Database Theory and Design

Assignment part-1 Project Fall 2014

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FIRST DATA PROPERTIES

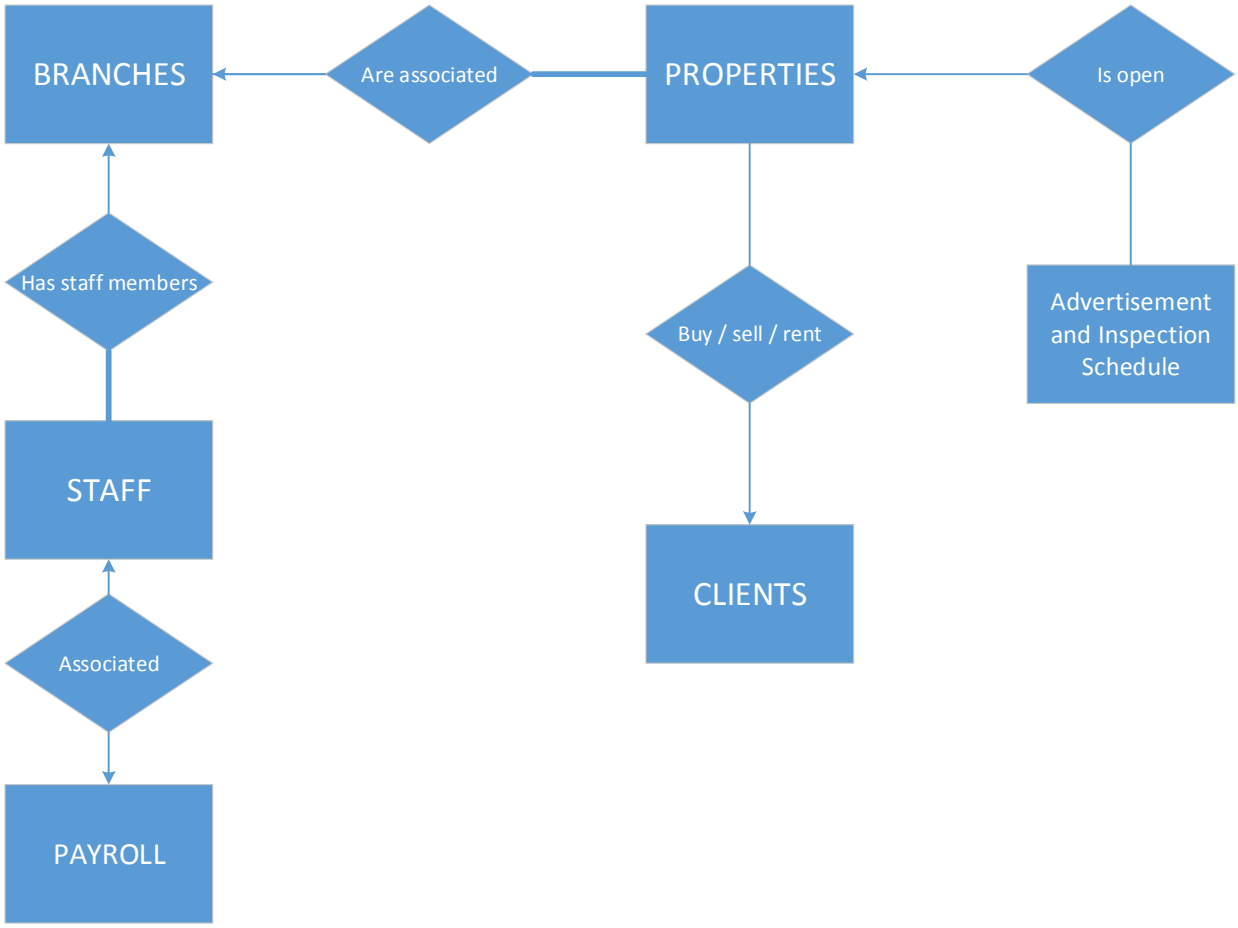
Constraints / Business Rules

- We deal with only residential properties and no commercial properties.
- We help in selling, buying and leasing houses to our clients.
- For renters, after they have agreed on the house to lease, we maintain the leasing agreement details.
- Both buyer and renter will have preferences like location, size of the house, number of bathroom/bedroom and budget (price range). So, there is a separate table 'client choice' for these details.
- Each branch has a manager.
- Each staff is associated with a branch and their payroll is also maintained in database.
- Property details include its type, availability, associated staff, features, listed price, advertisements and inspections done.

The below parts of the assignment can be found in following pages in the same order:

- Entity-relationship diagram for this real-estate database
- Entity-attributes diagram
- Relational schema diagram
- Relational schema definition
- Domain of the attributes – definition
- Group meeting log

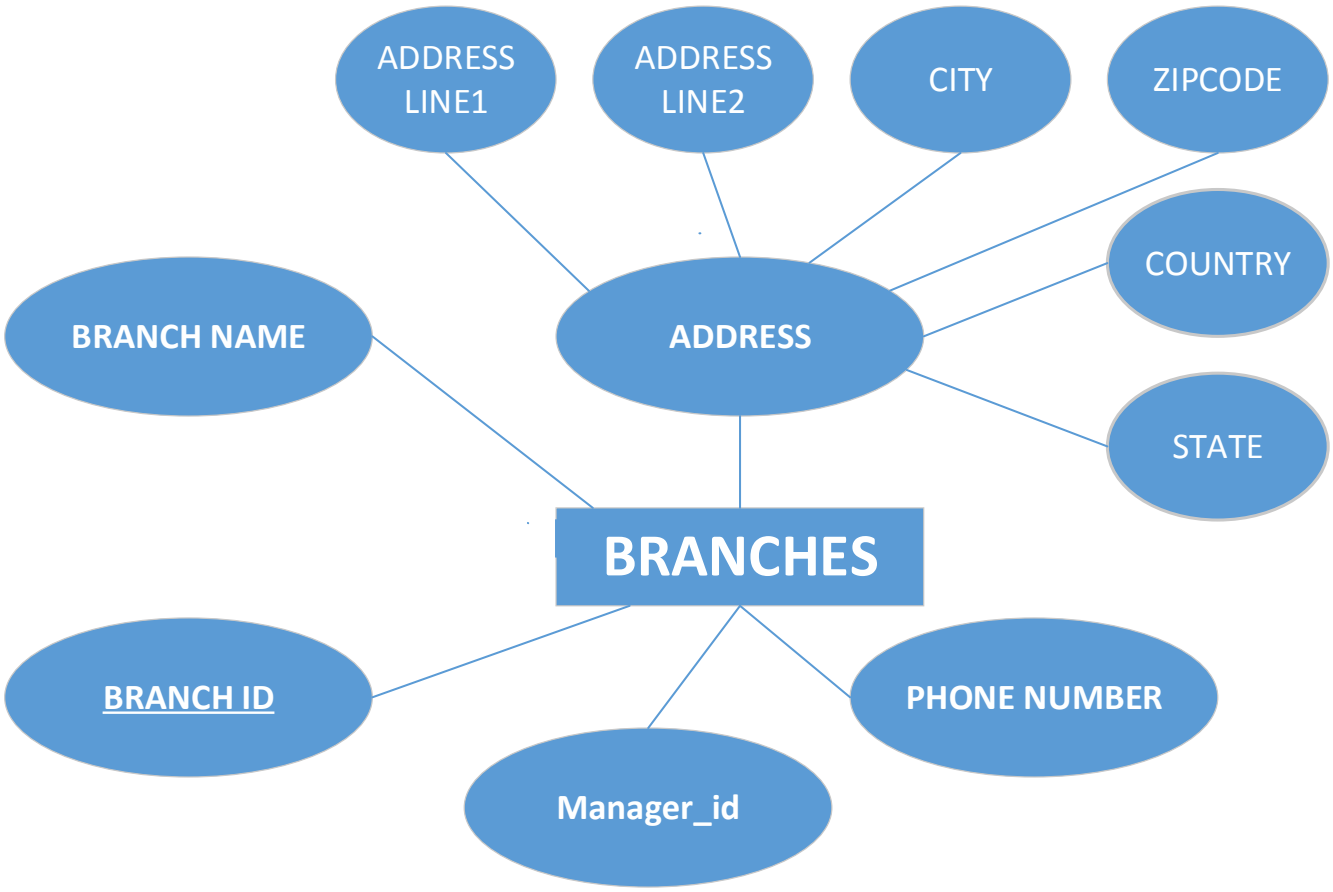
ENTITY-RELATIONSHIP DIAGRAM



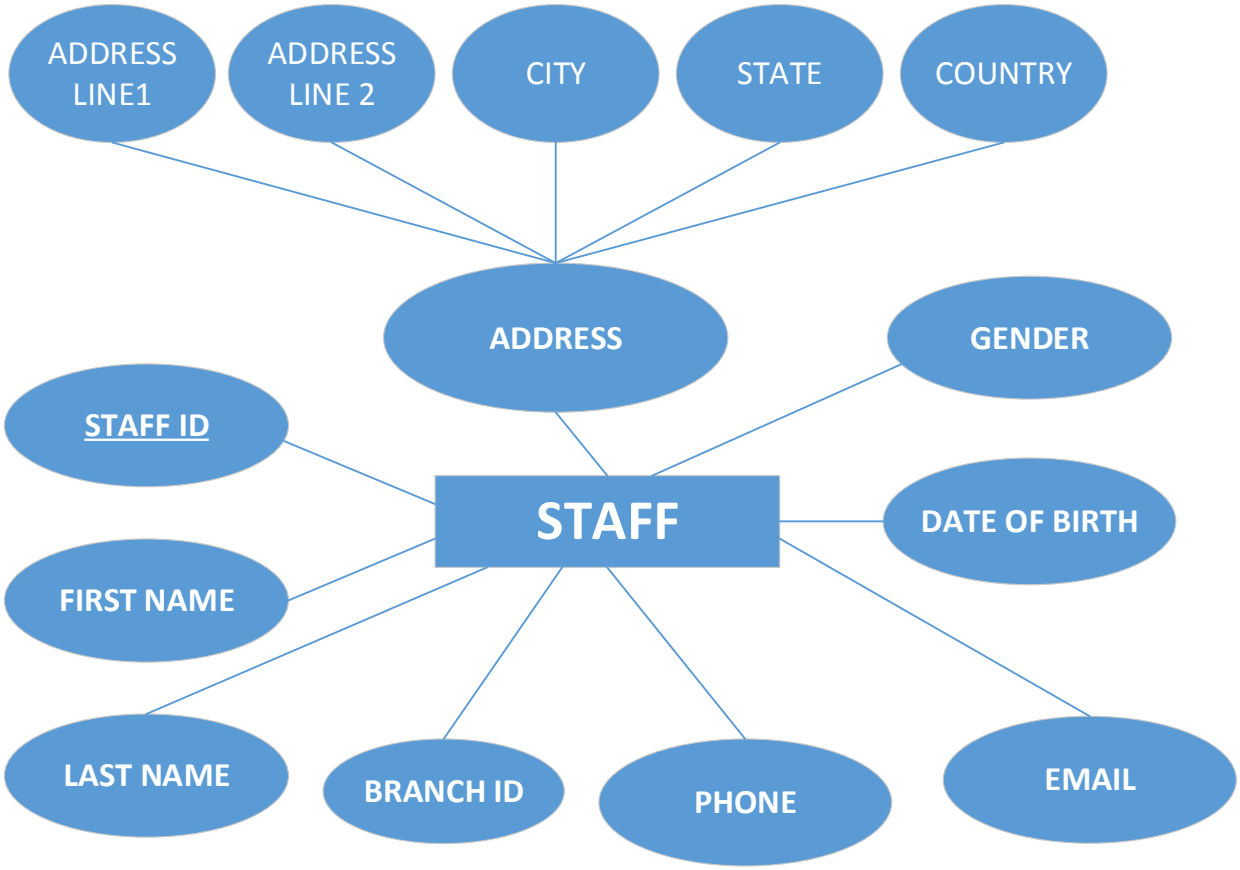
Every property is associated with one branch. (Total participation)
Each staff is associated with one branch. (Total participation)
Every tuple in payroll will have one staff and reverse is also true, so it is one-to-one relationship.
Every property will have one client (owner) at all time.
Advertisement or property Inspection will have only when there is a property.

ENTITY-ATTRIBUTE DIAGRAM

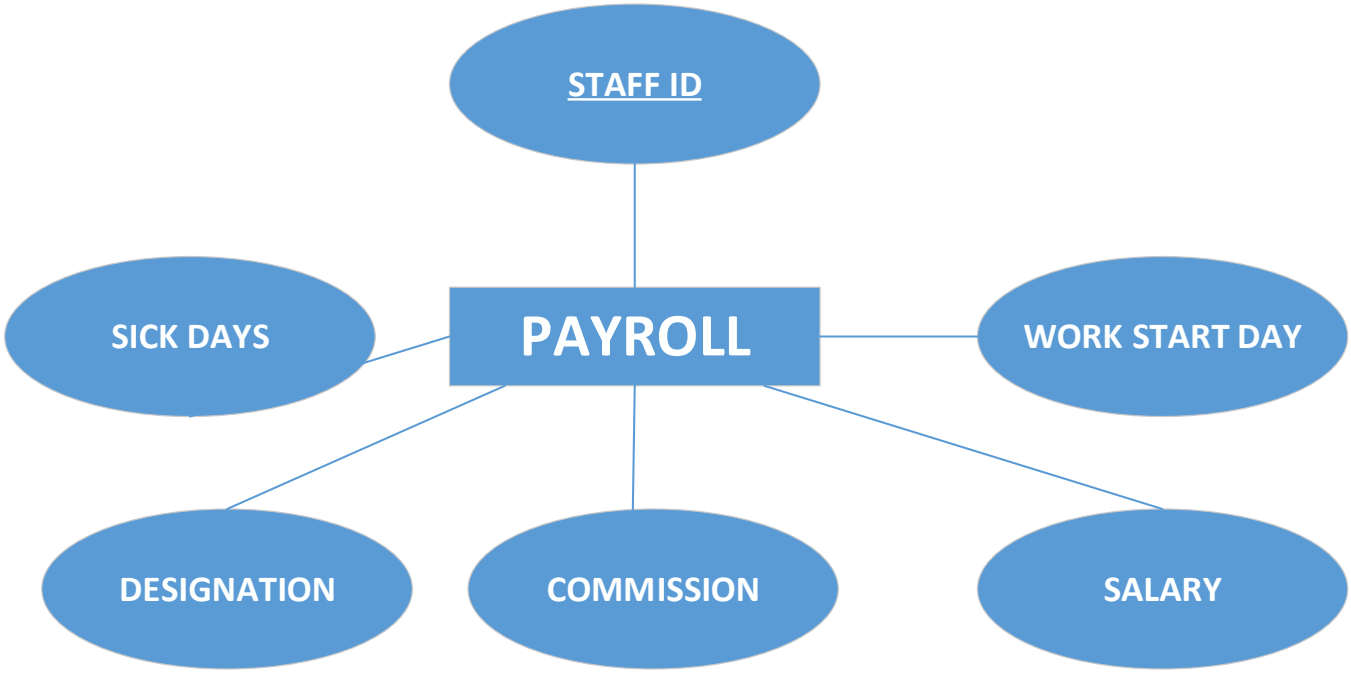
Branches



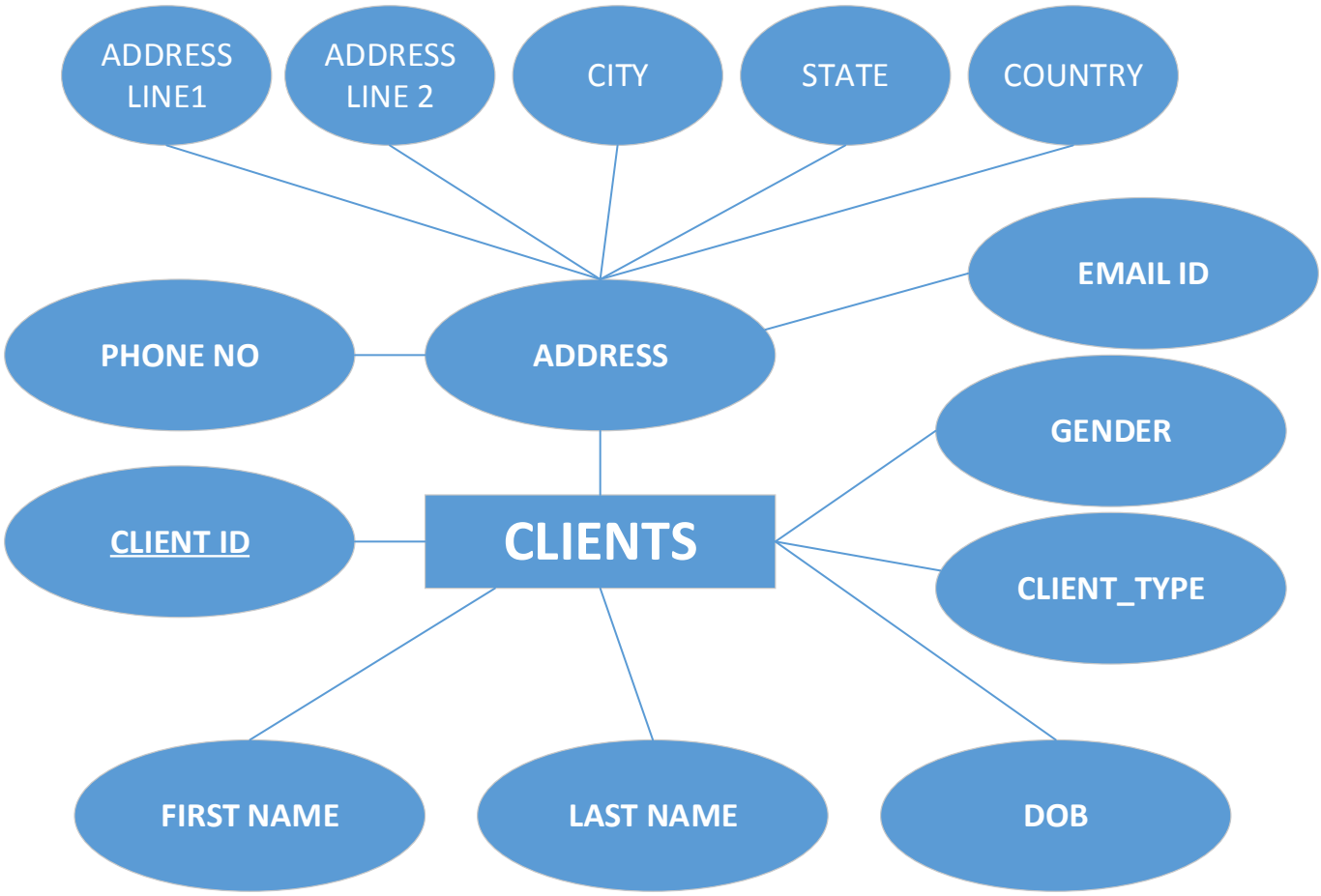
STAFF



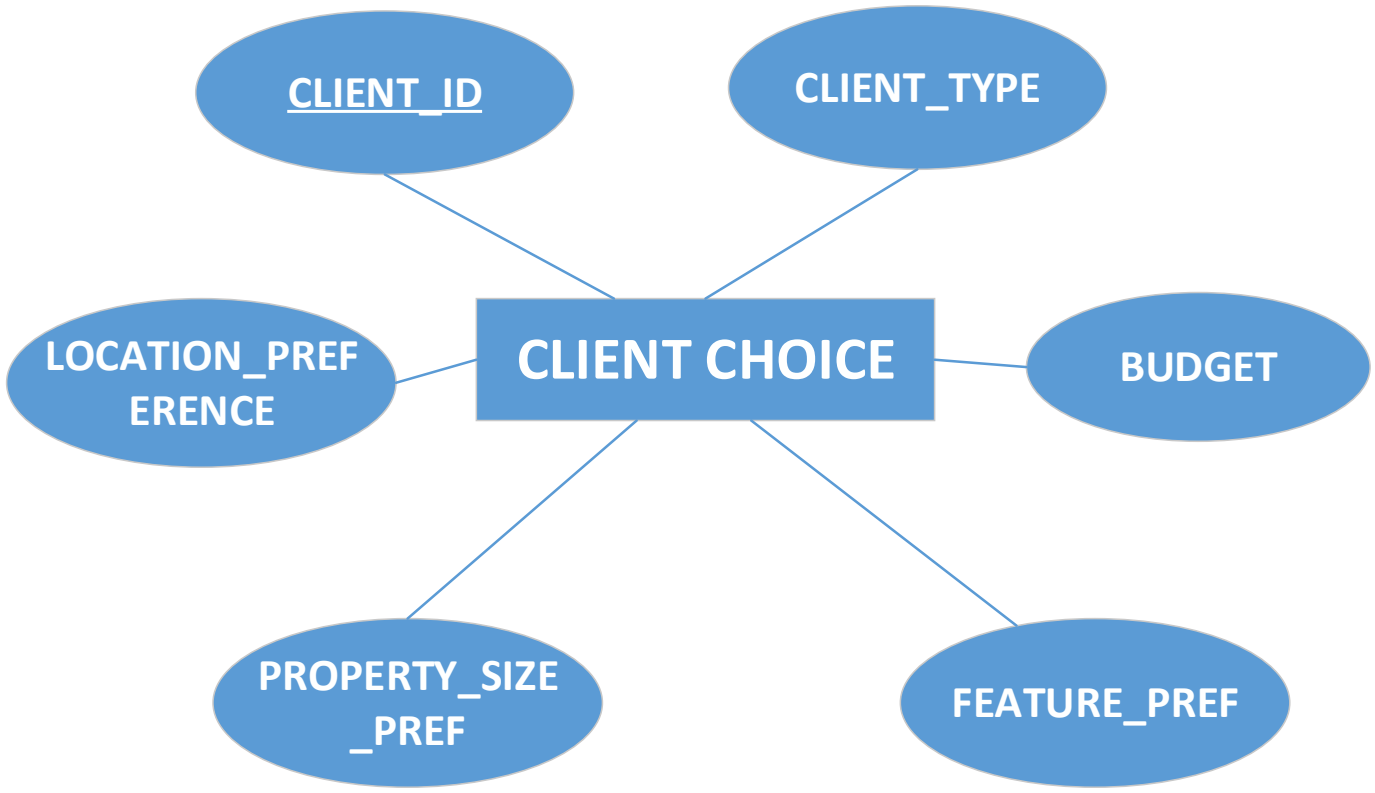
Payroll



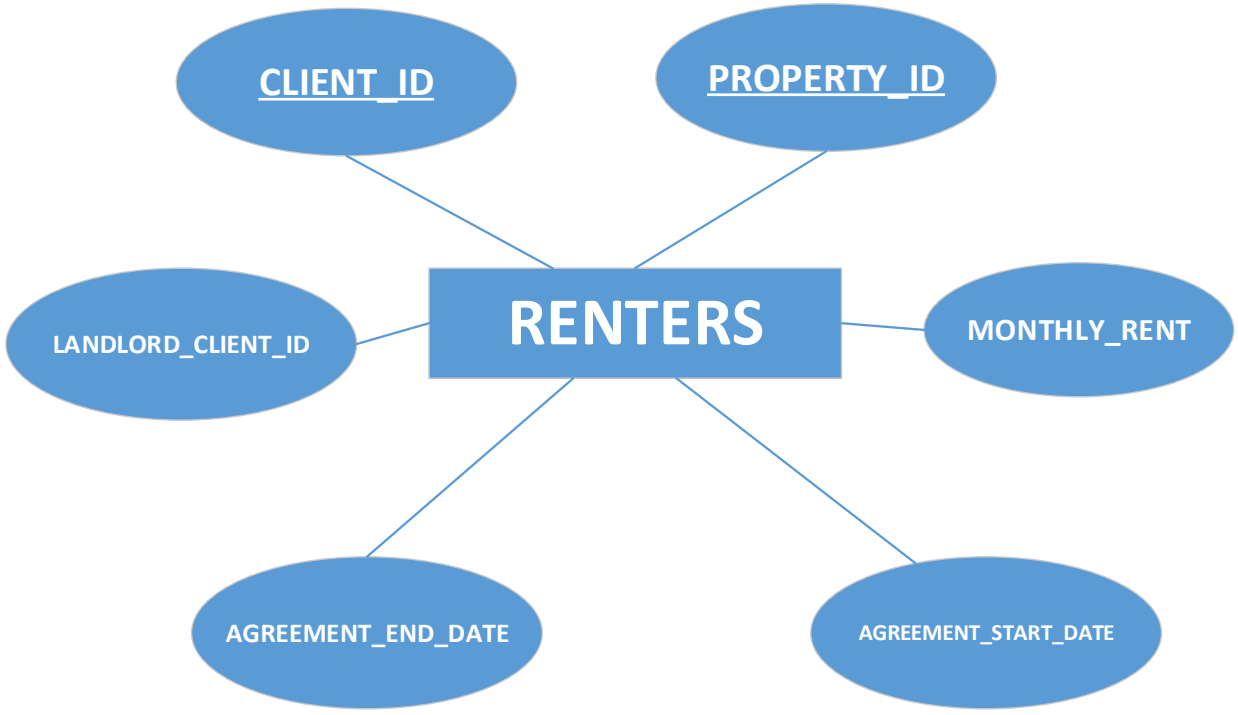
Clients


ADDRESS LINE1
ADDRESS LINE 2
CITY
STATE
COUNTRY
EMAIL ID
PHONE NO
ADDRESS
GENDER
CLIENT ID
CLIENTS
CLIENT_TYPE
FIRST NAME
LAST NAME
DOB

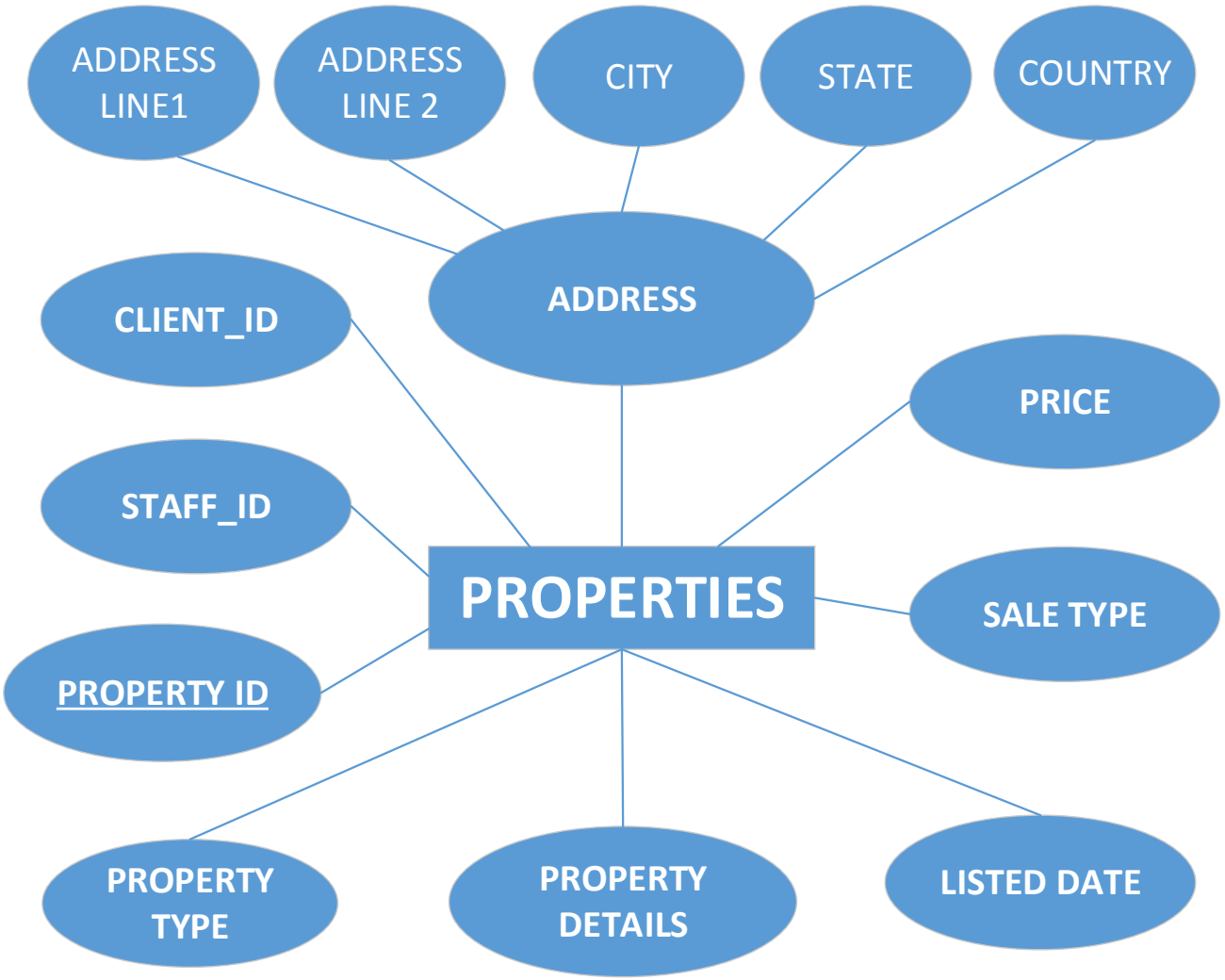
Client Choice



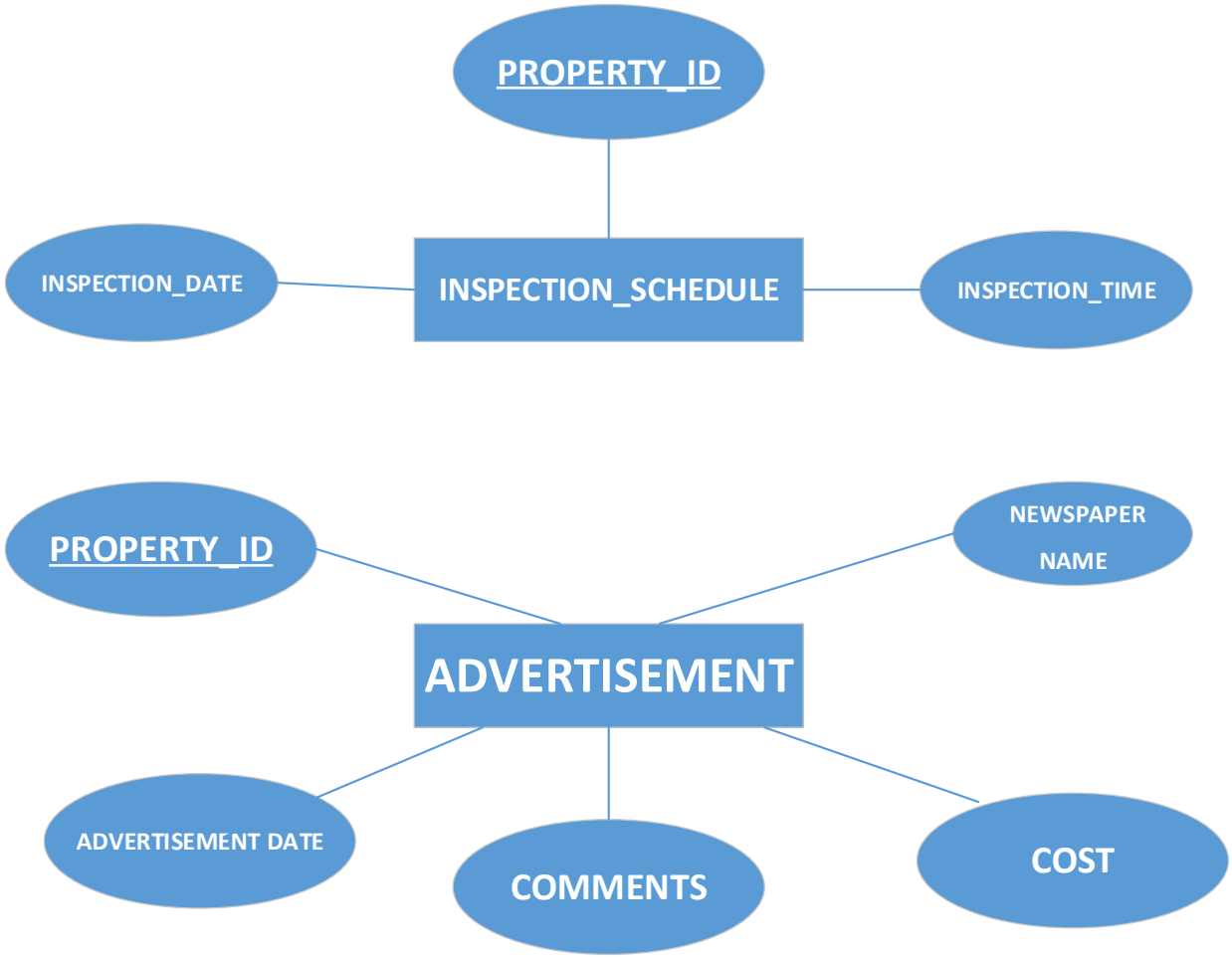
Renters



Properties


ADDRESS LINE1
ADDRESS LINE 2
CITY
STATE
COUNTRY
ADDRESS
CLIENT_ID
PRICE
STAFF_ID
PROPERTIES
SALE TYPE
PROPERTY ID
PROPERTY TYPE
PROPERTY DETAILS
LISTED DATE

Advertisement and inspection schedule



RELATIONAL SCHEMA DIAGRAM – FIRST DATA PROPERTIES

Relational schema definition

Branches (**branch_id**, *manager_id*, phone_number, branch_name, address_line1, address_line2, city, state, zipcode, country)

Staff (**staff_id**, *branch_id*, first_name, last_name, dob, gender, phone, email, address, street_name, city, state, country, zipcode)

Payroll (***staff_id***, designation, salary, work_start_date, commission)

Properties (**property_id**, *staff_id, client id, branch_id*, property_type, sale/rent, available, listed_date, listed_price, sold_price, sale_type, sq.ft, lot_size, bedroom_count, bathroom_count, address_line1, address_line2, city, state, zipcode, country)

Inspection (***property_id,*** inspection_date, inspection_time)

Advertisement (***property_id***, newspaper_name, advertisement_date, comments, cost)

Clients (**client_id,** *staff_id*, first_name, last_name, dob, gender, phone, email, address, street_name, city, state, country, zipcode, client_type)

Client_Choice (**client_id,** client_type, budget_start_price, budget_end_price, pref_location, pref_sq.ft, pref_lot_size, pref_bedroom_count, pref_bathroom_count)

Renters (***client_id, property_id***, monthly_rent, agreement_start_date, agreement_end_date, landlord_client_id)

Definition of Domain for the attributes

Branches

Int branch_id	// primary key
Int manager_id	// primary key in staff table
int phone_number	//10 digit integer
string branch_name	// less than 40 char
string address_line1	// less than 40 char
string address_line2	// less than 40 char
string city	// less than 20 char
string state	// less than 20 char
int zipcode,	// less than 10 int
string country	// less than 30 char

staff

int staff_id	//primary key
int branch_id	//primary key in branch table
char first_name	//less than 20 char
char last_name	//less than 20 char
date dob	//mm/dd/yyyy
char gender	// m for male; f for female
string email	// less than 40 char
int phone_number	//10 digit integer
string branch_name	// less than 40 char
string address_line1	// less than 40 char
string address_line2	// less than 40 char

string city // less than 20 char
string state // less than 20 char
int zipcode // less than 10 int
string country // less than 30 char

Payroll

int staff_id //primary key
string designation // less than 15 characters
double salary //in dollars
date work_start_date //mm/dd/yyyy
int commission //represents the percentage of the property sold price, default value is 3

Properties

Int property_id //primary key
Int staff_id
int client_id // refers to the current owner only and not the renter
int branch_id
String property_type //house, condo, townhouse
String sale/rent // for rent or for purchase
String available // yes denotes 'available in market', no - otherwise
Date listed_date // mm/dd/yyyy
Int listed_price
Int sold_price
String sale_type // AUSD, AUHB, PISD
Int sq.ft
Int lot_size
Int bedroom_count // 0 - 9
Int bathroom_count // 0 - 9
string address_line1 // less than 40 char
string address_line2 // less than 40 char
string city // less than 20 char
string state // less than 20 char
int zipcode // less than 10 int
string country // less than 30 char

Inspection

Int property_id //primary key
Date inspection_date // mm/dd/yyyy
Time inspection_time // hh:mm:ss

Advertisement

Int property_id //primary key
String newspaper_name // less than 40 char
date advertisement_date // mm/dd/yyyy
string comments // less than 150 char
double cost // dollars

Clients

int client_id //primary key
int staff_id //primary key in staff table
int property_id
char first_name //less than 20 char

char last_name //less than 20 char
date dob //mm/dd/yyyy
char gender // m for male; f for female
string email // less than 40 char
string address_line1 // less than 40 char
string address_line2 // less than 40 char
string city // less than 20 char
string state // less than 20 char
int zipcode // less than 10 int
string country // less than 30 char

ClientChoice
int client_id //primary key
char client_type //b for buyer, s for seller, r for renter, l for lease-landlord
int budget_start_price // price in dollars
int budget_end_price // price in dollars
string pref_location // less than 40 char
int pref_sq.ft
int pref_lot_size
int pref_bedroom_count //0 to 9
int pref_bathroom_count //0 to 9

Renter
int client_id //primary key
int property_id //primary key
double monthly_payment_amt //in dollars
date agreement_start_date //mm/dd/yyyy
date agreement_end_date //mm/dd/yyyy
int landlord_client_id // is also a client of FirstNation Properties, found in client table

Group Meeting Log

Date	Time	Activity
Sept 17	Alkek library (5 – 6pm)	Entities were decided. Constraints of the model were listed.
Sept 24	Alkek library (5 – 6pm)	Attributes to the entities were decided. Constraints of the model were updated.
Oct 1	Alkek library (5 – 6pm)	Few changes were done. A rough ER diagram was drawn.
Oct 3	in our house (11 – 2 pm)	Final ER diagram, relational schema, domain
Oct 10	in our house (11 – 2 pm)	Final document preparation work

All activities was done as team work by Harika and Lavanya.