

Database foundation

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Workshop # 2

1. Based on the Apartment shows as follows:

Apartment ID	Number	Block	Owner	Area	Rooms
1	101	1	Chad Smith	45	2
2	102	3	Neil Pearl	60	3
3	103	1	Alex Van Hulen	75	3
4	304	2	Eddie Van Hulen	30	1
5	305	3	David Lee Roth	50	2
6	306	1	Sommy Hagar	70	3
7	207	2	Michael Anthony	40	2
8	308	3	Gary Cherone	55	2
9	409	1	Wolfgang Van Hulen	65	3
10	310	2	Valerie Bertinelli	80	3

a) Show the Number of the apartments with more than 50 Area.

Number
102
103
306
308
409
310

π Number (σ Area > 50 (Apartment))

b) Show the Number and Owner of the apartments with more than 2 Rooms and less than 4 Rooms

Number	Owner
102	Neil Pearl
103	Alex Van Halen
206	Sammy Hagar
409	Wolfgang Van Halen
310	Valene Bertinelli

π Number, Owner
 $(\sigma_{2 < \text{Rooms} < 4} (\text{Apartment}))$

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

Number	Owner	Area
101	Chad Smith	45
102	Neil Pearl	60
305	David Lee Roth	50
308	Gary Cherone	55
409	Wolfgang Van H.	65

π Number, Owner, Area $(\sigma_{40 < \text{Area} < 70} (\text{Apartment}))$

d) Show all rows of the table Apartment where the Owner contains the word Van Halen, and called Van Halen Apartments.

Apartment ID	Number	Block	Owner	Area	Rooms
3	103	1	Alex Van H.	75	3
4	304	2	Eddie Van H.	30	1
9	409	1	Wolfgang V.H.	65	3

Van Halen Apartments $\leftarrow \sigma_{\text{Owner contains 'Van Halen'}} (\text{Apartment})$

- e) Using next table called PublicServices, show the Number of the apartments with more than 60 Area with all the PublicServices available.

Service ID	Name	Number
1	"Water"	103
2	"Electricity"	306
3	"Gas"	409
		310

π Number (σ Area > 60 (Apartment) \wedge PublicServices)

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 Van H.	60	3	2
4	Eddie Van H.	58	2	1
5	David Lee R.	55	1	0
6	Sammy Hagar	65	2	1
7	Michael Anthony	70	3	2
8	Gary Cherone	40	1	0
9	Wolfgang Van H.	30	0	0
10	Valerie Bertinelli	65	2	1

- a) Show the Name of the owners with more than 50 Age.

Name
Alex Van Halen
Eddie Van Halen
David Lee Roth
Sammy Hagar

Name
Michael Anthony
Valerie Bertinelli

π Name
(σ Age > 50 (Owner))

b) Show the Name and Age of the owners with more than 1 Children and less than 3 Children.

Name	Age
Chad Smith	50
Eddie Van H.	58
Sammy Hogar	65
Valerie Bertuelli	65

π Name, Age
 $(\sigma 1 < \text{Children} < 3 (\text{Owner}))$

c) Show the Name, Age and Children of the of owners with more than 40 Age and less than 60 Age.

Name	Age	Children
Chad Smith	50	2
Neil Pearl	45	1
Eddie Van H.	58	2
David Lee R.	55	1

π Name, Age, Children $(\sigma 40 < \text{Age} < 60 (\text{Owner}))$

D) Show all rows of the table Owner where there is a ar or ar substring in the Name, and called R Owners.

OwnerID	Name	Age	Children	Pets
2	Neil Pearl	45	1	0
6	Sammy Hogar	65	2	1
8	Gary Cherone	40	1	0

R Owners $\leftarrow \sigma \text{Name contains 'ar'} (\text{Owner})$

e) Show the Name of the owners with more than 1 Pets and less than 2 Children

Name

$\pi \text{Name} (\text{O Pets} > 1 \wedge \text{Children} < 2$
(Owner))

3. Based on the table Reservation show as follows:

Reservations ID	Apartment Number	Owner	Date	Common Space
1	101	Chad Smith	24-01-01	Soccer field
2	102	Neil Pearl	24-01-02	Pool
3	101	Chad Smith	24-01-02	Gym
4	103	Alex Van H.	24-01-03	Pool
5	102	Neil Pearl	24-01-03	Soccer field
6	103	Alex Van H.	24-01-04	Gym
7	101	Chad Smith	24-01-05	Pool
8	102	Neil Pearl	24-01-06	Gym
9	103	Alex Van H.	24-01-07	Soccer field
10	101	Chad Smith.	24-01-08	Pool

a) Show the Apartment Number, Owner and Common Space of the Reservations with Date 2020-01-01 and called NewYearReservations

Apartment Number Owner Common Space

NewYearReservations $\leftarrow \pi \text{Apartment, Owner, Common Space} (\text{O Date} = '2020-01-01' (\text{Reservations}))$

b) Show the Owner of the Reservations after 2024-01-02 date, and the CommonSpace is Pool or the Apartment Number is 104 or the Apartment Number is 102

Owner
Alex Van Halen
Chad Smith
Neil Pearl

π Owner (Date > '2024-01-02' ^
 (CommonSpace = 'Pool' v
 Apartment Number = 104 v
 Apartment Number = 102)
 (Reservations))

c) Show the ReservationsID and commonSpace of the reservations

ReservationsID	CommonSpace
1	Soccer Field
2	Pool
3	Gym
4	Pool
5	Soccer Field
6	Gym
7	Pool
8	Gym
9	Soccer Field
10	Pool

π ReservationsID, CommonSpace (Reservations)

4.

Owner
 E_1





Apartment
 E_2

Owner



Reservations
 E_3

	E_1	E_2	E_3
E_1		✓	✓
E_2	✓		
E_3	✓		