Databases Foundations

Workshop No.2 - Relational Algebra

Adiel Valentin Hernandez Manosalva 2020

① a-) Show the Number of the apartments with more than 50 Area.

Number
102
103
305
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.

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

Number	Owner
102	Neil Peorl
103	Aler Van Halem
306	Sammy Hagar
409	Wolfgong van Halen
310	Valerie Bertinelli

c-) Show the Number, Owner and Aren 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
102	Neil Peoir	60
305	David lee Roth	50
308	Gary cherone	55
207	Michorel Anthony	40
409	wolfgong van Halen	65

D M A

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

:= Π* (σ owner like 'van Halen' (Apartment)) // VanHallenApartments (A)

Apartment ID	Number	Block	Owner	Aria	Rooms
3	103	1	Alex van Halen	75	3
4	304	2	Eddie van Halen	30	1
9	409	1	Wolfgang van Halen	65	3

e-) Using next table called PublieServices, show the number of the apartments with more than 60 Area with all the Public Services available.

1 . Π' Number (σ Area > 60 (Apartment))

2 Π' Number (A) ∩ (Number (Public Services))

Number
103
409
310

Service ID	Name
1	"water"
2	"Electricity"
3	"Gas"

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

Π' Name (σ Age > 50 (owner))

Name
Alex van Halen
Eddie van Halen
David lee Roth
Sammy Hogor
Michael Anthony
Valerie Bertinelli

b-) Show the name and Age of the owners with more than 1 children and less than 3 children.

Π' Name, Age (σ 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.

Π' Name, Age, children (σ 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 ar or ar substring in the name, and called R Owners.

Π * (σ name like '%ar%' (owner))

Owner ID	Name	Age	children	Pets
6	Sammig Hagar	65	2	1
8	Gary Charony	40	1	0
10	Valerie Botalelli	65	2	1

e-) Show the name of the owners with more than 1 Pets and less than 2 children.

Π' Name (σ pets > 1 $\wedge$ children < 2 (owner))

Name
Alex van Halen
Michael Anthony

3-) a-) Show the Apartment Number, Owner and CommonSpace of the Reservations with Date 2020-01-01 and called New Year Reservations.

- ρ New year Reservation = π Apartment Number, Owner, common Space (σ 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 Numer is 104 or the Apartment Number is 102.

π Owner (σ Date > '2024-01-02' $\wedge$ (common Space = 'Pool' $\vee$ Apartment number = 104 $\vee$ Apartment Number = 102) (Reservations))

Owner
Alex Van Kalen
chad smith
Neil Peorl
Crod smith

c-) Show the Reservations ID and commonSpace of the Reservations. π ReservationsID, commonSpace (reservation)

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.-) Based on the tables showed above, create an ER diagram to show the relationships between the tables. If you think you need an additional entity you could add it.