**Business Rules and Assumptions**

**1. House-Related**

* **Subdivision**
  + One subdivision can have multiple lots.
  + One subdivision has three static styles: Modern, Renaissance, and Mediterranean.
* **Style**
  + A specific house style has already been assigned to each lot.
  + Each style has different elevations that clients can choose from. There are 3 elevations in total. Elevation A is the base design. Elevation B and C have different windows, roofline, and stone accents in the trim.
* **Lot**
  + One lot corresponds to one house, which is unique.
  + Our original assumption is that a lot can have no house on it. However, due to the internal error of Data Modeler, the participation of 1-to-1 relationship will be opposite to our original assumption. We will assume that one lot must have a house based on the ER Diagram.
* **School District**
  + One school district can cover multiple subdivisions; one subdivision can only belong to one school district. One school district can have multiple schools. One school can only belong to one school district.
* **Room**
  + Rooms are categorized into kitchen, living room, etc. One house may have multiple same types of rooms. For example, one house can have 2 bedrooms.

**2. Options & Decorator Choices**

* **Option**
  + Exterior choices do not have targeting rooms.
  + Each option is corresponding to one specific category, one category may have multiple options.
  + Each option can be made in different stages. One stage can only have one option in one object (room or exterior area)
  + Options price vary based on different stages and clients can decide the stage rather than strictly assigned.
  + Each style can have multiple options, while each option can only belong to one style. The costs of the same option for different styles can be different.
  + Some options must be purchased before certain stages (plumbing before stage 1)
  + There are only 4 categories, electrical, plumbing, interior, and exterior.
* **Decorate Choice**
  + One stage may contain different decorator choices.
  + If the clients want to change their initial order, one more decorator choice chart should be uploaded at any stage and cover related extra construction costs and bear extension of construction time for those unconstructed options.
  + Clients are not allowed to skip the regular construction stage but can make adjustments of non\_core decorator choices
  + Only unconstructed decorator choices can be changed by customers at stage 4 and 7.

**3. Construction**

* Every house is at least during construction stage 1
* One house has different construction stages while being supervised by one construction manager.
* Each stage contains several tasks and the total estimated construction time is determined by the completion of the latest tasks.

**4. Contract**

* Buyers only include people who have signed the contract
* One sales agent can serve many buyers and a buyer must be assigned to one sales agent.
* Each contract has one sales agent.
* Each contract is associated with one and only one house: a 1-to-1 relationship between entity Contract and entity House. However, due to the setup of Data Modeler, when we establish this relationship, contract\_id would appear in the house table and house\_id will appear in contract table, creating redundancy. Thus, we deleted the attribute contract\_id in the house table in our DDL, which does not affect our assumptions and database operations.

**5. Sales**

* Buyers only include people who have signed the contract.
* According to the date of the contract, the buyer must pay a deposit, which is recorded in the contract.
* An escrow agent has escrowed at least one buyer and can escrow multiple buyers
* A bank has sponsored at least one buyer and can sponsor multiple buyers
* A buyer can purchase multiple houses

**6. Employee**

* Each employee has a tile of sales agent or construction manager
* One sales agent is responsible for contract and decorator choices of the same house.
* A house’s contract and decorator choices throughout all stages are handled by one sales agent
* A house’s construction throughout all stages is handled by one construction manager
* One sales agent can be responsible for multiple houses’ contracts and decorator choices
* One construction manager can be responsible for multiple houses’ construction