RELATIONAL DATABASES

RELATIONSHIP MAPPING

OBJECTIVES

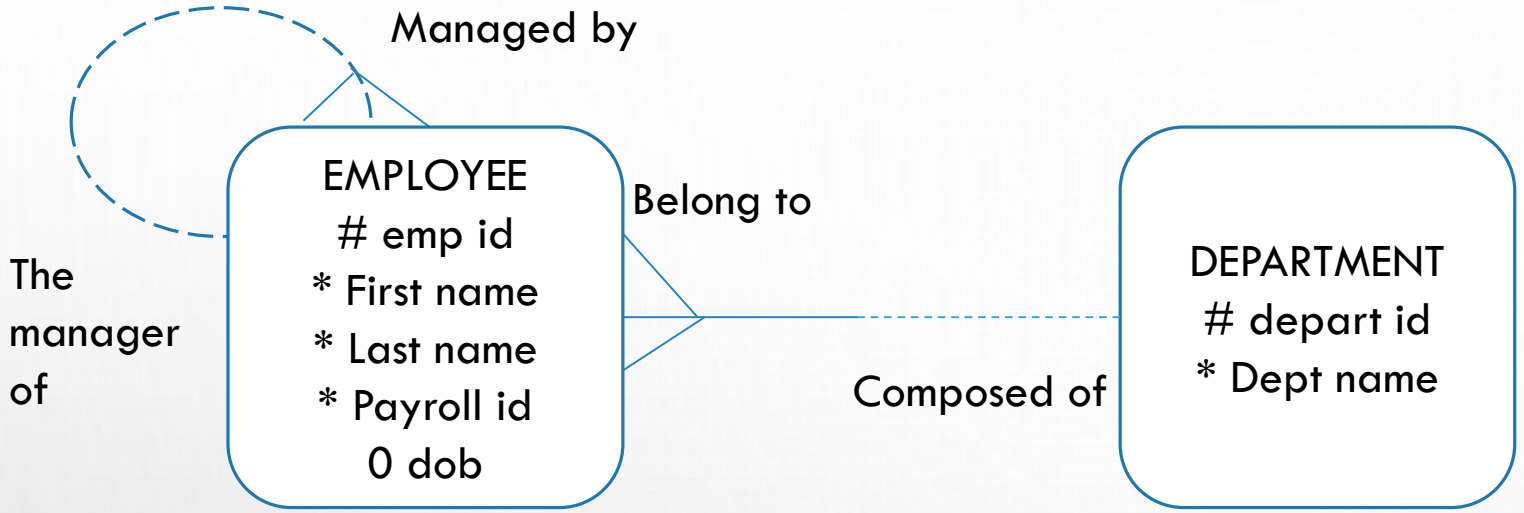
- APPLY THE RULE OF RELATIONSHIP MAPPING TO CORRECTLY TRANSFORM 1:M AND BARRED RELATIONSHIPS
- APPLY THE RULE OF RELATIONSHIP MAPPING TO CORRECTLY TRANSFORM 1:1 RELATIONSHIPS

PURPOSE

- RELATIONSHIPS ARE MAPPED BETWEEN PRIMARY KEYS AND FOREIGN KEYS TO ALLOW ONE TABLE TO REFERENCE ANOTHER.
- IF WE DON'T MAP RELATIONSHIPS THERE ARE JUST A LOT OF STANDALONE TABLES THAT DON'T CONNECT TO ANYTHING IN THE DATABASE.

RELATIONSHIPS

- A RELATIONSHIP CREATES ONE OR MORE FOREIGN KEY COLUMNS IN THE TABLE ON THE MANY SIDE OF THE RELATIONSHIP
- FOREIGN KEY COLUMN MAY BE EITHER MANDATORY OR OPTIONAL

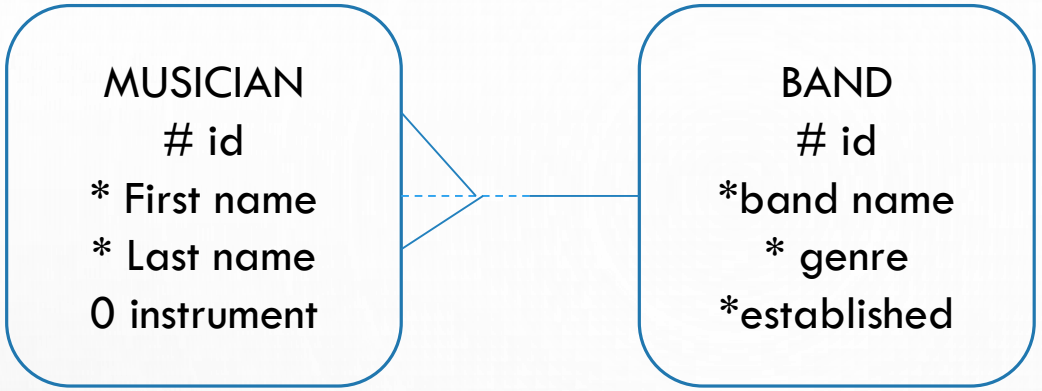


DEPARTMENTS		
COLUMN NAME	**DATA TYPE (SIZE)**	**CONSTRAINT**
department_id	NUMBER(9)	primary key
department_name	CHARACTER(40)	NOT NULL

EMPLOYEES		
COLUMN NAME	**DATA TYPE (SIZE)**	**CONSTRAINT**
employee_id	NUMBER (9)	primary key
first_name	CHARACTER(25)	NOT NULL
last_name	CHARACTER(35)	NOT NULL
payroll_id	NUMBER(9)	unique key
date_of_birth	DATE	
department_id	NUMBER(9)	NOT NULL foreign key: departments
manager_id	NUMBER(9)	foreign key: employees

MANDATORY ON THE ONE SIDE OF THE RELATIONSHIP

- RELATIONSHIPS THAT ARE MANDATORY ON THE ONE SIDE, OR MANDATORY ON BOTH SIDES, ARE MAPPED EXACTLY THE SAME WAY AS A RELATIONSHIP THAT IS OPTIONAL ON THE ONE SIDE.
- THE CONCEPTUAL MODEL IS RICH ENOUGH TO CAPTURE OPTIONALITY AT THE BOTH ENDS OF THE RELATIONSHIP.
- HOWEVER THE PHYSICAL MODEL IS LIMITED IN THAT A FOREIGN KEY CAN ONLY ENFORCE MANDATORY ON THE MANY SIDE.

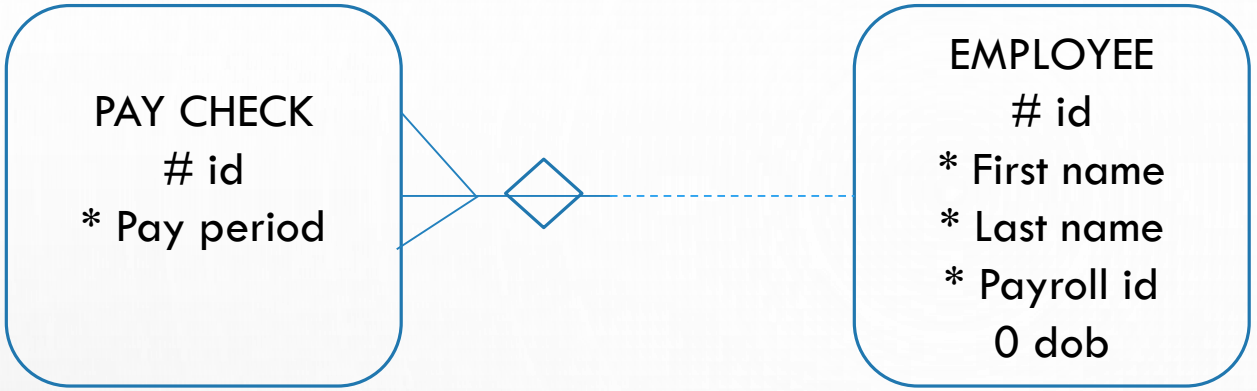


MUSICIAN		
COLUMN NAME	DATA TYPE (SIZE)	CONSTRAINT

BANDS		
COLUMN NAME	DATA TYPE (SIZE)	CONSTRAINT

MAPPING OF NONTRANSFERABLE RELATIONSHIPS

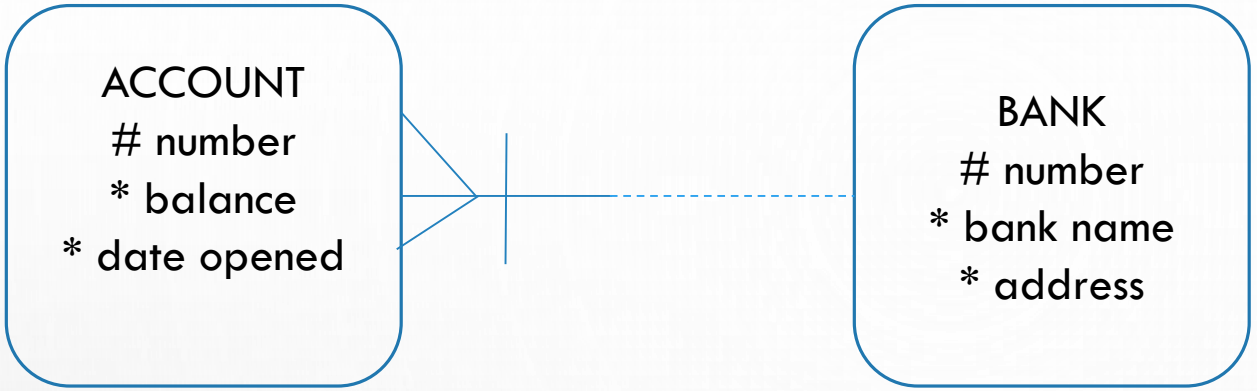
- A NONTRANSFERABLE RELATIONSHIP MEANS THAT THE FOREIGN KEY COLUMN IN THE DATABASE TABLE CANNOT BE UPDATED.
- THE FOREIGN KEY ITSELF CANNOT ENFORCE THIS IN THE DATABASE.
- ADDITIONAL PROGRAMMING IS NEEDED.



PAYCHECKS		
COLUMN NAME	**DATA TYPE (SIZE)**	**CONSTRAINT**

MAPPING BARRED RELATIONSHIPS

- A BARRED RELATIONSHIP IS MAPPED TO A FOREIGN KEY COLUMN ON THE MANY SIDE, JUST LIKE ANY OTHER 1:M RELATIONSHIP
- IN THIS CASE THE FOREIGN KEY PLAYS A DOUBLE ROLE BECAUSE IT IS ALSO PART OF THE PRIMARY KEY

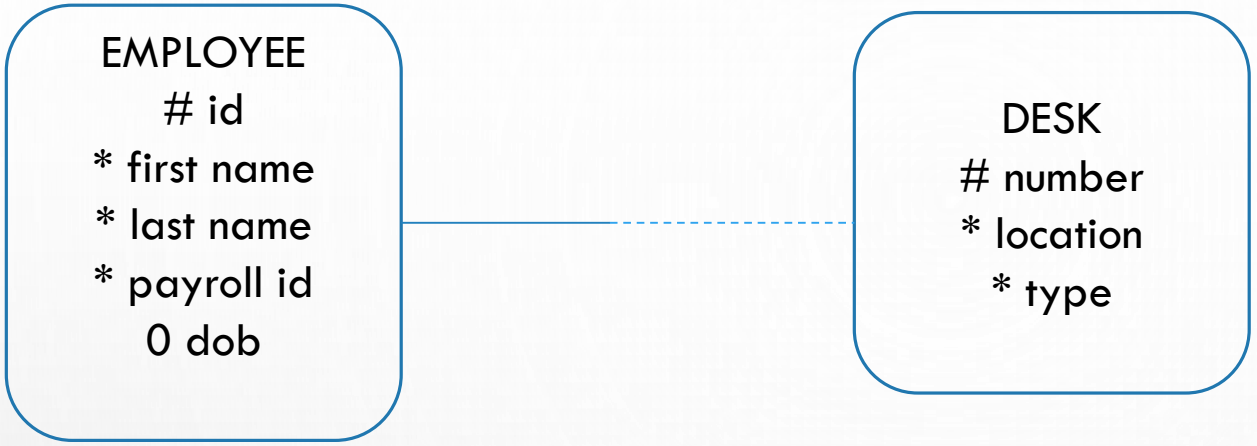


ACCOUNTS		
COLUMN NAME	**DATA TYPE (SIZE)**	**CONSTRAINT**

BANKS		
COLUMN NAME	**DATA TYPE (SIZE)**	**CONSTRAINT**

MAPPING ONE TO ONE RELATIONSHIPS

- WHEN TRANSFORMING A 1:1 RELATIONSHIP YOU CREATE A FOREIGN KEY AND A UNIQUE KEY
- ALL COLUMNS OF THIS FOREIGN KEY ARE ALSO PART OF THE UNIQUE KEY
- IF THE RELATIONSHIP IS MANDATORY ON ONE SIDE THE FOREIGN KEY IS PLACED IN THAT TABLE

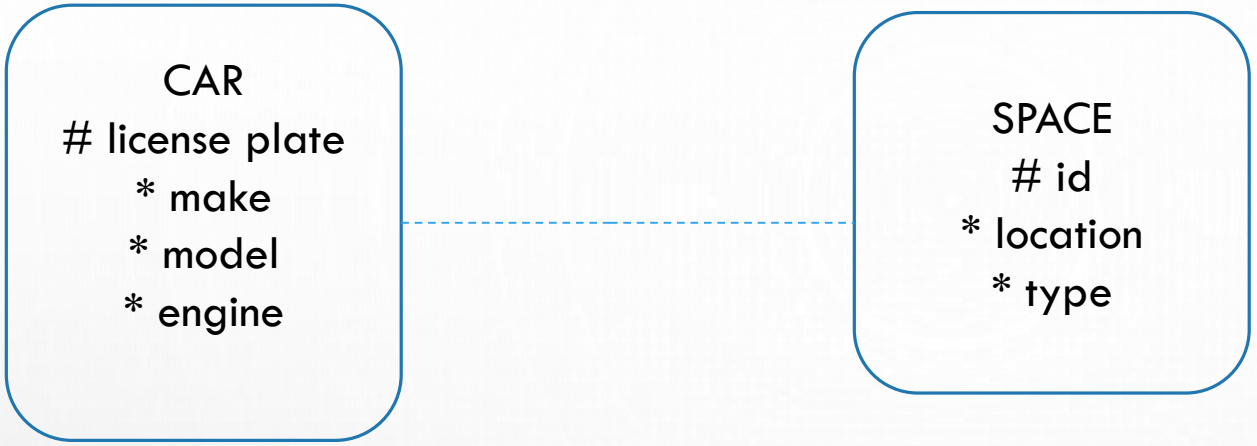


EMPLOYEE		
COLUMN NAME	DATA TYPE (SIZE)	CONSTRAINT

DESKS		
COLUMN NAME	DATA TYPE (SIZE)	CONSTRAINT

OPTIONAL ONE TO ONE RELATIONSHIPS

- IF THE RELATIONSHIP IS OPTIONAL ON BOTH SIDES, YOU CAN CHOOSE WHICH TABLE GETS THE FOREIGN KEY.
- THERE ARE NO ABSOLUTE RULES:
  - IMPLEMENT THE FOREIGN KEY IN THE TABLE WITH FEWER ROWS TO SAVE SPACE.
  - IMPLEMENT THE FOREIGN KEY WHERE IT MAKES MORE SENSE FOR THE BUSINESS



CARS		
COLUMN NAME	DATA TYPE (SIZE)	CONSTRAINT

SPACES		
COLUMN NAME	DATA TYPE (SIZE)	CONSTRAINT

ONE TO MANY MANDATORY BOTH SIDES

- IF THE RELATIONSHIP IS MANDATORY AT BOTH ENDS, YOU HAVE THE SAME LIMITATION WHERE IT IS MANDATORY AT ONE END.
- YOU NEED TO WRITE ADDITIONAL CODE TO ENFORCE IT.