Eggshell Home Builder (Final Project)

Object Description Document

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(Group 3)

Gummoe, Benjamin

Malavia, Sonal

Shaw, Katarina

Zhai, Xuefeng

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# Sequences

Sequences are created to generate the surrogate key for every table in the database. Each time when a new row is inserted into a table, the sequences are triggered and the surrogate key is generated for that record.

* + APPLICATION\_USER\_seq
  + CONSTRUCTION\_PROJECT\_STAGE\_seq
  + CONSTRUCTION\_WORKER\_CREW\_seq
  + CONTRACT\_seq
  + CONSTRUCTION\_PROJECT\_seq
  + CREW\_seq
  + CUSTOMER\_seq
  + CUSTOMER\_CONTRACT\_seq
  + DISCLOSURE\_FORM\_seq
  + ELEVATION\_seq
  + EMPLOYEE\_seq
  + FLOOR\_seq
  + HOUSE\_seq
  + HOUSE\_LAYOUT\_seq
  + HOUSE\_SALES\_AGENT\_seq
  + LOT\_seq
  + OPTION\_CHOICE\_seq
  + ROOM\_seq
  + ROOM\_ON\_A\_FLOOR\_seq
  + SALE\_seq
  + SCHOOL\_seq
  + SCHOOL\_DISTRICT\_seq
  + SELECTED\_STAGE\_OPTION\_seq
  + STAGE\_seq
  + STYLE\_seq
  + STYLE\_ELEVATION\_seq
  + SUBDIVISION\_seq
  + SUBDIVISION\_AGREEMENT\_seq
  + SUBDIV\_ALLOWABLE\_STYLE\_seq
  + TASK\_UPDATE\_seq
  + TASK\_seq

# Views

## view\_emptylot

This view shows the information of all the empty lots.

## view\_unfinished\_houses

This view shows the information of the customers whose houses are still under construction. It also shows the ID of the house, which lot it belongs and its estimated end date.

# Procedures

## display\_home\_status

This procedure generates a report of the construction status of a given customer’s home. When a user inputs the ID of the house, the procedure will report whether the project is finished or not. If it is not finished, it will report the estimated finish date.

## PM\_Assignment

This procedure generates a report of the assignment of the project manager. It shows which projects each project managers is working on.

# Function

## cal\_employee\_no

This function is a part of employee\_number procedure that calculates the number of current employees.

# Package

## list\_sales

This package contains a procedure ‘sales’. When a user inputs the ID of a sales agent, the procedure lists all the sales information for the sales agent.

# Database triggers

## stage\_selected\_option\_markup

Trigger ‘stage\_selected\_option\_markup’ is located on the Selected\_Stage\_Option table. After a new row is inserted or updated, the trigger fires and checks to see if the stage of the house is within one stage of the option that has been selected. If it is, then the price associated with the selected option is increased by 15% to account for additional costs of adding an option that is for a previous stage.

## selected\_stage\_option\_check

Trigger ‘selected\_stage\_option\_check’ is located on the Selected\_Stage\_Option table. Before a new row is inserted or updated, the trigger fires and checks to see if the stage of the house is more than one stage beyond the stage of the option that has been selected. If it is, then an error is thrown to prevent the row from being added or updated. This prevents options that would be too expensive to add from being considered.

# Job

## **find\_construction\_end\_today**

A job that is scheduled daily (scheduled every 30 seconds for testing) to update the construction\_end\_today table so that the construction manager and any other related roles could see which construction projects will end or have ended today. This updates the CONSTRUCTION\_END\_TODAY table to show which construction projects end today.

# Roles

## sales\_agent

The ‘sales\_agent’ role is designed specifically for sales agents. This role has CRUD privileges on all tables associated with the sale of a house, including all contract and option selection tables. Select privileges have been provided on subdivision, subdivision styles, schools, and school district-related tables, as well as some others. The sales\_agent role does *not* have access to other tables, such as those associated with the construction process.

## project\_manager

The ‘project\_manager’ role is designed specifically for construction project managers. This role has CRUD privileges on all tables associated with the house construction process, including construction project, construction project stage, task update, task, etc. The role also has select privileges on stage selected option, style, room, and floor tables, as well as others. The project\_manager role does *not* have access to other tables, such as those associated with the sale process.

# De-normalization

## Skills

A construction worker can have several skills, and this is modeled in the Construction\_worker with de-normalization. Instead of having two additional entities (say for example: SKILL and Construction\_worker\_SKILL), the skills are represented directly in the Construction\_worker entity as the following attributes: skill\_one, skill\_two, and skill\_three. The benefit of this approach is that it when searching for all users with a specific skill, joins are avoided and the results are quicker. The disadvantage to this approach is that a Construction\_worker is limited to three skills. It is also more difficult to group construction workers by their skill because there are three different attributes to take into account for.

## Floor plans

Another example of de-normalization is in the Style entity. Links to floor plans are saved as three possible attributes. The advantage to this approach is that when a user views a style, she can see all links for the Style without joining tables. The disadvantage to this approach is that the number of links is limited to three.

# Alternate Indexes

## ind\_contract\_cust\_id

This is an index on column customer\_id of table CUSTOMER\_CONTRACT. This table is used in the report that displays the status of a home. (procedure: display\_home\_status). Indexing this column will make the report run faster.

## ind\_contract\_cntrct\_id

This is an index on column contract\_id of table CUSTOMER\_CONTRACT. This table is used in the report that displays the status of a home. (procedure: display\_home\_status). Indexing this column will make the report run faster.

## ind\_prj\_house\_id

This is an index on column house\_id of table CONSTRUCTION\_PROJECT. This table is used in the report that shows which projects are assigned to which project managers. (procedure: PM\_Assignment). Indexing this column will make the report run faster.

## ind\_prj\_pm\_id

This is an index on column project\_manager\_employee\_id of table CONSTRUCTION\_PROJECT. This table is used in the report which projects are assigned to which project managers. (procedure: PM\_Assignment). Indexing this column will make the report run faster.