1)

(a) Number of the apartments with more than 50 Area

$\sigma_{Area > 50}(Apartment)$

ApartmentID	Number	Block	Owner	Area	Rooms
2	102	3	Nell Pearl	60	3
3	103	1	Alex Van Halen	75	3
6	306	1	Sammy Hagar	70	3
9	409	1	Wolfgang Van Halen	65	3
10	310	2	Valerie Bertinelli	90	3

(b) Show the number and Owner of the apartments with more than 2 rooms and less than 4 rooms

$\sigma_{Rooms > 2 \land Rooms < 4}(Apartment)$

Number	Owner
102	Neil Pearl
103	Alex van Halen
306	Sammy Hagar
409	Wolfgang Van Halen
310	Valerie Bertinelli

(c) Show the number, Owner and Area of the apartments with more than 40 Area and less than 70 Area

$\sigma_{Area > 40 \land Area < 70}(Apartment)$

Number	Owner	Area
102	Nell Pearl	60
207	Michael Anthony	40
308	Gary Cherone	55
409	Wolfgang Von Halen	65

(d) Show all the rows of the table apartment where the Owner contains the word Van Halen and called VanHalen Apartments.

σOwner contiene "VanHalen" (Apartment)

ID	Number	Block	Owner	Area	Room
3	103	1	Alex Van Halen	75	3
4	304	2	Eddie Van Halen	30	1
9	409	1	Wolfgang Van Halen	65	3

(c) Using next table called PublicServices show the number of the apartments with more than 60 Area with all the Public Services available

σArea>60 (Apartment) ⋈ Public Services

3	103	1	Alex Van Halen	75	3
6	306	1	Sammy Hagar	70	3
9	409	1	Wolfgang von Halen	65	3
10	310	2	Valerie Bermtelli	80	3

×

1	water
2	electricity
3	gas

3	103	1	Alex Van Halen	75	3	1	water
3	103	1	Alex VanHalen	75	3	2	electicity
3	103	1	Alex VanHalen	75	3	3	gas
6	306	1	Sammy Hagar	70	3	1	water
6	306	1	Sammy Hagar	70	3	2	electricity
6	306	1	Sammy Hagar	70	3	3	gas
9	409	1	Wolfgang VanHalen	65	3	1	water
9	409	1	Wolfgang VanHalen	65	3	2	electricity
9	409	1	Wolfgang VanHalen	65	3	3	gas
10	310	2	Valerie Bertinelli	80	3	1	water
10	310	2	Valerie Bertinelli	80	3	2	electricity
10	310	2	Valerie Bertinelli	80	3	3	gas

The apartments that have PublicServices aviable are
   Apartment 103
   Apartment 306
   Apartment 310

2) Based on the table Owner shows as follows

Owner ID	Name	Age	Children	Pets
1	Chad Smith	50	2	1
2	Neil Pearl	45	1	0
3	Alex Von Halen	60	3	2
4	Eddie Von Halen	58	2	1
5	David lee roth	55	1	0
6	Sammy Hagar	65	2	1
7	Michael Anthony	70	3	2
8	Gary Cherone	40	1	0
9	Wofgang Van Halen	30	0	6
10	Valerie Bertinelli	65	2	1

a) Show the name of the owners with more than 50 Age

σ Age>50 (Owner)

Name	Age
Alex Van Halen	60
Edie Van Halen	58
David Lee Roth	55
Sammy Hagar	65
Michael Anthony	76
Valerie Bertnelli	65

6) Show the Name and Age of the Owners with more than 1 children and less than 3 Children

σ children >1 $\wedge$ children <3 (Owner)

Name	Age
Chad Smith	50
Eddie Van Halen	58

c) Show the Name Age and Children of the Owners with more than 40 Age and less than 60 Age

σ Age>40 $\wedge$ Age<60 (Owners)

Name	Age	Children
Neil Pearl	45	1
Alex Van Halen	60	3

d) Show all rows of the table Owner where there is a ar or ar substring in the name and called R Owners

σ Name contains "ar" (Owner)

Name	Age	Children	Pets
Gary Cherone	40	1	0
Valerie Bertinelli	65	2	1

e) Show the name of the owners with more than 1 Pet and less than 2 Children

σ Pets>1 ^ Children <2 (Owners)

Doesn't exist

③

a) Show the Apartament number, Owner and Common Space of the reservations with date 2020-01-01 and called New Year Reservations

σ date - "2020-01-01" (Reservations)

Doesn't exist

b) Show the owner of the Reservations after 2024-01-02 date, and the Common Space is pool on the Apatment Number is 104 or the Apartament number is 102

σ (Date>"2024-01-02") ^ Commonspace - "Pool" v Apartamentnumber-104 v Apartamentnumber - 102 (Reservations

Owner
Alewon Halen

c) Show the Reservations ID and Common space of the reservations

σ Reservations ID, Common Space (Reservations)

Reservations ID	Common Space
1	Soccer field
2	pool
3	gym
4	pool
5	Soccer field
6	gym
7	pool
8	gym
9	Soccer field
10	pool

4) DER diagram:

- Apartment
  - Apartment ID
  - Number
  - block
  - Owner
  - Area
  - Rooms

- Public Services
  - serviceID
  - Name

- Owner
  - OwnerID
  - Name
  - Age
  - Children
  - Pets

- Reservations
  - ReservationID
  - Apartment number
  - Owner
  - Date
  - Common space

Relations

Apartment >———— Owner

Apartment ————< Reservations

Owner ————< Reservations

Apartment >————< Public Services