(1) $\pi_{(*)}\left(\sigma_{\text{Product\_id}}\left(\pi_{\text{Product\_id}}\left(\sigma_{\text{Product\_name}='\text{black shirt}'}\left(\text{Warehousemanagement.tbl\_Product}\right)\right)\right)\right)$

$\wedge$ date_Part ('year', order_date) = 2009

(Warehousemanagement.tbl_Sales)

2) $\left(\pi_{\left(\sigma_{\text{sum}}(\text{Product\_quantity})\right)}\left(\sigma_{\text{Product\_brand}='\text{nike}'}\left(\text{warehousemanagement.tbl\_Product}\right)\right)\right)$

3) $\left(\pi_{\left(\sigma_{\text{sum}}(\text{Sales\_quantity})\right)}\left(\sigma_{\text{order\_date}>='2018-01-01' \wedge \text{order\_date}<='2018-01-30'}\left(\text{warehousemanagement.tbl\_Purchase}\right)\right)\right)$

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4) $\left(\pi_{\left(\sigma_{\text{sum}}(\text{sales\_quantity})\right)}\left(\sigma_{\text{order\_date}='2018-01-01' \wedge \text{order\_date}='2018-01-30'}\left(\text{warehousemanagement.tbl\_sales}\right)\right)\right)$

5)

$$\pi_{(*),\ a.customer\_city,\ a.Pincode,\ a.addressid,\ a.address,\ a.customer\_state}\Big(\sigma_{a.address\_id = \pi_{customer\_address\_id}\left(\sigma_{sales\_id = 'S106'}(warehousemanagement.tbl.sales)\right)}(warehousemanagement, tbl.address)\Big) \rightarrow a \bowtie_{a.customer\_contactno = c.customer\_contactno} c(warehousemanagement.tbl\_customers)$$

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(6) ((customer_addressid $\mathcal{J}$ count(*) → num_of_orders, customer_id (tbl_sales)) → tbl_temp

($\mathcal{J}$ MAX (num_of_orders) (tbl_temp)) → RESULT 1

$\left[\Pi_{\text{customer\_addressid}} \left[\sigma_{\text{num\_of\_orders} = \text{RESULT 1}} (\text{tbl\_temp})\right]\right]$ → RESULT 2

ρ (a, tbl_address)
ρ (c, tbl_customer)

$\Pi_{c.*,\ a.address\_id,\ a.address,\ a.customer\_city,\ a.customer\_state}$ a.pincode [$\sigma_{a.address\_id = \text{RESULT 2}}$ [a ⋈ (a.customer_contact_no = c.customer_contact_no)]]

(7) List all detail of customers who have purchased maximum amount (rs) of clothes.

$$\left(\left(\text{customer\_addressid } \mathcal{T}\ \text{SUM (total\_amount)} \rightarrow \text{total\_amount\_of\_orders}, \text{customer\_id (tbl\_sales)}\right) \rightarrow \text{tbl\_temp}\right)$$

$$\left(\mathcal{T}\ \text{MAX (total\_amount\_of\_orders) (tbl\_temp)}\right) \rightarrow \text{RESULT1}$$

$$\left[\pi\ \text{customer\_addressid}\left[\sigma\ \text{sale.total\_amount\_of\_orders} = \text{RESULT1}\ (\text{tbl\_temp})\right]\right] \rightarrow \text{RESULT2}$$

$$\rho\ (a, \text{tbl\_address})$$
$$\rho\ (c, \text{tbl\_customer})$$

$$\pi\ c.*, a.\text{address\_id}, a.\text{address}, a.\text{customer\_city}, a.\text{customer\_state}, a.\text{pincode}\left(\sigma\ a.\text{address\_id} = \text{RESULT2}\left[a \bowtie_{(a.\text{customer\_contactno} = c.\text{customer\_contactno})} c\right]\right)$$

(8) Fetch no. of diffrent products of a particular company

$\Pi_{product\_id}\left[\sigma_{(supplier\_gstno = ' ')}(tbl\_purchase)\right] \rightarrow$ PRODUCTID

$\Im_{COUNT(*) \rightarrow num\_of\_products}\left[tbl\_product \rightarrow pr \text{ SEMI-INTERSECTION}_{[pr.product\_id = PRODUCTID.product\_id]}^{PRODUCT\_ID}\right]$

(9) Fetch no. of 'x' size shirts of a company

$\rho(pid)\left\{\Pi_{product\_id}\left[\sigma_{(supplier\_gstno = ' ')}(tbl\_purchase)\right]\right\} \rightarrow RESULT1$

$\sigma_{(product\_size = 'x')}\left[tbl\_product \text{ SEMI-INTERSECTION}_{[product\_id = pid]}^{RESULT1}\right]$

(10) Fetch all products available of a company

$$\rho(pid)\{\Pi\ product\_id\ [\sigma\ (supplier\_gstno = '' \text{ AND } product\_quant > 0)\ (tbl\_purchase)]\} \rightarrow RESULT_1$$

$$[\ tbl\_product\ \text{SEMI-INTERSECTION}_{(product\_id = pid)}\ RESULT_1\ ]$$

(11) Fetch Order and grouped in diffrent payment methods.

ρ (s, tbl_sales)
ρ (pm, tbl_paymentmethod)
ρ (p, tbl_sales_payment)

$$[\Pi_{s.emp\_contactno,\ pm.payment\_method,\ (s.emp\_contactno,\ pm.payment\_method)}\ \Im\ SUM(p.amount)$$

$$[\sigma\ (s.sales\_id = p.sales\_id \text{ AND } p.paymethod\_id = pm.paymethod)$$

$$[tbl\_sales \times tbl\_sales\_payment \times tbl\_payment\_method]]]$$

(12) Fetch Sales Order of particular Payment Methods.

ρ (s, tbl_sales)
ρ (pm, tbl_paymentmethod)
ρ (pay, tbl_sales_payment)

$$\rho(pa, (\pi_{pay.sales\_id,\ pm.payment\_method}(pay \bowtie_{(pay.paymethod\_id = pm.paymethod\_id)} pm)))$$

$$\sigma_{payment\_method = 'Debit\ Card'}(s \bowtie_{(s.sales\_id = p.sales\_id)}^{pa})$$

(13) Fetch Purchase Order of particular Payment Methods

ρ (pur, tbl_purchase)
ρ (pm, tbl_paymentmethod)
ρ (pay, tbl_purchase_payment)

$$\rho(pa, (\pi_{pay.purchase\_id,\ pm.payment\_method}(pay \bowtie_{(pay.paymentmethod\_id = pm.paymethod\_id)}^{pm})))$$

$$\sigma_{(payment\_method = 'Debit\ Card')}\left[s \bowtie_{(pur.purchase\_id = pa.purchase\_id)}^{pa}\right]$$

(14) Brand wise maximum Selling

ρ (s, tbl_sales)
ρ (p, tbl_product)

$$\Pi_{p.product\_brand}\ \mathcal{T}_{MAX(sales\_quantity) \rightarrow maximum\_sales} \left[S \bowtie_{(p.product\_id = s.product\_id)} P \right]$$

(15) Brand wise total Selling

ρ (s, tbl_sales)
ρ (p, tbl_product)

$$\Pi_{p.product.brand}\ \mathcal{T}_{SUM(s.sales\_quantity) \rightarrow total\_sales} \left[S \bowtie_{(p.product\_id = s.product\_id)} P \right]$$

(16) Fetch no. of product available of a company.

ρ (s, tbl_sales)
ρ (p, tbl_product)

$$\Pi_{\text{p.product\_brand}}\ \mathcal{T}_{\text{SUM(s.total\_amount)} \rightarrow \text{total\_amount}} \left(s \bowtie_{[\text{p.product\_id} = \text{s.product\_id}]} p \right)$$

(17) Fetch employee details with it's total no. of sales done.

ρ (e, tbl_employee)

ρ (s, tbl_sales)

$\left(e \bowtie_{(e.emp\_contactno = s.emp\_contactno)} s \right) \longrightarrow$ EMPSALES

π e.*, e.emp_contactno $\mathcal{T}$ COUNT s.sales_id $\rightarrow$ total_Sales (EMPSALES)

(18) Fetch employee details with it's total no. of purchase done

ρ (e, tbl_employee)
ρ (pur, tbl_purchase)

$\left(e \bowtie_{(e.emp\_contactno = pur.emp\_contactno)} pur \right) \rightarrow$ EMPPUR

π e.*, e.emp_contactno $\mathcal{T}$ COUNT pur.purchase_id $\rightarrow$ total_purchase (EMPPUR)

(19) Fetch total no. of items sold by employee with it's details

ρ (e, tbl_employee)
ρ (s, tbl_sales)

$\left(e \bowtie_{(e.emp\_contactno = s.emp\_contactno)} s \right) \rightarrow$ EMPSALES

Π e.*, e.emp_contactno $\mathcal{T}$ SUM s.sales_quantity $\rightarrow$ total_quan (EMPSALES)

(20) Fetch total no. of items purchased by employee with it's details

ρ (e, tbl_employee)
ρ (p, tbl_purchase)

$\left(e \bowtie_{(e.emp\_contactno = p.emp\_contactno)} p \right) \rightarrow$ EMPPUR

Π e.*, e.emp_contactno $\mathcal{T}$ SUM p.quantity $\rightarrow$ total_quantity purchase (EMPPUR)

(21) Fetch total salary earned by employee with employee details.

ρ (e, tbl_employee)
ρ (s, tbl_salary)

$\left[e \bowtie_{(e.emp\_contactno = s.emp\_contactno)} s \right] \rightarrow$ EMPSALARY

Π e.*, e.emp_contactno $\Im$ SUM s.emp_salary $\rightarrow$ total Salary (EMPSALARY)

(22) Fetch total salary paid to an employee in each department.

ρ (d, tbl_department)
ρ (e, tbl_employee)
ρ (s, tbl_salary)

Π e.department_id, e.emp_contactno $\Im$ SUM s.emp_salary $\rightarrow$ total_salary_emp $\left[e \bowtie_{(e.emp\_contactno = s.emp\_contactno)} s \right]$

$\rightarrow$ sal

Π sal.department_id $\Im$ SUM sal.total_salary_emp $\rightarrow$ total_salary_dept (sal) $\rightarrow$ dept

Π d.*, dept.total_salary_dept $\left[d \bowtie_{(d.deptid = dept.departmentid)} dept \right]$