COMSATS UNIVERSITY ISLAMABAD

ASSIGNMENT NO: 1

DATA BASE SYSTEM

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Reg no: FA20-BCS-088

Class: BCS-IV-B

Date of submission: 17-april-2022

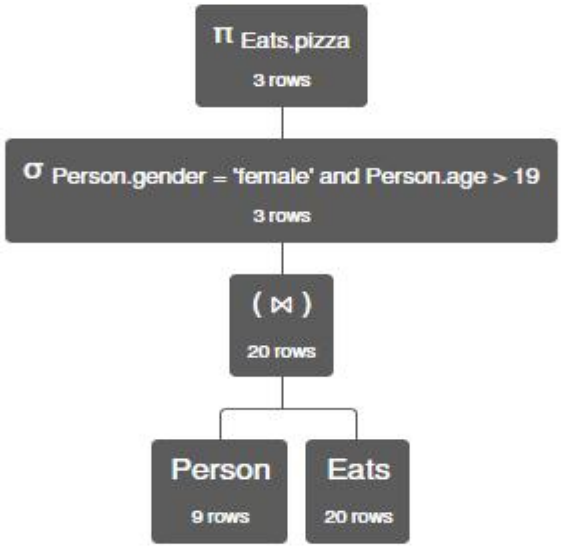
Submitted to Mr. Qasim Malik

Question no 1:
Find all pizzas eaten by at least one female over the age of 19.

Query:

Π Eats.pizza (σ Person.gender ='female' ∧ Person.age > 19 (Person ⋈ Eats))

Flow Chart:



Results:

Eats.pizza
'mushroom'
'cheese'
'chicken tikka'

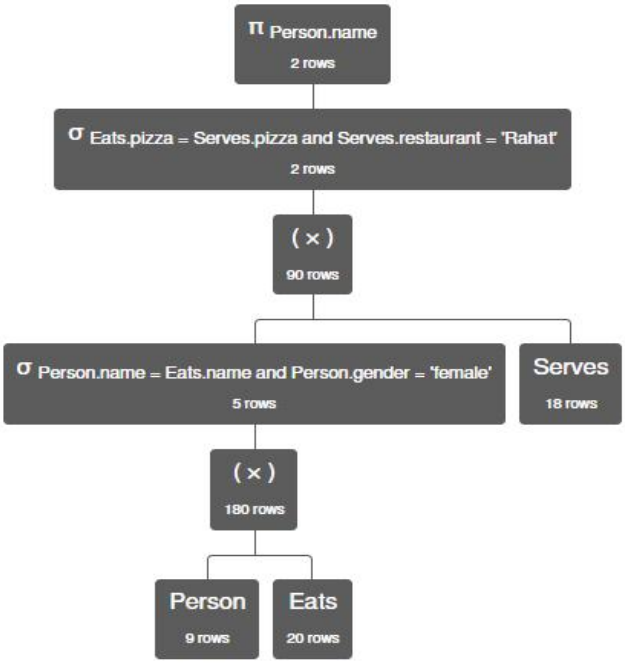
Question no 2:

Find the names of all females who eat at least one pizza served by Rahat. (Note: The pizza need not be eaten at Rahat.)

Query:

π Person.name (σ Eats.pizza = Serves.pizza ∧ Serves.restaurant = 'Rahat' ((σ Person.name = Eats.name ∧ Person.gender = 'female' (Person × Eats))× Serves))

Flow Chart:



Results:

Person.name
'Amna'
'Hamna'

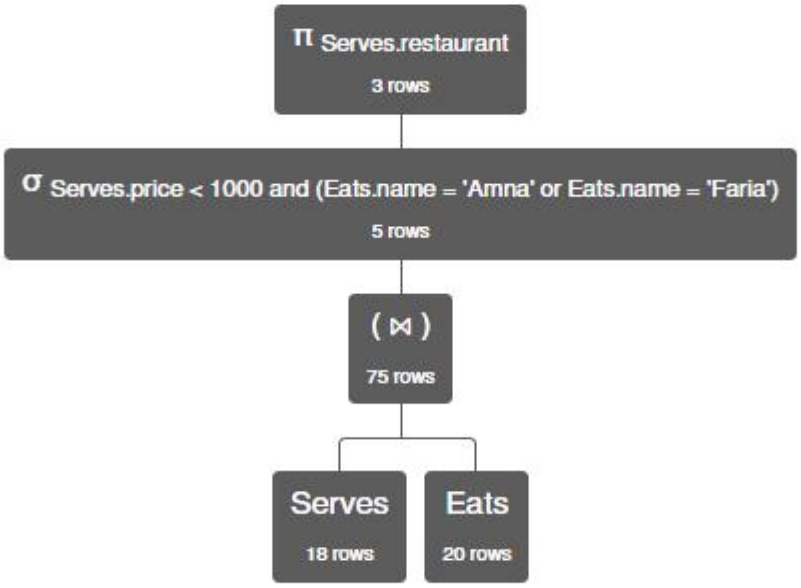
Question no 3:

Find all restaurants that serve at least one pizza for less than Rs.1000 that either Amna or Faria (or both) eat.

Query:

πServes.restaurant (σ Serves.price < 1000 ∧ (Eats.name = 'Amna' ∨ Eats.name = 'Faria') (Serves ⋈ Eats))

Flow Chart:



Results:

Serves.restaurant
'Italian Oven'
'Pappasallis'
'Rahat'

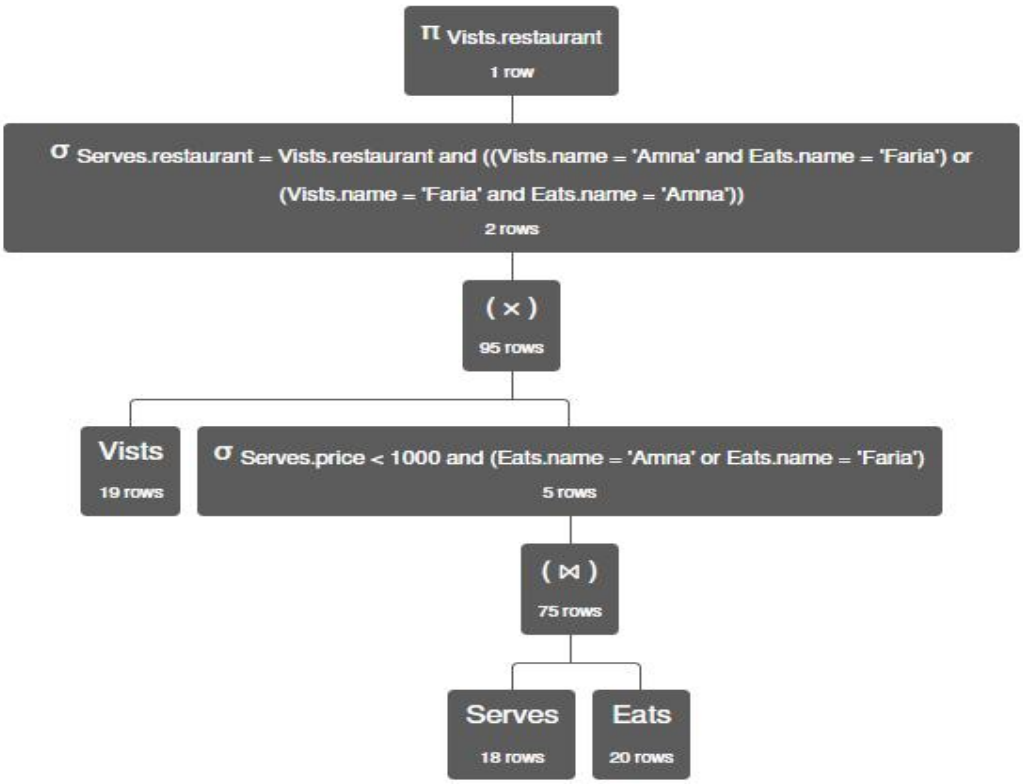
Question no 4:

Find all restaurants that serve at least one pizza for less than Rs.1000 that both Amna and Faria eat.

Query:

πVists.restaurant (σServes.restaurant = Vists.restaurant ∧ ((Vists.name = 'Amna' ∧ Eats.name = 'Faria')∨ (Vists.name = 'Faria' ∧ Eats.name = 'Amna')) (Vists × (σ Serves.price < 1000 ∧ (Eats.name = 'Amna' ∨ Eats.name = 'Faria') (Serves ⋈ Eats))))

Flow Chart:



Results:

Vists.restaurant
'Italian Oven'

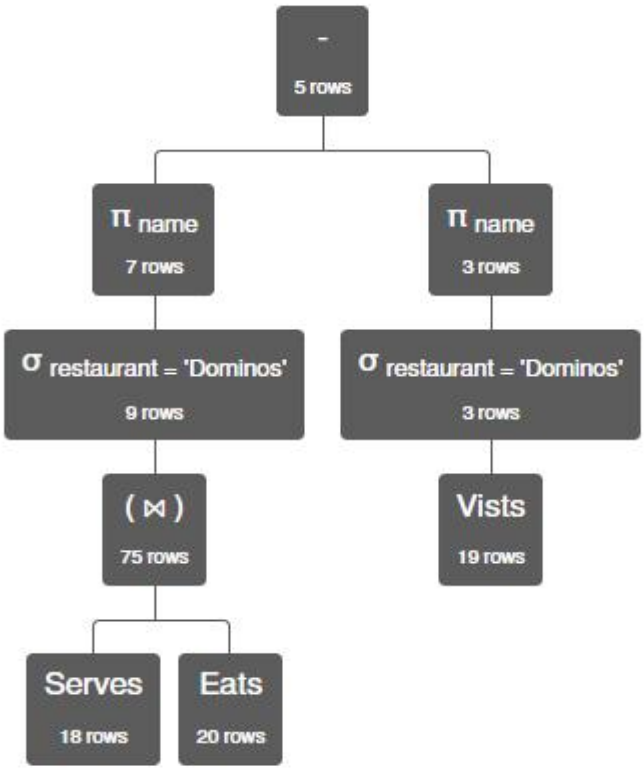
Question no 5:

Find the names of all people who eat at least one pizza served by Dominos but who do not visit Dominos.

Query:

(π name (σ restaurant = 'Dominos' (Serves ⋈ Eats))) - (π name (σ restaurant = 'Dominos' (Vists)))

Flow Chart:



Results:

Eats.name
'Bilal'
'Danish'
'Ehsan'
'Gauhar'
'Amna'

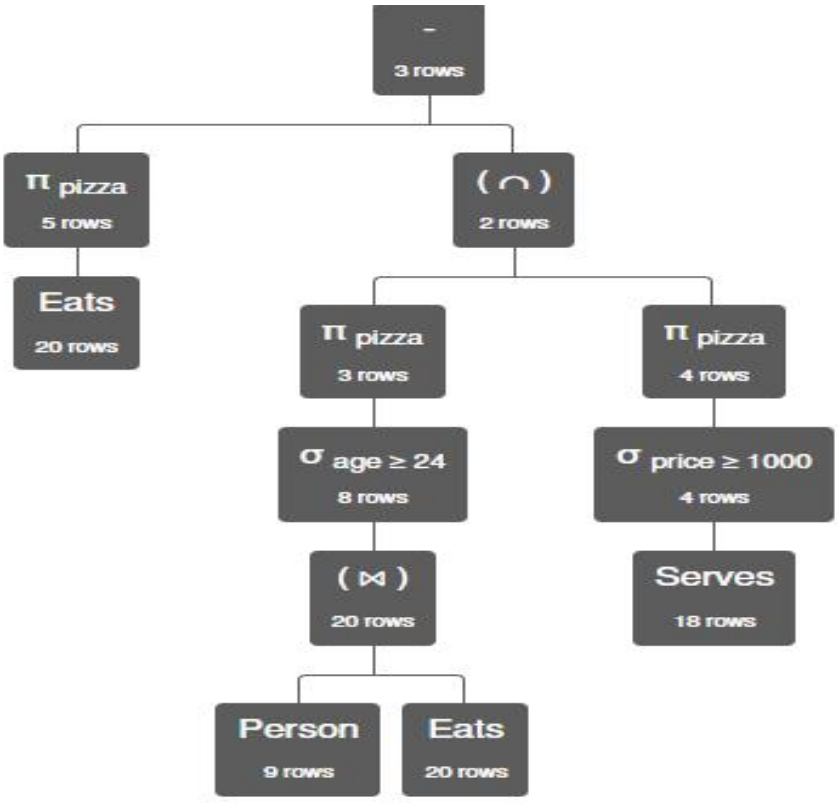
Question no 6:

Find all pizzas that are eaten only by people younger than 24, OR that cost less than Rs.1000 everywhere they are served.

Query:

Π pizza (Eats) - (π pizza (σ age ≥ 24 (Person ⋈ Eats)) ∩ (π pizza (σ price ≥ 1000 (Serves))))

Flow Chart:



Results:

Eats.pizza
'fajita'
'cheese'
'sausage'

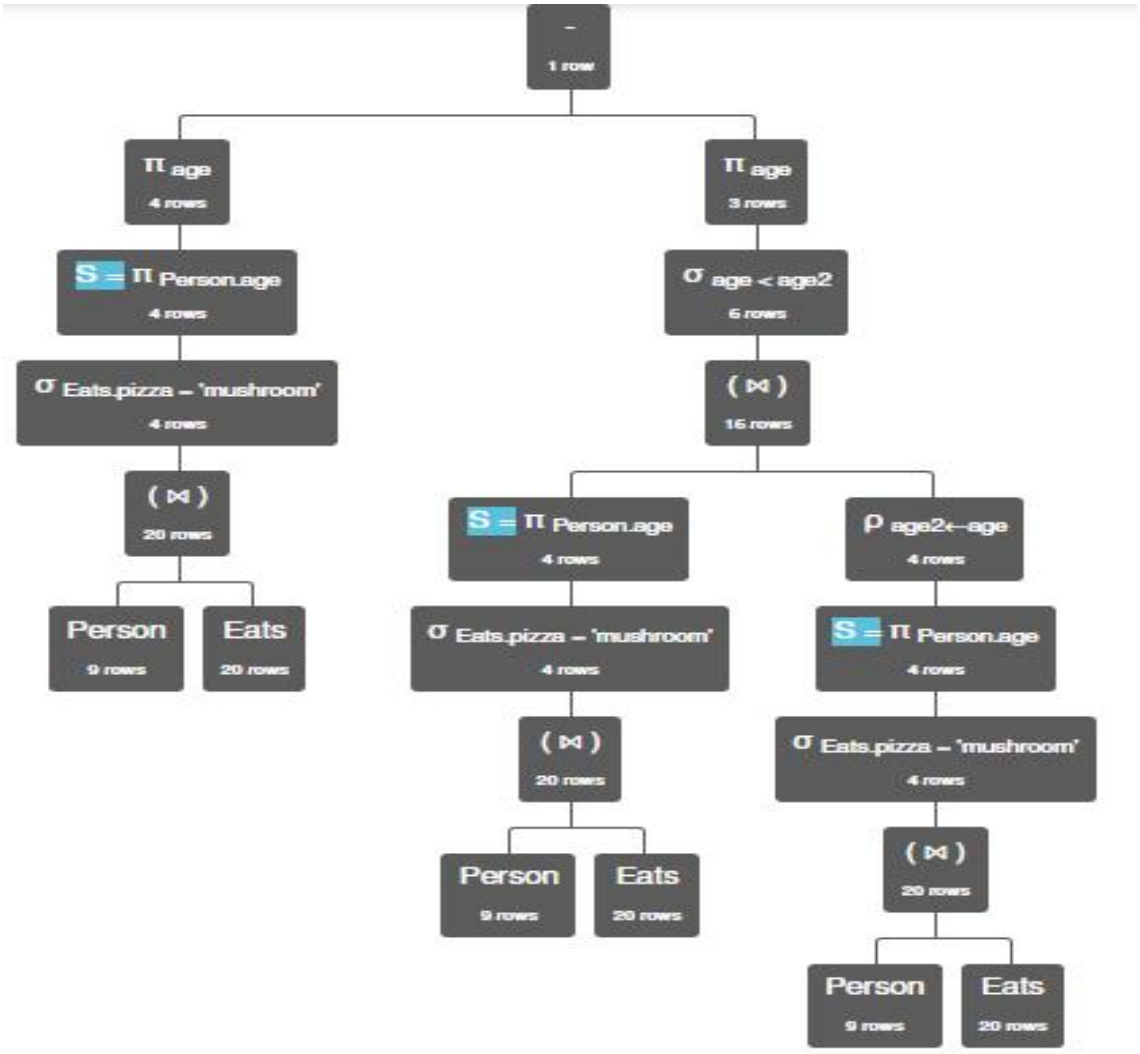
Question no 7:

Find the age of the oldest person who eat mushroom pizza.

Query:

S = π Person.age (σ Eats.pizza = 'mushroom' (Person ⋈ Eats)) π age (S) - π age (σ age < age2 (S ⋈ (ρ age → age2 S)))

Flow Chart:



Results:

Person.age
24

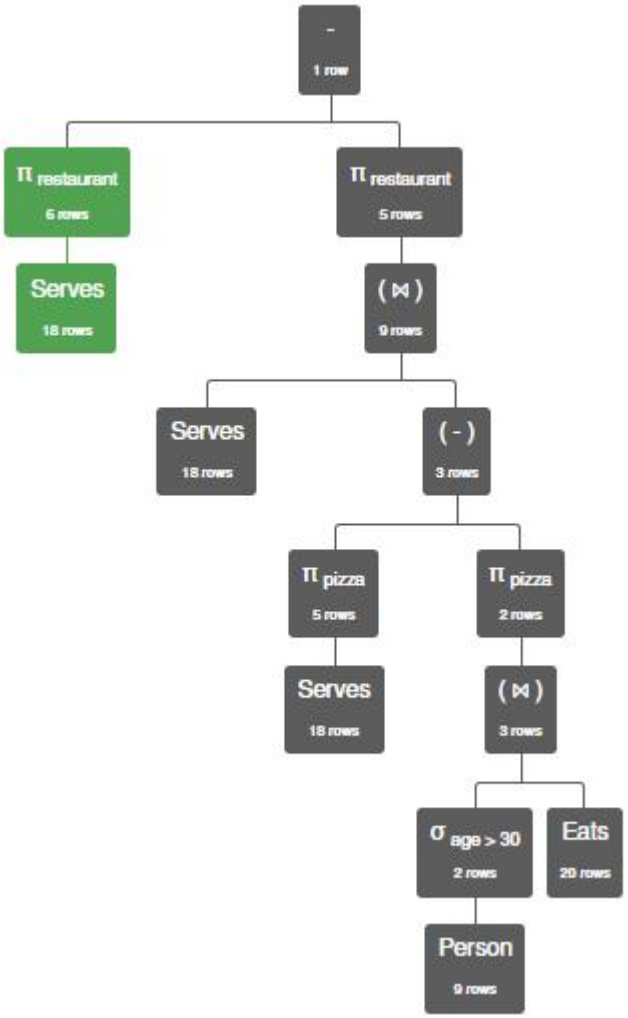
Question no 8:

Find all restaurants that serve ONLY pizzas eaten by people over 30.

Query:

Π restaurant (Serves) – π restaurant (Serves ⋈ ((π pizza (Serves)) - (π pizza ((σ age > 30 (Person)) ⋈ Eats))))

Flow Chart:



Results:

Serves.restaurant
'Tehzeeb'

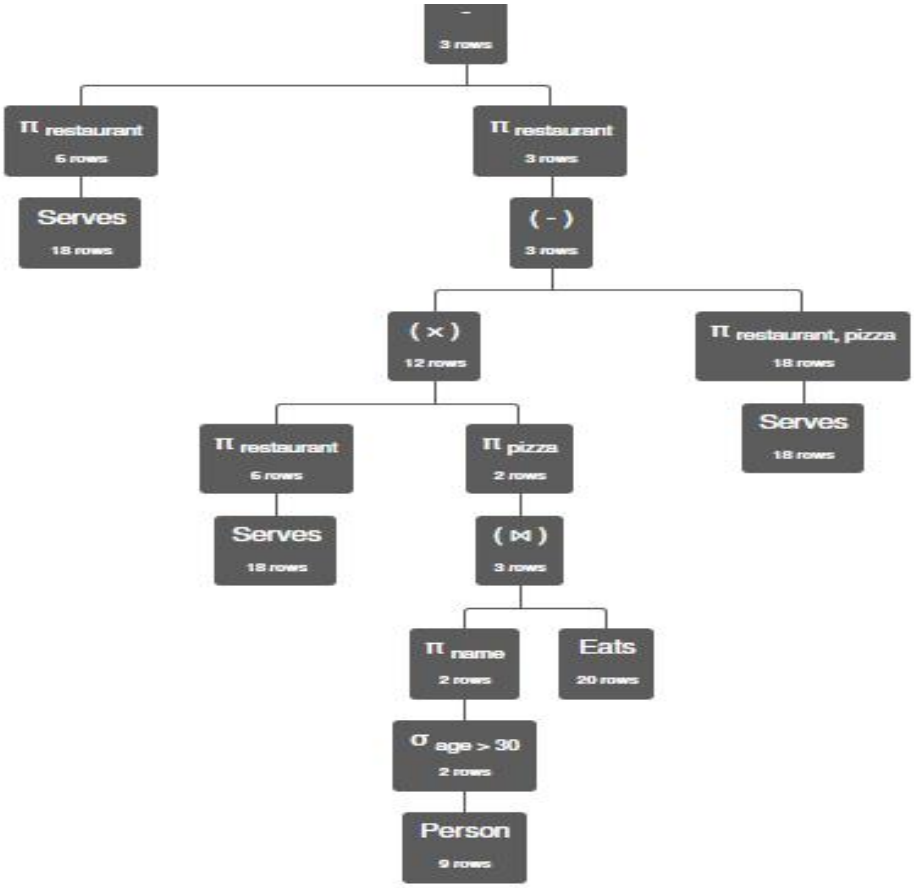
Question no 9:

Find all restaurants that serve EVERY pizza eaten by people over 30.

Query:

π restaurant (Serves) - π restaurant ((π restaurant (Serves) × π pizza (π name (σ age > 30 (Person)) ⋈ Eats)) - π restaurant, pizza (Serves))

Flow Chart:



Results:

Serves.restaurant
'Pappasallis'
'Pizza Hut'
'Tehzeeb'