

Tutorial - 4Relational Algebra and SQL Query

Q1] Write relational algebra for SQL

1. Select S. Seller name from Seller S, Product P, Price register R where P. category = 'Book' and R. product_id = P. product_id and R. seller_id = S. seller_id

$\pi_{\text{seller name}} (\sigma_{\text{category} = \text{'Book'}} (\text{Seller} \bowtie \text{product} \bowtie \text{price register}))$

2. Select R. seller_id from product P, price register R where (P. category = 'Book' or P. category = 'Stationary') and P. product_id = R. product_id

$\pi_{\text{seller id}} (\sigma_{\text{category} = \text{'Book'} \vee \text{category} = \text{'Stationary'}} (\text{Product} \bowtie \text{price register}))$

3. Select R. seller_id from Product P, price register R where (P. category = 'Mobile' and P. category = 'Electronics' and P. product_id = R. product_id)

$\pi_{\text{seller id}} (\sigma_{\text{category} = \text{'Mobile'} \wedge \text{category} = \text{'Electronics'}} (\text{Product} \bowtie \text{price register}))$

4. Select S. seller_id from Seller S where S. city = 'Surat' or S. seller_id in (Select R. seller_id from Product P,

Price register R where P. category = 'Clothes' and
P. product_id = R. product_id

$f(R_1, \pi_{\text{seller-id}}(\sigma_{\text{city}='Surat'}(\text{Seller})))$

$f(R_2, \pi_{\text{seller-id}}(\sigma_{\text{category}='cloth'}(\text{product} \bowtie \text{price register})))$

$R_1 \cup R_2$

- (5) Select S. seller-id from seller S where S. city = Nagpur
and S. seller-id in (Select R. seller-id from
product P, price register R where P. category = 'Fruits'
and P. product_id = R. product_id.

$f(R_1, \pi_{\text{seller-id}}(\sigma_{\text{city}='Nagpur'}(\text{Seller})))$

$f(R_2, \pi_{\text{seller-id}}(\sigma_{\text{category}='Fruit'}(\text{product} \bowtie \text{price register})))$

$R_1 \cap R_2$

2] Write SQL query for following relational algebra

1. Select R. seller-id from price-register R
where not exist (select R.product-id from
Product P where not exists (select R1. seller-id
from price-register R1 where R1. seller-id =
R. seller-id and R1. product-id = P. product-id))

2. Select R. seller-id from price-register R where not
exist (select p. product-id from product P where
P. category = 'Book' and not exist (

Select R1.seller_id from price_register R1 where
 R1.seller_id = R.seller_id and
 R1.product_id = P.product_id))

3. Select R1.seller_id, R2.seller_id from
 price_register R1, price_register R2.
 where R1.product_id = R2.product_id
 and R1.seller_id <> R2.seller_id and
 R1.price > R2.price

4. Select distinct R1.product_id from price_register R1,
 price_register R2. where
 R1.product_id = R2.product_id and
 R1.seller_id <> R2.seller_id.

5. Select R.seller_id from price_register R
 where not exist (select P.product_id from Product P
 where (P.category = 'cloth' or P.category = 'Fashion')
 and not exist (select R1.seller_id from price_register
 R1 where R.seller_id = R1.seller_id and
 R1.product_id = P.product_id))