Normalization Exercise 2

Design Document

Database Purpose: Track the history of home sales. Only the sold homes are tracked.

The current database design is listed below:

SoldHomes

*HomeID
StreetAddress
City
State
ZipCode
AgentName
AgentPhoneNo
RealEstateCompany
CompanyStreetAddress
CompanyCity
CompanyState
CompanyZipCode
SellingPrice
ClosingDate

Exercise Description:
- Refine the design to conform to the 3rd normal form and meet the following business rules and design requirement.

Business Rules:
- Track each sale of each home, including the selling price, closing date, and the selling agent.
- Assume only the selling agent is tracked.
- Assume there is only one selling agent for each sale.
- Assume only the last name of an agent is tracked.
- Assume only one phone number is tracked for an agent.
- Assume an agent is associated with only one real estate company.

Design Requirements:
- Use Crow's Foot Notation

Original

SoldHomes
* HomeID
StreetAddress
City
State
ZipCode
AgentName
AgentPhoneNo
RealEstateCompany
CompanyStreetAddress
CompanyCity
CompanyState
CompanyZipCode
SellingPrice
ClosingDate

Changed to Composite Primary Key

SoldHomes
* HomeID
* ClosingDate
StreetAddress
City
State
ZipCode
AgentName
AgentPhoneNo
RealEstateCompany
CompanyStreetAddress
CompanyCity
CompanyState
CompanyZipCode
SellingPrice

First Normal Form (1st NF)
Take to 2nd NF Next

	SoldHomes
*	HomeID
*	ClosingDate
	StreetAddress
	City
	State
	ZipCode
	AgentName
	AgentPhoneNo
	RealEstateCompany
	CompanyStreetAddress
	CompanyCity
	CompanyState
	CompanyZipCode
	SellingPrice

First Normal Form (1ˢᵗ NF)
Take to 2ⁿᵈ NF Next

Partial Dependency

	SoldHomes
*	HomeID
*	ClosingDate
	StreetAddress
	City
	State
	ZipCode
	AgentName
	AgentPhoneNo
	RealEstateCompany
	CompanyStreetAddress
	CompanyCity
	CompanyState
	CompanyZipCode
	SellingPrice

Corrected Partial Dependency and Conforms to 2nd NF

SoldHomes

* HomeID
* ClosingDate
  AgentName
  AgentPhoneNo
  RealEstateCompany
  CompanyStreetAddress
  CompanyCity
  CompanyState
  CompanyZipCode
  SellingPrice

Homes

* HomeID
  StreetAddress
  City
  State
  ZipCode

Second Normal Form (2nd NF)
Take to 3rd NF Next

SoldHomes

* *HomeID
* *ClosingDate
* AgentName
* AgentPhoneNo
* RealEstateCompany
* CompanyStreentAddress
* CompanyCity
* CompanyState
* CompanyZipCode
* SellingPrice

Homes

* *HomeID
* StreetAddress
* City
* State
* ZipCode

Transitive Dependency

Second Normal Form (2nd NF)
Take to 3rd NF Next

SoldHomes

* HomeID
* ClosingDate
  AgentID
  SellingPrice

Homes

* HomeID
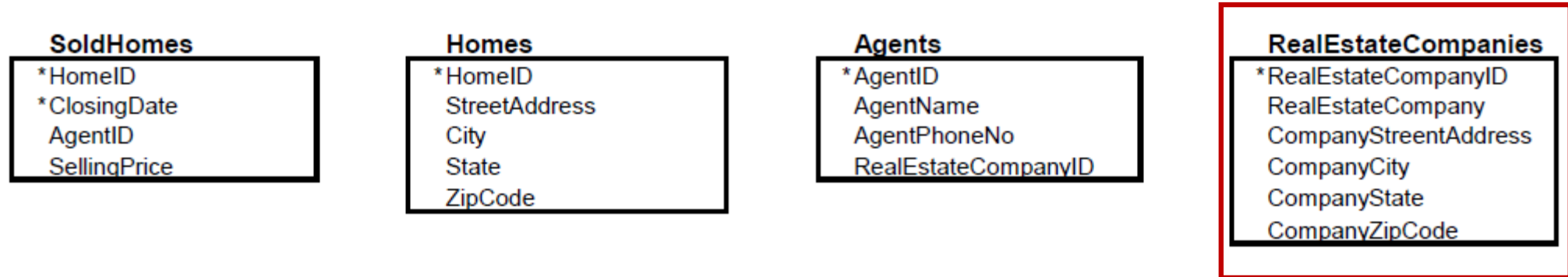 StreetAddress
  City
  State
  ZipCode

Agents

* AgentID
  AgentName
  AgentPhoneNo
  RealEstateCompany
  CompanyStreetAddress
  CompanyCity
  CompanyState
  CompanyZipCode

Transitive Dependency

Corrected Transitive Dependency and Conforms to 2nd NF

SoldHomes
- *HomeID
- *ClosingDate
- AgentID
- SellingPrice

Homes
- *HomeID
- StreetAddress
- City
- State
- ZipCode

Agents
- *AgentID
- AgentName
- AgentPhoneNo
- RealEstateCompanyID

RealEstateCompanies
- *RealEstateCompanyID
- RealEstateCompany
- CompanyStreentAddress
- CompanyCity
- CompanyState
- CompanyZipCode

What To Do Next?

- Create entities in Design Tool
- Don't add any additional entity or attribute
- Establish relationships between entities
- Pay attention to Multiplicity
- Pay attention to type of relationship
  - Identifying vs Non-Identifying
- Label PKs and FKs