

# Perancangan Basis Data(IFWP1007)

## 3 sks



Major: Informatics

Topic: Second Normal Form

Dosen Pengampu

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### Skills





# Objectives

This lesson covers the following objectives:

- Define the rule of Second Normal Form in the normalization process
- Examine a non-normalized entity and determine which rule, or rules of normalization are being violated
- Apply the rule of Second Normal Form to resolve a violation in the model



# Purpose

- Your goal as a database designer is to “store information in one place only and in the best possible place.”
- Consistently applying the rules of normalization helps you achieve this goal.
- When organizing information such as your friends’ phone numbers and addresses, you want to make sure that you store that information in the appropriate place -- such as a personal address book.





# Purpose

- If you store a friend's address in your recipe box, for instance, you may not find it until the next time you look up that recipe.
- Normalization is a process that helps eliminate these kinds of problems.





# What is Second Normal Form?(2NF)

- Second Normal Form (2NF) requires that any **non-UID attribute** be **dependent on** (be a property of, or a characteristic of) the entire **UID**.
- If the UID is a composite UID each attribute must be dependent on all parts of the composite UID.
- If an attribute is not dependent on the entire UID, create an additional entity with the partial UID.



# Second Normal Form (2NF)

- An attribute must be **dependent** on its entity's entire **UID**.



The Bank Location attribute is dependent on BANK, not on ACCOUNT. Therefore, this is not in 2NF. Move the attribute to the BANK entity.



# Second Normal Form Example

- Examine the entity PRODUCT SUPPLIER.
- The UID is a composite UID consisting of the supplier number and the product number.
- If one supplier supplies 5 different products, then 5 different instances are created.
- What happens if the supplier name changes?

## PRODUCT SUPPLIER

# supplier number  
# product number  
\* purchase price  
\* supplier name



# Second Normal Form Example

- The supplier name would then need to be changed in 5 different instances.
- What if some of them were changed, but not others?
- How would users know which name is the correct name?

**PRODUCT SUPPLIER**  
# supplier number  
# product number  
\* purchase price  
\* supplier name



# Second Normal Form Description

- Second Normal Form (2NF) requires that **any non-UID attribute be dependent on (be a property of, or a characteristic of) the entire UID**.
- Is purchase price a property of supplier number, product number, or both?

## PRODUCT SUPPLIER

# supplier number  
# product number  
\* purchase price  
\* supplier name

1NF

kode_faktur	tanggal	kode_barang	nama_barang	harga	qty
KD_001	13/07/2020	BRG_001	Indomie Goreng	2500	5
KD_001	13/07/2020	BRG_002	Indomie Goreng Jumbo	3000	8
KD_001	13/07/2020	BRG_003	Mie Sedaap Goreng	2500	9
KD_001	13/07/2020	BRG_004	Mie Sedaap Soto	2300	3
KD_002	13/07/2020	BRG_005	Intermie Goreng	1500	6
KD_002	13/07/2020	BRG_006	Intermie Soto	1500	6
KD_003	14/07/2020	BRG_007	Pop Mie Ayam	4500	3



2NF

Tabel Barang

kode_barang	nama_barang	harga
BRG_001	Indomie Goreng	2500
BRG_002	Indomie Goreng Jumbo	3000
BRG_003	Mie Sedaap Goreng	2500
BRG_004	Mie Sedaap Soto	2300
BRG_005	Intermie Goreng	1500
BRG_006	Intermie Soto	1500
BRG_007	Pop Mie Ayam	4500

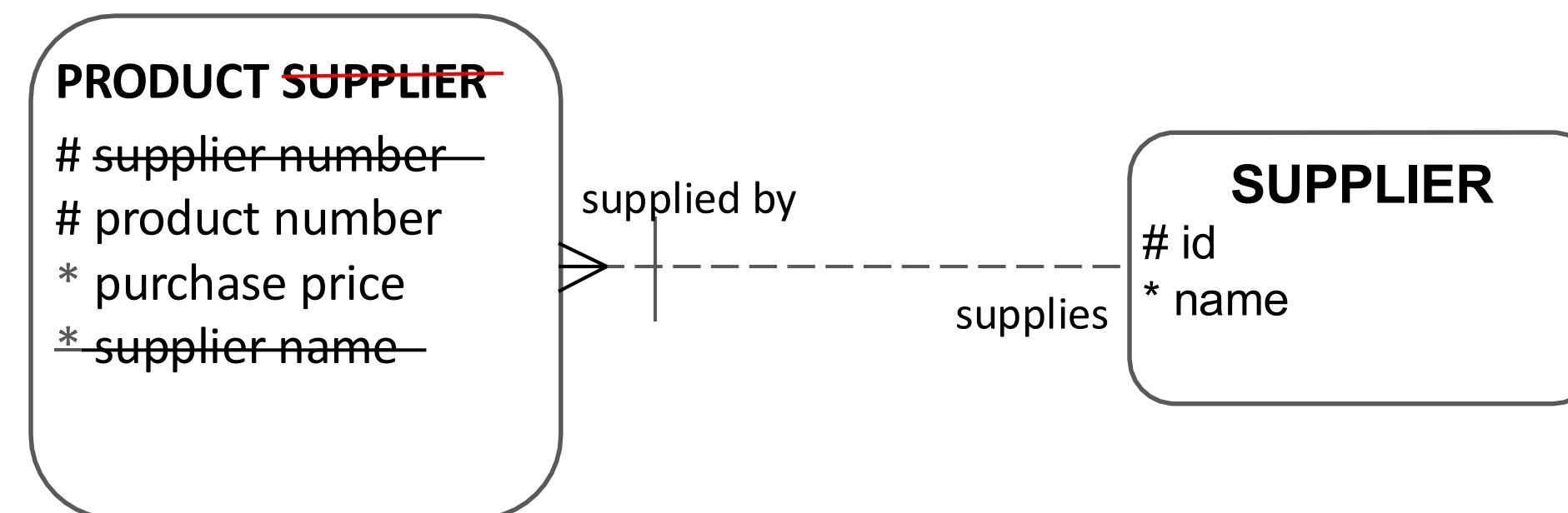
Tabel Transaksi

kode_faktur	tanggal	kode_barang	qty
KD_001	13/07/2020	BRG_001	5
KD_001	13/07/2020	BRG_002	8
KD_001	13/07/2020	BRG_003	9
KD_001	13/07/2020	BRG_004	3
KD_002	13/07/2020	BRG_005	6
KD_002	13/07/2020	BRG_006	6
KD_003	14/07/2020	BRG_007	3



# Second Normal Form Description

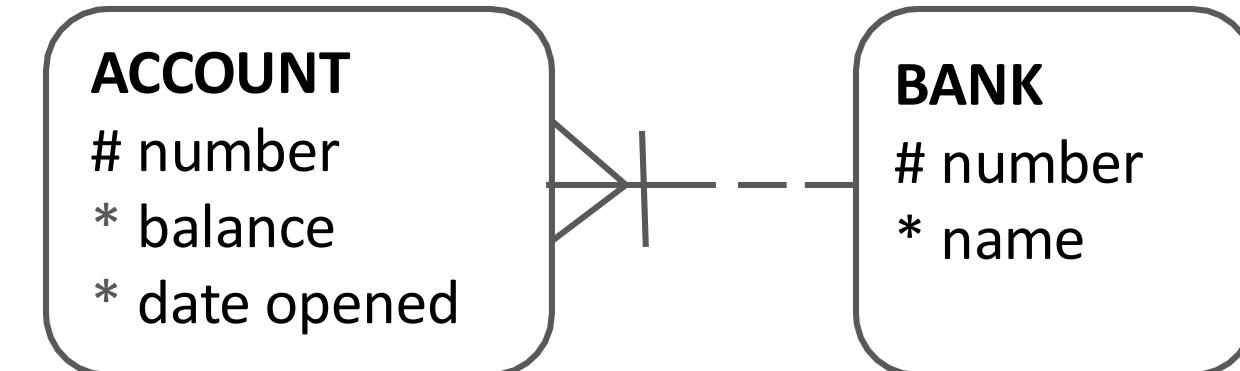
- Is supplier name a property of supplier number, product number, or both?
- 2NF requires a “both” answer to each question.





# Second Normal Form Bar Relationship

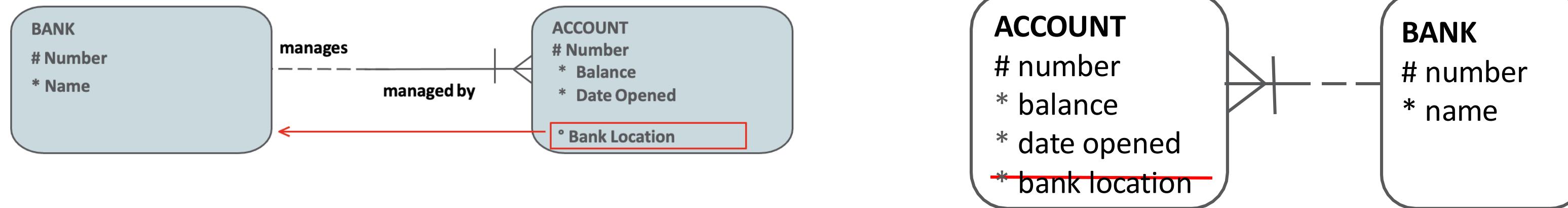
- The UID for ACCOUNT is a composite UID from a barred relationship consisting of ACCOUNT number and BANK number.
- Is balance a property of ACCOUNT number, BANK number, or both?
- Is date opened a property of ACCOUNT number, BANK number, or both?





# Second Normal Form Violation

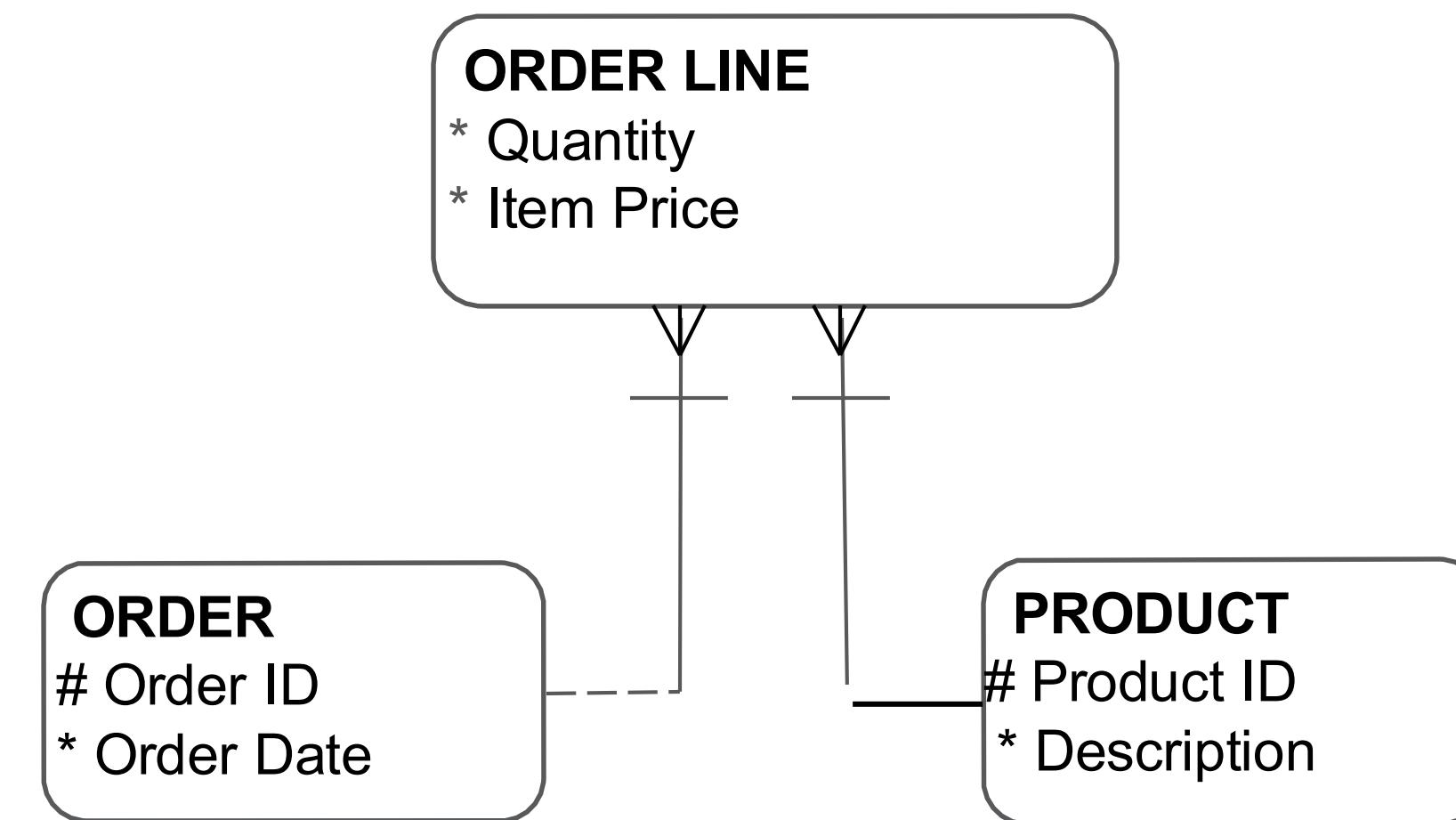
- In this ERD, the attribute bank location has been added. Is bank location a property of ACCOUNT number, BANK number, or both?
- It is a property of BANK number only and is thus misplaced. This is a violation of Second Normal Form.
- What would happen if a bank's location changed?
- Every account at that bank would need to be updated.





# Order ERD

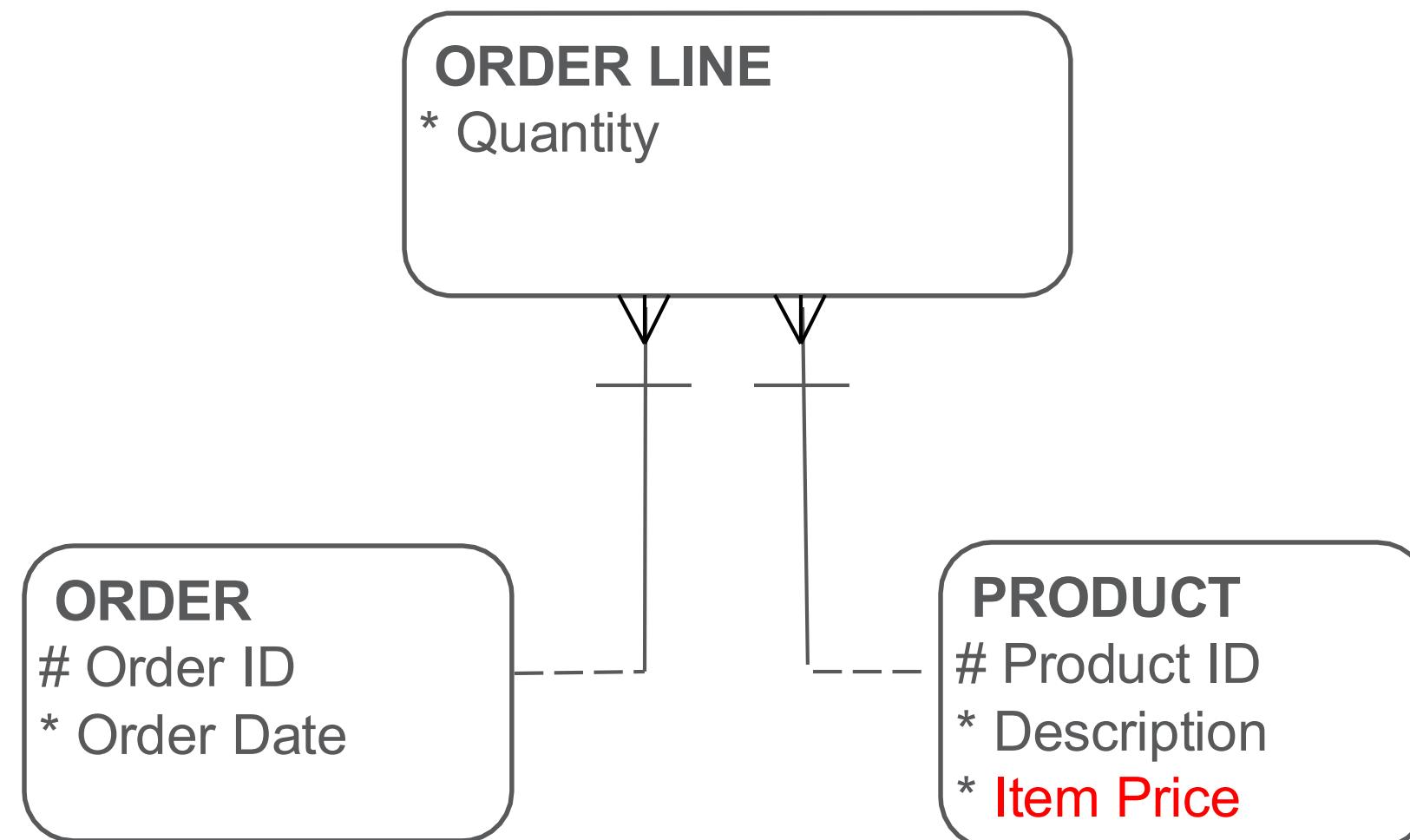
- What is wrong with this diagram?





# Order ERD

- The ERD is now in 2NF
- Answer: The price attribute is misplaced.
- Item Price depends solely on PRODUCT.
- This is a violation of Second Normal Form.





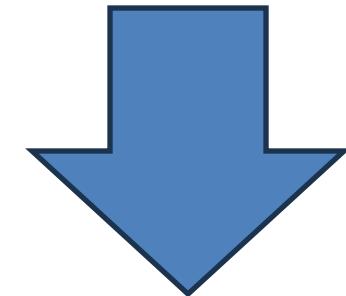
## Tabel yang tidak memenuhi Second Normal Form

- Tabel memiliki primary key komposit yaitu Supplier ID dan Store ID.
- Atribut non-key adalah Location, dimana atribut ini bergantung pada Store ID (yang merupakan primary key).

Supplier ID	Store ID	Location
SP001	S1	New York
SP001	S3	Vermont
SP002	S1	New Hampshire
SP003	S2	Rhode Island
SP004	S3	Illinois



Supplier ID	Store ID	Location
SP001	S1	New York
SP001	S3	Vermont
SP002	S1	New Hampshire
SP003	S2	Rhode Island
SP004	S3	Illinois



## Rule Second Normal Form (2NF):

An **attribute** must be **dependent on its entity's entire UID**.

TABLE 1: SUPPLIER\_STORE\_DETAILS

Supplier ID	Store ID
SP001	S1
SP001	S3
SP002	S1
SP003	S2
SP004	S3

TABLE2: STORE\_LOCATION

Store ID	Location
S1	New Hampshire



# Terminology

Key terms used in this lesson included:

- Second Normal Form (2NF)



# Summary

In this lesson, you should have learned how to:

- Define the rule of Second Normal Form in the normalization process
- Examine a non-normalized entity and determine which rule, or rules of normalization are being violated
- Apply the rule of Second Normal Form to resolve a violation in the model

# Thank You

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