



RELATIONAL DATABASES


2NF

OBJECTIVES

- DEFINE THE RULE OF SECOND NORMAL FORM IN THE NORMALISATION PROCESS
- EXAMINE A NON NORMALISED DATA TABLE AND ENTITY AND DETERMINE WHICH RULE OR RULES OF NORMALISATION ARE BEING VIOLATED
- APPLY THE RULE OF SECOND NORMAL FORM TO RESOLVE A VIOLATION IN THE MODEL



PURPOSE

- STORING DATA IN THE CORRECT OR MOST APPROPRIATE PLACE IS VERY IMPORTANT IN THE DESIGN OF RELATIONAL DATABASES.
 - IF YOU STORE A FRIEND'S EMAIL ADDRESS IN YOUR COLLEGE NOTES YOU MAY NOT FIND IT UNTIL THE NEXT TIME YOU LOOK UP THOSE NOTES.
 - NORMALISATION HELPS TO ELIMINATE THESE KINDS OF PROBLEMS
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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 PRIMARY KEY”

- IS PURCHASE PRICE A PROPERTY OF SUPPLIER NUMBER OR PRODUCT NUMBER? OR BOTH. IS SUPPLIER NAME A PROPERTY OF SUPPLIER NUMBER OR PRODUCT NUMBER?
- 2NF ALLOWS US TO VALIDATE THAT EVERY ATTRIBUTE IS IN THE CORRECT ENTITY.
- AN ENTITY IS IN 2NF IF IT HAS A SIMPLE UID

SECOND NORMAL FORM

Full Names	Address	Movies Rented	Salutation	Director
Janet Jones	First Street Plot 1	Pirates of the Caribbean	Ms.	Gore Verbinski
Janet Jones	First Street Plot 1	Clash of the Titans	Ms.	Louis Leterrier
Robert Phil	3 rd Street 34	Forgetting Sarah marshal	Mr.	Nicholas Stoller
Robert Phil	3 rd Street 34	Daddy's Little Girls	Mr.	Tyler Perry
Robert Phil	5 th Avenue	Clash of the titans	Mr.	Louis Leterrier

SECOND NORMAL FORM

- CONTINUING WITH OUR EXAMPLE FROM 1NF WE CAN SEE WE HAVE A COMPOSITE KEY THAT COMBINES NAME WITH ADDRESS

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Robert Phil	3 rd Street 34	Daddy's Little Girls	Mr.	Tyler Perry
Robert Phil	5 th Avenue	Clash of the titans	Mr.	Louis Leterrier

SECOND NORMAL FORM

- WE MUST PARTITION THE TABLE BECAUSE THE SALUTATION IS ONLY DEPENDENT ON PART OF THE PRIMARY KEY, THE NAME PART. IT IS NOT DEPENDENT ON THE ADDRESS TOO.

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- SALUTATION IS MOVED TO A SEPARATE TABLE AND THEN LINKED BACK TO THE ORIGINAL TABLE

Salutation
Mr.
Mrs.

SECOND NORMAL FORM (2NF)

- EXAMINE THE ENTITY PRODUCT SUPPLIER
- THE UID IS A COMPOSITE UID 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?
- THE SUPPLIER NAME WOULD NEED CHANGING IN 5 PLACES, WHAT WOULD BE THE EFFECT IF SOME WERE CHANGED BUT NOT ALL? HOW WOULD USERS KNOW WHICH WAS THE CORRECT NAME?
- THIS OCCURS WHEN AN ATTRIBUTE IS DEPENDENT ON ONLY PART OF A COMPOSITE KEY.

PRODUCT SUPPLIER

supplier number

product number

* purchase price

* supplier name

SECOND NORMAL FORM (2NF)

- IS SUPPLIER NAME A PROPERTY OF SUPPLIER NUMBER, PRODUCT NUMBER, OR BOTH?
- 2NF REQUIRES A “BOTH” ANSWER TO THE QUESTION.
- TO CONVERT THE EXAMPLE SHOWN TO 2NF, WE NEED TO CREATE A SUPPLIER ENTITY (IT IS DOES NOT ALREADY EXIST), AND MOVE SUPPLIER NAME ATTRIBUTE TO THE SUPPLIER ENTITY.
- IN THIS CASE WE CAN ALSO REMOVE THE SUPPLIER NUMBER FROM THE ENTITY AND BAR THE RELATIONSHIP SO THAT SUPPLIER NUMBER IS USED WITH PRODUCT NUMBER FOR THE COMPOSITE UID

PRODUCT SUPPLIER

~~supplier number~~
product number
* purchase price
* ~~supplier name~~

supplied by



supplies

SUPPLIER

id
* Name

EXAMPLE

What is wrong with this diagram?

