**Name: Mahasri M**

**CASE STUDY 2**

**Table creation:**

CREATE TABLE regions (rid int primary key, rname varchar(15));

INSERT INTO regions VALUES (1, 'India');

INSERT INTO regions VALUES (2, 'Nepal');

INSERT INTO regions VALUES (3, 'China');

INSERT INTO regions VALUES (4, 'Bhutan');

INSERT INTO regions VALUES (5, 'Russia');

SELECT \* FROM regions;

CREATE TABLE customer\_nodes (cid int primary key, rid int, node\_id int, starting\_date date , ending\_date date

CONSTRAINT FK\_cust\_id foreign key (rid) references regions(rid));

INSERT INTO customer\_nodes VALUES (101, 1, 5,'2023/01/23', '2023/02/20');

INSERT INTO customer\_nodes VALUES (102, 2, 3,'2023/02/01', '2023/02/28');

INSERT INTO customer\_nodes VALUES (103, 3, 2,'2023/03/01', '2023/03/20');

INSERT INTO customer\_nodes VALUES (104, 4, 4,'2023/01/03', '2023/02/05');

INSERT INTO customer\_nodes VALUES (105, 5, 1,'2023/01/12', '2023/02/09');

INSERT INTO customer\_nodes VALUES (106, 1, 3,'2023/02/13', '2023/02/28');

INSERT INTO customer\_nodes VALUES (107, 2, 5,'2023/03/12', '2023/03/19');

SELECT \* FROM customer\_nodes;

CREATE TABLE customer\_transaction (cid int, tdate date, ttype varchar(20),tamount int,

CONSTRAINT FK\_CUST\_TRANS FOREIGN KEY (cid) REFERENCES customer\_nodes(cid));

INSERT INTO customer\_transaction VALUES (101, '2023/02/01','withdraw', 8000);

INSERT INTO customer\_transaction VALUES (102, '2023/02/10','deposit', 5500);

INSERT INTO customer\_transaction VALUES (103, '2023/03/13','withdraw', 4800);

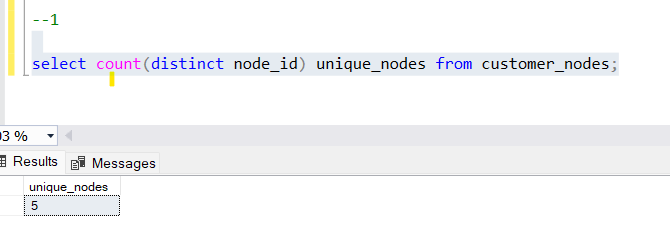
INSERT INTO customer\_transaction VALUES (104, '2023/02/01','withdraw', 6700);

INSERT INTO customer\_transaction VALUES (105, '2023/01/29','deposit', 5550);

SELECT \* FROM customer\_transaction;

**1. How many unique nodes are there on the Data Bank system?**

select count(distinct node\_id) unique\_nodes from customer\_nodes;

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**2. What is the number of nodes per region?**

select n.rid,r.rname,

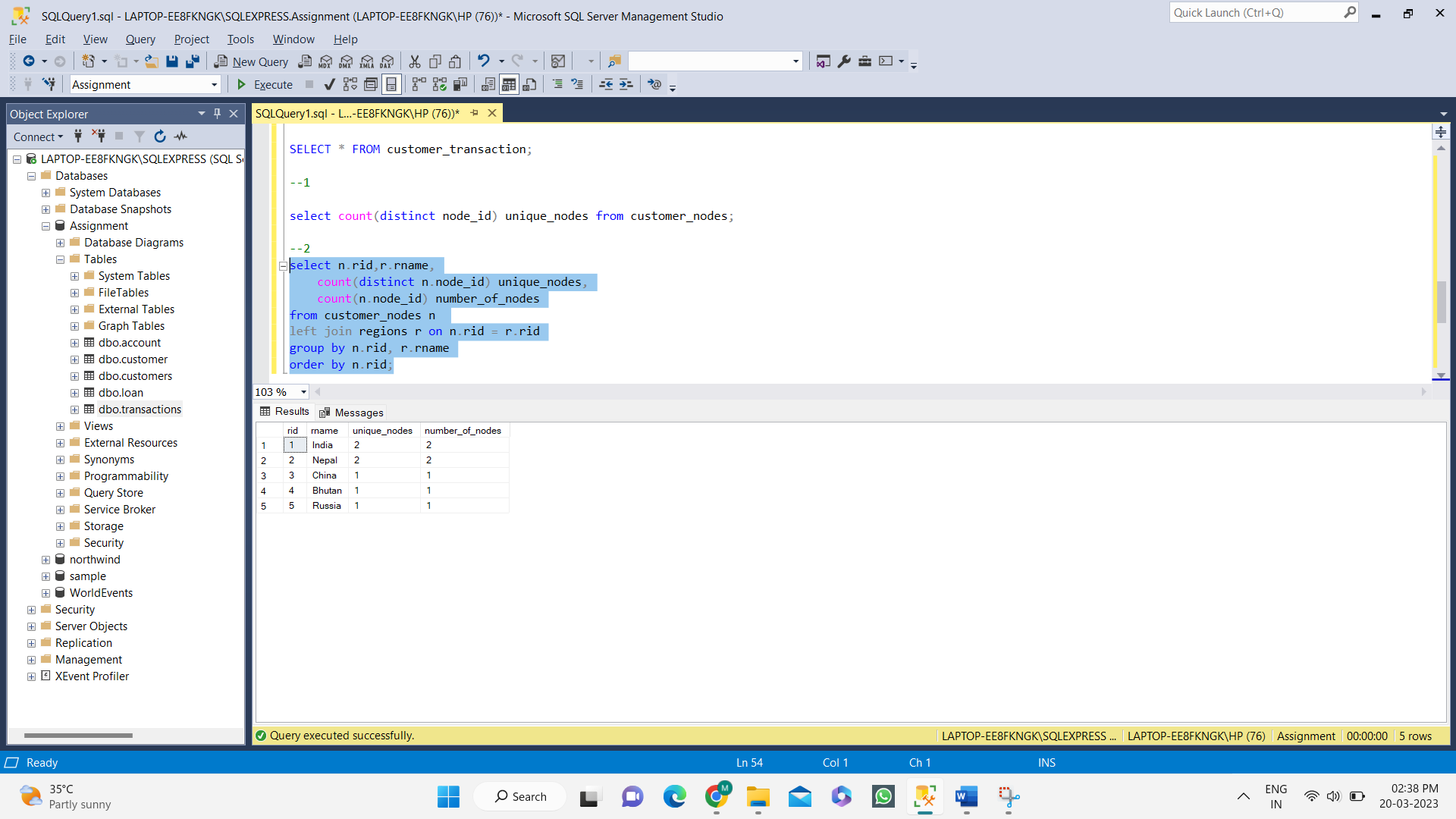
count(distinct n.node\_id) unique\_nodes,

count(n.node\_id) number\_of\_nodes

from customer\_nodes n

left join regions r on n.rid = r.rid

group by n.rid, r.rname

order by n.rid;

**3. How many customers are allocated to each region?**

select r.rname,

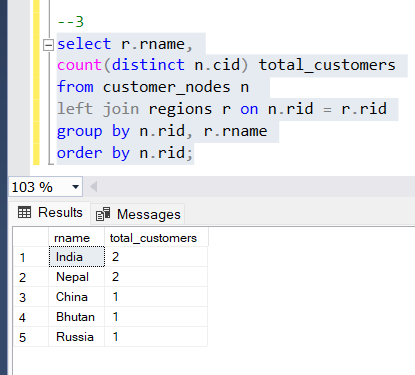
count(distinct n.cid) total\_customers

from customer\_nodes n

left join regions r on n.rid = r.rid

group by n.rid, r.rname

order by n.rid;

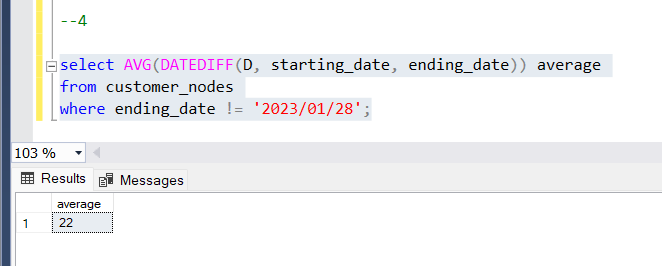
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**4. How many days on average are customers reallocated to a different node?**

select AVG(DATEDIFF(D, starting\_date, ending\_date)) average

from customer\_nodes

where ending\_date != '2023/01/28';

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**6. What is the unique count and total amount for each transaction type?**

select ttype,

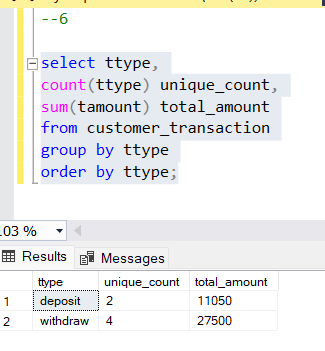
count(ttype) unique\_count,

sum(tamount) total\_amount

from customer\_transaction

group by ttype

order by ttype;

****

**7. What is the average total historical deposit counts and amounts for all customers?**

WITH cte\_deposit AS (

SELECT cid,

COUNT(ttype) AS deposit\_count,

SUM(tamount) AS deposit\_amount

FROM customer\_transaction

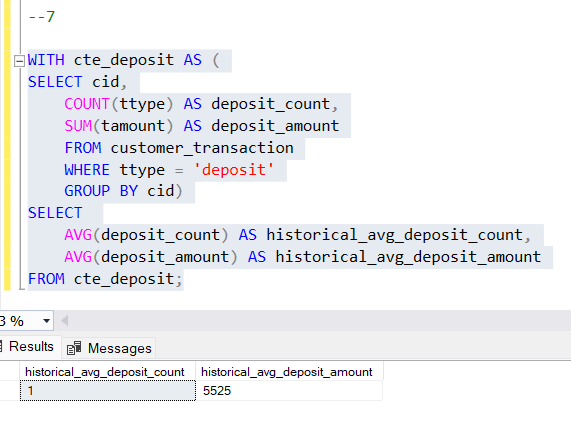
WHERE ttype = 'deposit'

GROUP BY cid)

SELECT

AVG(deposit\_count) AS historical\_avg\_deposit\_count,

AVG(deposit\_amount) AS historical\_avg\_deposit\_amount

****FROM cte\_deposit;

**8. For each month - how many Data Bank customers make more than 1 deposit and either 1 purchase or 1 withdrawal in a single month?**

select n.cid,

DATEPART(M, t.tdate) month\_id,

DATENAME(M, t.tdate) month\_name,

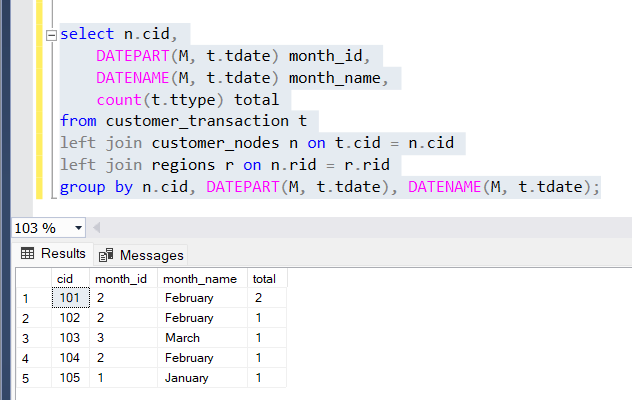
count(t.ttype) total

from customer\_transaction t

left join customer\_nodes n on t.cid = n.cid

left join regions r on n.rid = r.rid

group by n.cid, DATEPART(M, t.tdate), DATENAME(M, t.tdate);

****

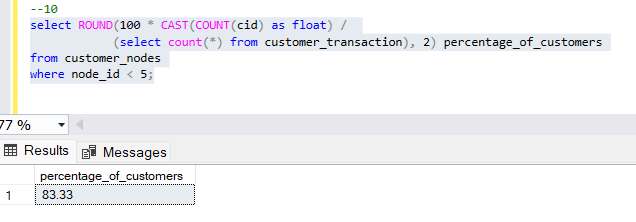
**10) What is the percentage of customers who increase their closing balance by more than 5%?**

select ROUND(100 \* CAST(COUNT(cid) as float) /

(select count(\*) from customer\_transaction), 2) percentage\_of\_customers

from customer\_nodes

where node\_id < 5;

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**ER DIAGRAM:**

