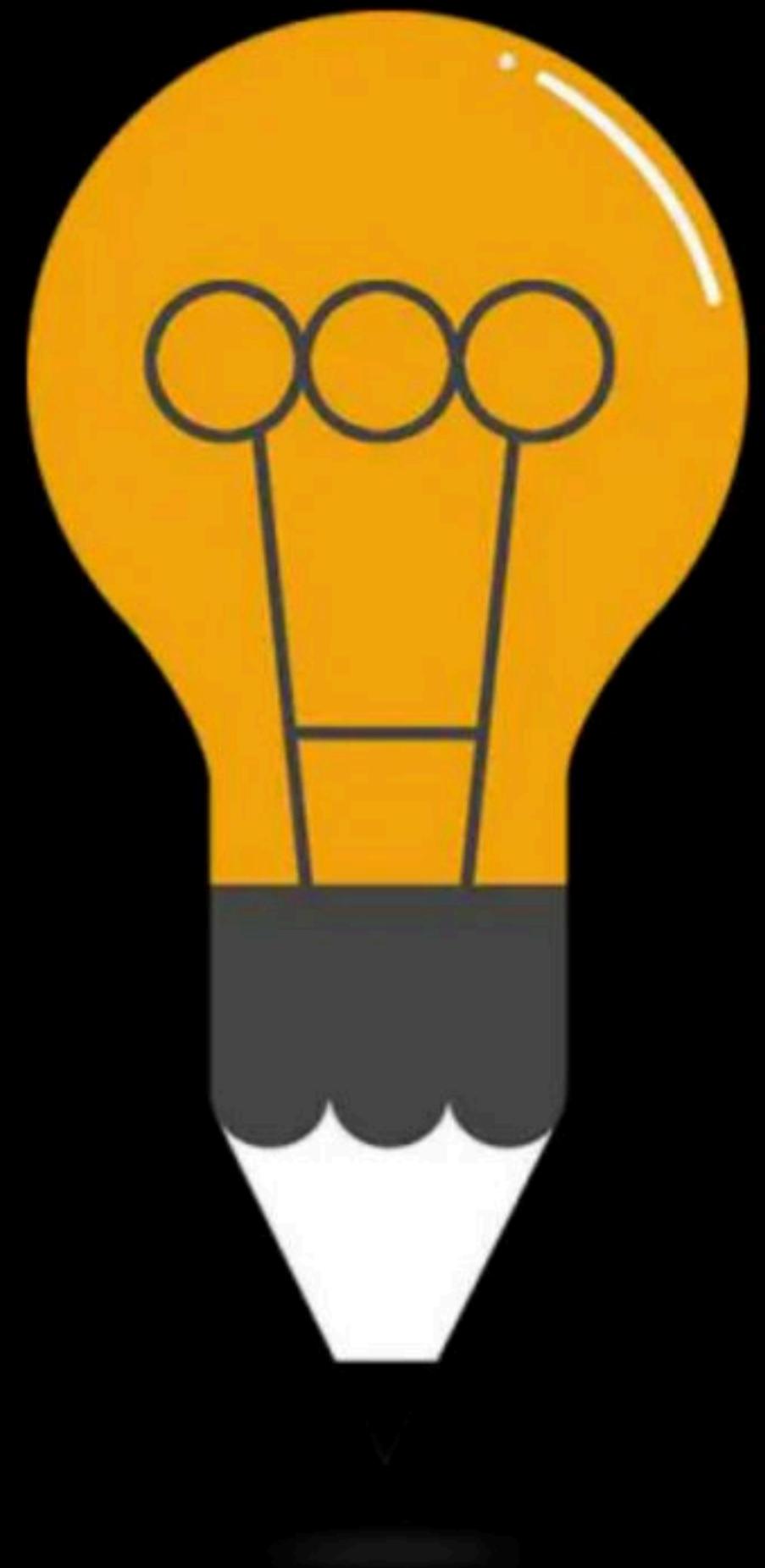




Doubt Clearing Session

Complete Course on Database Management System



DBMS **Doubts & Relational DB**

By: Vishvadeep Gothi

Set Operators

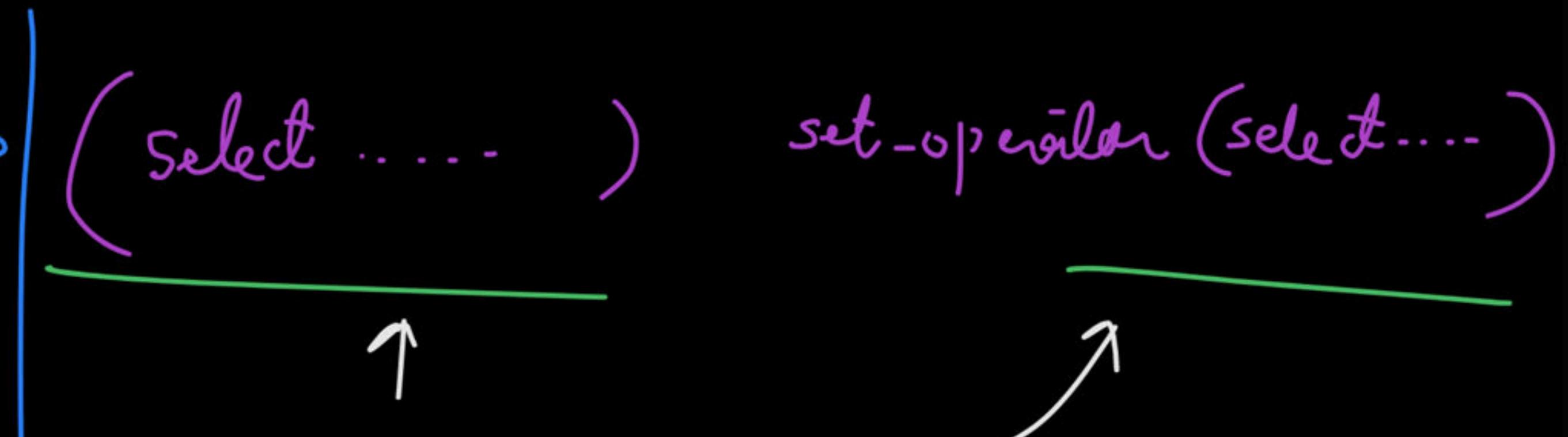
Set operators are used to combine results from two or more SELECT statements

1. Union → eliminates duplicates
2. Union all → shows all tuples
3. Intersect
4. Minus or Except

↳ set difference

Result :-

same no. of columns, as in
left or right select
statement



no. of
columns should be
equal

T₁

A	B
1	2
3	4
5	6

T₂

A	C
1	2
3	4
3	6

Union

A	B
1	2
3	4
5	6
3	6

(select * from T₁) union (select * from T₂)

(select city from customers) union (select country
from suppliers)

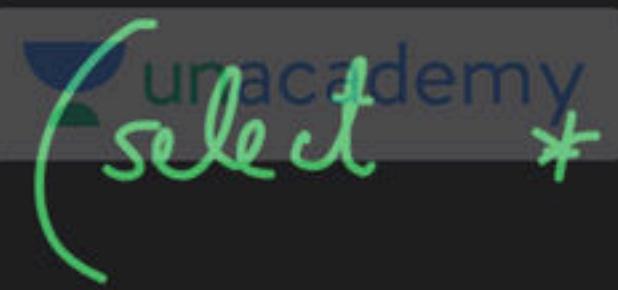
Select 'Vishadeep' from customers

Select 'customer', country from customers

Select 'customer' as type, country from customers

(Select 'customer' as type, city from customers) union

(Select 'supplier', city from suppliers)



$(\text{select } * \text{ from } T_1) \text{ intersect } (\text{select } * \text{ from } T_2)$

A	B
1	2
3	4

$(\text{select } * \text{ from } T_1) \text{ except } (\text{select } * \text{ from } T_2)$

A	B
5	6

Over) find out those cities where we don't have customers but only supplies.

Select city from supplies except select city from customers

Create Table

```
CREATE TABLE table_name (  
    column1 datatype,  
    column2 datatype,  
    column3 datatype,  
    ....  
)
```

create table student
(
 sno int (10),
 name varchar (30),
 fname varchar (30),
 phno int (10))

Create Table from Another Table

```
CREATE TABLE new_table_name AS  
SELECT column1, column2,...  
FROM existing_table_name  
WHERE ....
```

Constraints

1. Primary Key
2. Not NULL
3. Unique
4. Foreign Key

Not NULL, Unique

```
CREATE TABLE tablename (  
    column1 datatype NOT NULL,  
    column2 datatype UNIQUE  
);
```

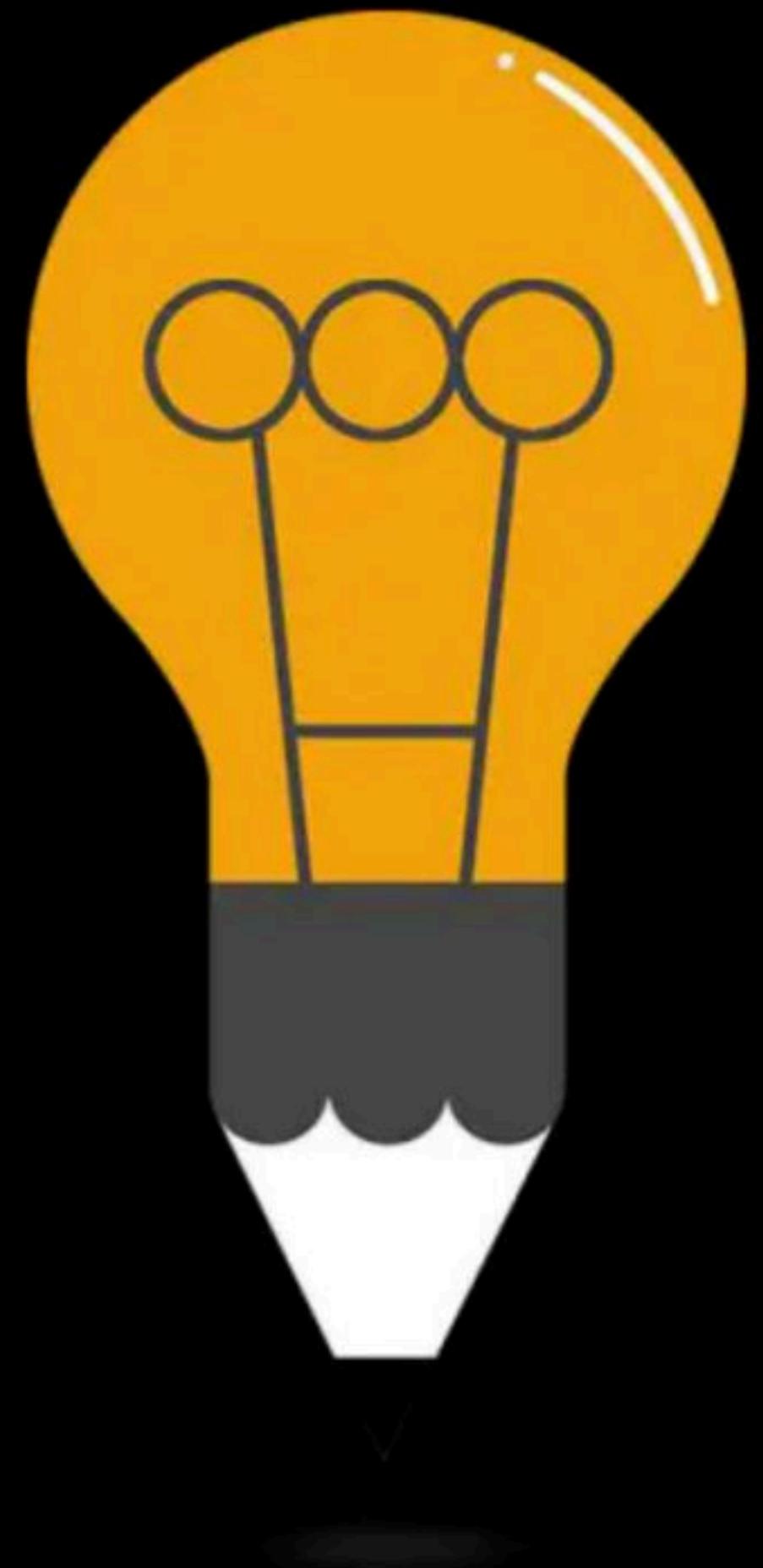
Primary Key

```
CREATE TABLE Persons (
    ID int NOT NULL,
    LastName varchar(255) NOT NULL,
    FirstName varchar(255),
    Age int,
    PRIMARY KEY (ID)
);
```

```
CREATE TABLE Persons (
    ID int NOT NULL,
    LastName varchar(255) NOT NULL,
    FirstName varchar(255),
    Age int,
    CONSTRAINT PK_Person PRIMARY KEY (ID,LastName)
);
```

Foreign Key

```
CREATE TABLE Orders (
    OrderID int NOT NULL,
    OrderNumber int NOT NULL,
    PersonID int,
    PRIMARY KEY (OrderID),
    FOREIGN KEY (PersonID) REFERENCES Persons(PersonID)
);
```



DPP: SQL

By: **Vishvadeep Gothi**

Customers Table

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden
6	Blauer See Delikatessen	Hanna Moos	Forsterstr. 57	Mannheim	68306	Germany
7	Blondel père et fils	Frédérique Citeaux	24, place Kléber	Strasbourg	67000	France
8	Bólido Comidas preparadas	Martín Sommer	C/ Araquil, 67	Madrid	28023	Spain

Question

Write query for all below questions on table Customers

1. Find name of all such customers who live in same country as the country of customer with name 'Around the Horn'
2. Write a query to know how many customers share same postalcode?
3. Write a query to know from which country we have maximum number of customers?
4. Write a query to know from which country we have only one customer?

1. Select ^ from customers where country =
(select country from customers where
customername = 'Around the Horn')

2. Select my postcode, count(*) from customers group by postcode

3. select country, max(count) from

(Select country, count(*) 'count' from customers
group by country)

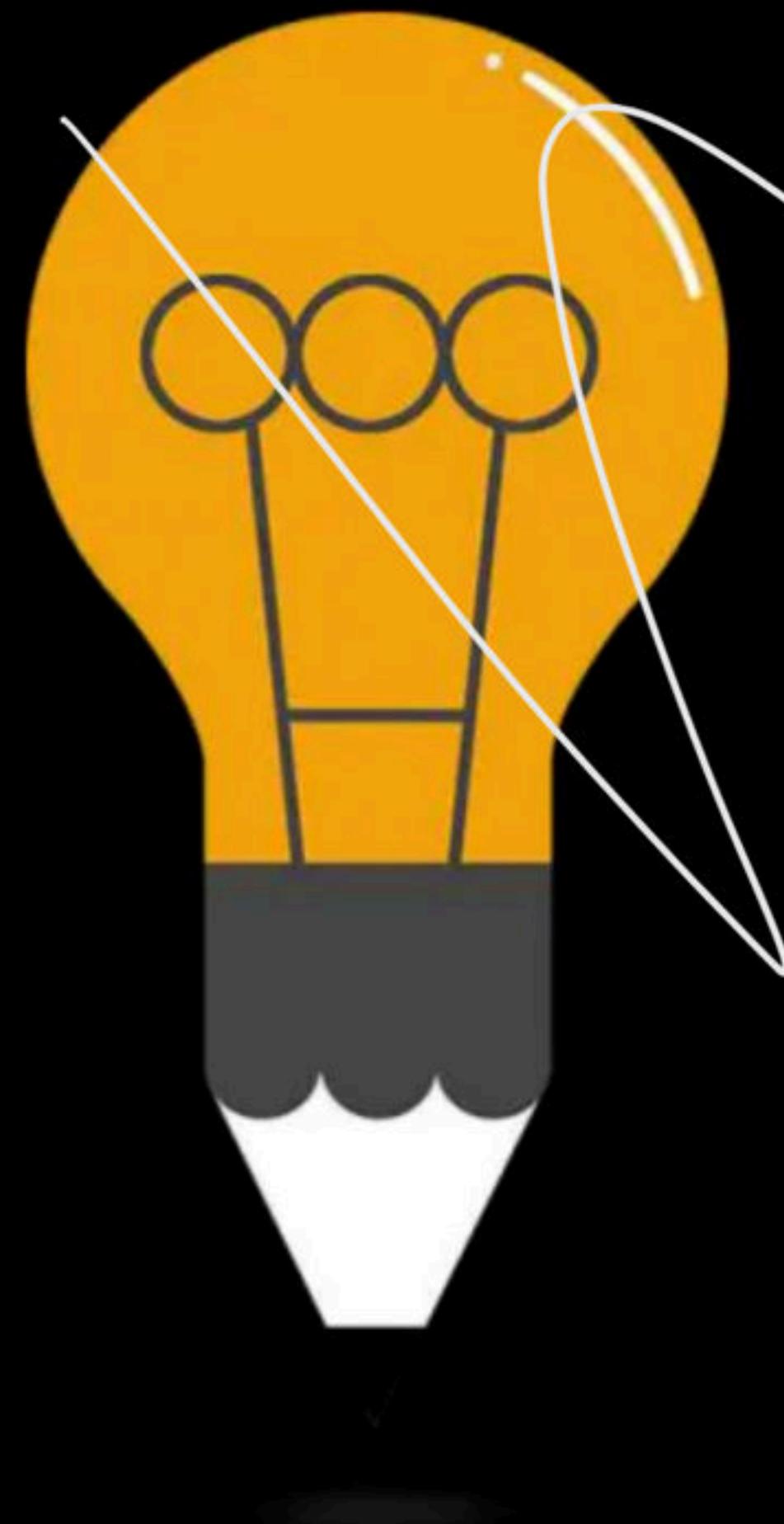
4. Select country from customers group by country
having count(*) = 1

Products Table

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes x 20 bags	18
2	Chang	1	1	24 - 12 oz bottles	19
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97
10	Ikura	4	8	12 - 200 ml jars	31
11	Queso Cabrales	5	4	1 kg pkg.	21
12	Queso Manchego La Pastora	5	4	10 - 500 g pkgs.	38
13	Konbu	6	8	2 kg box	6
14	Tofu	6	7	40 - 100 g pkgs.	23.25
15	Genen Shouyu	6	2	24 - 250 ml bottles	15.5

Suppliers Table

SupplierID	SupplierName	ContactName	Address	City	PostalCode	Country	Phone
1	Exotic Liquid	Charlotte Cooper	49 Gilbert St.	London	EC1 4SD	UK	(171) 555-2222
2	New Orleans Cajun Delights	Shelley Burke	P.O. Box 78934	New Orleans	70117	USA	(100) 555-4822
3	Grandma Kelly's Homestead	Regina Murphy	707 Oxford Rd.	Ann Arbor	48104	USA	(313) 555-5735
4	Tokyo Traders	Yoshi Nagase	9-8 Sekimai Musashino-shi	Tokyo	100	Japan	(03) 3555-5011
5	Cooperativa de Quesos 'Las Cabras'	Antonio del Valle Saavedra	Calle del Rosal 4	Oviedo	33007	Spain	(98) 598 76 54
6	Mayumi's	Mayumi Ohno	92 Setsuko Chuo-ku	Osaka	545	Japan	(06) 431-7877
7	Pavlova, Ltd.	Ian Devling	74 Rose St. Moonie Ponds	Melbourne	3058	Australia	(03) 444-2343
8	Specialty Biscuits, Ltd.	Peter Wilson	29 King's Way	Manchester	M14 GSD	UK	(161) 555-4448
9	PB Knäckebröd AB	Lars Peterson	Kaloadagatan 13	Göteborg	S-345 67	Sweden	031-987 65 43
10	Refrescos Americanas LTDA	Carlos Diaz	Av. das Americanas 12.890	São Paulo	5442	Brazil	(11) 555 4640
11	Heli Süßwaren GmbH & Co. KG	Petra Winkler	Tiergartenstraße 5	Berlin	10785	Germany	(010) 9984510
12	Plutzer Lebensmittelgrossmärkte AG	Martin Bein	Bogenallee 51	Frankfurt	60439	Germany	(069) 992755
13	Nord-Ost-Fisch Handelsgesellschaft mbH	Sven Petersen	Frahmredder 112a	Cuxhaven	27478	Germany	(04721) 8713
14	Formaggi Fortini s.r.l.	Elio Rossi	Viale Dante, 75	Ravenna	48100	Italy	(0544) 60323



Relational Model

Question

Write query for all below questions on table Customers

1. Find all such products which have price equal to the price of product name 'Aniseed Syrup'?
2. Find all such suppliers name who supplies products of price greater than 20?
3. Find all other products of the category of the product 'Tofu'?

1. select * from products where price =
(select price from products where productname = 'Aniseed Syrup')

2) unacademy
select suppliername from suppliers where supplierId in
(select supplierId from products where price > 20)
or

select distinct suppliername from suppliers, products where
suppliers.supplierId = products.supplierId and price > 20

3)  `Select * from products where productname != 'Tofu'
and categoryid = (select categoryid from products where
productname = 'Tofu')`

Relational Model

The relational model uses a collection of tables to represent both data and the relationships among those data

Relation

The main construct for representing data in the relational model is a relation, which is table.

Attribute

Attributes are used to describe relations

Or

Columns of relations are attributes

Tuple Or Record

A row in a relation

Relation Example

The account relation with unordered tuples

<i>account-number</i>	<i>branch-name</i>	<i>balance</i>
A-101	Downtown	500
A-215	Mianus	700
A-102	Perryridge	400
A-305	Round Hill	350
A-201	Brighton	900
A-222	Redwood	700
A-217	Brighton	750

Database Schema

Logical design of database

Database Instance

Snapshot of the data in the database at a given instant in time

Domain

A unique set of values permitted for an attribute

Domain Constraint

Specifies an important condition that we want each instance of relation to satisfy

Degree or Arity

Number of attributes in relation

Cardinality

Number of tuples in a relation

Relational Database

A relational database is a collection of relations

Keys

An attribute or set of attributes whose values can uniquely identify a tuple in a relation

Keys

1. Super Key
2. Candidate Key
3. Primary Key
4. Alternate Key
5. Foreign Key

Functional Dependency

Consider a relation R and 2 attributes A and B in R.

B is functionally dependent on A (denoted by $A \rightarrow B$), if each value of A is associated with exactly one value in B in relation R.

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A	B	C	D
a_1	b_1	c_1	d_1
a_1	b_2	c_1	d_2
a_2	b_2	c_2	d_2
a_2	b_2	c_2	d_3
a_3	b_3	c_2	d_4

Functional Dependency: Example

A	B	C
10	B1	1
10	B2	2
11	B4	1
12	B3	4
13	B1	1
14	B3	4

Functional Dependency

- Functional dependencies play a key role in differentiating good database designs from bad database designs
- A functional dependency is a type of constraint that is a generalization of the notion of key
- $X \rightarrow Y$, where X is a set of attributes that can determine the value of Y

Happy Learning.!



▲ 1 • Asked by Shreyas

Please help me with this doubt

vertical microprogramming

- (c) uses one bit for each control signal
- (d) All of the above

[2002 : 2 Marks]

2.8 Consider an array multiplier for multiplying two n bit numbers. If each gate in the circuit has a unit delay, the total delay of the multiplier is

- (a) $\Theta(1)$
- (b) $\Theta(\log n)$
- (c) $\Theta(n)$
- (d) $\Theta(n^2)$

[2003 : 1 Mark]

2.9 What is the minimum size of ROM required to store the complete truth table of an 8-bit \times 8-bit multiplier?

▲ 1 • Asked by Shreyas

Please help me with this doubt

minimum time required to complete this computation is 80 nanoseconds.
[2016 (Set-2) : 2 Marks]

- 3.37 Instruction execution in a processor is divided into 5 stages. Instruction Fetch (IF), Instruction Decode (ID), Operand Fetch (OF), Execute (EX) and Write Back (WB). These stages take 5, 4, 20, 10 and 3 nanoseconds (ns) respectively. A pipelined implementation of the processor requires buffering between each pair of consecutive stages with a delay of 2 ns. Two pipelined implementations of the processor are contemplated:

- a naive pipeline implementation (NP) with 5 stages and
- an efficient pipeline (EP) where the OF stage is divided into stages OF1 and OF2 with execution times of 12 ns and 8 ns respectively.

The speedup (correct to two decimal places) achieved by EP over NP in executing 20 independent instructions with no hazards is _____.

[2017 (Set-1) : 2 Marks]

- 3.38 The instruction pipeline of a RISC processor has the following stages. Instruction Fetch (IF), Instruction Decode (ID), Operand Fetch (OF), Perform Operation (PO) and Writeback (WB). The IF, ID, OF and WB stages take 1 clock cycle each. The PO stage takes 2 clock cycles. Consider the sequence

$$k = 5$$

$$5, 4, 20, 10, 3$$

$$t_p = 20 + 2 = 22 \text{ ns}$$

$$n = 20$$

$$528$$

$$k = 6$$

$$5, 4, 12, 6, 10, 3$$

$$t_p = 14 \text{ nsec}$$

$$h = 20$$

$$350$$

$$1.51$$

$$\frac{528}{350} = 1.518$$

▲ 1 • Asked by Prajjwal19...

sir please explain this

Question 2

-0.66 MARKS

Your Time Taken: 5m 48s

Avg Time Taken By Others: 2m 23s

Attempt Accuracy: 73%

In paged memory management, the page sharing between 2 processes is implemented by?

Sharing the entire page tables

Loading separate copy of shared page for each process

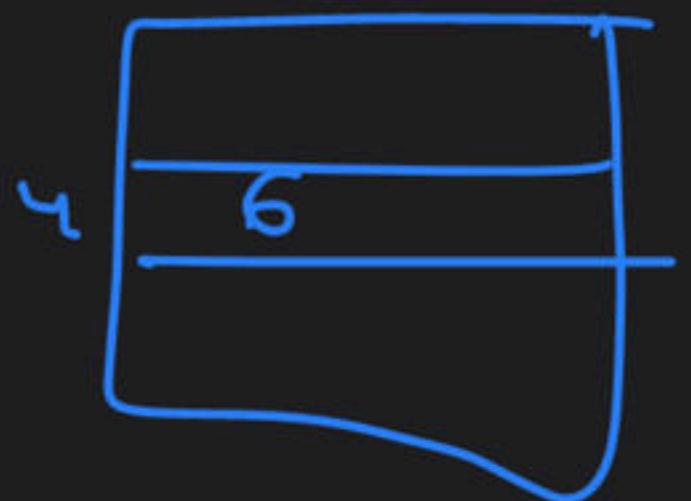
INCORRECT

Virtual Memory technique

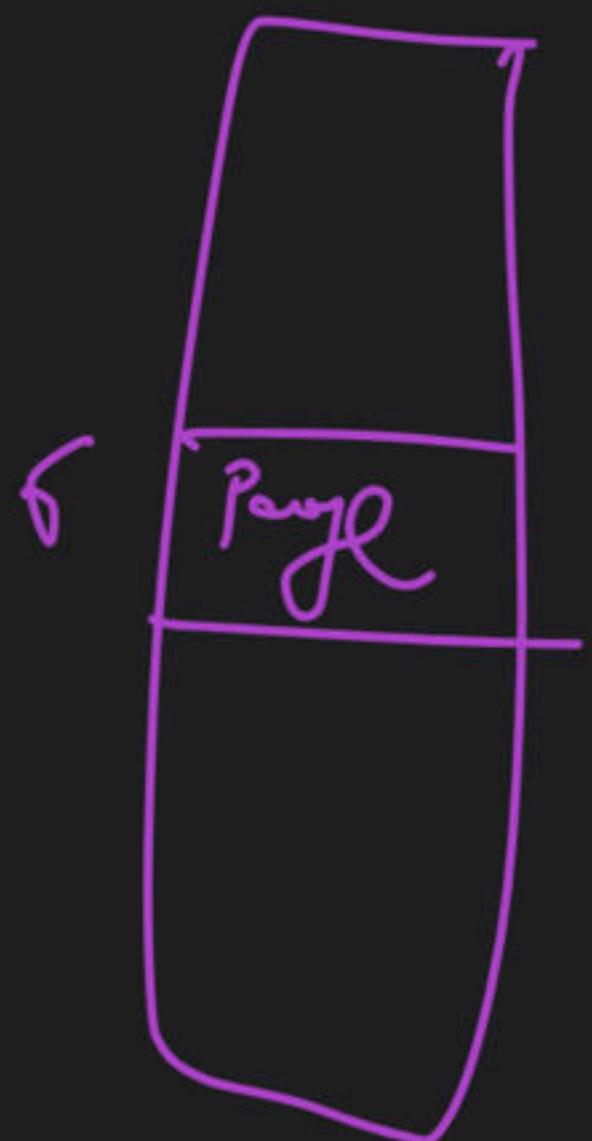
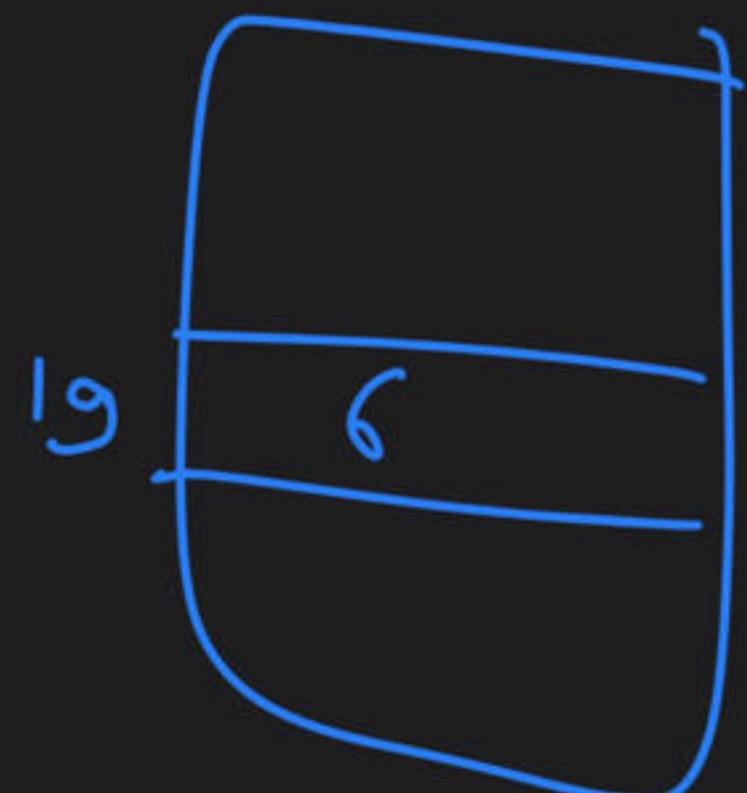
Having some page table entries pointing to same frame in main memory

CORRECT ANSWER

Prajjwal P1

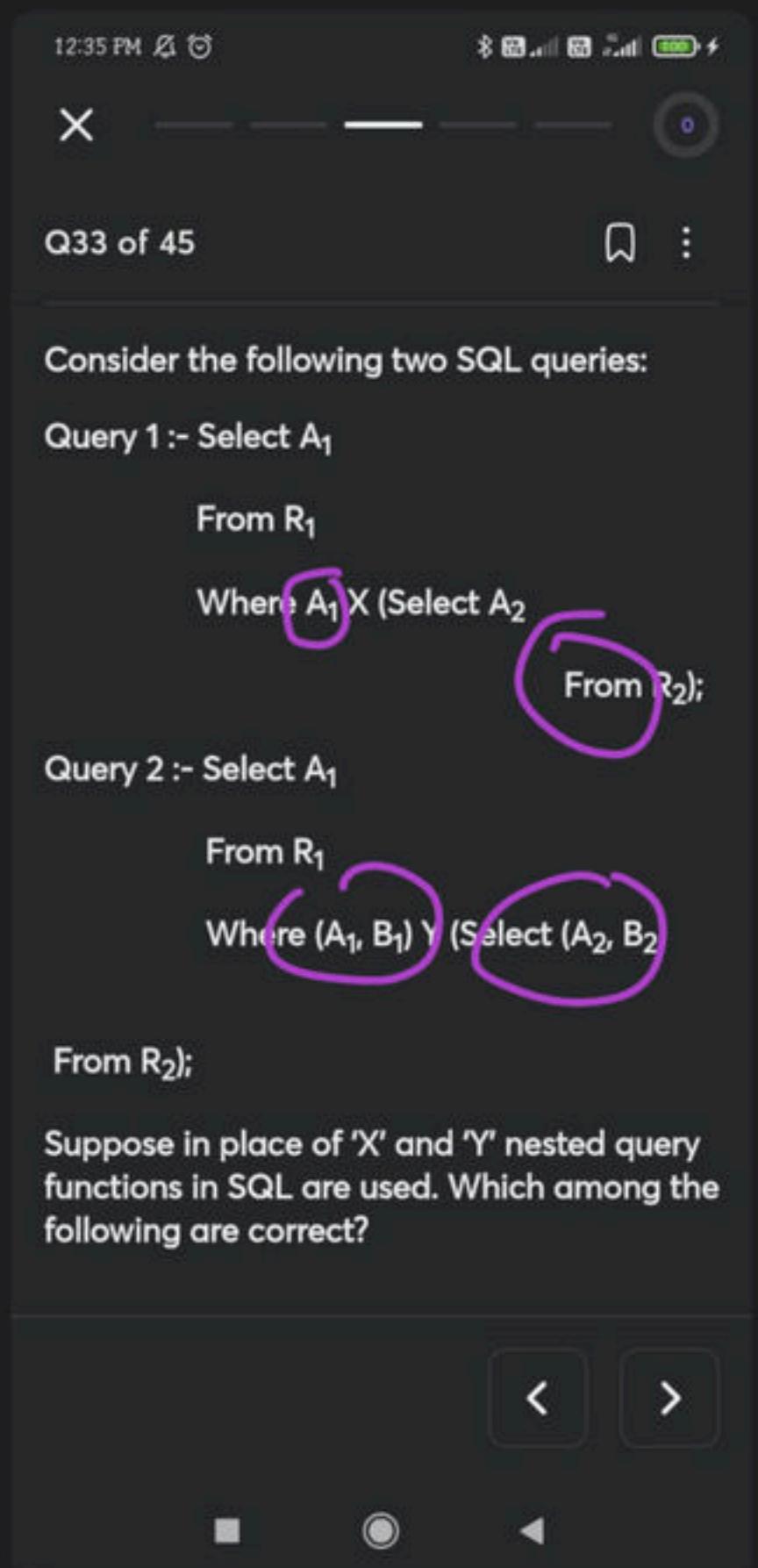


P2



▲ 1 • Asked by Kumar

Please help me with this doubt



$x \rightarrow \infty$

$$\begin{array}{c} A \\ \hline B \end{array}$$

$$\frac{A_2}{1} \quad \frac{D_2}{4}$$

▲ 1 • Asked by Aditi

Sir, if in itemp 2nd null is written as Null / NULL then what will distinct itemp return ?

2 : 30 PM

Tom.

NULL In RDBMS

```
SELECT *  
FROM itemmaster  
WHERE itemp is NOT NULL
```

item	itemp
1	2
2	4
3	null
4	null

PyQ
discussion

▲ 1 • Asked by Kumar

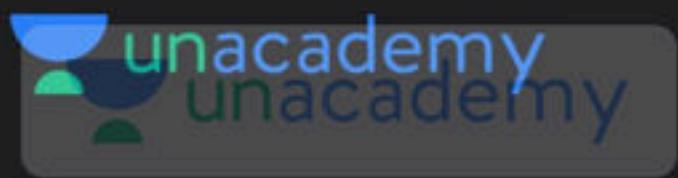
Please help me with this doubt

Consider a process management system which is executing n processes. During a certain span of time it executed all n processes in round robin manner with time slice of t units. Consider there is no any IO requirement of any process. It has been observed that all the processes were having their remaining CPU burst time $b=t$ during that span. The process management system of OS takes 0.1 nanoseconds as context switch time, and before that 0.02 nanoseconds for selecting next process to run. Assume that if there are $n=500$ processes and value of $t = 1\text{ns}$, then maximum percentage of time available of process execution is _____ % (nearest integer value) during this span of time?

Note: Ignore context switches, scheduling delay before first execution and after last execution

$$\frac{500}{Total}$$

$$Total = 500 \text{ sec} \left| \begin{array}{l} 499 \times 0.1 \\ + 6.02 \end{array} \right.$$



▲ 1 • Asked by Kumar

Please help me with this doubt

12:51 PM

Battery

X Solutions

Suppose in place of 'X' and 'Y' nested query functions in SQL are used. Which among the following are correct?

- A Both 'X' and 'Y' can be replaced by 'IN' function.
- B Both 'X' and 'Y' can be replaced by 'ANY' function
- C 'X' can be replaced by 'IN' function and 'Y' can be replaced by 'ANY' function.
- D 'X' can be replaced by 'ANY' function and 'Y' can be replaced by 'IN' function.

'IN' and 'ANY' are nested query functions in SQL.

'IN' can be used for one or more than one attributes equality condition.

Continue practicing

▲ 1 • Asked by Divya

Select country from(Select country,count(*) 'count' from customers group by country) where count=1; sir yeh 4th ques ke liye shi h query?

▲ 1 • Asked by Shreyas

Sir ans 38 aaraha hai ,can you help me with this ?

Consider a database with three relation instances shown below. The primary keys for the Drivers and Cars relation are *did* and *cid* respectively and the records are stored in ascending order of these primary keys as given in the tables. No indexing is available in the database.

D: Drivers relation

did	dname	rating	age
22	Karthikeyan	7	25
29	Salman	1	33
31	Boris	8	55
32	Amoldt	8	25
58	Schumacher	10	35
64	Sachin	7	35
71	Senna	10	16
74	Sachin	9	35
85	Rahul	3	25
95	Ralph	3	53

R: Reserves relation

did	Cid	day
22	101	10 - 10 - 06
22	102	10 - 10 - 06
22	103	08 - 10 - 06
22	104	07 - 10 - 06
31	102	10 - 11 - 16
31	103	06 - 11 - 16
31	104	12 - 11 - 16
64	101	05 - 09 - 06
64	102	08 - 09 - 06
74	103	08 - 09 - 06

C: Cars relation

Cid	Cname	colour
101	Renault	blue
102	Renault	red
103	Ferrari	green
104	Jaguar	red

```

select D.dname
from Drivers D
where D.did in (
    select R.did
    from Cars C, Reserves R
    where R.cid = C.cid and C.colour = 'red'
    intersect
    select R.did
    from Cars C, Reserves R
    where R.cid = C.cid and C.colour = 'green'
)

```

Let n be the number of comparisons performed when the above SQL query is optimally executed. If linear search is used to locate a tuple in a relation using primary key, then n lies in the range:

▲ 2 • Asked by Shreyas

Sir what is throughput in context of disc scheduling and which algo give best ?

▲ 1 • Asked by Shreyas

Please help me with this doubt

of the blocks and the size of the address
(d) None of the above

- 5.14 Using a larger block size in a fixed block size file system leads to [2002 : 2 Marks]
- (a) better disk throughput but poorer disk space utilization
 - (b) better disk throughput and better disk space utilization
 - (c) poorer disk throughput but better disk space utilization
 - (d) poorer disk throughput and poorer disk space utilization

[2003 : 1 Mark]

- 5.15 A Unix-style I-node has 10 direct pointers and one single, one double and one triple indirect pointers. Disk block size is 1 Kbyte, disk block address is 32 bits, and 48-bit integers are used.

5.18 In a

1105

1264

files

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