FIT2094-FIT3171 Databases

Week 6 Tutorial Suggested Solution

LOGICAL MODELLING

FIT Database Teaching Team

FIT2094-FIT3171 2021 S2

FIT2094-FIT3171 Introduction to Databases

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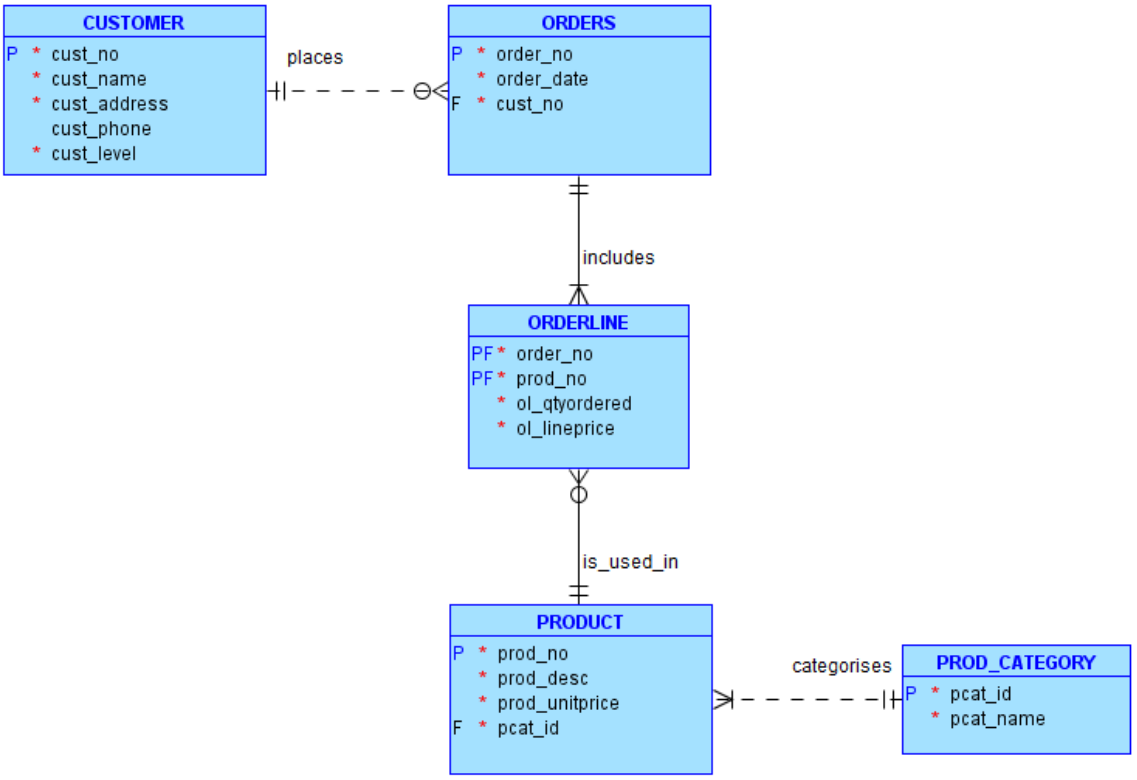
6.2 Using SQL Developer Data Modeler

6.2.3 Develop a model - Stage 1 The Logical Mode

Customer Orders Case Study

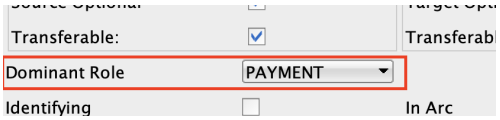


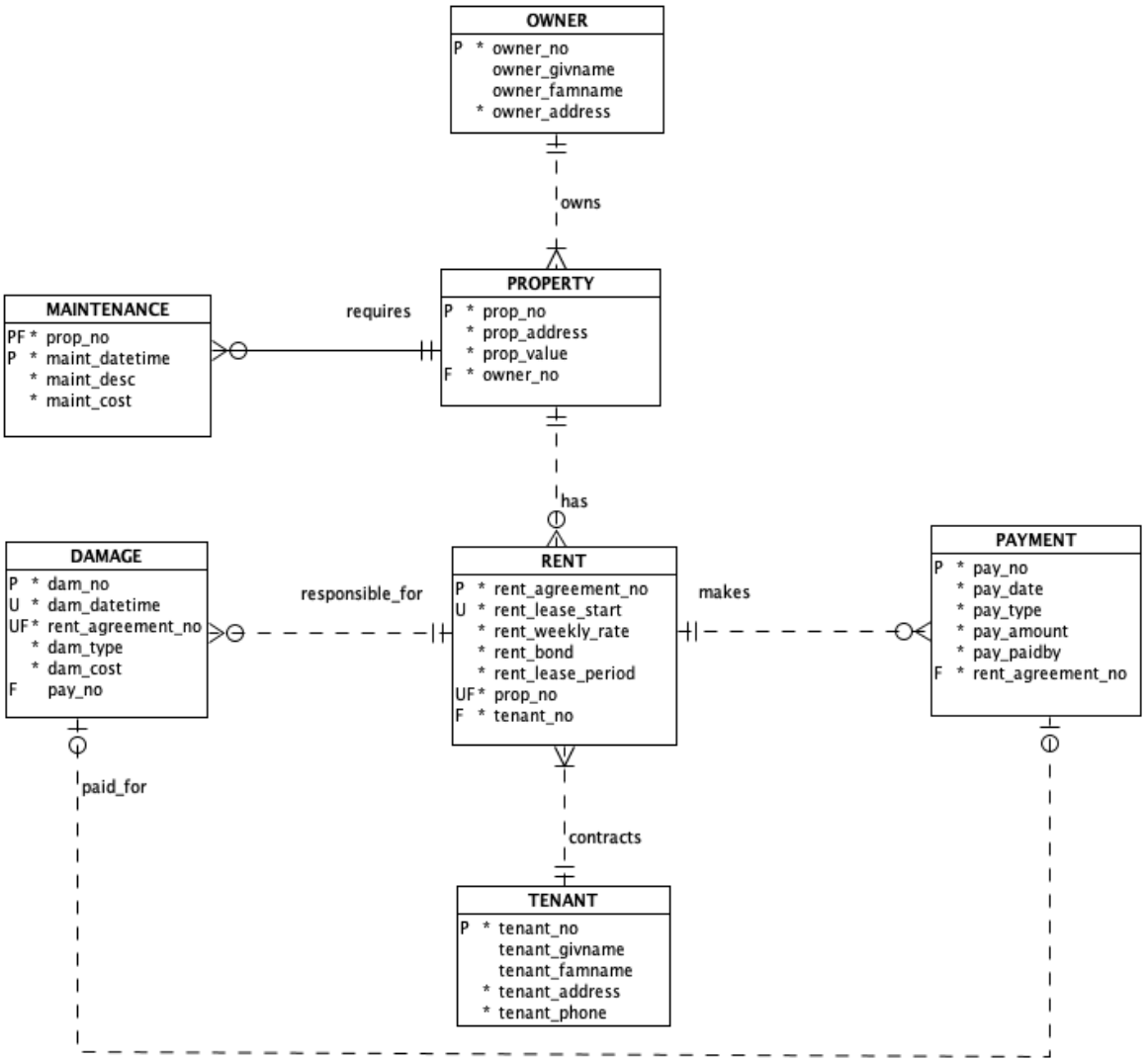
6.3 Property-Rental Model

6.3.1 Drawing Logical Model

Note:

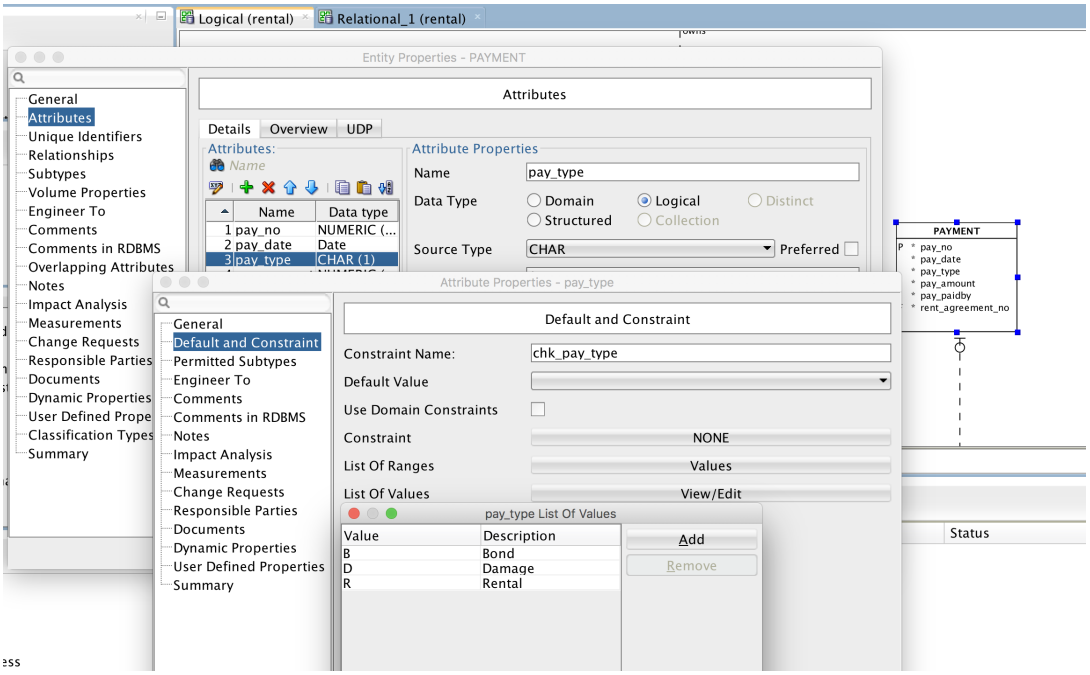
- Surrogate keys of rent_agreement_no and dam_no added to RENT and DAMAGE respectively. Note that when a surrogate key is added, a unique identifier is created to maintain the natural key.
- Since the model is to be implemented in Oracle date and time can be stored in a single DATE type attribute
- In one to one relationship between PAYMENT and DAMAGE, the FK should be placed in DAMAGE (remember that you have to place the FK in a relation such that the database has less null values). Thus, the Dominant Role is set as PAYMENT and the FK is placed in DAMAGE:



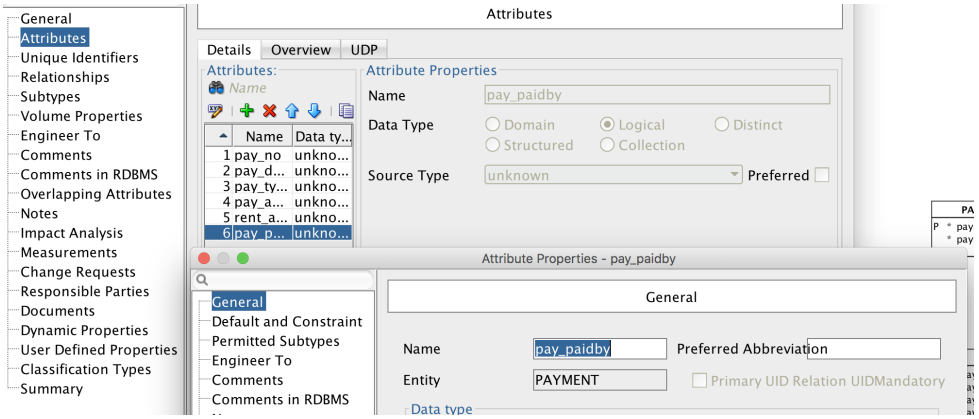


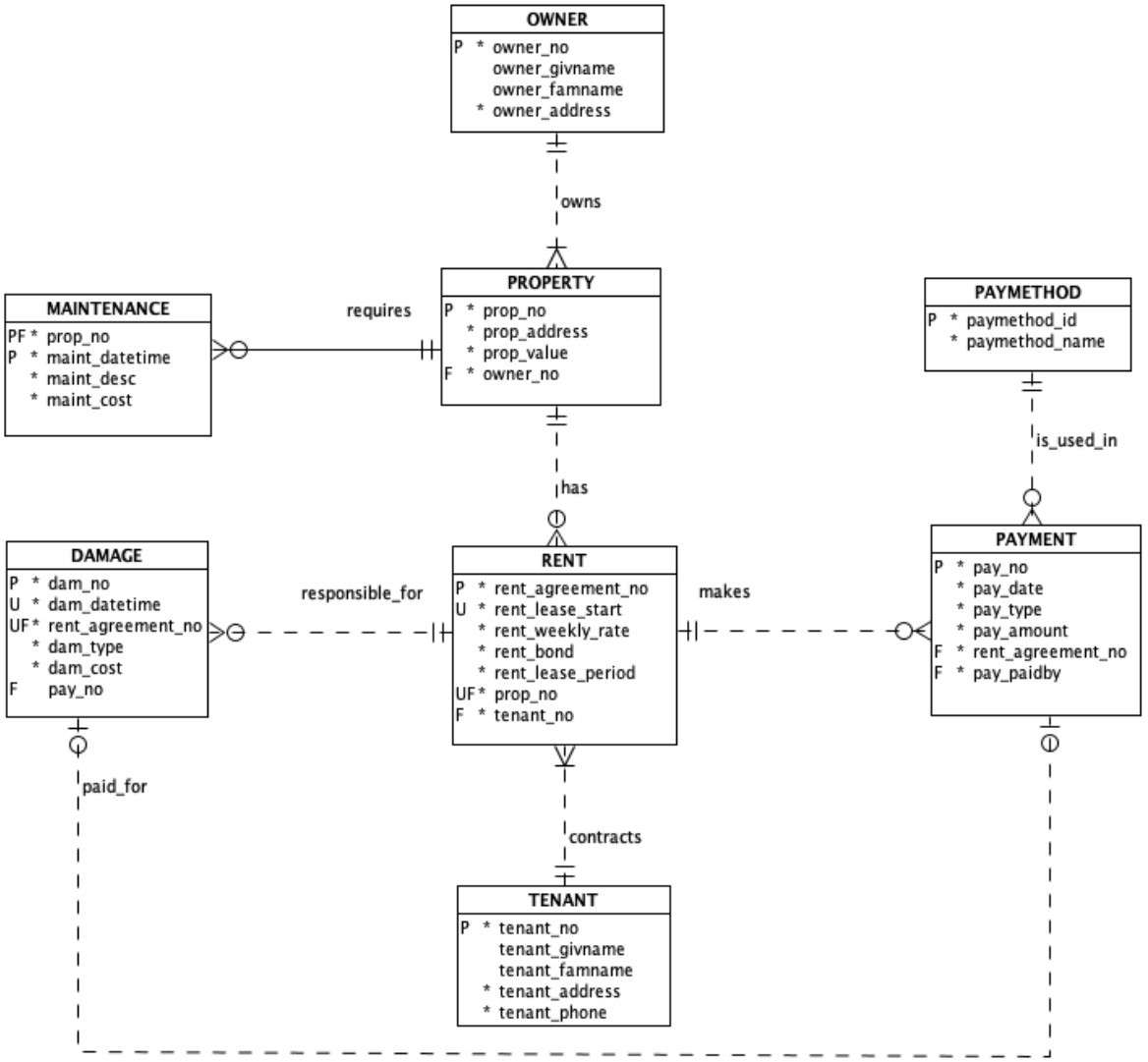
Part of the case study indicates that the payment type must be recorded as Rent, Bond or Damage. This should be enforced by adding a CONSTRAINT. This constraint becomes part of the database structure, if the user wishes to add a new option, say 'F' for future rent payments then the structure must be altered.

The picture below shows controlling pay_type via a CONSTRAINT (CHK_PAY_TYPE) - add a check clause to payment.pay_type:



The case study also indicates that it needs flexibility in the design to be able to add new, and remove current, payment methods as circumstances change. This should be handled by adding a LOOKUP table. Lookup tables are a good approach where there is likely to be a need to extend the possible values for an attribute. In the diagram, we add a new relation (PAYMETHOD) and add a relationship between PAYMETHOD and PAYMENT relation. Note that the name of FK can be different from PK name. You can change the name of FK by double clicking the FK attribute in child relation → change the attribute name.




OWNER
P * owner_no
owner_givname
owner_famname
* owner_address
owns
PROPERTY
P * prop_no
* prop_address
* prop_value
F * owner_no
requires
MAINTENANCE
PF * prop_no
P * maint_datetime
* maint_desc
* maint_cost
PAYMETHOD
P * paymethod_id
* paymethod_name
is_used_in
has
PAYMENT
P * pay_no
* pay_date
* pay_type
* pay_amount
F * rent_agreement_no
F * pay_paidby
DAMAGE
P * dam_no
U * dam_datetime
UF * rent_agreement_no
* dam_type
* dam_cost
F pay_no
responsible_for
RENT
P * rent_agreement_no
U * rent_lease_start
* rent_weekly_rate
* rent_bond
* rent_lease_period
UF * prop_no
F * tenant_no
makes
paid_for
contracts
TENANT
P * tenant_no
tenant_givname
tenant_famname
* tenant_address
* tenant_phone

6.3.2 Generate Relational (Physical) Model

The schema file is provided as part of this solution.

To capture the full run of your schema file you must insert a SPOOL and ECHO on command at the top of your file, and a SPOOL OFF and ECHO off at the end of your script.

For example - added to the top of your script:

```
-- Capture run of script in file called rental-run.txt
SET ECHO ON
SPOOL prop_rental_schema_output.txt

-- Database Teaching Team
-- Property Rental Logical Model Schema script file
-- Schema file includes example constraint to control pay_type
```

….. the SQL Developer Generated Script goes here …...

```
-----------------------------------------------------
SPOOL off
set echo off
```

Please check the sample solution schema files to see this in action.