Workshop No 2 databases formation Relational Algebra

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1 a) show the number of the apartments with more than 50 Area

Π Number (σ Area > 50 (Apartment))

Number
102
103
305
306
308
409
310

b) show the number and owner of the apartments with more than 2 rooms and less 4 Rooms

Π Number, Owner (σ Rooms > 2 $\wedge$ Rooms < 4 (Apartments))

Number	Owner
102	Neil Peart
103	Alex van Halem
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

Π Number, owner, Area (σ Area > 40 $\wedge$ Area < 70 (Apartments))

Number	Owner ~~Area~~	Area
102	Neil Peair	60
305	David lee Roth	50
308	Gary cherone	55
207	Michael Anthony	40
409	Wolfgang Van Halen	65

d) Show all rows of the table Apartments where the Owner contains the word Van Halen Apartments

1 A= Π * (σ Owner like 'Van Halen' (Apartment)) 2 ρ VanHalen Apartments (A)

Apartment ID	Number	Block	Owner	Area	Rooms
3	103	1	Alex Van Halem	75	3
4	304	2	Eddie Van Hailem	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 PublicServices available

1 A= $\Pi_{Number}(\sigma_{Area>60}(Apartment))$

2 $\Pi_{Number}(A) \cap (\Pi_{Number}(PublicServices))$

ServiceID	Name
1	water
2	Electric
3	Gas

Number
103
409
310

2)

a) show the Name of the owners with more than 50 Age

$\Pi_{Name}(\sigma_{Age>50}(Owner))$

Name
Alex Van Halen
Eddie Van Halen
David lee Roth
Sammy Hagar
Michael Anthony
Valerie Bertinelli

b) show the Name and Age of the owners with more than 1 children and less than 3 child

$\Pi_{Name, Age}(\sigma_{children>1 \wedge children<3}(Owner))$

Name	Age
chad smith	50
Eddie Van Halen	58
Sammy Hagar	65
Valerie Bertinelli	65

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

$\Pi_{Name, Age, children}(\sigma_{Age>40 \wedge Age<60}(Owner))$

Name	Age	children
chad smith	50	2
Neil Peart	45	1
Alex Van Halen	60	3
Eddie Van Halen	58	2
David lee Roth	55	1

d) show all rows of the table Owner where there is a or or ar substring in the Name, and called R owners

$\Pi^*(\sigma_{Name\ LIKE\ '\%ar\%'}(Owner))$

Owner ID	Name	Age	children	Pets
6	Sonny Bogar	65	2	1
8	Gary Cherone	40	1	0
10	Valerie Patinelli	65	2	1

e) Show the name of the owners with more than 1 pets and less than 2 children

$\Pi_{Name}(\sigma_{pets>1 \wedge children<2}(Owner))$

Name
Alex Van Halen
Michael Anthony

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a) Show the apartment number, owner and common space of the Reservations with Date 2020-01-01 and called New Year Reservations

Newyear Reservation $= \Pi_{Apartment\ Number, Owner, Common\ Space}(\sigma_{Date='2024-01-01'}(Reservation))$

Apartment Number	Owner	Common Space
101	chad smith	Soccer Field

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

$\Pi_{Owner}(\sigma_{Date>'2024-01-02' \wedge (commonSpace='pool' \vee Apartment\ Number=104 \vee Apartment\ Number=102}(Reservation))$

Owner
Alex Van Halen
chad smith
Neil Peart
chad smith

c) Show the Reservations ID and Common Space of the Reservations

$\pi_{ReservationID,\ CommonSpace}(Reservation)$

ReservationID	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) Based on the tables showed above, create an ER diagram to show the relationship between the tables if you think you need an additional entity you could add it