



RELATIONAL DATABASES

3NF

OBJECTIVES

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

THIRD NORMAL FORM

“TO CHECK IF AN ENTITY IS IN THIRD NORMAL FORM, EXAMINE EACH NON-UID ATTRIBUTE TO CHECK FOR TRANSITIVE DEPENDENCY WITH OTHER NON-UID ATTRIBUTES”

- IN THE ABOVE EXAMPLE THE STORE NAME IS DEPENDENT ON THE CD NUMBER
- STORE ADDRESS IS DEPENDENT ON THE CD NUMBER BUT IT IS ALSO DEPENDENT ON THE STORE NAME WHICH IS A NON-UID ATTRIBUTE
- THIS IS AN EXAMPLE OF TRANSITIVE DEPENDENCY

THIRD NORMAL FORM

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

- SHOULD INFORMATION ABOUT THE DIRECTOR OF A MOVIE BE STORED WITH THE CUSTOMER'S INFORMATION?

Salutation

Mr.

Mrs.

THIRD NORMAL FORM

Full Names	Address
Janet Jones	First Street Plot 1
Janet Jones	First Street Plot 1
Robert Phil	3 rd Street 34
Robert Phil	3 rd Street 34
Robert Phil	5 th Avenue

Movies Rented	Director
Pirates of the Caribbean	Gore Verbinski
Forgetting Sarah marshal	Nicholas Stoller
Daddy's Little Girls	Tyler Perry
Clash of the titans	Louis Leterrier

Salutation
Mr.
Mrs.

Now we have the movie information stored separately and we will put a link from the movie to the customer

THIRD NORMAL FORM

- THINK OF THE KIND OF INFORMATION YOU'D LIKE TO STORE ABOUT CDS
- DOES INFORMATION ABOUT THE STORE WHERE YOU BOUGHT IT BELONG IN THE SAME ENTITY?
- IF THE STORE ADDRESS CHANGED YOU WOULD NEED TO CHANGE THAT INFORMATION ON ALL THE CDS BOUGHT IN THAT STORE

CD

id

* title

* producer

* year

o store name

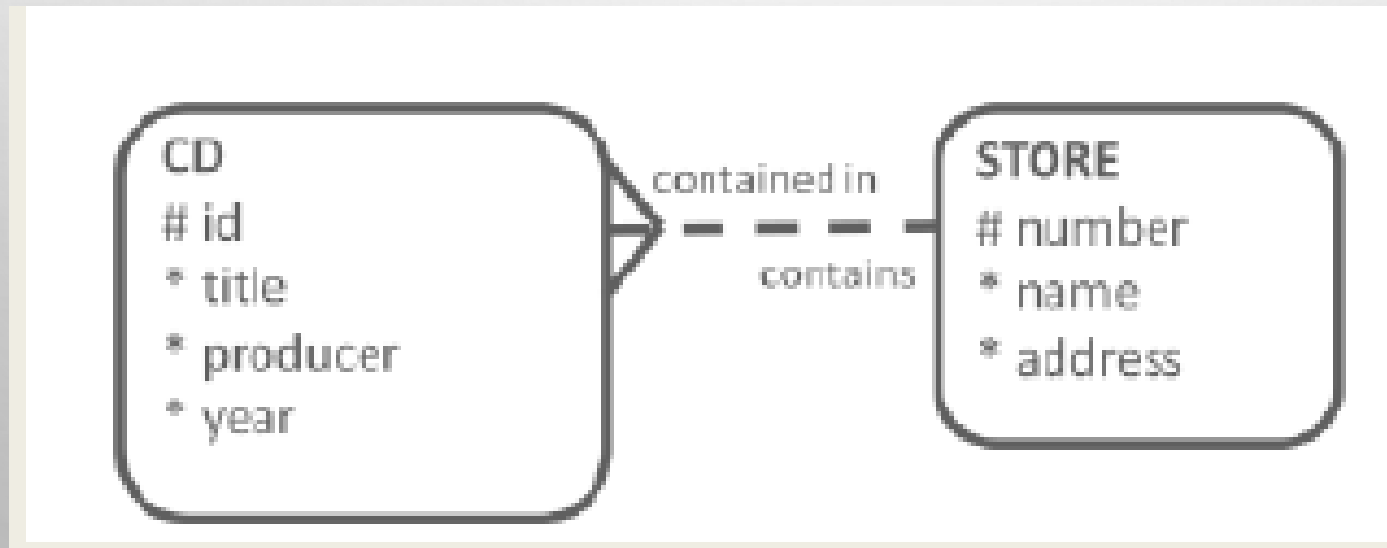
o store address

THIRD NORMAL FORM

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THIRD NORMAL FORM

- TO RESOLVE A THIRD NORMAL FORM (3NF) VIOLATION, YOU CREATE A NEW ENTITY, MOVE THE ATTRIBUTES THAT WERE CAUSING THE VIOLATION TO THE NEW ENTITY (ADDING A UID), AND DRAW A RELATIONSHIP TO THE ORIGINAL ENTITY.
- FOR AN ENTITY TO BE IN 3NF IT MUST ALSO ALREADY BE IN 2NF



THIRD NORMAL FORM

- CONSIDER A SYSTEM THAT TRACKS INFORMATION ABOUT CITIES – SIZE, POPULATION, MAYOR AND SO ON
- THE MODEL SHOWS AN ENTITY THAT INCLUDES STATE INFORMATION
- ALTHOUGH STATE IS A PROPERTY OF CITY ID, STATE FLOWER IS REALLY A PROPERTY OF STATE.

CITY

id

* name

* size

* population

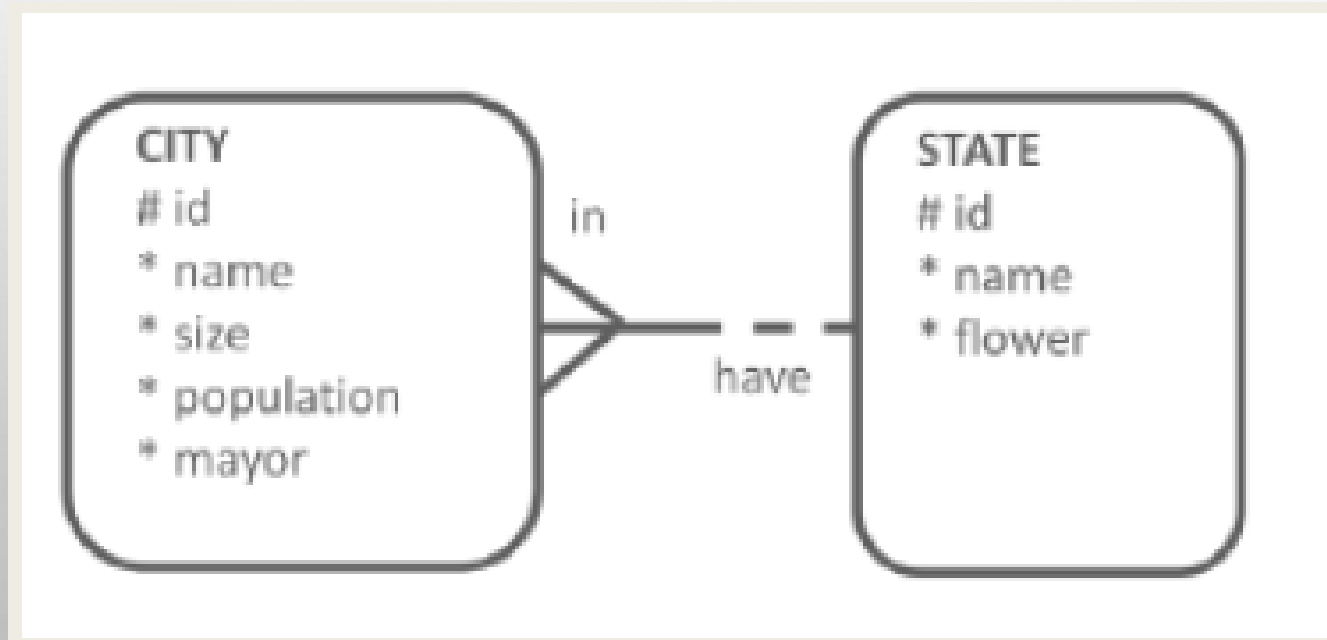
* mayor

* state

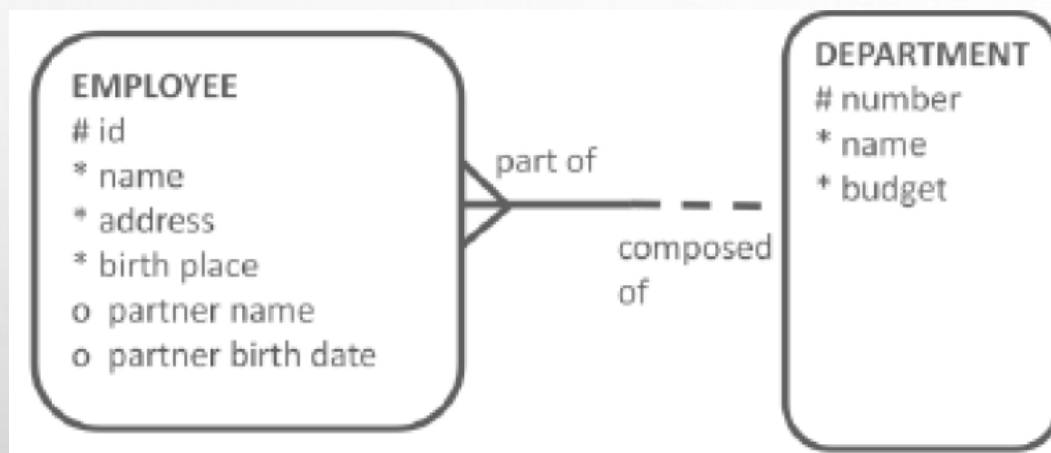
* state flower

SOLUTION

- THE FOLLOWING ENTITIES ARE IN 3NF WITH THE NEW ENTITY STATE



THIRD NORMAL FORM



- IN THIS EXAMPLE ASSUME THE FOLLOWING BUSINESS RULE: EACH EMPLOYEE CAN HAVE ONE PARTNER
- HOW DO YOU RESOLVE THIS?

