Database Modeling

Introduction

Process

1) Requirement analysis
2) Create ER-diagram
3) Organizing data into tables
4) Normalizing

Requirement analysis

1

Gather information

List the types of data

People
Things
Locations
Events

ER-Diagram

②

Visual

Entities

Primary keys

Relations

Organizing data into tables

3

ER-diagram => tables

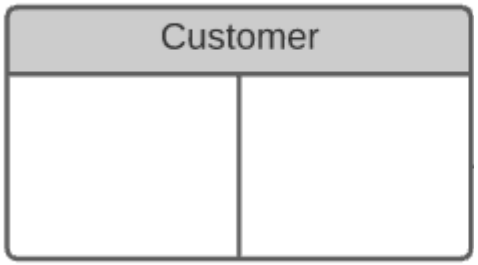
Assign datatypes

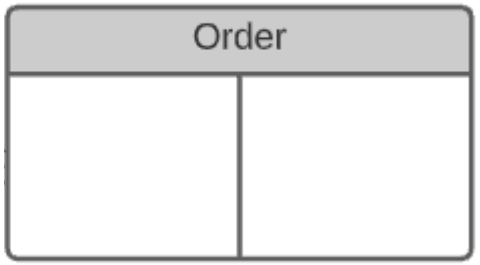
Normalization

④

One big => many small

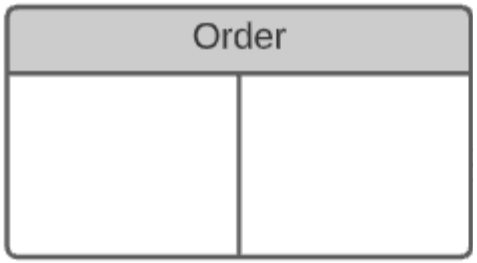
Relations

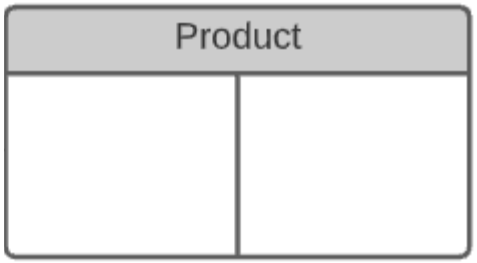




Relations

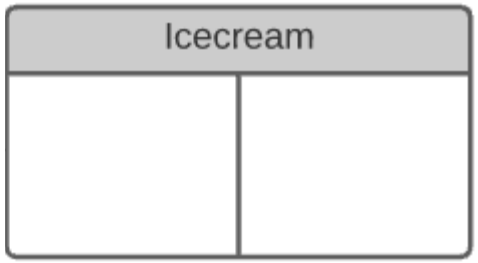
Relations





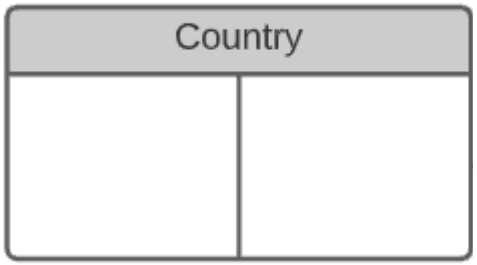
Relations

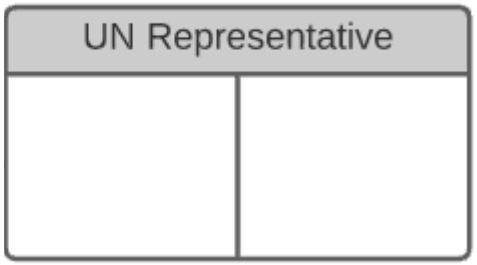
Relations



Relations

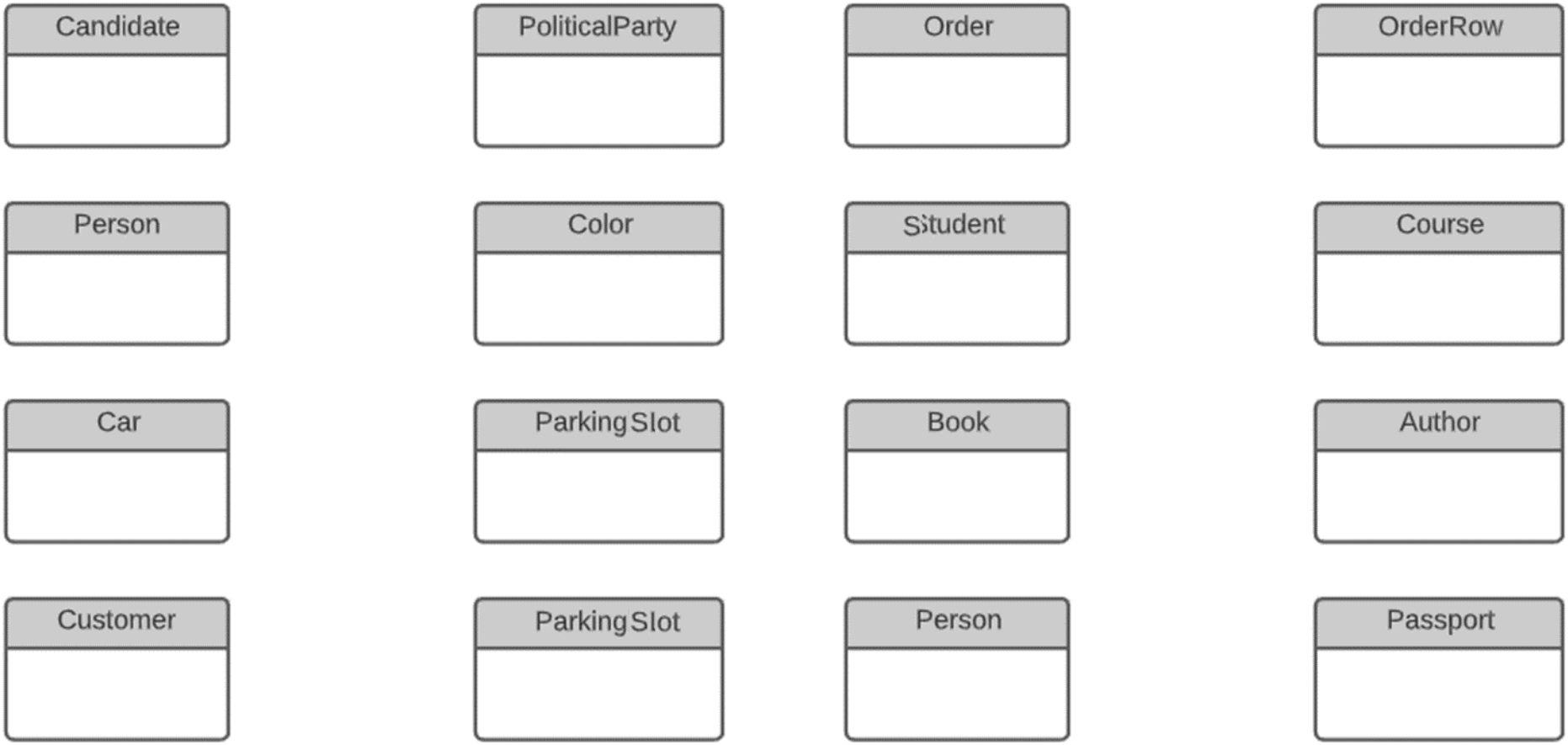
Relations



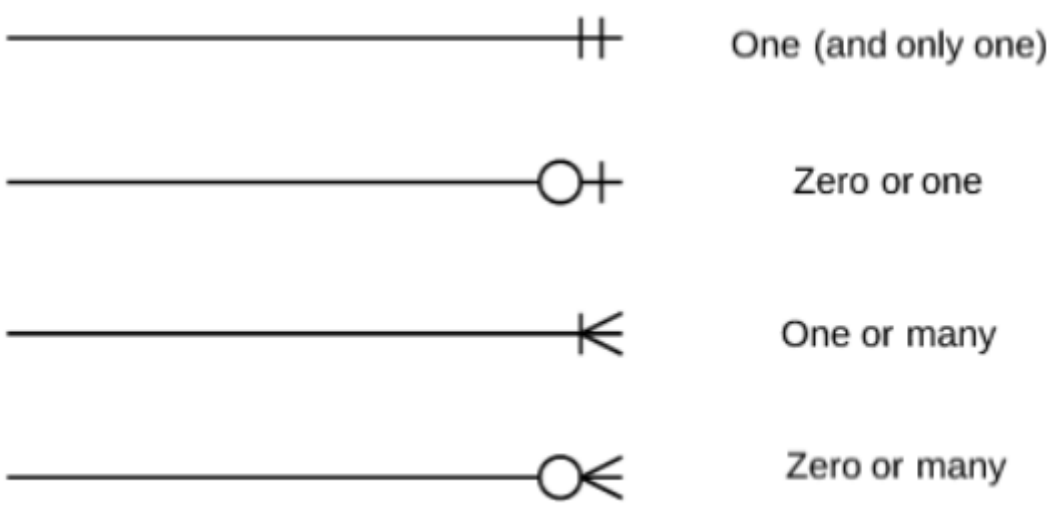


Relations

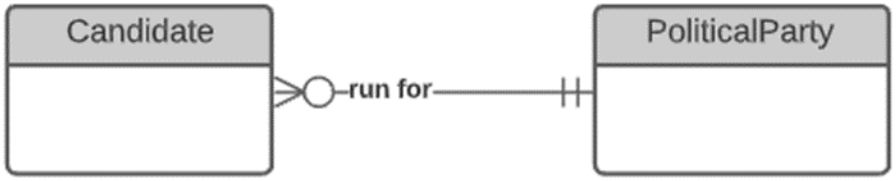
Relations


Candidate
PoliticalParty
Order
OrderRow
Person
Color
Student
Course
Car
ParkingSlot
Book
Author
Customer
ParkingSlot
Person
Passport

Relations



Relations

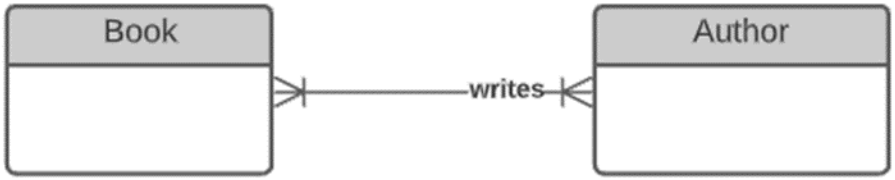

Candidate
run for
PoliticalParty


Order
contains
OrderRow

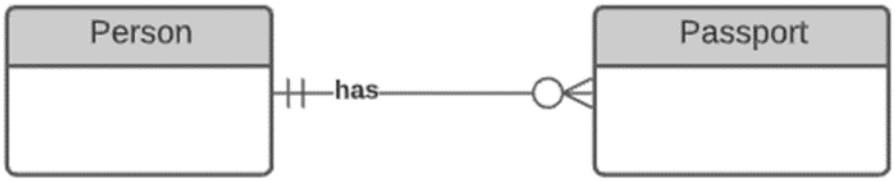

Person
favorites
Color


Student
attends to
Course


Car
parked
Parking Slot

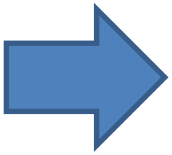

Book
writes
Author


Customer
rents
Parking Slot


Person
has
Passport

Normalizing

Name	FavoriteColor
Mia	Red
Olivia	Red
James	Green
Liam	Blue
Ava	*NULL*
NULL	Red



Name	**FavoriteColor**
Mia	91
Olivia	91
James	92
Liam	93
Ava	NULL
NULL	91

Id	**Name**
91	Red
92	Green
93	Blue
94	Purple
95	Indigo

Normalizing

First normal form

Second normal form

Third normal form

Normalizing

First normal form

Name	FavoriteColors
Bart	Red, Green, Blue
Lisa	Green, Purple

Name	Color1	Color2	Color3
Bart	Red	Green	Blue
Lisa	Green	Purple	

Normalizing

Second normal form


OrderNumber	ProductId	ProductName
1	3000	Monitor 26"
2	4000	Freezer
3	3000	Monitor 26"

Normalizing

Third normal form

ProductId	Name	Price	VAT	TotalPrice
1	Bowl	200	50	250
2	Spoon	32	8	40