**1st step:** Identifying the relations (simply the records)

* Relations are entities in the requirement where specific sets of data is being recorded about it.
* It has an **expressed identifier.**

**2nd step:** Determine the types of the data (single-valued, multi-valued, composite, controlled value)

**3rd step:** Look for identifiers (Fields in the data that is unique)

NOTE: If there are no possible identifier in the relation, the last resort is to create an artificial identifier. It is indicated by a double asterisk (\*\*) **(Make Identifiers to the ones without ie create a data record that is unique to a specific data)**

**4th step:** Identify if the relations are connected to each other

5th Step: Designing the data plan

6th Step Normalization (Specialization and Generalization)

**IF ALL THE POSSIBLE RELATIONSHIPS HAVE BEEN EXHAUSTED, YOU'RE DONE WITH THE DESIGN PLAN**

NOTE:

- Field name were shortened to facilitate

putting into the database design

- By notation, all relation and field names

must be in small caps

================================================

01. hoa

- name\* << db designer decided

that this is the

best field to use as

identifier since

there is only one

record of hoa and it

can be identified

through its name

- ofcaddress

- streetno

- streetname

- barangay

- city

- province

- region

- zipcode

- coordx

- coordy

- estabyear

- website

- subdname

- aofincorporation\_fileid (FK) << rel 1

- bylaws\_fileid (FK) << rel 2

- minutesga\_fileid (FK) << rel 3

- attendance\_fileid (FK) << rel 4

- certification\_filedid (FK) << rel 6

- coethics\_fileid (FK) << rel 7

- hasotherhoa (Y/N) << deleted, if the

otherhoaname field

has a value, it

automatically means

there exists other

hoa

- otherhoaname

- otherhoaaddr

- streetno

- streetname

- barangay

- city

- province

- region

- zipcode

- coordx

- coordy

- regmondues

- regcolday (1..20)

================================================

02. files

- fileid\*

- filename

- description

- filelocation

- filetype

- submitdate

- uploader

- fileowner << deleted, fileowner is the

hoa and the decision of the

designer is to have the

relation hoa implement the

FK instead of the relation

file, as reflected in

relationships 1,2,3,4,6,

and 7. This decision is

because, the files being

submitted by the hoa is

more controlled rather than

if the relation file

implements the FK, where

it is possible that many

files (more than the

required) may be recorded.

NOTE:

- The designer decided to use FILEID as

identifier instead of filelocation and

filename to simplify the implementation of

FK in the relation hoa.

- however, the combination of filelocation

and filename will still be implemented

as unique to avoid the problem of having

two exactly the same file be recorded in the

relation. Since in MYSQL Workbench, composite

attributes cannot be declared as unique,

this will be implemented in SQL DDL instead.

CREATE TABLE files (

fileid INT(7),

filelocation VARCHAR(45),

filename VARCHAR(45),

description VARCHAR(45),

filetype VARCHAR(45),

submitdate DATE,

uploader VARCHAR(45),

primary key (fileid),

UNIQUE (filelocation, filename)

);

================================================

03. homeowner

- homeownerid\*

- hoaname (FK) << relationship 5

- completename

- lastname

- firstname

- middlename

- yearsasho

- properties[] << removed since

relationship 8 will

make the homeownerid

is instead recorded

in properties, rather

than the properties

recorded in homeowner

- birthday

- gender (M/F)

- email

- mobileno []

- fburl

- picture [U] << filename should

be recorded instead

of actual picture

- undertaking (Y/N)

- expression (Y/N)

- otheraddr

- streetno

- streetname

- barangay

- city

- province

- region

- zipcode

- coordx

- coordy

- othercontact

- email

- mobileno

NOTE:

- The designer took note of the reality

that when picture files are saved to the

physical disk, the filenames should be unique.

this was noted with a [U].

Functional Dependencies

03.1. province --> region

03.2. barangay,city,province,region --> zipcode

================================================

04. property

- propertycode\*

- homeownerid (FK) << relationship 8

- hoaname (FK) << indicates the

if property is

owned by hoa

and is deemed

asset

- size

- turnoverdate

- classification (R/C) << DB designer

decided not to

remove this even

if it is

automatically

deemed

commercial if

there is a value

of commercial

type since the

relation can be

a candidate for

specialization.

The DB Designer

took note that

only residential

properties have

residents, not

commercial

properties.

- commercialtype

- maximumtenants

NOTE:

- The db designer has analyzed that a property

owned by the hoa and are assets, are not

residential or commercial properties based on

the samples provided in the case. Properties

owned by omeowners therefore are either

residential or commercial, and based on the

case only residential properties have

household.

================================================

05. household

- householdid\*

- propertycode (FK) << DB designer,

based on

relationship 11,

decided to have

the propertycode

in the household

instead of the

other way around

because

properties are

recorded first

than households.

this means that

a property may

be recorded

without a

household and

will need to be

updated when the

household

record is

created. This is

will result

to extra

processing of

the data.

* receiptno (FK)

================================================

06. resident

- residentid\*

- homeownerid (FK) << implementing

relationship 9.

Homeowners are

recorded first than

the residents.

- householdid (FK) << implementing

relationship 13

- isauthorized (Y/N)

- completename

- lastname

- firstname

- middlename

- renter (Y/N)

- email

- birthday

- gender (M/F)

- mobileno

- fburl

- picture [U] << filename should

be recorded instead

of actual picture

- relationship

- undertaking (Y/N)

- lastupdatedate << to determine if

record is more than

a year already

* businessID\* (FK)

NOTE:

- The designer took note of the reality

that when picture files are saved to the

physical disk, the filenames should be unique.

this was noted with a [U].

- The designer took note that the resident and

homeowner are relations of the same nature

having common identifiers and common

attributes

- The designer took note of the consequence of

the decision to implement relationship 14 this

way. It is possible that in the records, the

resident is recorded as a homeowner, but it

so happens that the household it belongs to

is not the property of the homeowner. This is

the reality of db design, there are cases that

the limitations of the relational model will

not allow certain conditions of the data to

be completely fulfilled, and this has to be

taken note of that the software component

of the application system will check.

================================================

07. residentidcard

- cardno\*

- residentid (FK) << relationship 14

- cancelled (Y/N)

- requestdate

- reason

- providedate

- authorizingofficer (FK) relationship 15

- homeownerid

- position

- electiondate

- ornumber [U]

- cardfee

NOTE:

- The designer took note of the legal

requirement that official receipt numbers are

unique. This was noted with a [U].

================================================

08. vehicle

- plateno\* << by law, plateno

is unique per vehicle

- owner

- lastname

- firstname

- middlename

- residentid (FK)

- homeownerid (FK) << relationship 10

- classification

- type

- orcr [U] << filename should

be recorded instead

of actual picture

- orcrupdated (Y/N)

- regdate

- regfee

- ownertype (R/N) << removed, if there

is a value on

residentid, then it

automatically means

the owner is a

resident

NOTE:

- The designer took note of the reality

that when picture files are saved to the

physical disk, the filenames should be unique.

this was noted with a [U].

================================================

09. sticker

- stickerid\*

- validityyear

- plateno (FK) << relationship 16

vehicles receive

multiple stickers

since it says every

year

- authorizingofficer (FK) << relationship 17

- homeownerid

- position

- electiondate

================================================

10. officer

- homeownerid\*

- position (P/V/T/A/S)\*

- election

- electiondate\* << the DB designer

decided to use the

election date as

part of the

identifier of officer

to represent the

election since no two

elections will

definitely be held on

the same date, that

makes the date to be

unique for every

election. Election is

a highly composite

attribute, and it's

entirety is not best

to be used as part of

PK.

- venue

- quorum (Y/N)

- witness

- completename

- lastname

- firstname

- middlename

- mobileno

- startdate

- enddate

- availdays

- availtime (M/A)

Functional Dependencies

10.1. electiondate --> venue, quorum,

witness

10.2. witnesscompletename --> mobileno

================================================

11. asset

- assetid\*

- propertycode (FK) << db designer decided

to implement

relationship 12

by recording the

propertycode in

asset rather than

the other way around

since properties are

recorded first

before assets.

- assetname

- description

- acquisitiondate

- forrent (Y/N)

- value

- type (P/E/F/O)

- status (W/D/R/P/S)

- locX

- locY

- assetid [] << relationship 19

================================================

12. Rental << relationship 18

is a \* to \*

relationship, this

will require another

relation to record

the resident and the

assets rented. It is

a reality that assets

can be rented

multiple time of the

same resident, but of

different dates of

course, this would

mean that a field on

rent date should be

part of the

identifier and not

only the asset and

resident that rented

it.

- assetid\* (FK)

- residentid\* (FK)

- rentdate\*

Business

* businessname
* completenameofowner[]
* Isresident (Y,N)
* Isnotaresident
* businessaddress
  + streetno
  + Streetname
  + barangay
  + city
  + province
  + region
  + zipcode
  + locx
  + locy
* businessemail
* description
* business type (S,P,C)
* startdate
* operatingschedule
* website
* copyofpermit
* expirationdatepermit
* Officer (FK)
* employees[] (FK)
* closedate
* businessID\* < artificial
* receiptno (FK)
* billID\* (FK)

Storeemployees

* completename
* mobileno
* position
* isauthorized (Y/N)
* employeeid\*

monthly dues

* regulardues
* otherdues
  + penalties
  + damages
* residents[]
* households
* receiptno\*
* residentID\* (FK)

Billing

* monthlydue
* unpaiddues
* discounts
* penalties
* amountcollected
* month
* year
* dategenerated
* billID\*

Payment

* dateofpayment
* amountpaid
* personpaying
* recevingofficer
* ORnumber\*

Incident Reporting

* incidentdate
* incidentdescription
* nameofperson
* Isresident (Y,N)
* businessname
* officerinvestigated
* penaltyimposed
* ruleno []
* secondingofficer
* incidentID\*
* evidenceID\* (FK)

Evidence

* evidenceID\*
* evidencename
* evidencedescription
* evidencefilename
* resident
* officer
* datesubmitted

Asset Activity

* activitydescription
* personincharge
* mobilenumber
* locationofactivity
* authorizingofficer
* tentativeschedule
* activitystartdate
* activityenddate
* costofactivty
* officialreceipt
* activitystatus (S,O,C,D)
* activityno\*
* assetid (FK) << relationship20

Relationship 20:

Assets have activities

Relationship Planning:

01 hoa submits aofincorporation (file)

02 hoa submits bylaws (file)

03 hoa submits minutesga (file)

04 hoa submits attendance (file)

05 hoa submits \* homeowner

06 hoa submits certification (file)

07 hoa submits coethics (file)

08 homeowner owns \* property

09 homeowner is resident

10 homeowner registers \* vehicles

11 property has household

12 property isan asset

13 household has \* resident

14 resident issuedwith \* residentidcard

15 residentidcard authorizedby officer

16 vehicle has \* sticker

17 \* sticker authorizedby officer

18 \* asset rentedby \*resident

19 asset has \*asset

20 \* residents canhave business

21 business authorizedby officer

22 business have \*employees

23 monthlydues issuedto residents

24 montlhydues issuedto households

25 billings issuedto business

26 business has monthlydues

27 payments has business

28 incidents require \*evidence

29 \*incidents has businesses

30 assets has \*assetactivitiy

Generalization and Specialization Planning

a. Homeowners and Residents to be generalized to Persons

b. Property can be specialized into

b.1. HOAAsset

b.2. HomeownerProperty

b.2.1 Residential

b.2.2.Commercial

c. Vehicles can be specialized to outside vehicles and

insider vehicles owned by homeowners or residents

**Possible Conditions:**

4A Business Registration

* Authorized employee and business owner are the only persons who can transact with the HOA (josh)
* contains a hoa officer

4B

* relationship(issued to residents and households)
* (amount depends on the type of business)
* authorized can pay in partial or full
* issued to residents and households

4C

* incidents require evidences
* imposed to registered business

4D

* assets have asset activities
* assets are(repaired, cleaned,restored) among all except asset rentals and transfers

Questions:

1. why are there multiple business owners: business can be sole proprietorship, joint partnerships or corporations
2. why are payments multiple for businesses: business owners have the option to pay in partial,full, or in advance
3. why are there multiple activities in one asset:assets can have multiple activities( asset activities are not deleted on e they are completed)