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

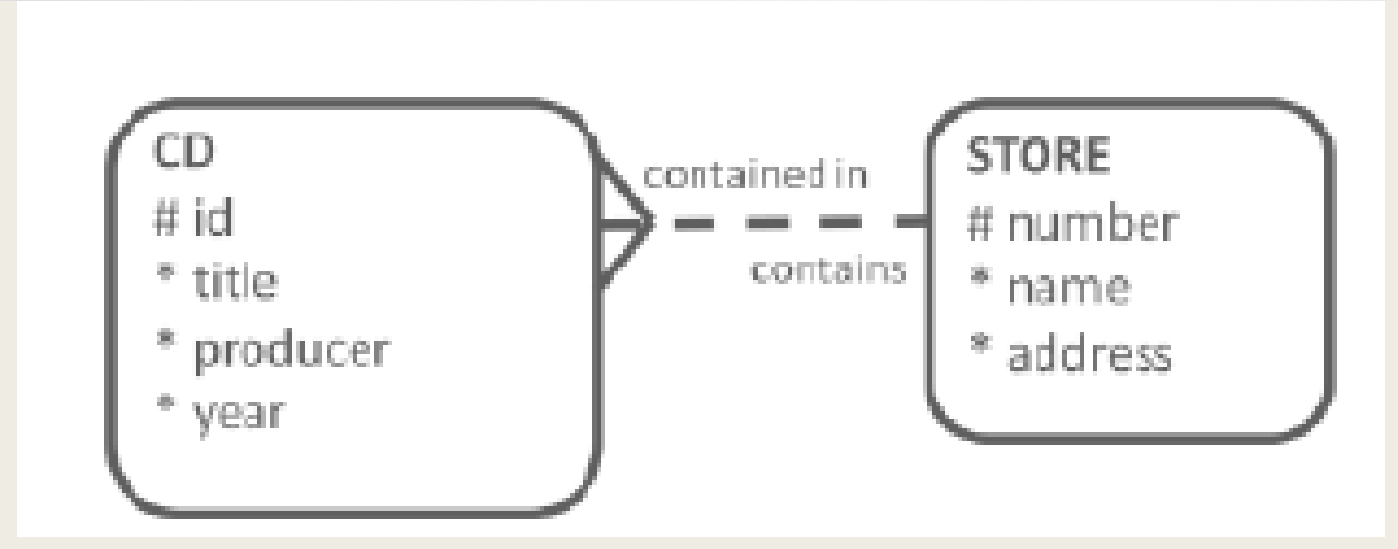
- THINK OF THE KIND OF INFORMATION YOU'D LIKE TO STORE ABOUT CDS
- DOES INFORMATION ABOUT THE STORE WHERE YOU BOUGHT IT BELONG IN THE SAME ENTITY?
- IF THE STORE ADDRESS CHANGED YOU WOULD NEED TO CHANGE THAT INFORMATION ON ALL THE CDS BOUGHT IN THAT STORE

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

- 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

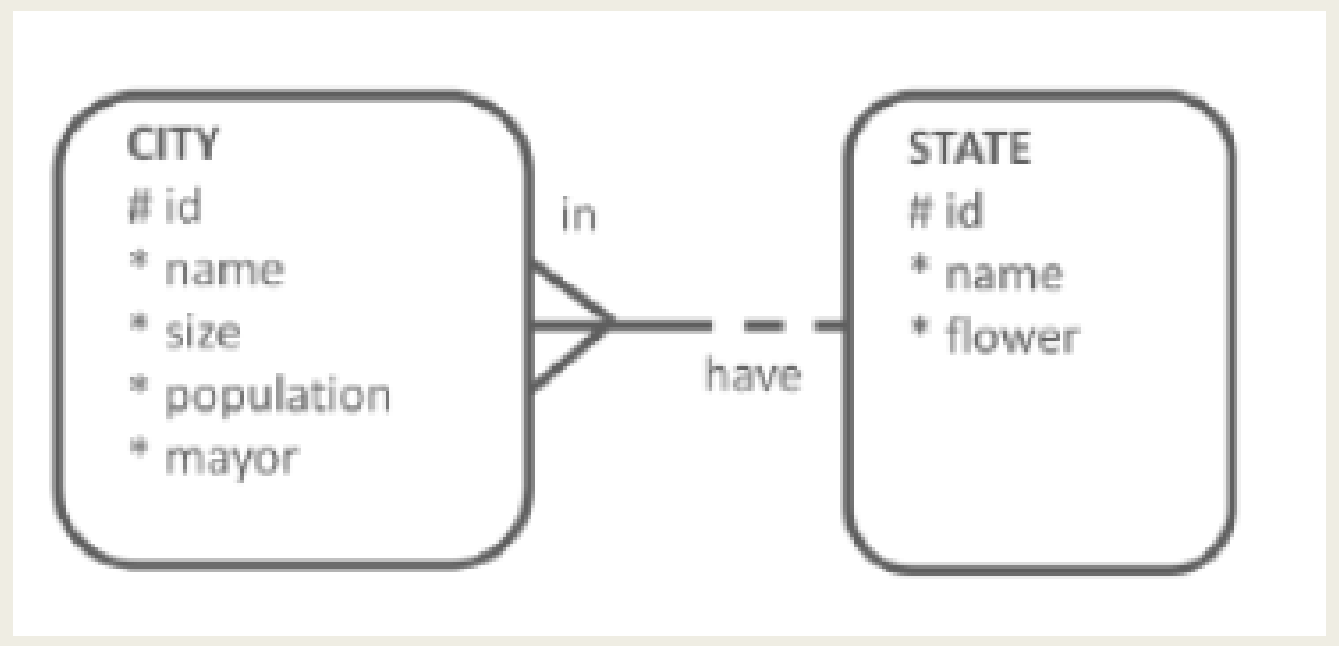


THIRD NORMAL FORM

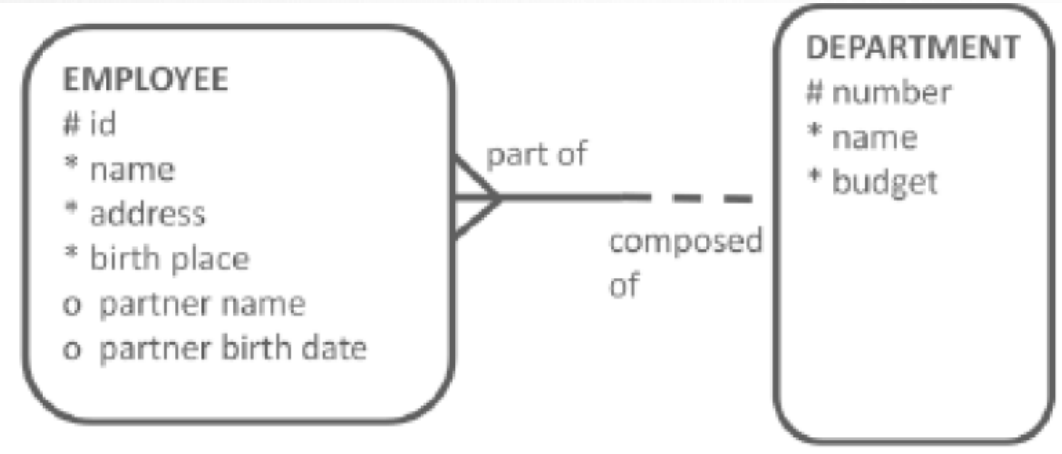
- CONSIDER A SYSTEM THAT TRACKS INFORMATION ABOUT CITIES – SIZE, POPULATION, MAYOR AND SO ON
- THE MODEL SHOWS AN ENTITY THAT INCLUDES STATE INFORMATION
- ALTHOUGH STATE IS A PROPERTY OF CITY ID, STATE FLOWER IS REALLY A PROPERTY OF STATE.

SOLUTION

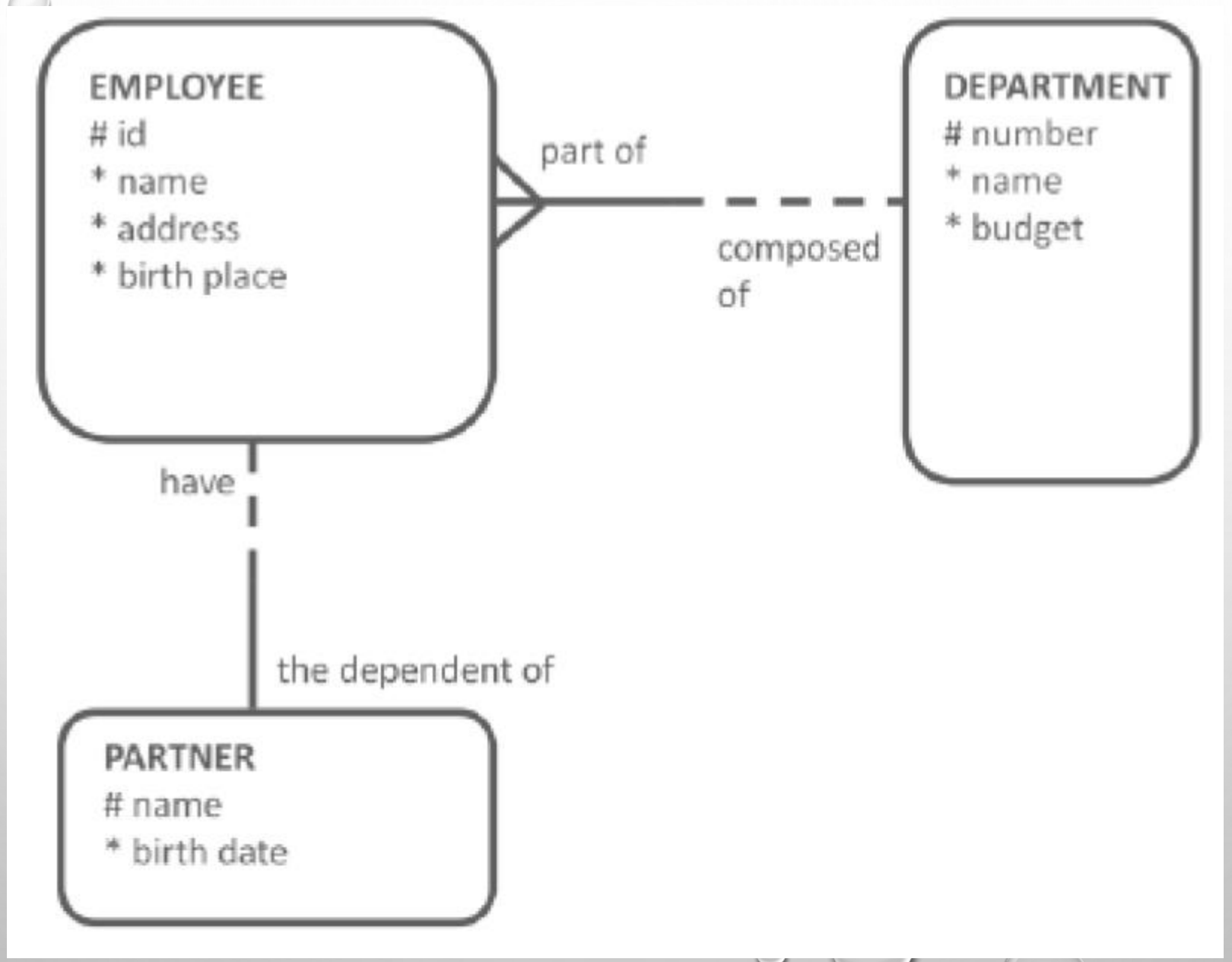
- THE FOLLOWING ENTITIES ARE IN 3NF WITH THE NEW ENTITY STATE



THIRD NORMAL FORM



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


EMPLOYEE
id
* name
* address
* birth place
part of
composed of
DEPARTMENT
number
* name
* budget
have
the dependent of
PARTNER
name
* birth date