

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 |

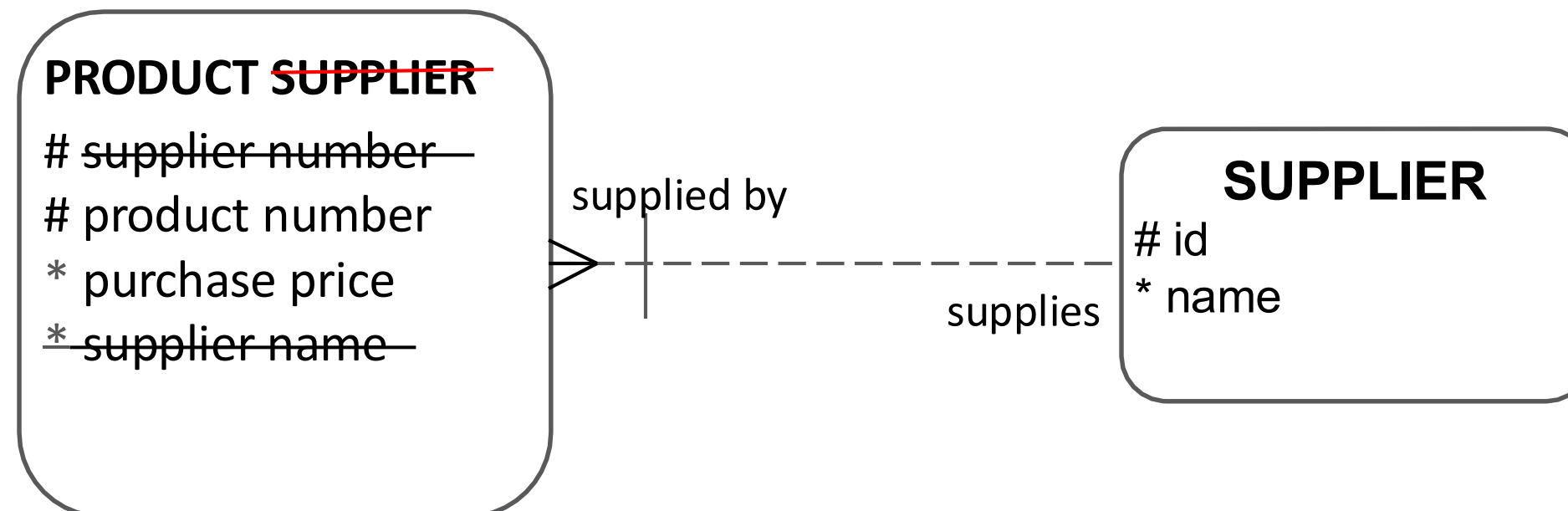


| 2NF | | | | | | | |
|--------------|----------------------|-------|--|-----------------|------------|-------------|-----|
| Tabel Barang | | | | Tabel Transaksi | | | |
| kode_barang | nama_barang | harga | | kode_faktur | tanggal | kode_barang | qty |
| BRG_001 | Indomie Goreng | 2500 | | KD_001 | 13/07/2020 | BRG_001 | 5 |
| BRG_002 | Indomie Goreng Jumbo | 3000 | | KD_001 | 13/07/2020 | BRG_002 | 8 |
| BRG_003 | Mie Sedaap Goreng | 2500 | | KD_001 | 13/07/2020 | BRG_003 | 9 |
| BRG_004 | Mie Sedaap Soto | 2300 | | KD_001 | 13/07/2020 | BRG_004 | 3 |
| BRG_005 | Intermie Goreng | 1500 | | KD_002 | 13/07/2020 | BRG_005 | 6 |
| BRG_006 | Intermie Soto | 1500 | | KD_002 | 13/07/2020 | BRG_006 | 6 |
| BRG_007 | Pop Mie Ayam | 4500 | | KD_003 | 14/07/2020 | BRG_007 | 3 |



Second Normal Form Description

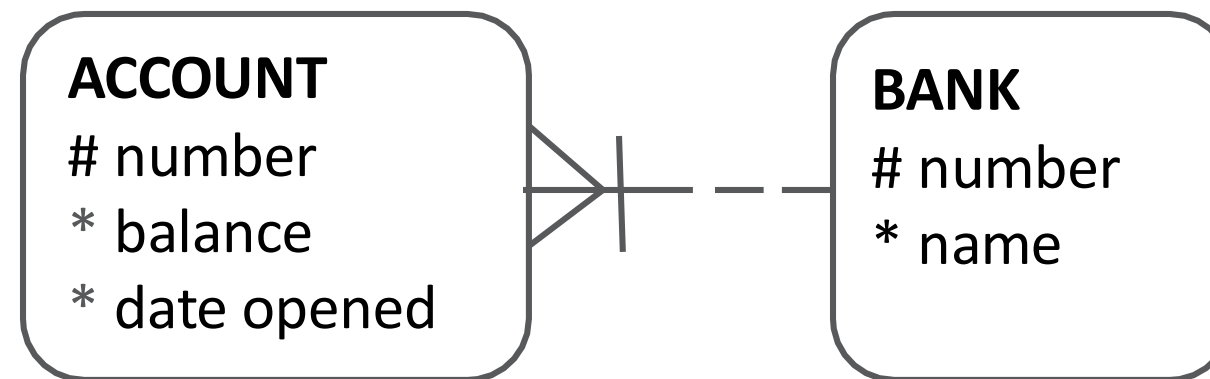
- Is supplier name a property of supplier number, product number, or both?
- 2NF requires a “both” answer to each question.





Second Normal Form Bar Relationship

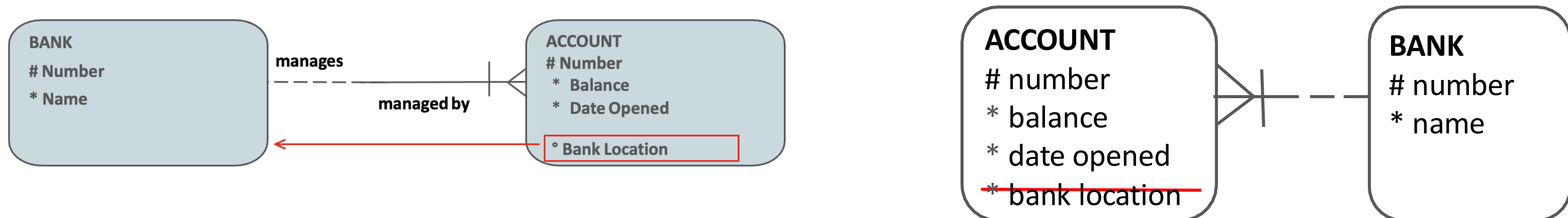
- The UID for ACCOUNT is a composite UID from a barred relationship consisting of ACCOUNT number and BANK number.
- Is balance a property of ACCOUNT number, BANK number, or both?
- Is date opened a property of ACCOUNT number, BANK number, or both?





Second Normal Form Violation

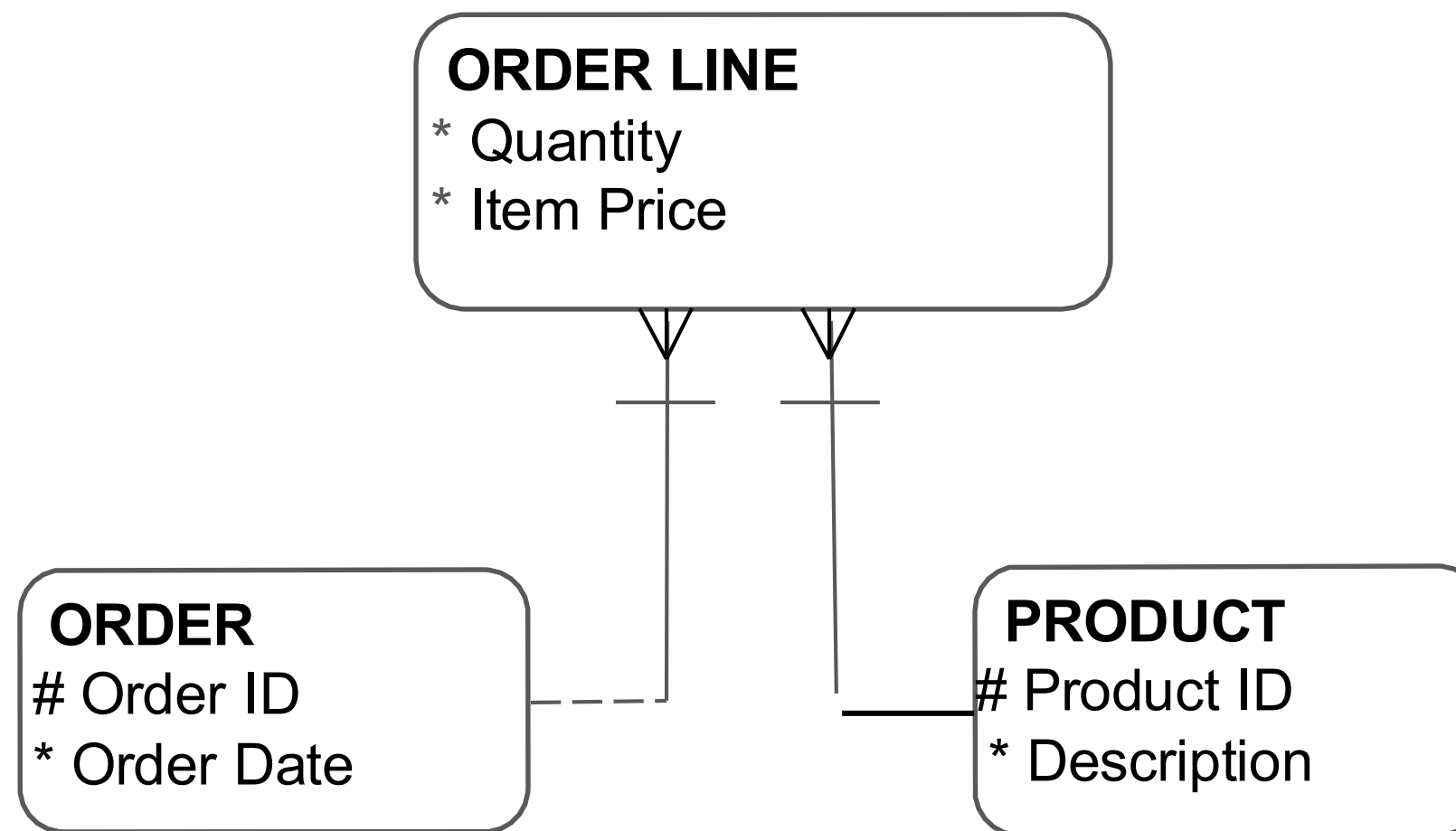
- In this ERD, the attribute bank location has been added. Is bank location a property of ACCOUNT number, BANK number, or both?
- It is a property of BANK number only and is thus misplaced. This is a violation of Second Normal Form.
- What would happen if a bank's location changed?
- Every account at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





Order ERD

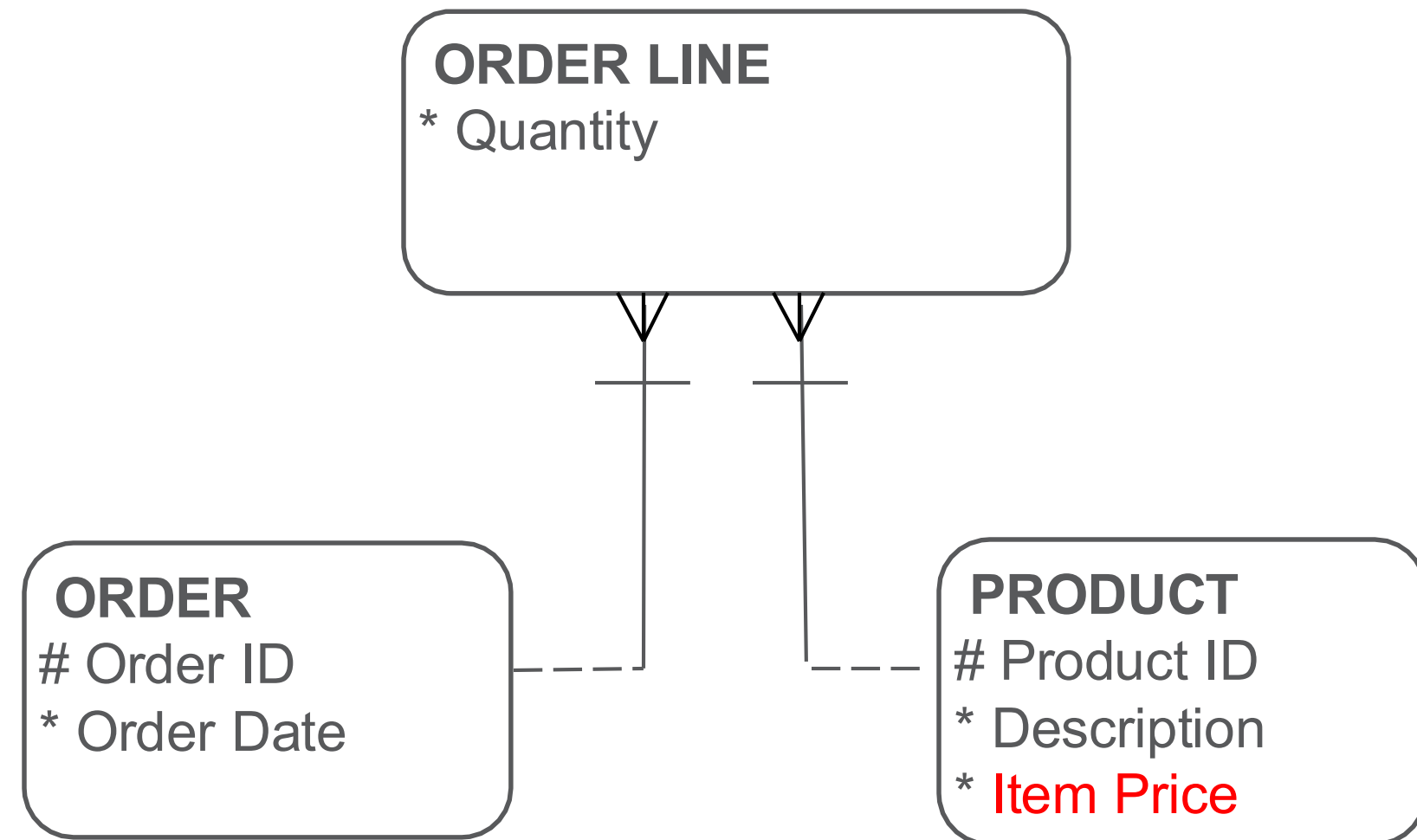
- What is wrong with this diagram?





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.





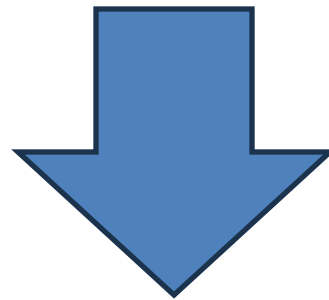
Tabel yang tidak memenuhi Second Normal Form

- 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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