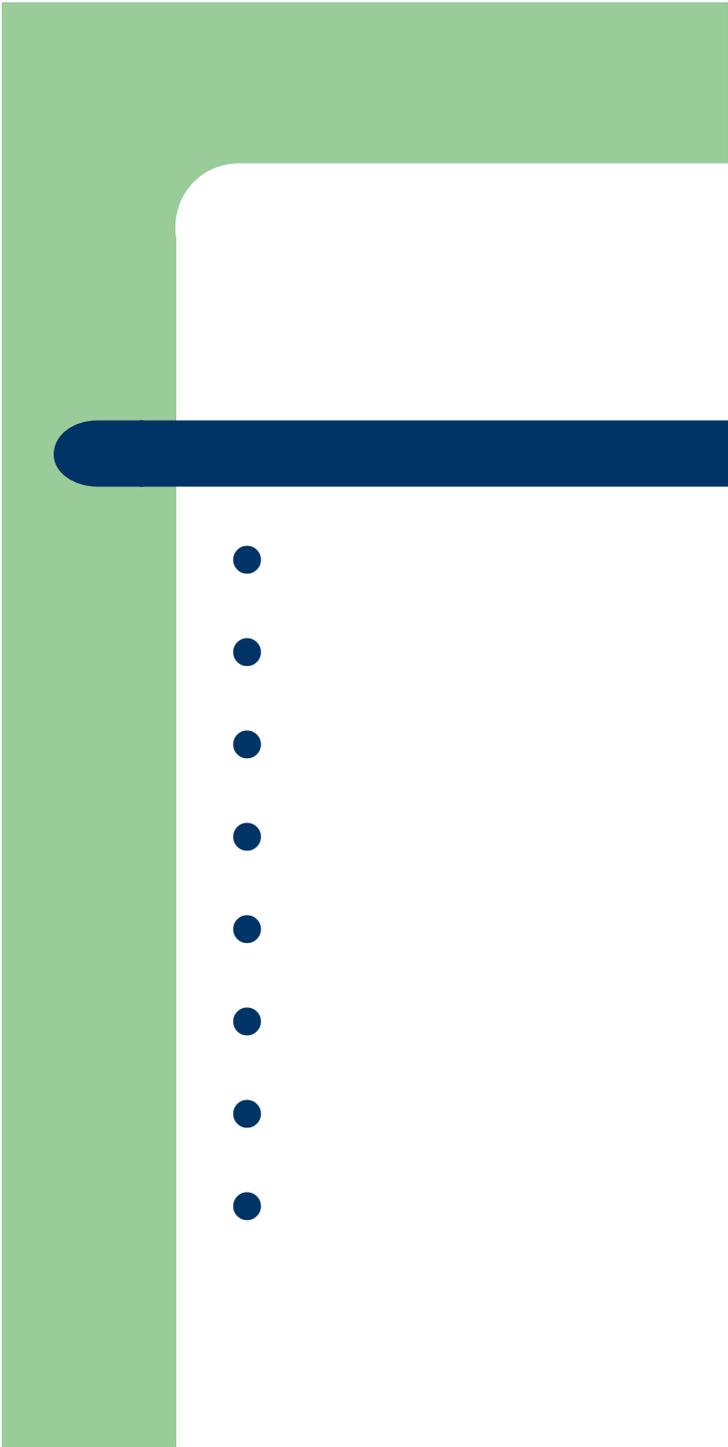
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- / ( ) 가

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- : ( 가) , ( ) , ,





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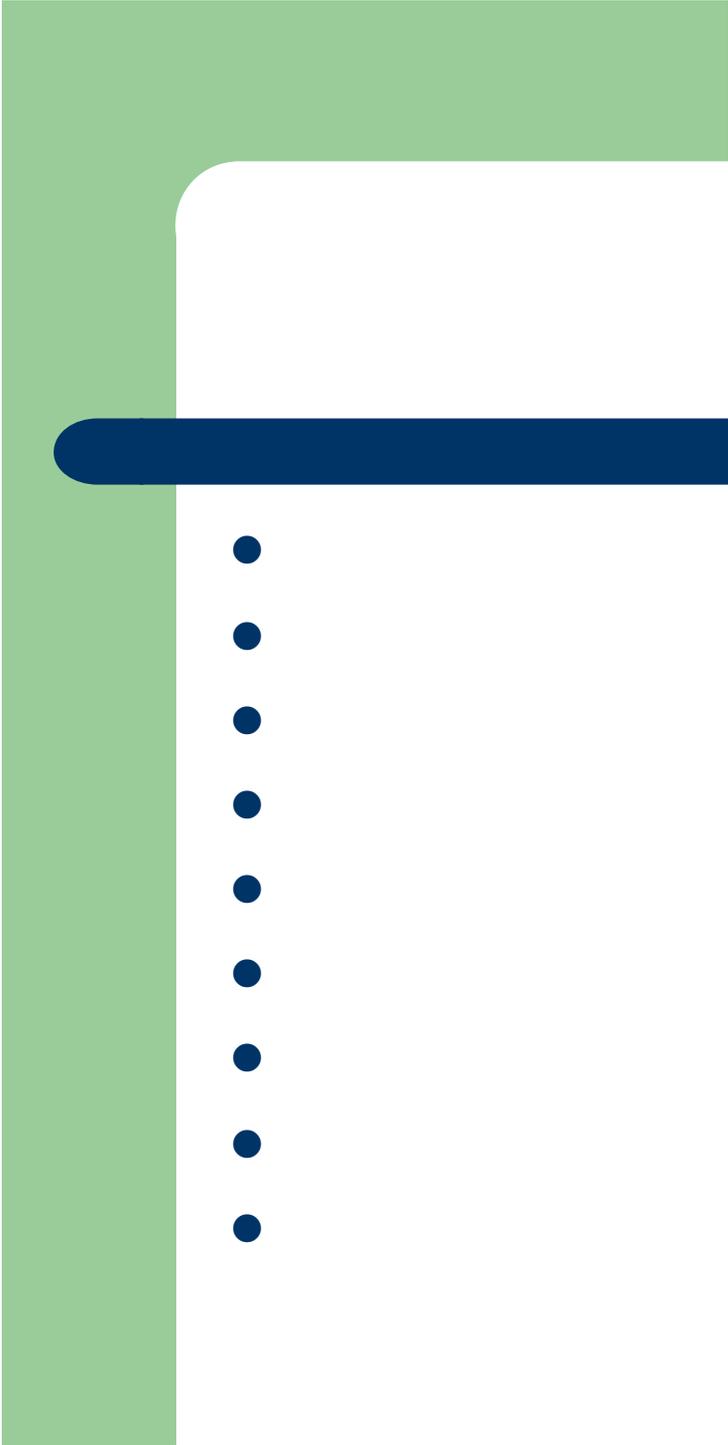
/

( )

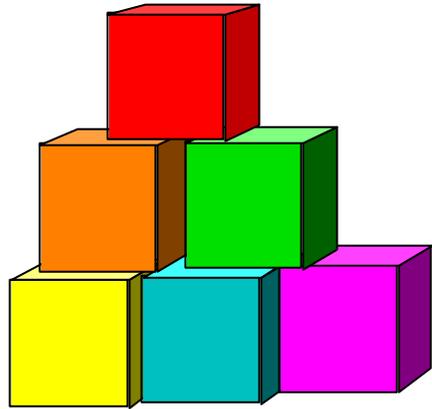
- (Name)
- /
- (Description)
- (Property)
  - (M )
  - / /
  - ( )
  - (%)
  - 가 (Yes/No)
- (RI: Referential Integrity)

									가
ET		ET							
	(M)1:M(O)		80	0	4	15	3	2	No

1				
2				
3	가		가	가



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# (Attribute)

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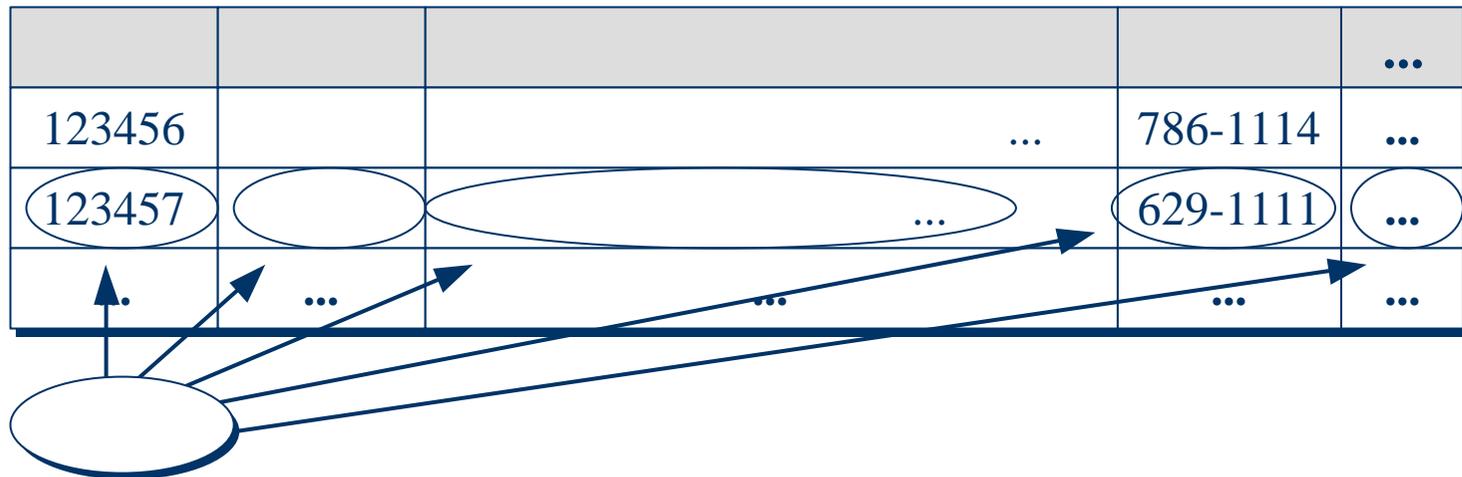
(BA) , (Design)  
(Column, Field)



				...	
123456			...	786-1114	...
123457			...	629-1111	...
...	...		...	...	...

# (Value)

- - (Instance)
- - 가 ?
- : ( )





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- (Abbreviation)

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- (Aliases)

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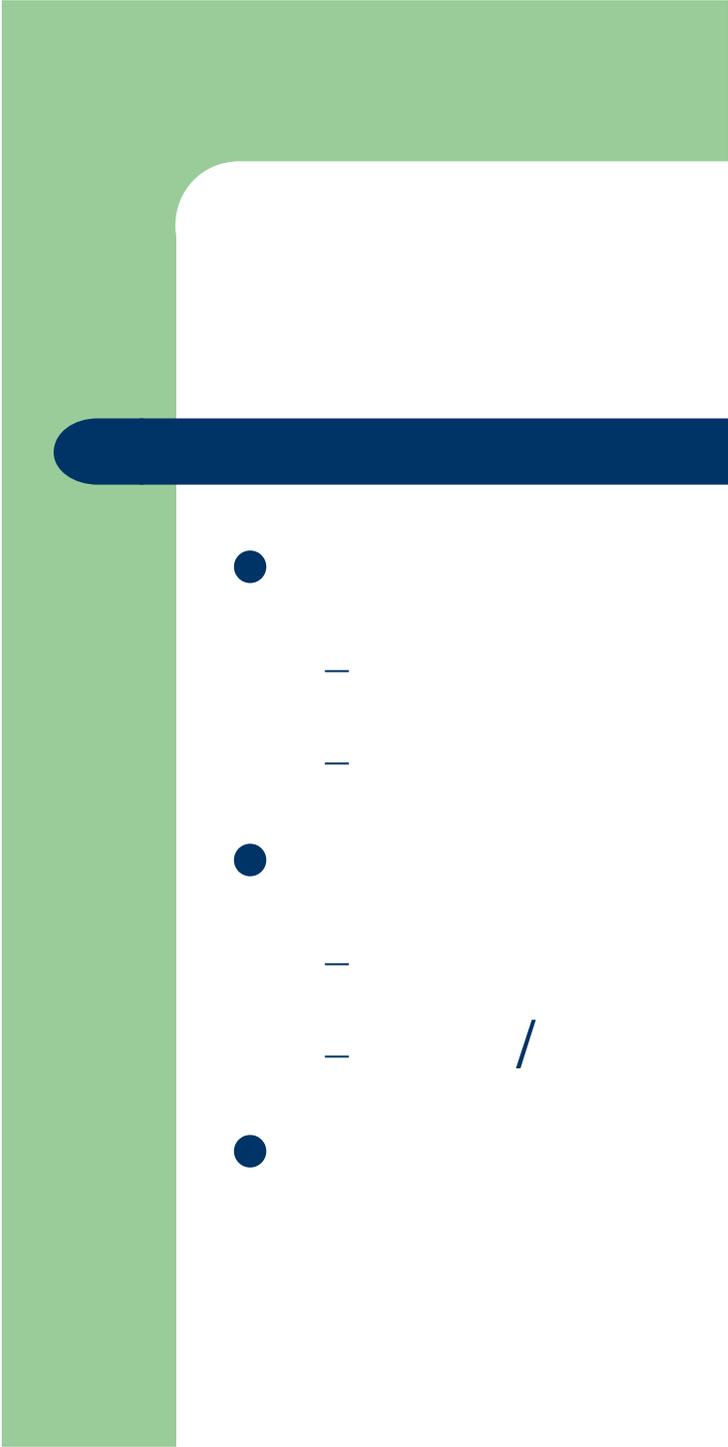
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## Dark blue horizontal bar

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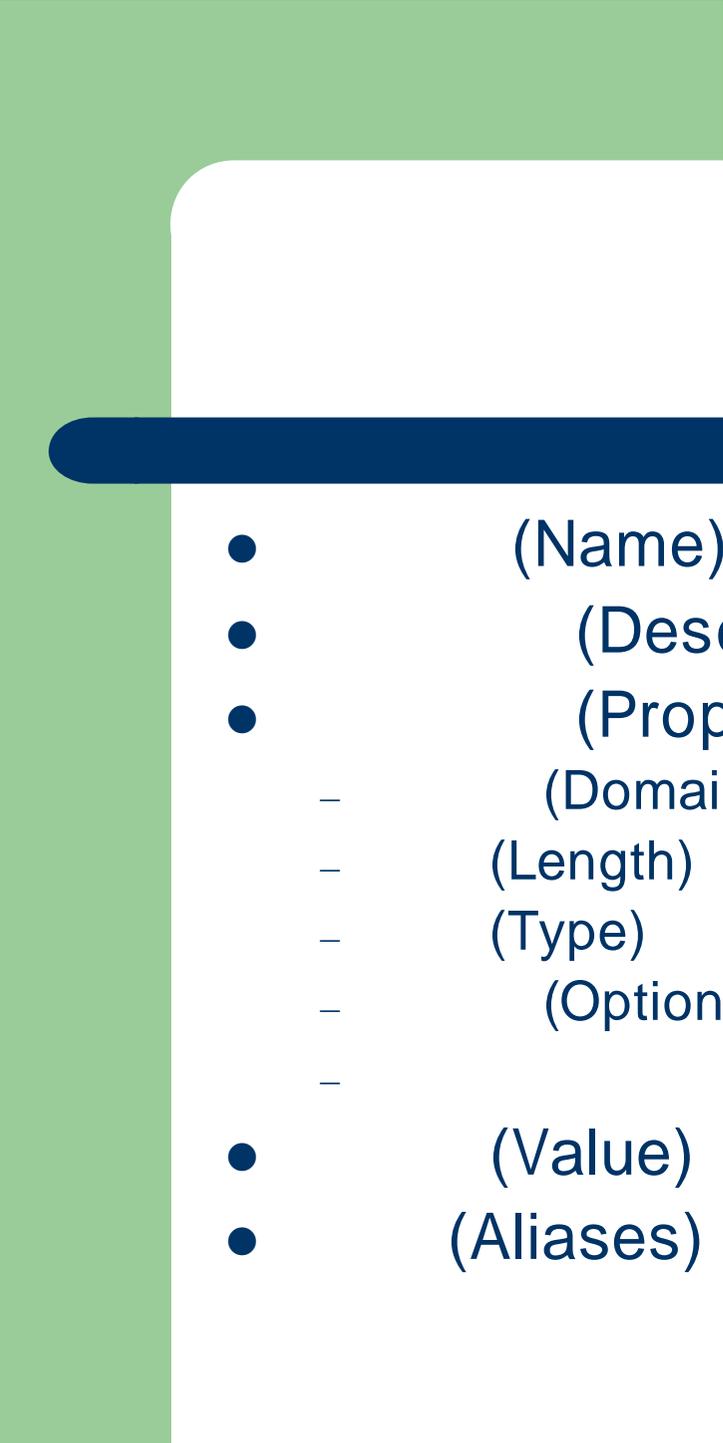
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- 
- 
- (Name)
  - (Description)
  - (Property)
    - (Domain)
    - (Length)
    - (Type)
    - (Optionality)
    -
  - (Value)
  - (Aliases)



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(Integrity Condition)



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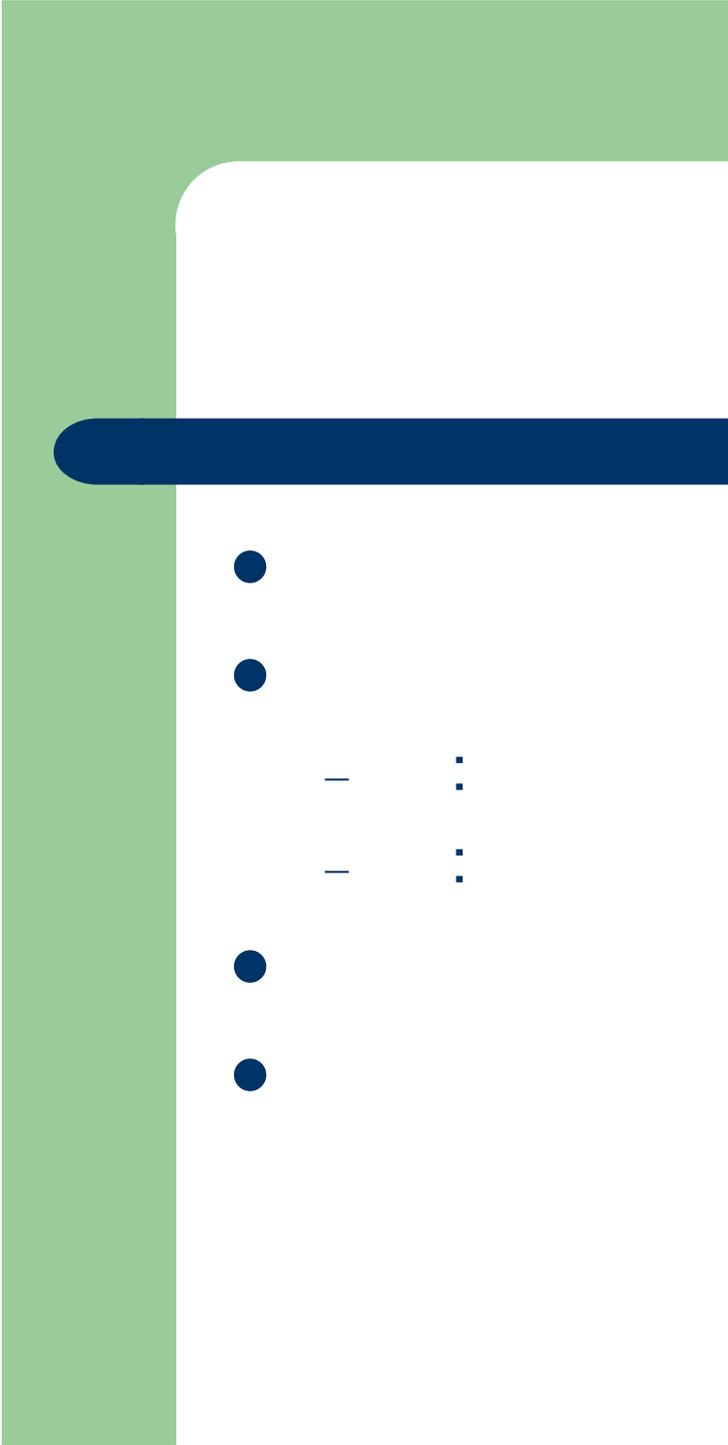
(Data Dictionary)

(Help System)

# (Domain)

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- Tool / 가

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- (Basic)

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- (Business) ( : )

- (Derived)

- 

- (Derivation Algorithm) ( : )

- (Designed)

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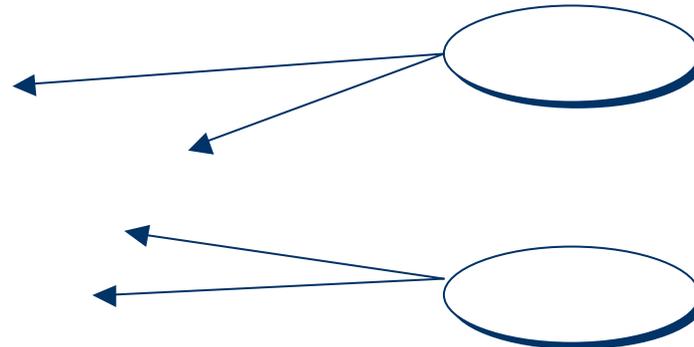
- ( : )

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- ( : )

# (Optionality)

- - 가
  -
- - (Mandatory):
  - (Optional):



- (Default Value or Algorithm)

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: ,

- (Permitted Value or Range)

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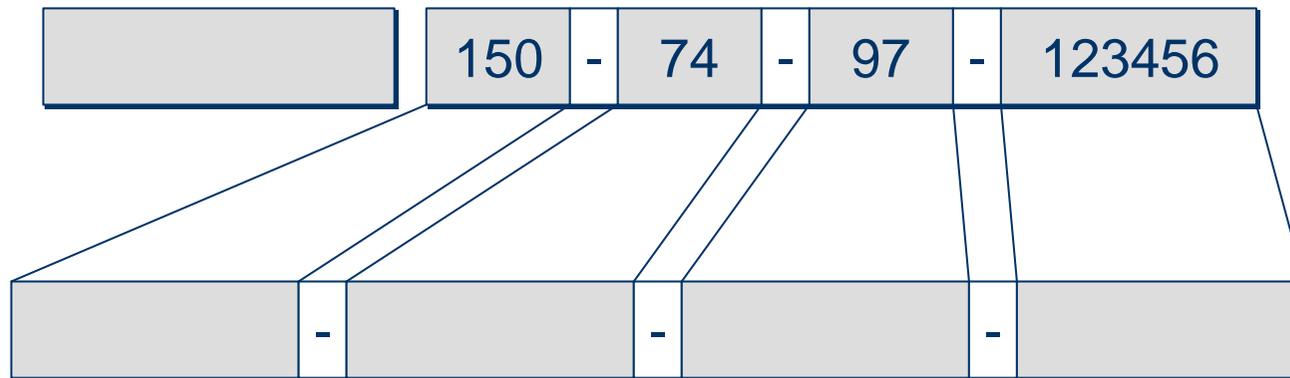
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: "Yes/No", "01" "05"

	○	×	○
	×	○	○
	○	×	○

# (Composite Attribute)

- 가 ,  
- 가 가 ( )  
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(Code)



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(A, B, C ....)



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(Code)



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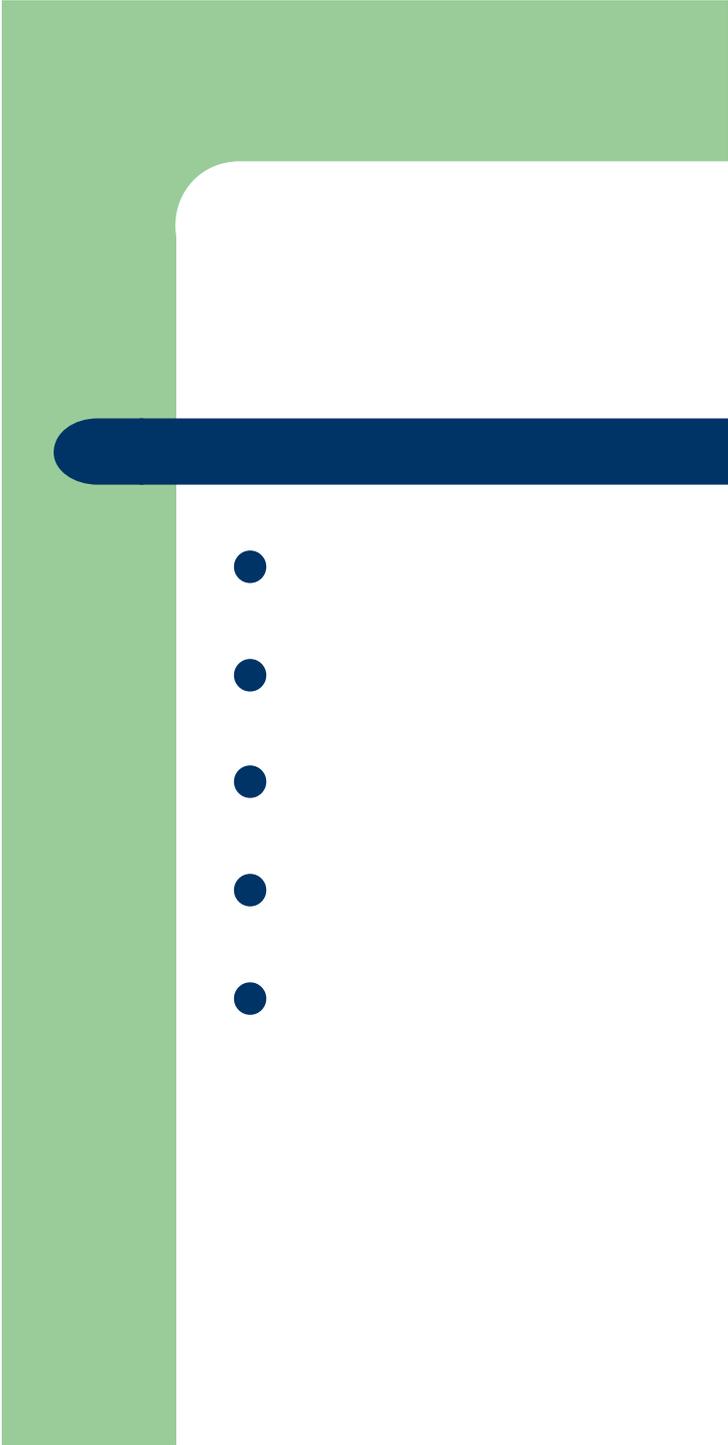


1		2				
2		3				
3		3				
4		3				
5		4				
6		4				*
7		10				
8		7				
9		10				
...	...	...	...	...	...	...

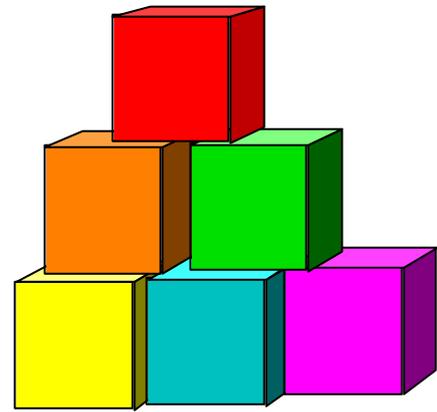
-



	13				
	<table border="1"><tr><td>1</td><td>2</td></tr></table>	1	2	1-10 : 11-20 : 21-30 : 31-40 :	1 2
1	2				
1		22			
2		31			
11		32			
21		...	...		



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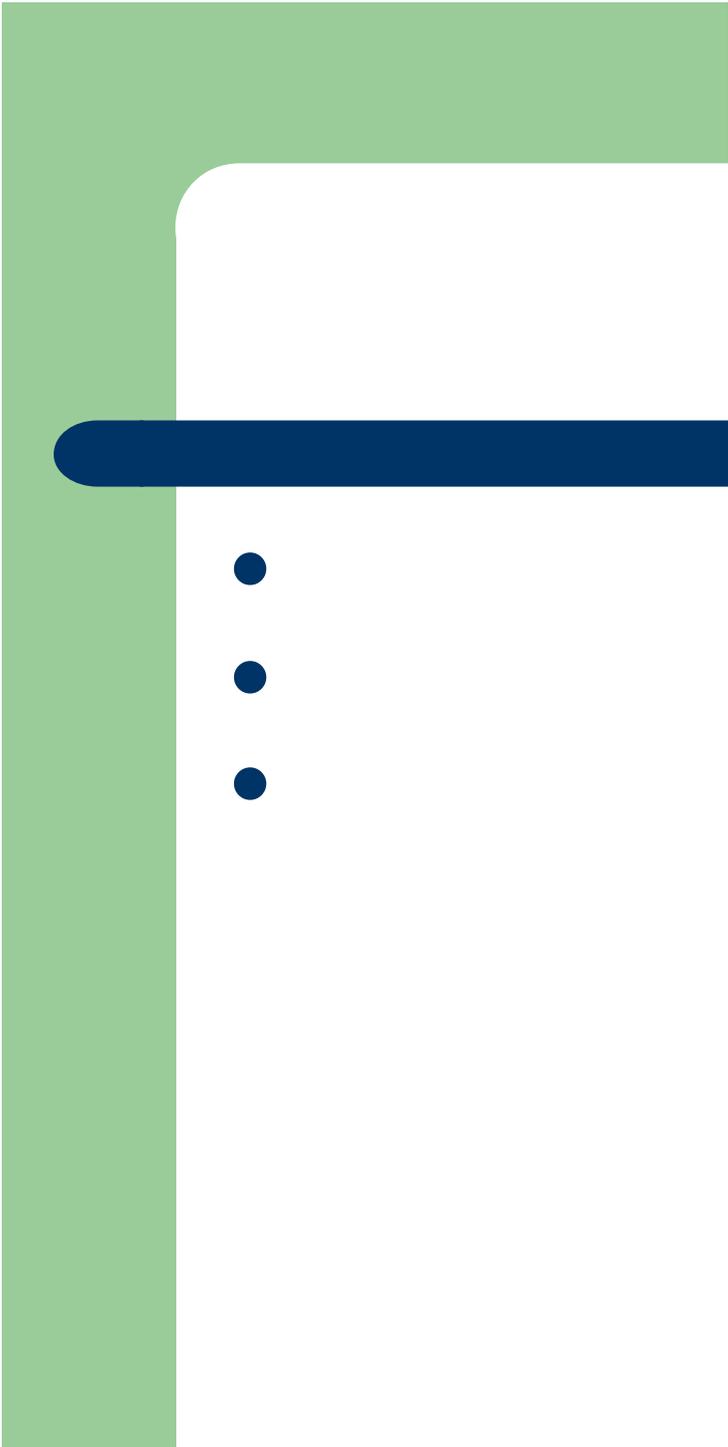
# (Identifier)

- - , , (Uniqueness)
  - (Minimality)
  - Unique Index (Primary Key)  
가 PK 가

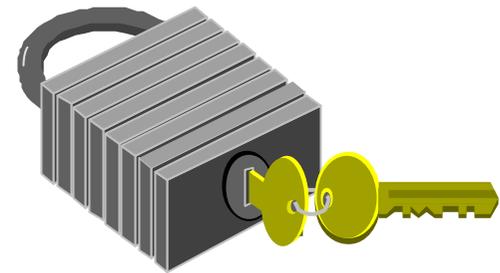
- - :
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- ( )



				...	
123456			...	786-1114	...
123457			...	629-1111	...
...	...		...	...	...

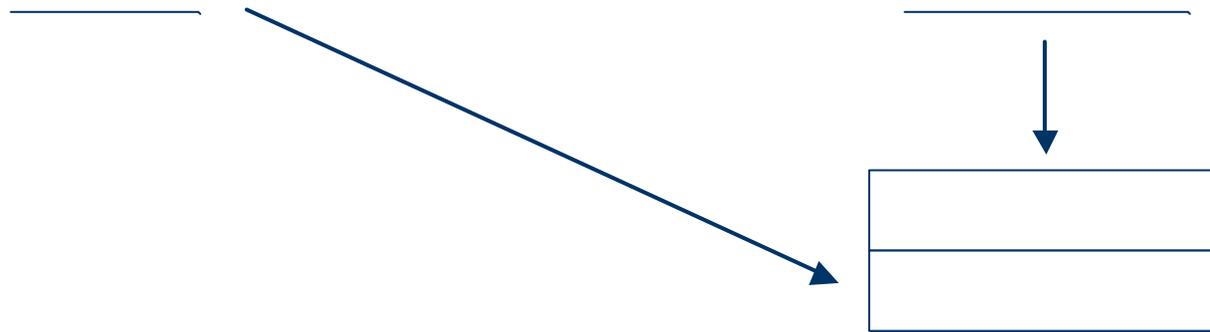


				...	
123456			...	786-1114	...
123457			...	629-1111	...
...	...		...	...	...

- ( + )

● “ ”

- \_\_\_\_\_ ( ) + " \_\_\_\_\_ " [ ] ( )



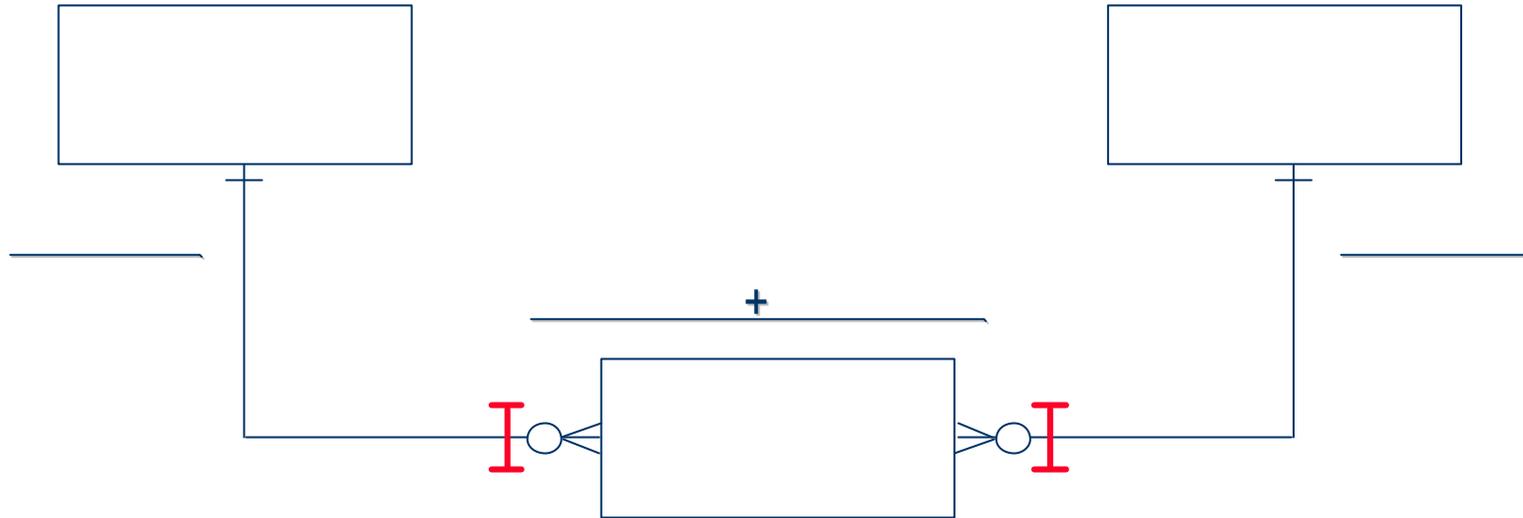
- ( + )

● “ ”

- ”

" [ ] + ”

" [ ]



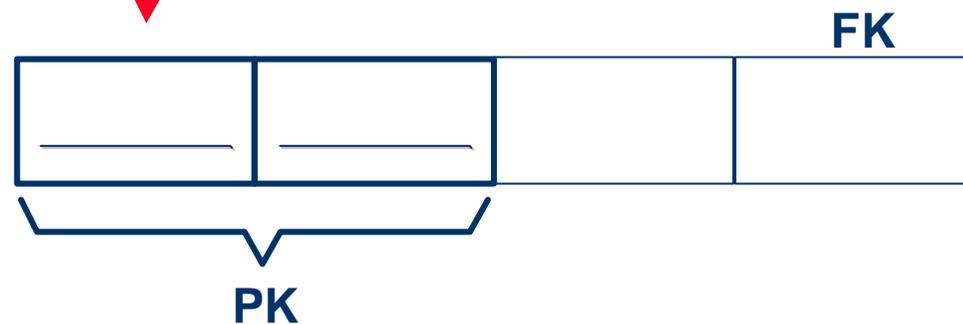
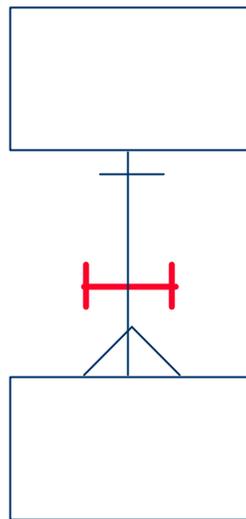


# (Identifying Relationship)

- 가

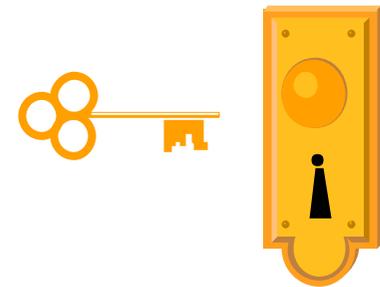
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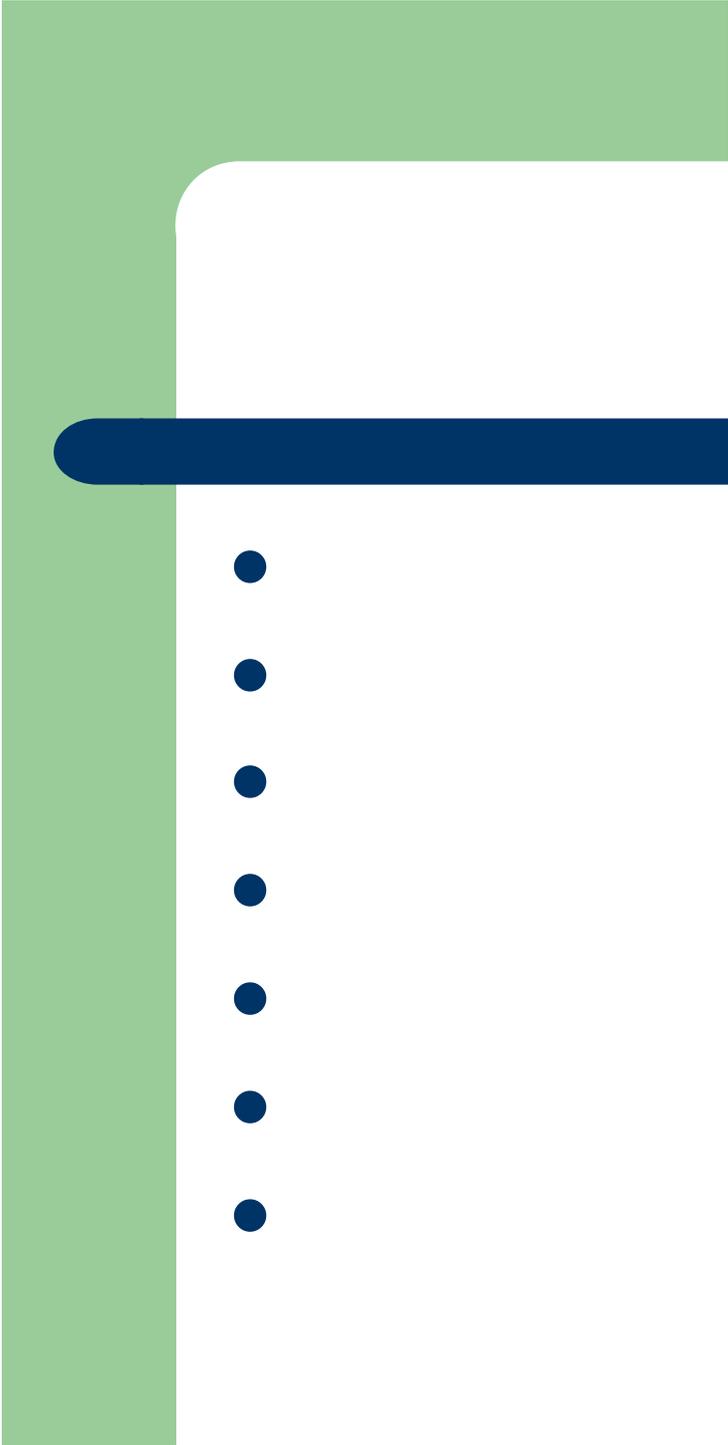
(4 )  
(1), (Mandatory)



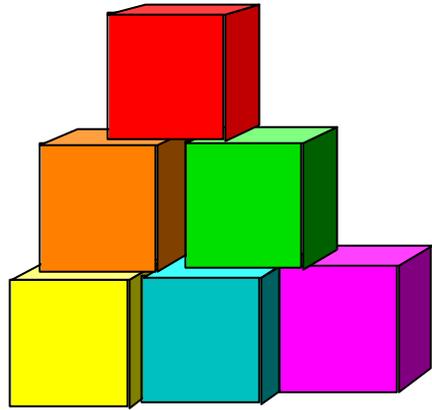
# (Surrogate Key)

- 가
  - 
  - 
  - (Allocation Algorithm)
- 가
  - 가
  - Hash Algorithm
    - (Primary Identifier)
  - /
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# (Subtype)

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(Partitioning)

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(Supertype):

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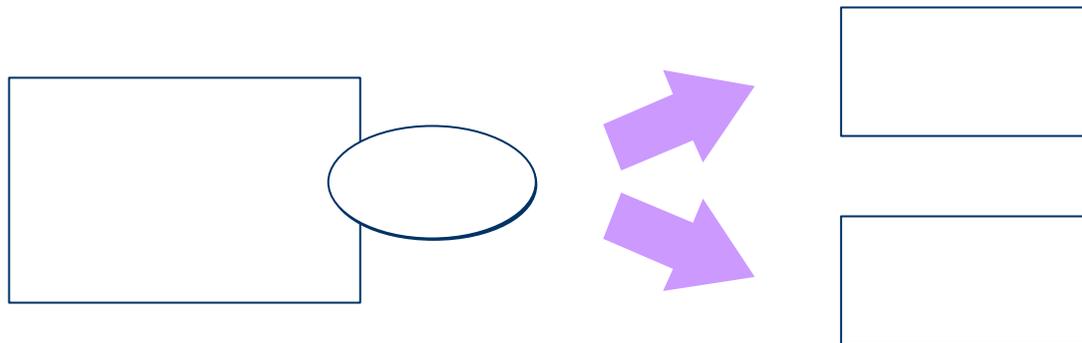
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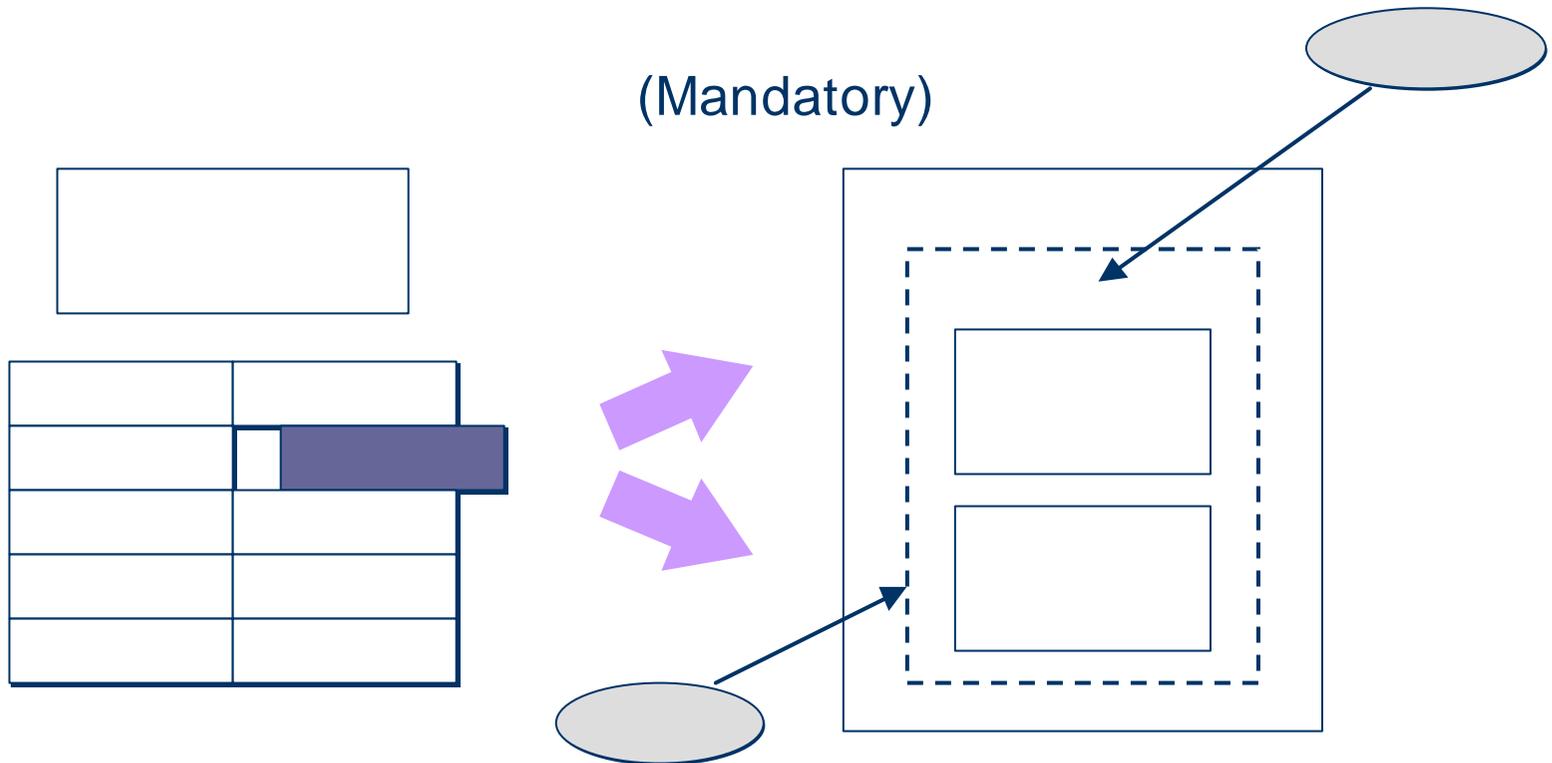
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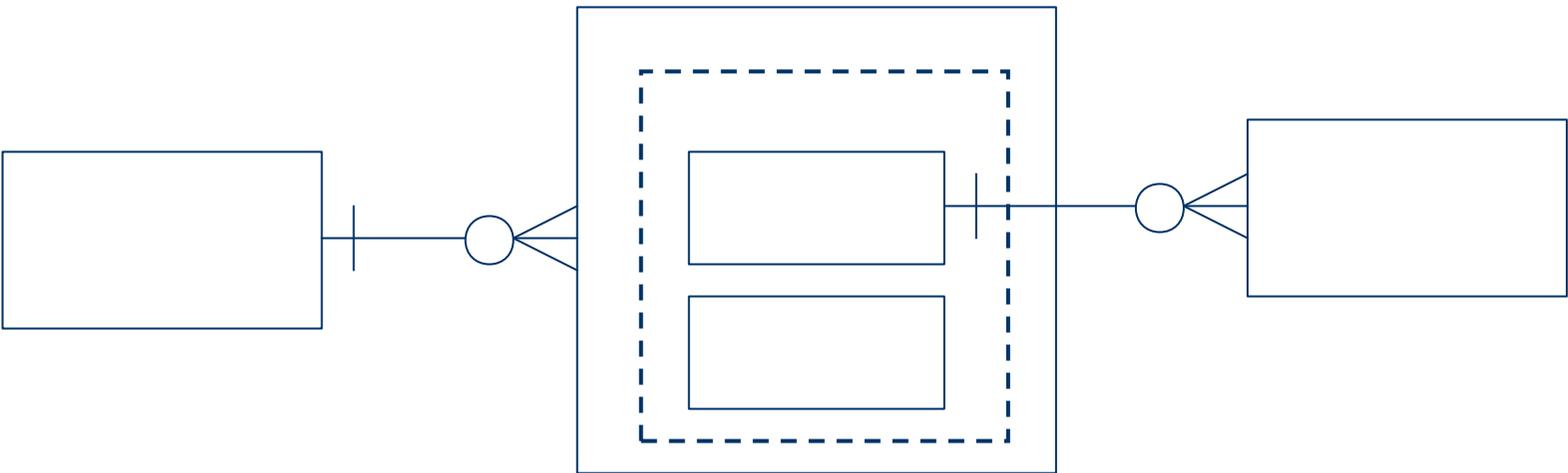
# (Classifying Attribute)

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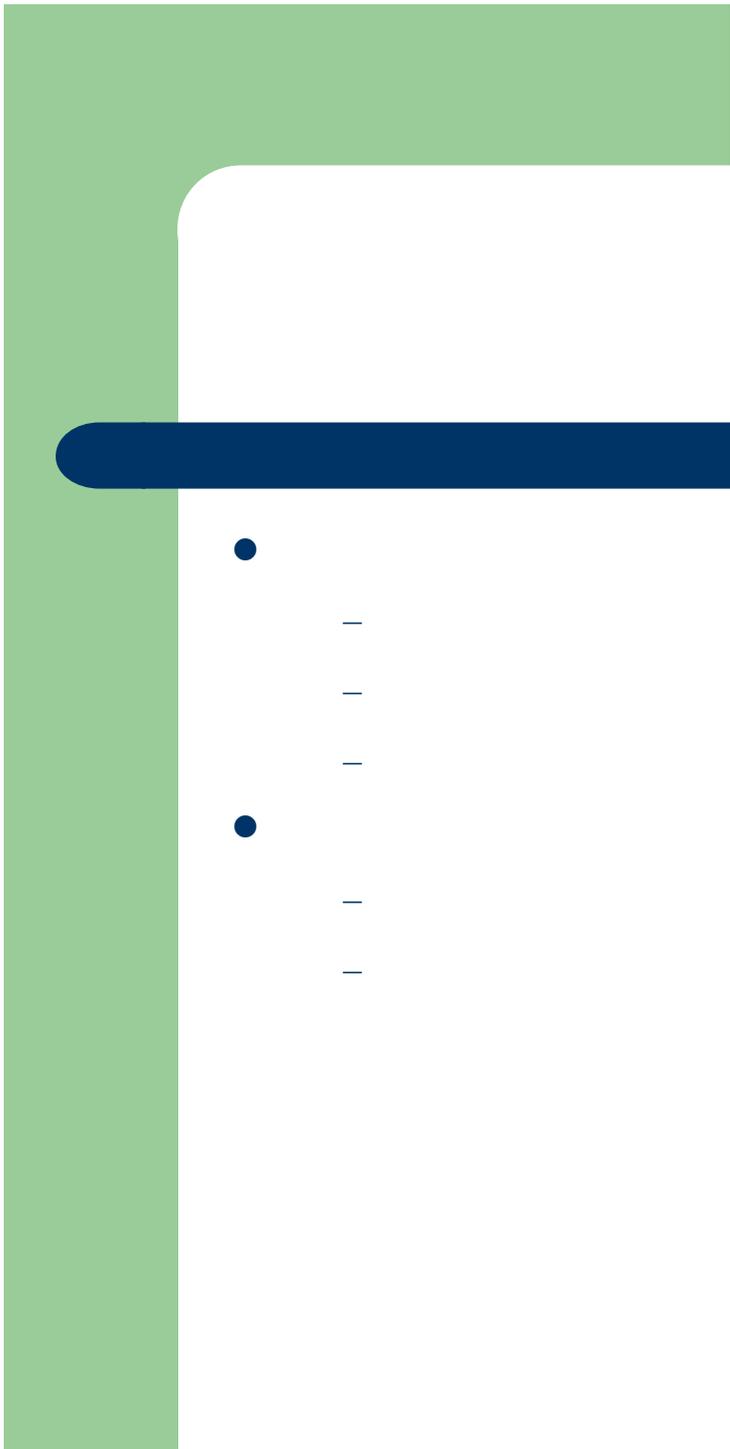
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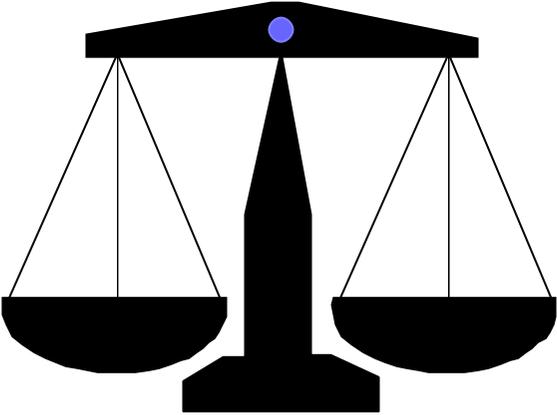
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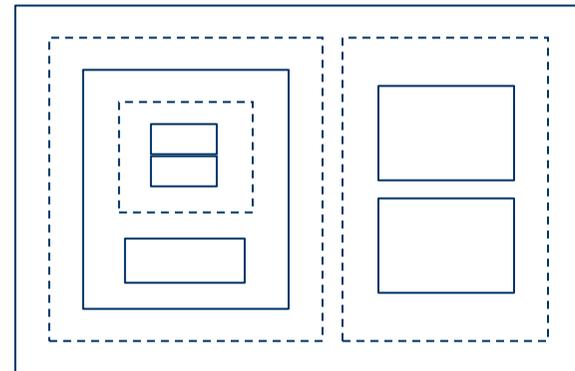
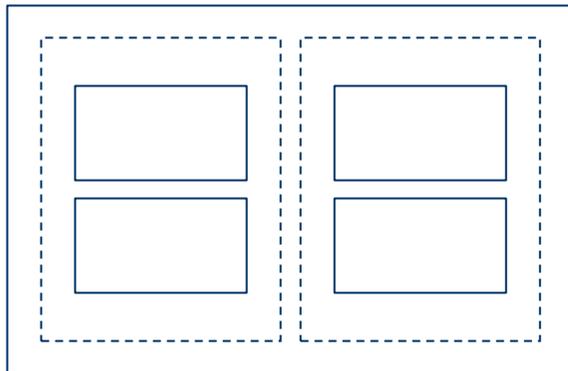
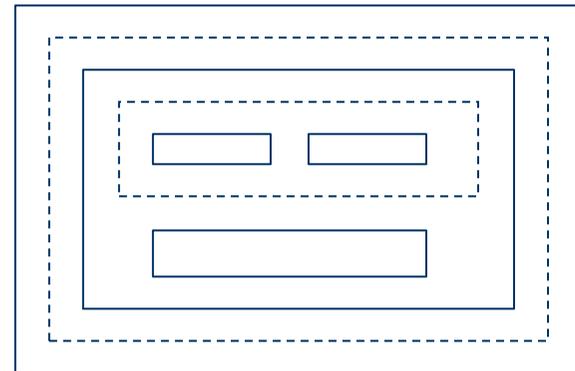
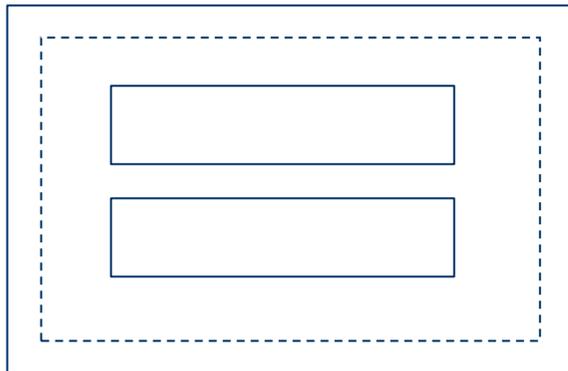
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Promotion



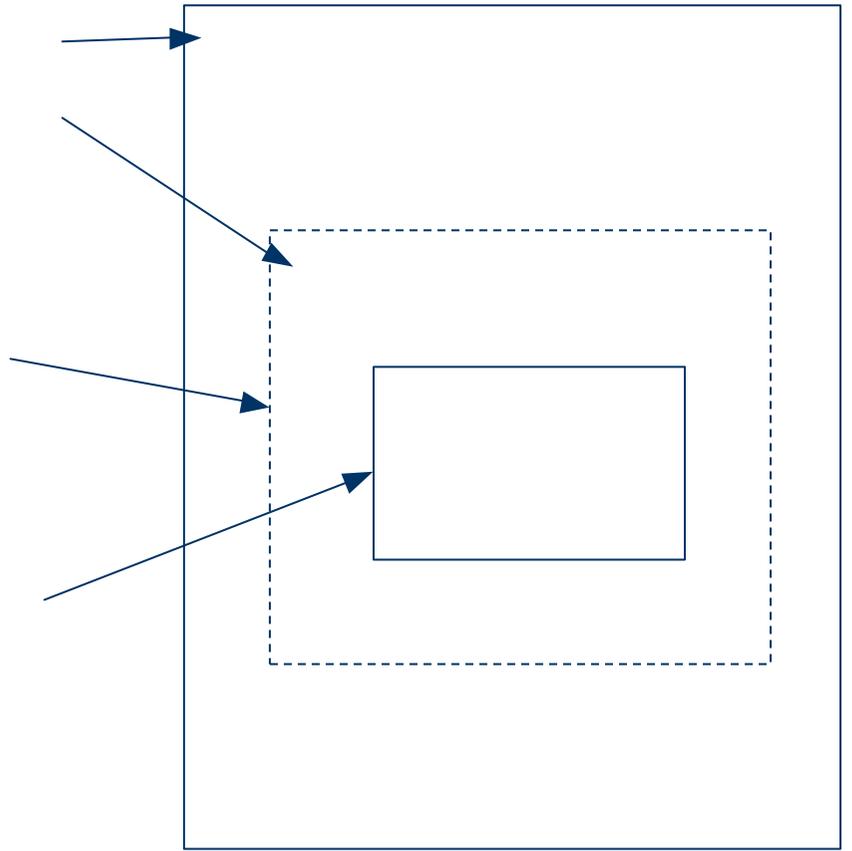
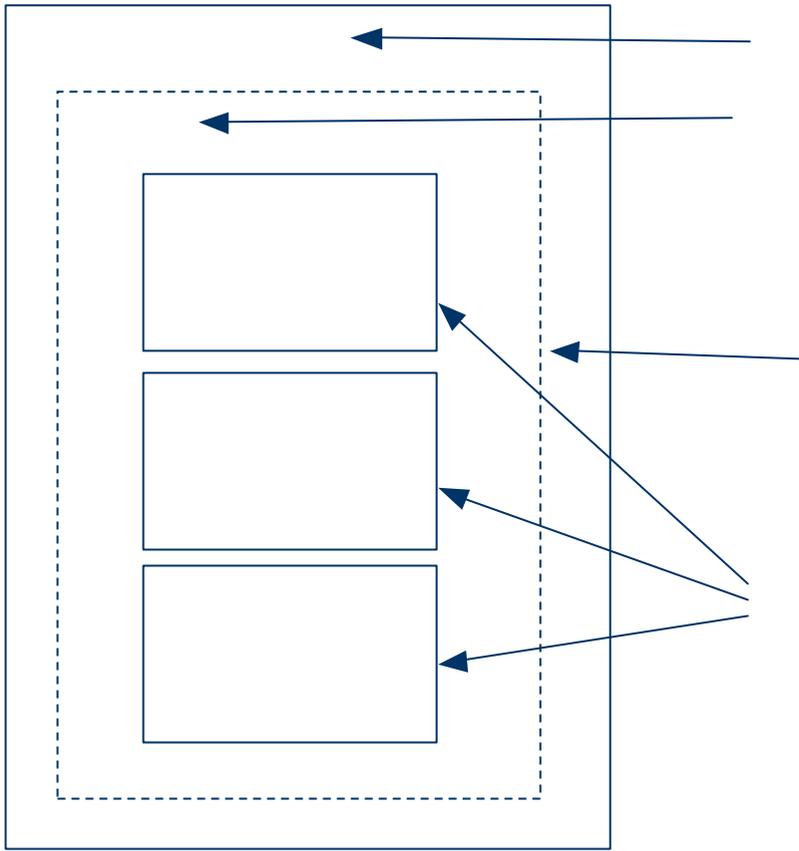
# (Partition)



- (Mandatory, Fully Enumerated)
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- (Optional, Not fully enumerated)
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  -
- (Life Cycle Partitioning)
  - 가 , , 가
  - 가
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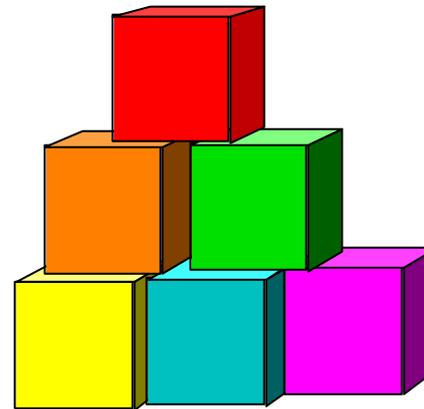


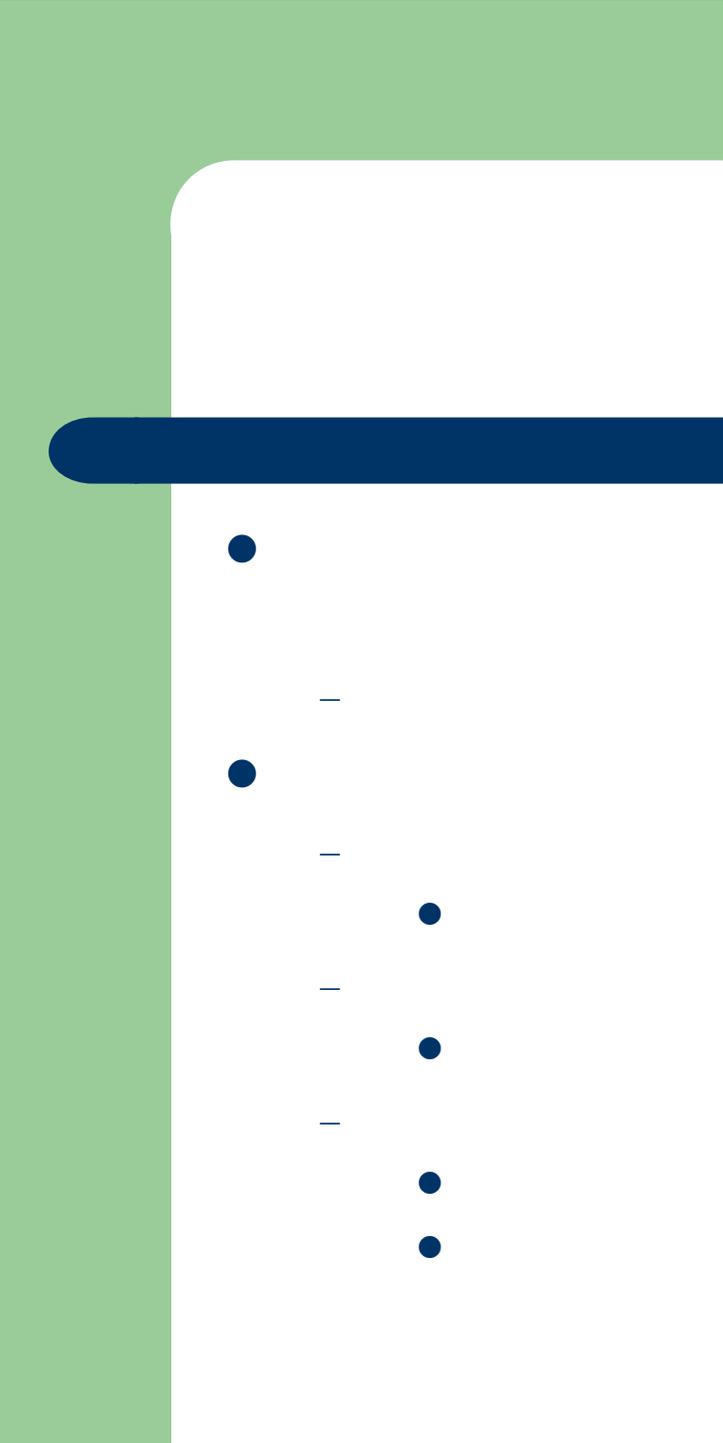


# (Normalization)

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(Duplication)

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(Anomaly)

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# (Anomaly)

- (Insert Anomaly)

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- (Update Anomaly)

- ,

- (Delete Anomaly)

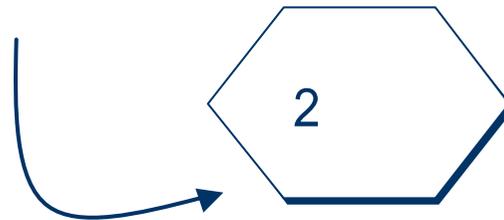
- ,

- - 1970 E.F.Codd
- - (Bottom-Up)
  - ( ) ERD
  - (Reverse Engineering)
- - (Top-Down)
- - (Transactional)
  - , ,
  - 
  - c.f: (Data Warehousing)

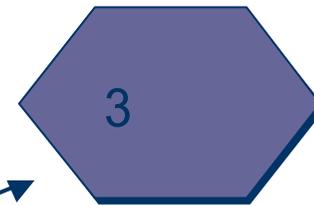
1NF (1st Normal Form)



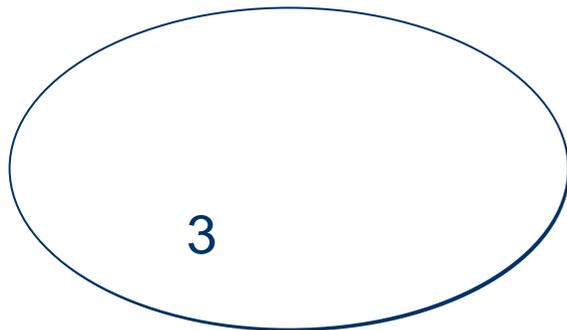
2NF (2nd Normal Form)



3NF (3rd Normal Form)



4NF



- 가
  - Un-normalized Form
- - 
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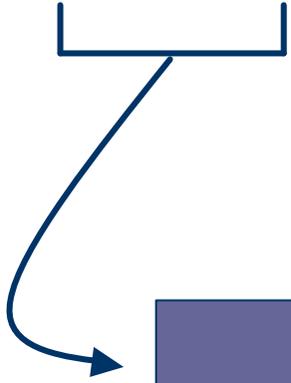


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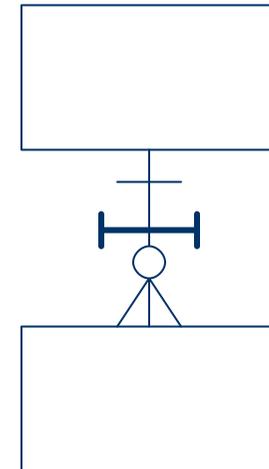
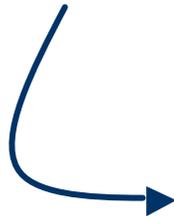
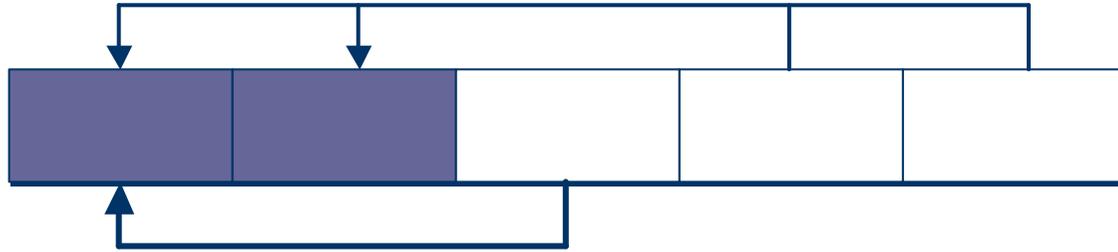


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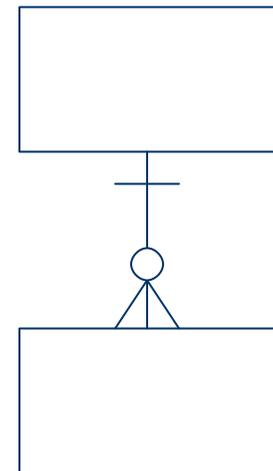
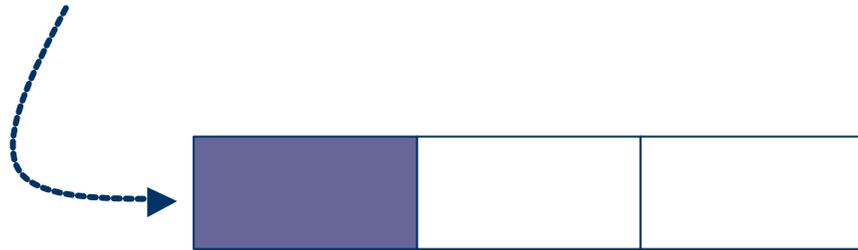
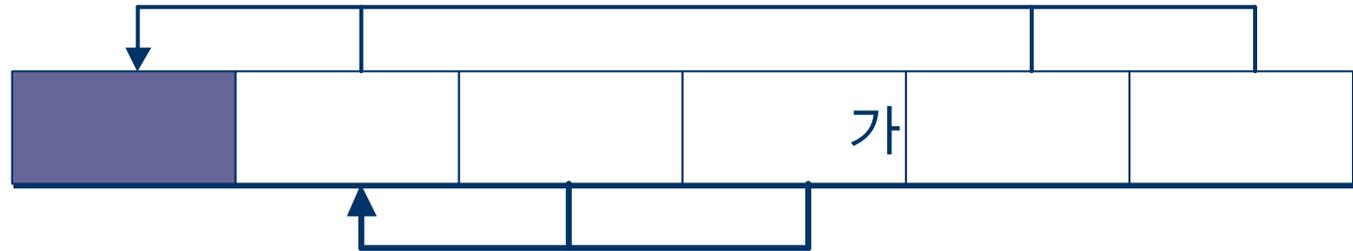
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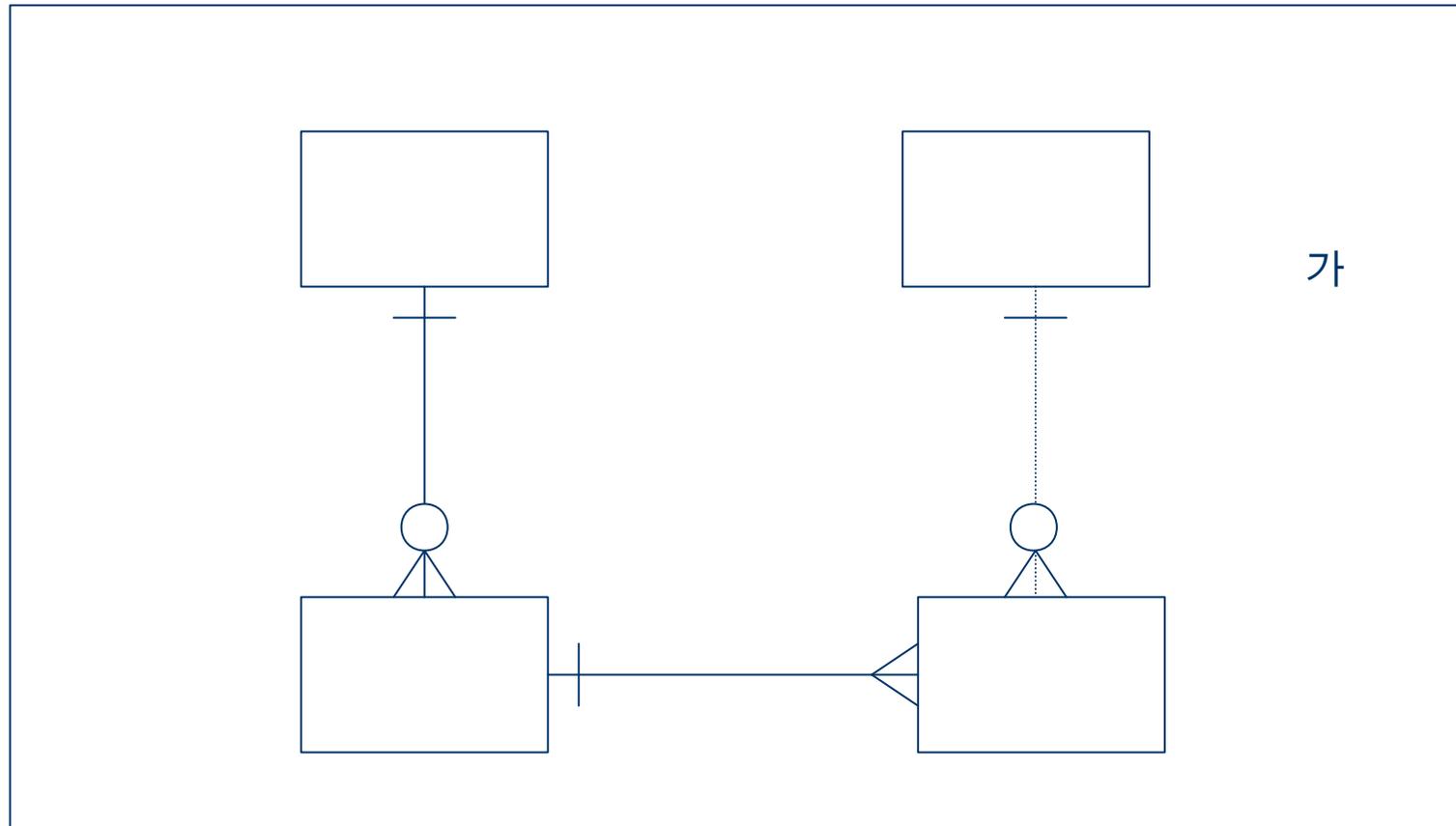


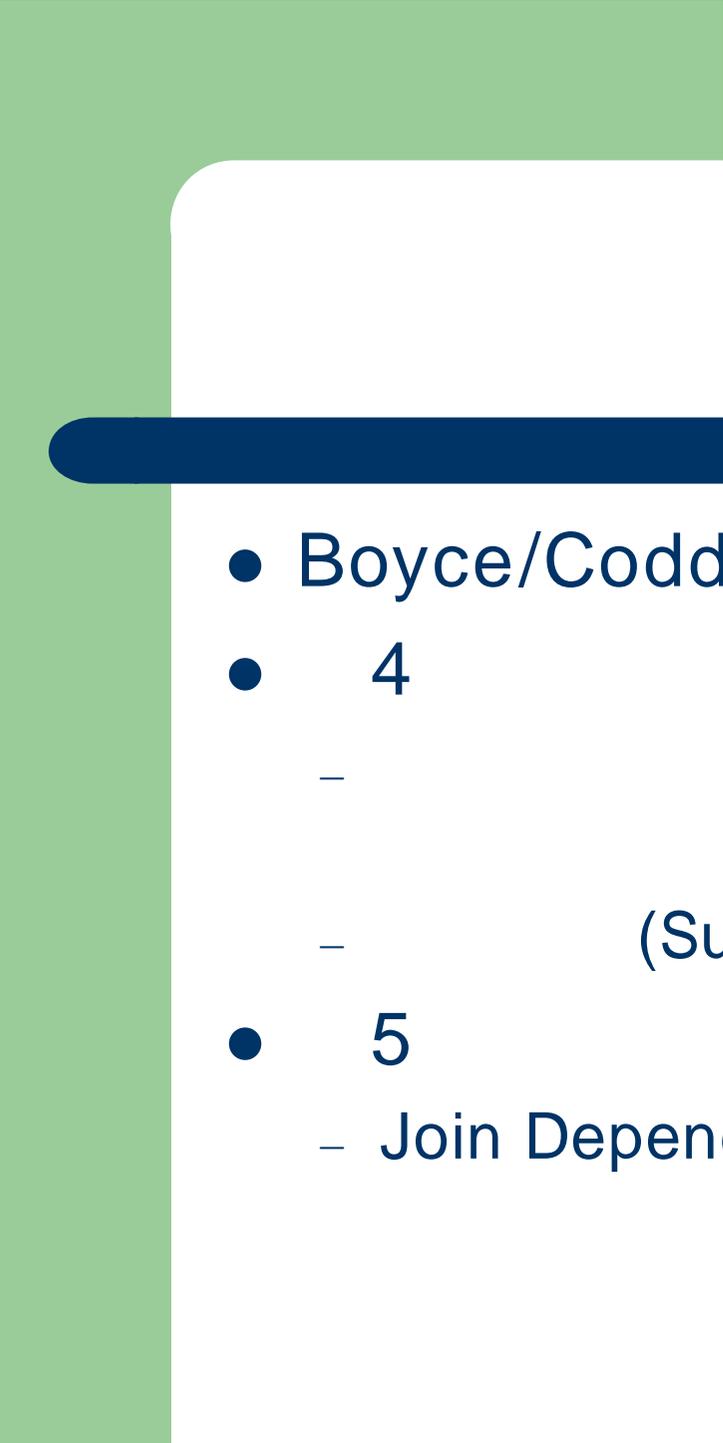
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# (3 ) - ERD





- Boyce/Codd Normal Form

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- (Subtype)

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- Join Dependency

# (Denormalization)

- ERD ,
  - (JOIN) ( )
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    - (Surrogate Key)
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