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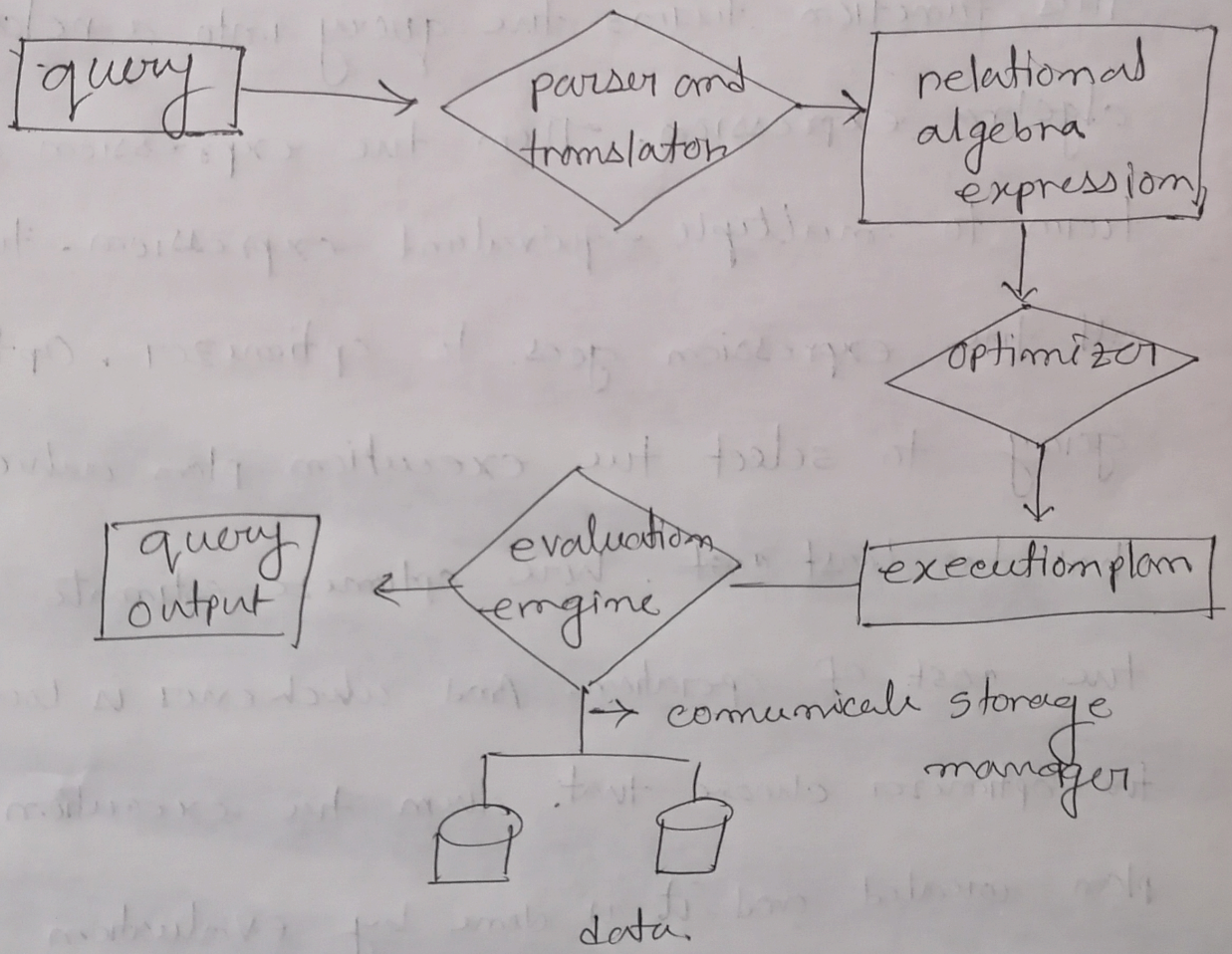
## Ans to the Q: NO: 1

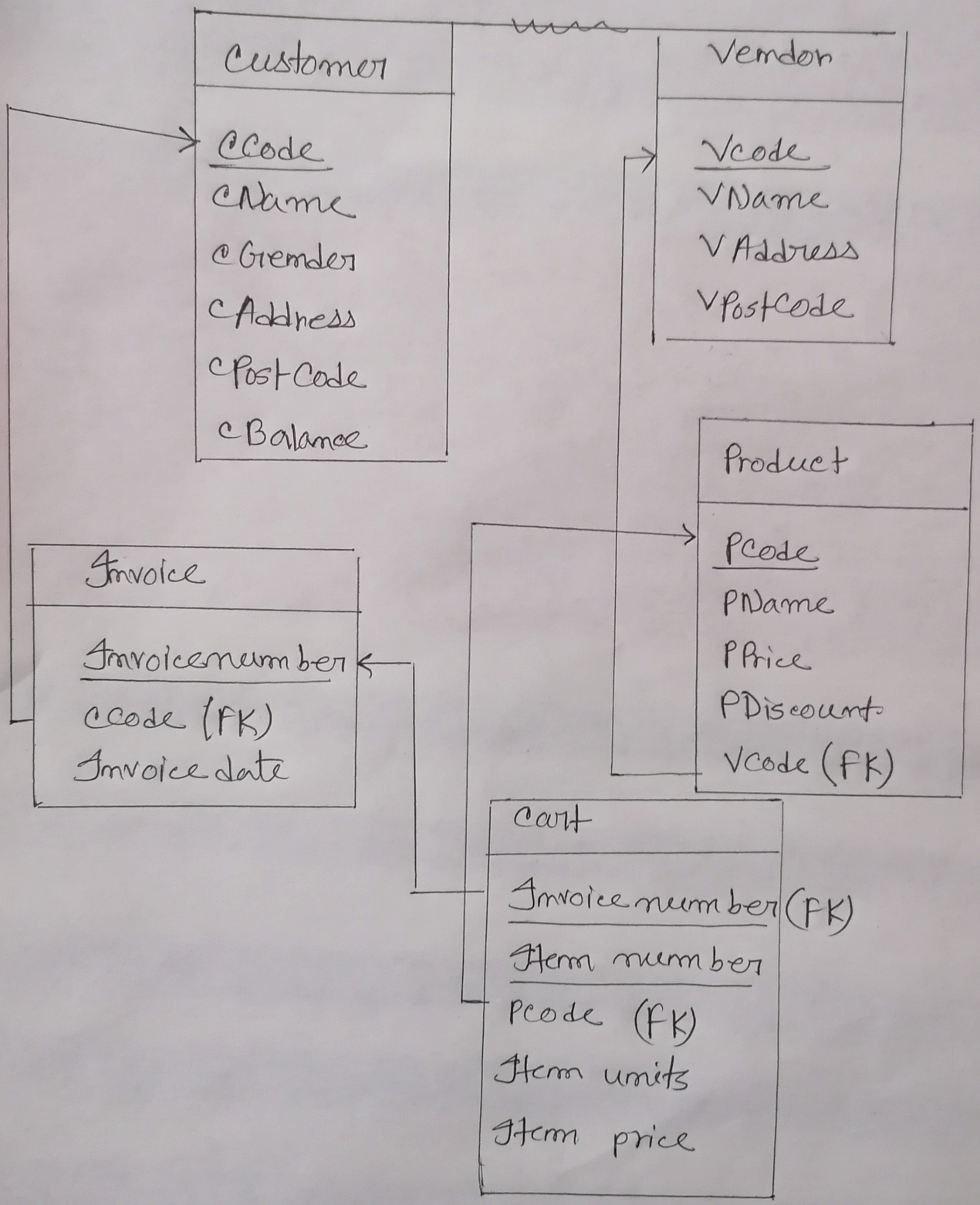
First of all the query is been taken from the user in SQL. Then the query tranfer to the function called parser and translator. This function turns the query into a relational algebra expression. Then the expression will turn to multiple equivalent expression. turn all the expression goes to optimizer. Optimizer going to select the execution plan which has the least cost. here optimizer estimate the cost of operation. And which ever is lower the optimizer choose that. turn the execution plan created and it is done by evaluation engine. ~~It~~ ~~come~~ Evaluation engine. communicate with the storage management

fetch
~~and get the data from the~~

and fetch the data from the disk storage and shows it as output.



# Ans to the Q: NO: 2



## Ans to the Q: NO: 3

(a).

```
create table cart (
        Invoice number    VARCHAR(20),
        Item number       number,
        Pcode    number,
        Item unit number not null,
        Item price number not null,
        constraint cart_pk primary key (Invoice number
                                        Item number),
        constraint cart_fk1 foreign key (Invoice number)
                            references Invoice,
        constraint cart_fk2 foriegn key (pcode) refernces
                                        product,
        constraint Item unit_CU CHECK (Item unit >=0),
        constraint Item price_CP CHECK (Item price >=0)
);
```

(b).

```
Alter table Customer add CPhone number;
```

(c)

```
update product
set PPrice = (PPrice - (0.2 * ppriee))
where pcode = 'P1-AB-01';
```

(d)

```
Delete
From product
where PDiscount = TRUE;
```

# Ans to the Q: NO: 54

(a)

```
select ccode, cName,
from customer
where cGrender = 'female' and cBalamce NOT
      (Betweem 10000 and 20000);
```

(b)

```
select PName , PPrice . Vname
From Product, Vendor
where Product. Vcode = Vendor. Vcode and
      PName Like '%Oil';
```

(c)

```
select ccode, Invoice number, Invoice date , PName
       Item units, Itemprice
from customer C Invoice I Product P, cart C1
where C.CCode = I. CCode and I. Invoice number = C1.
      Invoice number and C1. PCode = P. Pcode ;
```

(d)

d) Select PName
From Product, Vendor
Where Product.Vcode = Vendor.Vcode and
VName = 'ACI Limited'
Group by PPrice;

# Ans to the Q: NO: 5

(a)

$\Pi_{pcode, PName, PPrice}(\sigma_{product.Vcode = Vendor.Vcode \text{ and } VName = 'Samsung'}(Product \times Vendor))$

(b)

step1, $E \leftarrow \Pi_{customer.cname, customer.cAddress}(\sigma_{customer.cBalance > d.cBalance}(customer \times \rho_d(customer)))$

step 2 $\Pi_{cname, caddress}(customer) - E_1$.

(c)

$\Im_{count(pcode)}(\sigma_{product.Vcode = Vendor.Vcode \text{ and } Vname = 'Samsung'}(Product \times Vendor))$

(d)

$\text{Invoicenumber}\ \mathcal{G}\ \text{sum}\ (\text{Item unit} * \text{Item price})$

$(\sigma\ \text{Invoice.Invoicenumber} = \text{cart.Invoice number}$

$(\text{Invoice} \times \text{cart}))$

(e)

$\Pi_{\text{pcode, pName}}\ (\text{Product}) -$

$\Pi_{\text{pcode pname}}\ (\text{cart} \bowtie \text{Invoice} \bowtie \text{product})$

# Ans to the Q: NO: 6

relation 1 ⋈ relation 2 (a)

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| A1 | B1 | C1 | D1 | E1 | F1 |
| A2 | B2 | C2 | D3 | E2 | F1 |
| A2 | B2 | C2 | D2 | E3 | F1 |
| A4 | B2 | C3 | D4 | E2 | F3 |

(b)

relation 1 ⟗ relation 2

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| A1 | B1 | C1 | D1 | E1 | F1 |
| A2 | B2 | C2 | D3 | E2 | F1 |
| A2 | B2 | C2 | D2 | E3 | F1 |
| A4 | B2 | C3 | D4 | E2 | F3 |
| A3 | B3 | C4 | null | null | null |
| A5 | B3 | C5 | null | null | null. |