Team GLASTA's *Fantastic Furniture*: Relational Translation

Team Info

Team Name:	Team GLASTA	
Project Name:	*Fantastic Furniture*	
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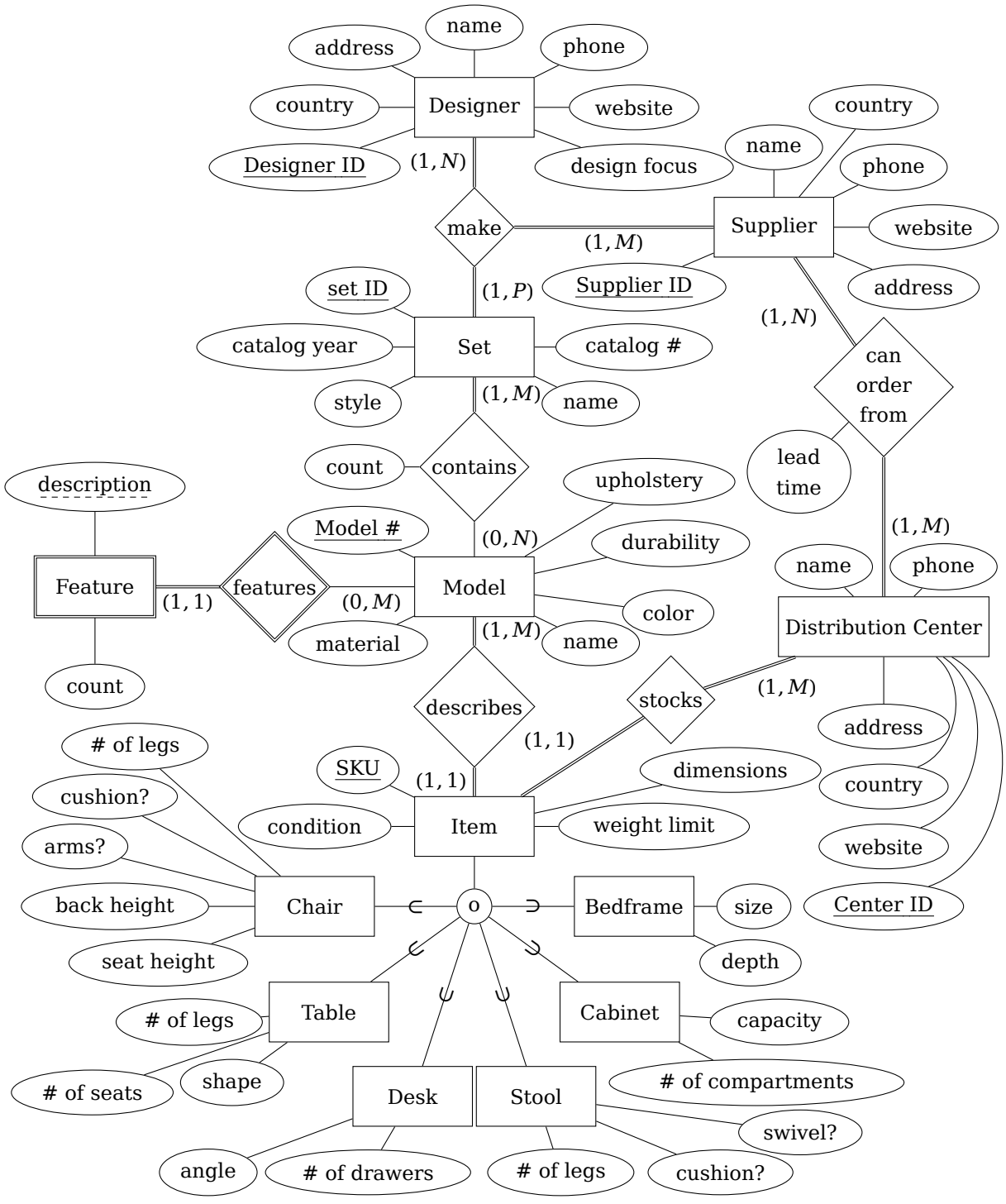
Application Domain

We will be modeling the designer and supplier of a particular piece of furniture. We will also be modeling the distribution centers that will allow customers to order furniture and have it shipped to the store. Pieces of furniture are organized into sets that have different styles. Each set contains the models of the furniture, which are part of a specific catalog and has a unique id number to reference that catalog. We are also modeling the individual items in our store which includes the physical condition on used items. Item can be broken up into an incomplete specialization hierarchy that contains: tables, chairs, bedframes, desks, stools, and cabinets.

Domain Restrictions Not Reflected in Our Model

We won't be covering things like cushions or mattresses in our model, nor will we be modeling the actual shipping of the products to their locations. We will also not be modeling the locations of multiple stores, but we do have the distribution network to model that one particular store.

ER Diagram


name
address
phone
country
Designer
website
country
Designer ID
(1, N)
design focus
name
phone
make
Supplier
website
(1, M)
set ID
Supplier ID
address
(1, P)
(1, N)
catalog year
Set
catalog #
can order from
style
(1, M)
name
lead time
count
contains
description
upholstery
(1, M)
Model #
(0, N)
durability
name
phone
Feature
features
Model
(1, 1)
(0, M)
color
Distribution Center
material
(1, M)
name
count
describes
stocks
(1, M)
address
# of legs
(1, 1)
SKU
dimensions
country
cushion?
(1, 1)
condition
Item
weight limit
website
arms?
back height
Chair
o
Bedframe
size
Center ID
seat height
depth
# of legs
Table
Cabinet
capacity
# of seats
shape
Desk
Stool
# of compartments
swivel?
angle
# of drawers
# of legs
cushion?

Relational Translation

Note that some of the table and column names have underscores after them; this is because those names would otherwise conflict with SQL keywords. Additionally, ISO standard SQL doesn't have any syntax for comments, so we have used the `--` syntax common in practice for this purpose.

```
create domain posreal as double precision
check         (value > 0.0);

create domain posint as integer
check         (value > 0);

-- all measures in this type are in inches
create type dimensions as (length_ posreal,
                           width   posreal,
                           height  posreal);

create table Supplier(supplierID  varchar(10),
                      name_       nchar varying(50)
                                  not null,
                      phone       varchar(12),
                      address     nchar varying(100),
                      country     char(2),
                      website     nchar varying(50),
                      primary key (supplierID));

create table Designer(designerID  varchar(10),
                      name_       nchar varying(50)
                                  not null,
                      phone       varchar(12),
                      address     nchar varying(100),
                      country     char(2),
                      website     nchar varying(50),
                      designFocus nchar varying(100),
                      primary key (designerID));

create table Set_(setID         varchar(10),
                  name_         nchar varying(50)
                                not null,
                  catalogYear   numeric(4,0),
                  catalogNumber integer
                                not null,
                  style_        nchar varying(30),
                  primary key   (setID));
```

```
39
40 create table Model(modelNumber varchar(10),
41                     name_       nchar varying(50)
42                                 not null,
43                     material    nchar varying(30),
44                     upholstery  nchar varying(30),
45                     durability  nchar varying(30),
46                     color       nchar varying(30),
47                     primary key (modelNumber));
48
49 create table Item(sku         varchar(10),
50                   dimensions  dimensions
51                               not null, -- anti-redundancy constraint
52                   condition   nchar varying(30),
53                   weightLimit posreal, -- in pounds of weight
54                   primary key (sku));
55
56 create table DistributionCenter(centerID    varchar(10),
57                                  name_       nchar varying(50)
58                                              not null,
59                                  phone       varchar(12),
60                                  address     nchar varying(100),
61                                  country     char(2),
62                                  website     nchar varying(50),
63                                  primary key (centerID));
64
65 create table make(supplierID  varchar(10),
66                   designerID  varchar(10),
67                   setID       varchar(10),
68                   primary key (supplierID,
69                                designerID,
70                                setID),
71                   foreign key (supplierID)
72                               references Supplier,
73                   foreign key (designerID)
74                               references Designer,
75                   foreign key (setID)
76                               references Set_);
77
78 create table contains_(setID       varchar(10),
79                        modelNumber varchar(10),
80                        count_      posint,
81                        primary key (setID,
82                                     modelNumber),
83                        foreign key (setID)
```

```
                                    references Set_,
                        foreign key (modelNumber)
                                    references Model);

create table describes(modelNumber varchar(10)
                                    not null,
                        sku         varchar(10),
                        primary key (sku),
                        foreign key (modelNumber)
                                    references Model,
                        foreign key (sku)
                                    references Item);

create table canOrderFrom(centerID    varchar(10),
                          supplierID  varchar(10),
                          leadTime    double precision, -- in days
                          primary key (centerID,
                                       supplierID),
                          foreign key (centerID)
                                      references DistributionCenter,
                          foreign key (supplierID)
                                      references Supplier,
                          check       (leadTime >= 0.0));

create table stocks(centerID    varchar(10)
                                not null,
                    sku         varchar(10),
                    primary key (sku),
                    foreign key (centerID)
                                references DistributionCenter,
                    foreign key (sku)
                                references Item);

create table Chair(sku          varchar(10),
                   numberOfLegs posint,
                   hasCushion   boolean,
                   hasArms      boolean,
                   backHeight   posreal, -- in inches
                   seatHeight   posreal, -- in inches
                   primary key  (sku),
                   foreign key  (sku)
                                references Item);

create table Table_(sku           varchar(10),
                    numberOfLegs  posint,
```

```
                    numberOfSeats posint,
                    shape         nchar varying(30),
                    primary key   (sku),
                    foreign key   (sku)
                                  references Item);

create table Desk(sku             varchar(10),
                  angle           double precision, -- in degrees, possibly negative
                  numberOfDrawers posint,
                  primary key     (sku),
                  foreign key     (sku)
                                  references Item,
                  check              (angle > -360.0
                                  and angle < 360.0));

create table Stool(sku          varchar(10),
                   numberOfLegs posint,
                   hasCushion   boolean,
                   hasSwivel    boolean,
                   primary key  (sku),
                   foreign key  (sku)
                                references Item);

create table Cabinet(sku                 varchar(10),
                     numberOfCompartments posint,
                     capacity            nchar varying(30),
                     primary key         (sku),
                     foreign key         (sku)
                                         references Item);

create table Bedframe(sku         varchar(10),
                      size_       nchar varying(30),
                      depth_      double precision, -- in inches, possibly negative
                      primary key (sku),
                      foreign key (sku)
                                  references Item);

create table features_Feature(modelNumber varchar(10),
                              description nchar varying(50),
                              count_      posint,
                              primary key (modelNumber,
                                           description),
                              foreign key (modelNumber)
                                          references Model);
```

Group Work

Alexander: Provided update and revision to Part 2 ER diagram to fit a real world application and provided initial write-up of relations.

Timothy: Provided input, feedback, and correction to Part 2 revisions as well as to write-up of relations.

Schuyler: Provided input, feedback, and correction to Part 2 revisions as well as to write-up of relations.