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Databases - Fundamentals
Workshops 2

ii Based on the Apartment table:

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

Solution: for this query, we can use the selection (σ) operator to filter apartments with $\text{Area} > 50$, then project (π) to show only the Number column:

$\pi \text{Number} (\sigma \text{Area} > 50 (\text{Apartment}))$

b) Show the number and owners of the apartments with rooms more than 2 rooms and less than 4 rooms.

Solution: for this query, we'll use selection to filter apartments with $\text{rooms} > 2$ and $\text{rooms} < 4$, then project to show Number \rightarrow

and Owner.

π Number, Owner (σ Rooms $> 2 \wedge$ Rooms < 4 (Apartment))

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 (Apartment))

D) Show all arrows of the table Apartment Where contains the word Van Halen, and called Vanhalen Apartments.

Solution: for this query, will use selection with a LIKE Condition to filter owners containing "Van Halen", then rename the result:

VanHalenApartment, $\leftarrow \sigma$ Owner LIKE '%Van Halen%' (Apartment)

e) Using the public services table, show the number of the apartments with more than 60 Area with all the public services available

Solution: for this Query, we need to join the apartment table with the public services table, the first filter for apartments with Area > 60, and ensure all services are available:

π Number [

6 ServiceCount = TotalServices [

γ ApartmentID, Count (ServicesID) → ServicesCount [

6 Area > 60 [

Apartment ⚫ ApartmentServices ⚫ PublicServices

]

) × (P TotalServices (π Count (*) → Total Services

PublicServices))

,

)

2) Based on the Owner fable show above:

d) Show the name of the owners over 50 years of age.

π Name (δ Age $>$ 50 (Owner))

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

π Name, Age (δ Children $>$ 1 \wedge Children $<$ 3 (Owner))

c) show the name, age and number of children of the owners over 40 years of age and under 60 years

π name, Age, Children (δ Age $>$ 40 \wedge Age $<$ 60 (Owner))

d) Display all rows from the owner fable where there is a substring "ar" "or", "ai" in the name, and call it R_owners

R_Owners ← Ø Name LIKE '% or %' (Owner)

c) Show the name of the name of the owners with more than + pet and less than 2 Children

Π name (σ Pets > 1 ∧ Children < 2 (Owner))

3) Based on the reservation table shown:

a) Display the apartmentNumber, Owner and CommonSpace of reservations with date 2024-01-01 and call it NewYearReservation.

NewYearReservation ← Π Apartment Number, Owner, CommonSpace (σ Date = '2024-01-01' (Reservations))

b) Show the owner for reservations after the date 2024-01-02, and the common Space is pool or the Apartment Number is 104 or the Apartment Number is 102

π Owner (6 (Date > '2024-01-02') \wedge (CommonSpace
'Poo' \vee ApartmentNumber = '104' \vee ApartmentNumber =
'102')) (Reservations))

(c) Display the Reservations ID and
Common Space of the reservations

π Reservations ID, CommonSpace (Reservations)

4 Based on the tables show above,
Create an ER Diagram in text, we
I cannot do show the relationships between
the tables.

Owners	
Name	str
Age	int
Children	nt
Pets	bookan
ID	String PK

apartment s	
ID	str PK
Number	str
block	str
OwnerId	str PK
Area	float
Rooms	int

reservations	
ID	String PK
Apartment	str FK
Owner.Id	str FK N
Date	timestamp
CommonSpaceId	str PK

Common Spaces	
ID	Str PK
Name	str
Capacity	int