

0.1 Truy vấn dữ liệu

0.1.1 MulticarAddress

Yêu cầu truy vấn: Tìm ra đại diện của hộ gia đình đang trong thời hạn hưởng chính sách bảo hiểm. Hộ gia đình được xác định bởi nhóm các khách hàng có cùng AddressId(số lượng lớn hơn 1).

Câu lệnh:

```
USE nguyenhieu;
SELECT
    CustomerID,
    Title,
    FName AS FirstName,
    LName AS LastName,
    EmailAddress,
    TelephoneNumber,
    VehicleReg,
    HouseNumber,
    PostCode,
    Price AS 'Price($)'
From customer
LEFT JOIN policy ON customer.ID = policy.CustomerID
LEFT JOIN address ON customer.AddressID = address.ID
WHERE CURDATE() BETWEEN PolicyStartDate AND PolicyEndDate
AND AddressID IN (
    SELECT customer.AddressID
    FROM customer
    GROUP BY AddressID
    HAVING COUNT(AddressID) > 1
)
ORDER BY CustomerID;
```

Kết quả dữ liệu:

	CustomerID	Title	FirstName	LastName	EmailAddress	TelephoneNumber	VehicleReg	HouseNumber	PostCode	Price(\$)
▶	3	Mr.	Akeem	Graham	viola85@example.org	1-817-384-1168	uu26dpj	196	pz728ly	1138
	5	Prof.	Mikel	Runolfsdottir	webster61@example.com	(149)298-5357	xp90ggv	34	bx986eh	948
	9	Prof.	Jairo	Jacobs	yhoeger@example.net	08155297980	nv85bbi	132	np709se	1824
	10	Dr.	Flavie	Abshire	mathias.simonis@example.org	611.954.2066	np62ivu	60	tk538lq	503
	11	Mrs.	Adalberto	Rice	daniella24@example.org	433-423-4870x31	qu93ars	44	jl058yb	1173
	12	Dr.	Joany	Ritchie	lockman.tyrell@example.net	992.066.8610x64	pp81xfi	137	nv916ms	567
	14	Mr.	Antonieta	Krajcik	gutmann.maurine@example.com	115.818.1089x63	qn56nvl	10	jq406tm	1770
	16	Mr.	Leslie	Schinner	earline89@example.com	149-063-7331	kt25jte	85	ll582aa	827
	16	Mr.	Leslie	Schinner	earline89@example.com	149-063-7331	yvw61suh	85	ll582aa	1520
	17	Mr.	Vivien	Borer	horacio.schimmel@example.org	(736)023-9209	ny27eop	114	uq415gs	715
	18	Ms.	Gisselle	Erdman	gkessler@example.net	1-119-754-7264x	lb04eat	73	wg628mh	1241
	19	Mr.	Jose	Graham	virginia.prohaska@example.com	(258)486-0209	uq28wrc	65	cz663oa	803
	19	Mr.	Jose	Graham	virginia.prohaska@example.com	(258)486-0209	yp05iqc	65	cz663oa	812
	22	Ms.	Alf	White	mckenzie51@example.org	156.475.0411	wz55dja	144	gz900ol	1880
	22	Ms.	Alf	White	mckenzie51@example.org	156.475.0411	fb08lvi	144	gz900ol	1118
	26	Dr.	Lionel	Harber	fbalsterri@example.net	484-121-5559x99	au66mqz	193	rk725bn	1360

Result 1 x

0.1.2 MultiPolicyBenefits

Yêu cầu truy vấn: Lấy ra danh sách những chính sách bảo hiểm có cùng hiệu lực ở thời điểm hiện tại của từng khách hàng.

Câu lệnh:

```

SELECT
    x.pol1 AS PolicyID,
    x.cus1 AS CustomerID,
    x.pol2 AS PolicyID2,
    x.cus2 AS CustomerID2
FROM(
    SELECT
        P1.ID AS pol1,
        P1.CustomerID AS cus1,
        P1.PolicyStartDate,
        P1.PolicyEndDate,
        P2.CustomerID AS cus2,
        P2.ID AS pol2
    FROM policy AS P1, policy AS P2
    WHERE P1.ID < P2.ID
    AND P1.PolicyStartDate BETWEEN P2.PolicyStartDate AND
        P2.PolicyEndDate
    OR P1.PolicyEndDate BETWEEN P2.PolicyStartDate AND
        P2.PolicyEndDate
)AS X
WHERE pol1 <> pol2
AND cus1 = cus2
AND CURDATE() BETWEEN X.PolicyStartDate AND X.PolicyEndDate;

```

Kết quả dữ liệu:

	PolicyID	CustomerID	PolicyID2	CustomerID2
►	9	179414	79626	179414
	13	48509	196330	48509
	16	90323	145509	90323
	17	89042	121298	89042
	21	40437	185231	40437
	33	6626	106719	6626
	33	6626	111184	6626
	33	6626	182867	6626
	35	171765	10569	171765
	36	134643	29335	134643
	39	36968	164670	36968
	40	154966	85497	154966

Result 2 ×

0.1.3 PriceCalculation

Yêu cầu truy vấn: Tính chi phí bảo hiểm của tất cả các chính sách.

Câu lệnh:

```

SELECT DISTINCT
    PolicyID,
    BasePrice,
    Metric,
    ROUND(((Baseprice/100*metric)/100)*(‘PaymentTypePercentageChange(%)’+100),2)
        as 'totalPrice($)'
FROM (
    SELECT DISTINCT
        PolicyID,
        (x.VehicleValue / 100) * 25 AS BasePrice,
        (EngineClass + OccupationClass + AgeClass +

```

```

        VehicleModClass + MedicalConditionClass)+100 AS
        Metric,
        'PaymentTypePercentageChange(%)'
FROM (
    SELECT
        policy.ID AS PolicyID,
        Fname,
        VehicleReg,
        VehicleValue,
        CASE
            WHEN EngineCC BETWEEN 1000 AND 1199 THEN 0
            WHEN EngineCC BETWEEN 1200 AND 1399 THEN 10
            WHEN EngineCC BETWEEN 1400 AND 1599 THEN 20
            WHEN EngineCC BETWEEN 1600 AND 1799 THEN 30
            WHEN EngineCC BETWEEN 1800 AND 1999 THEN 40
            WHEN EngineCC BETWEEN 2000 AND 2199 THEN 50
            WHEN EngineCC BETWEEN 2200 AND 2399 THEN 60
            WHEN EngineCC BETWEEN 2400 AND 2599 THEN 70
            WHEN EngineCC BETWEEN 2600 AND 2799 THEN 80
            WHEN EngineCC BETWEEN 2800 AND 2999 THEN 90
            WHEN EngineCC BETWEEN 3000 AND 3199 THEN 100
            WHEN EngineCC BETWEEN 3200 AND 3399 THEN 110
            WHEN EngineCC BETWEEN 3400 AND 3599 THEN 120
            WHEN EngineCC BETWEEN 3600 AND 3799 THEN 130
            WHEN EngineCC BETWEEN 3800 AND 3999 THEN 140
            ELSE 200
        END AS EngineClass,
        CASE
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                <= 16 THEN 30
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                BETWEEN 17 AND 19 THEN 30
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                BETWEEN 20 AND 25 THEN 20
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                BETWEEN 26 AND 29 THEN 10
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                BETWEEN 30 AND 35 THEN 0
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                BETWEEN 35 AND 39 THEN -10
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
                BETWEEN 40 AND 49 THEN -20
            WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)

```

```

        BETWEEN 50 AND 59 THEN -30
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365)
        BETWEEN 60 AND 90 THEN 20
    ELSE 0
END AS AgeClass,
Modifier AS OccupationClass,
CASE
    WHEN SUM(Points) > 1 THEN SUM(Points)
    ELSE 0
END AS VehicleModClass,
CASE
    WHEN MedicalCondition = 'No' THEN 0
    WHEN MedicalCondition = 'Yes' THEN 10
    ELSE 20
END AS MedicalConditionClass,
CASE
    WHEN PaymentType = 'Annual' THEN 0
    WHEN PaymentType = 'Monthly' THEN 20
    ELSE 10
END AS 'PaymentTypePercentageChange(%)'
FROM vehicle
JOIN policy ON vehicle.Registration =
    policy.VehicleReg
JOIN customer ON policy.CustomerID = customer.ID
JOIN occupation ON customer.Occupation = occupation.ID
LEFT JOIN mod_vehicle ON vehicle.Registration =
    mod_vehicle.Reg
LEFT JOIN 'mod' ON mod_vehicle.VehicleMod = 'mod'.ID
GROUP BY PolicyID
) AS X
) AS Y
WHERE PolicyID BETWEEN 10000 AND 20000;

```

Kết quả dữ liệu:

	PolicyID	BasePrice	Metric	totalPrice(\$)
▶	10000	297.7500	180	589.55
	10001	147.2500	141	207.62
	10002	1423.5000	127	1988.63
	10003	948.5000	204	2128.43
	10004	1489.5000	219	3262.01
	10005	2097.5000	206	4752.94
	10006	787.5000	184	1449.00
	10007	2033.0000	226	5054.04
	10008	219.7500	150	362.59
	10009	1843.7500	187	3447.81
	10010	1838.7500	163	3296.88
	10011	1776.0000	162	3164.83

Result 3 x

0.1.4 ProfitsByFiscalYear

Yêu cầu truy vấn: Nhóm theo các năm, số tiền phải trả cho khách hàng và lợi nhuận.

Câu lệnh:

```

SELECT
    sales.FinancialYear,
    sales.Gross,
    CASE
        WHEN expenses.expense IS NULL THEN 0
        ELSE expenses.expense
    END AS AmountSpentOnClaims,
    CASE
        WHEN sales.gross - expenses.expense IS NULL THEN

```

```

        sales.gross
    ELSE sales.gross - expenses.expense
END AS 'Profit/Loss ($)'
FROM (
    SELECT
        CASE
            WHEN MONTH(policy.PolicyStartDate) >= 6
            THEN concat(YEAR(policy.PolicyStartDate), ' to ',
                YEAR(policy.PolicyStartDate) + 1)
            ELSE concat(YEAR(policy.PolicyStartDate) - 1, ' to ',
                YEAR(policy.PolicyStartDate))
        END AS FinancialYear,
        SUM(policy.Price) AS Gross
    FROM policy
    GROUP BY FinancialYear
) AS sales
LEFT JOIN (
    SELECT
        CASE
            WHEN MONTH(claim.DatePaid) >= 6
            THEN CONCAT(YEAR(claim.DatePaid), ' to ',
                YEAR(claim.DatePaid) + 1)
            ELSE CONCAT(YEAR(claim.DatePaid)-1,' to ',
                YEAR(claim.DatePaid))
        END AS FinancialYear,
        SUM(claim.AmountPaidOut) AS expense
    FROM claim
    GROUP BY FinancialYear
    HAVING FinancialYear IS NOT NULL
) AS expenses ON expenses.FinancialYear = sales.FinancialYear;

```

Kết quả dữ liệu:

	FinancialYear	Gross	AmountSpentOnClaims	Profit/Loss (\$)
►	2018 to 2019	49925861	0	49925861
	2020 to 2021	46472570	4274600	42197970
	2016 to 2017	49929158	0	49929158
	2017 to 2018	50158635	0	50158635
	2019 to 2020	50033904	0	50033904
	2015 to 2016	3509966	0	3509966

0.1.5 UpcomingRenewals

Yêu cầu truy vấn: Số ngày còn lại cho đến hạn cuối của chính sách bảo hiểm của mỗi khách hàng

Câu lệnh:

```
SELECT
    Title,
    FName AS 'First Name',
    LName AS 'Last Name',
    EmailAddress,
    TelephoneNumber,
    DATE_FORMAT(CURDATE(), '%d/%m/%Y') AS 'Today Date',
    DATE_FORMAT(PolicyEndDate, '%d/%m/%Y') AS 'Policy End
        Date',
    DATEDIFF(PolicyEndDate, CURDATE()) AS 'Days left',
    policy.ID AS PolicyID,
    VehicleReg
FROM customer
LEFT JOIN policy ON customer.ID = policy.CustomerID
WHERE PolicyEndDate BETWEEN CURDATE() AND DATE_ADD(NOW(),
    INTERVAL 30 DAY);
```

Kết quả dữ liệu:

	Title	First Name	Last Name	EmailAddress	TelephoneNumber	Today Date	Policy End Date	Days left	PolicyID	VehicleReg
▶	Dr.	Danielle	King	gregg29@example.com	1-273-979-5717	17/08/2021	15/09/2021	29	28	ye31tev
	Prof.	Howell	Runolfsson	misty08@example.org	1-969-035-2747x	17/08/2021	09/09/2021	23	31	kt62udm
	Dr.	Sabrina	Labadie	upfeffer@example.org	+83(8)034555879	17/08/2021	28/08/2021	11	114	wq63mbz
	Prof.	Damian	Hermann	gutmann.shemar@example.com	+11(8)798858297	17/08/2021	29/08/2021	12	169	zd96dat
	Miss	Oral	VonRueden	luettgen.anahi@example.org	(198)543-2353x8	17/08/2021	30/08/2021	13	212	va00snc
	Mrs.	Thalia	Rowe	gertrude20@example.com	834.787.9069	17/08/2021	03/09/2021	17	238	ib14tyq
	Dr.	Caroline	Shields	pbashirian@example.org	1-925-953-0023	17/08/2021	05/09/2021	19	269	jv67bxi
	Prof.	Zita	Little	tania97@example.com	+29(6)569748969	17/08/2021	01/09/2021	15	282	pt59cto
	Dr.	Gunner	Gaylord	oceane69@example.org	05783992586	17/08/2021	15/09/2021	29	331	hn52tfw
	Dr.	Effie	Johnston	rempe.julie@example.net	676-305-2516x28	17/08/2021	27/08/2021	10	381	tu29wjl
	Prof.	Marie	Funk	lorenza01@example.org	421.387.0163x57	17/08/2021	05/09/2021	19	433	zp65psc
	Dr.	Daniald	Torn	randall00@example.net	1-778-151-8607	17/08/2021	03/09/2021	17	514	uuu3tknk

0.2 Tối ưu truy vấn

0.2.1 Index

Câu lệnh truy vấn:

```
SELECT
    policy.ID AS PolicyID,
```



```

Fname,
VehicleReg,
VehicleValue,
CASE
  WHEN EngineCC BETWEEN 1000 AND 1199 THEN 0
  WHEN EngineCC BETWEEN 1200 AND 1399 THEN 10
  WHEN EngineCC BETWEEN 1400 AND 1599 THEN 20
  WHEN EngineCC BETWEEN 1600 AND 1799 THEN 30
  WHEN EngineCC BETWEEN 1800 AND 1999 THEN 40
  WHEN EngineCC BETWEEN 2000 AND 2199 THEN 50
  WHEN EngineCC BETWEEN 2200 AND 2399 THEN 60
  WHEN EngineCC BETWEEN 2400 AND 2599 THEN 70
  WHEN EngineCC BETWEEN 2600 AND 2799 THEN 80
  WHEN EngineCC BETWEEN 2800 AND 2999 THEN 90
  WHEN EngineCC BETWEEN 3000 AND 3199 THEN 100
  WHEN EngineCC BETWEEN 3200 AND 3399 THEN 110
  WHEN EngineCC BETWEEN 3400 AND 3599 THEN 120
  WHEN EngineCC BETWEEN 3600 AND 3799 THEN 130
  WHEN EngineCC BETWEEN 3800 AND 3999 THEN 140
  ELSE 200
END AS EngineClass,
CASE
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) <= 16 THEN 30
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 17
    AND 19 THEN 30
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 20
    AND 25 THEN 20
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 26
    AND 29 THEN 10
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 30
    AND 35 THEN 0
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 35
    AND 39 THEN -10
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 40
    AND 49 THEN -20
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 50
    AND 59 THEN -30
  WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN 60
    AND 90 THEN 20
  ELSE 0
END AS AgeClass,
Modifier AS OccupationClass,
CASE

```

```

        WHEN SUM(Points) > 1 THEN SUM(Points)
        ELSE 0
    END AS VehicleModClass,
CASE
    WHEN MedicalCondition = 'No' THEN 0
    WHEN MedicalCondition = 'Yes' THEN 10
    ELSE 20
END AS MedicalConditionClass,
CASE
    WHEN PaymentType = 'Annual' THEN 0
    WHEN PaymentType = 'Monthly' THEN 20
    ELSE 10
END AS 'PaymentTypePercentageChange(%)'
FROM vehicle
JOIN policy ON vehicle.Registration = policy.VehicleReg
JOIN customer ON policy.CustomerID = customer.ID
JOIN occupation ON customer.Occupation = occupation.ID
LEFT JOIN mod_vehicle ON vehicle.Registration = mod_vehicle.Reg
LEFT JOIN 'mod' ON mod_vehicle.VehicleMod = 'mod'.ID
WHERE
    VehicleValue BETWEEN 5000 AND 8000
GROUP BY PolicyID;

```

Trước khi thêm index:

The screenshot shows the MySQL Workbench interface with the 'EXPLAIN' output for the query. The 'EXPLAIN' output is as follows:

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	vehicle		range	PRIMARY_vlue_engineCC	vlue_engineCC	4		1	100.00	Using where; Using index; Using temporary
1	SIMPLE	mod_vehicle		ref	Mod_Vehicle_Vehicle_Reg	Mod_Vehicle_Vehicle_Reg	34	test.vehicle.Registration	1	100.00	
1	SIMPLE	policy		ref	PRIMARY_Policy_Customer_ID_Policy_Vehicle_Reg	Policy_Vehicle_Reg	34	test.vehicle.Registration	2	100.00	
1	SIMPLE	mod		eq_ref	PRIMARY	PRIMARY	4	test.mod_vehicle.VehicleMod	1	100.00	
1	SIMPLE	customer		eq_ref	PRIMARY_customer_occupation	PRIMARY	4	test.policy.CustomerID	1	100.00	
1	SIMPLE	occupation		eq_ref	PRIMARY	PRIMARY	4	test.customer.Occupation	1	100.00	

The 'Output' tab shows the execution plan for the query. The 'Action' column shows the sequence of operations: 'SELECT policy.ID AS PolicyID', 'EXPLAIN SELECT policy.ID AS PolicyID', 'EXPLAIN SELECT policy.ID AS PolicyID', 'ALTER TABLE vehicle DROP INDEX enginecc_vlue', 'CREATE INDEX vlue_engineCC ON vehicle(VehicleValue, EngineCC)', 'SELECT policy.ID AS PolicyID', and 'EXPLAIN SELECT policy.ID AS PolicyID'. The 'Duration / Fetch' column shows the time taken for each operation, with the final 'EXPLAIN' operation taking 0.000 sec / 0.000 sec.

Sau khi thêm index:

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

SQL File 16" SQL File 20" SQL File 21" %

Limit to 500 rows

EXPLAIN SELECT

```

1 policy.ID AS PolicyID,
2 FName,
3 VehicleReg,
4 VehicleValue,
5 CASE
6 
```

Result Grid

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	vehicle		index	PRIMARY	enginecc_valu	8		62999	11.11	Using where; Using index; Using temporary
1	SIMPLE	mod_vehicle		ref	Mod_vehicle_Vehicle_Reg	PRIM_Vehicle_Reg	34	test.vehicle.Registration	1	100.00	
1	SIMPLE	mod		eq_ref	PRIMARY		4	test.mod_vehicle.VehicleMod	1	100.00	
1	SIMPLE	policy		ref	PRIMARY_Policy_Customer_ID_Policy_Vehicle_Reg	Policy_Vehicle_Reg	34	test.vehicle.Registration	2	100.00	
1	SIMPLE	customer		eq_ref	PRIMARY_customer_occupation	PRIMARY	4	test.policy.CustomerID	1	100.00	
1	SIMPLE	occupation		eq_ref	PRIMARY		4	test.customer.Occupation	1	100.00	

Result 17

Output

Action Output

Time	Action	Message	Duration / Fetch
6 22:32:40	EXPLAIN SELECT policy ID AS PolicyID,	Frame, VehicleReg, VehicleValue, ...	6 row(s) returned
7 22:32:51	EXPLAIN SELECT policy ID AS PolicyID,	Frame, VehicleReg, VehicleValue, ...	6 row(s) returned
8 22:32:52	EXPLAIN SELECT policy ID AS PolicyID,	Frame, VehicleReg, VehicleValue, ...	6 row(s) returned
9 22:33:43	ALTER TABLE vehicle DROP INDEX enginecc_valu	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.047 sec
10 22:33:53	CREATE INDEX enginecc_valu ON vehicle(enginecc, VehicleValue)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.921 sec
11 22:34:03	SELECT policy ID AS PolicyID,	Frame, VehicleReg, VehicleValue, CASE W...	500 row(s) returned
12 22:35:15	EXPLAIN SELECT policy ID AS PolicyID,	Frame, VehicleReg, VehicleValue, ...	6 row(s) returned

Object Info Session

Query Completed

0.2.2 Partition

Câu lệnh truy vấn

```

EXPLAIN SELECT
    PolicyID,
    FName,
    PolicyStartDate,
    YearsNCB
FROM part_Table
JOIN policy ON part_table.PolicyID = policy.ID
WHERE EngineClass IN (10, 50, 80, 140);

```

Bảng để partition:

```

CREATE TABLE part_Table
SELECT
    policy.ID AS PolicyID,
    FName,
    VehicleReg,
    VehicleValue,
CASE
    WHEN EngineCC BETWEEN 1000 AND 1199 THEN 0
    WHEN EngineCC BETWEEN 1200 AND 1399 THEN 10
    WHEN EngineCC BETWEEN 1400 AND 1599 THEN 20
    WHEN EngineCC BETWEEN 1600 AND 1799 THEN 30
    WHEN EngineCC BETWEEN 1800 AND 1999 THEN 40

```

```

    WHEN EngineCC BETWEEN 2000 AND 2199 THEN 50
    WHEN EngineCC BETWEEN 2200 AND 2399 THEN 60
    WHEN EngineCC BETWEEN 2400 AND 2599 THEN 70
    WHEN EngineCC BETWEEN 2600 AND 2799 THEN 80
    WHEN EngineCC BETWEEN 2800 AND 2999 THEN 90
    WHEN EngineCC BETWEEN 3000 AND 3199 THEN 100
    WHEN EngineCC BETWEEN 3200 AND 3399 THEN 110
    WHEN EngineCC BETWEEN 3400 AND 3599 THEN 120
    WHEN EngineCC BETWEEN 3600 AND 3799 THEN 130
    WHEN EngineCC BETWEEN 3800 AND 3999 THEN 140
    ELSE 200
END AS EngineClass,
CASE
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) <= 16
        THEN 30
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        17 AND 19 THEN 30
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        20 AND 25 THEN 20
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        26 AND 29 THEN 10
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        30 AND 35 THEN 0
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        35 AND 39 THEN -10
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        40 AND 49 THEN -20
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        50 AND 59 THEN -30
    WHEN FLOOR(DATEDIFF(PolicyStartDate, DOB) / 365) BETWEEN
        60 AND 90 THEN 20
    ELSE 0
END AS AgeClass,
Modifier AS OccupationClass,
CASE
    WHEN SUM(Points) > 1 THEN SUM(Points)
    ELSE 0
END AS VehicleModClass,
CASE
    WHEN MedicalCondition = 'No' THEN 0
    WHEN MedicalCondition = 'Yes' THEN 10
    ELSE 20
END AS MedicalConditionClass,

```

```

CASE
    WHEN PaymentType = 'Annual' THEN 0
    WHEN PaymentType = 'Monthly' THEN 20
    ELSE 10
END AS 'PaymentTypePercentageChange(%)'
FROM vehicle
JOIN policy ON vehicle.Registration = policy.VehicleReg
JOIN customer ON policy.CustomerID = customer.ID
JOIN occupation ON customer.Occupation = occupation.ID
LEFT JOIN mod_vehicle ON vehicle.Registration =
    mod_vehicle.Reg
LEFT JOIN 'mod' ON mod_vehicle.VehicleMod = 'mod'.ID
GROUP BY PolicyID;

```

Câu lệnh partition:

```

ALTER TABLE part_Table
PARTITION BY RANGE (EngineClass) (
    PARTITION p00 VALUES LESS THAN (20),
    PARTITION p01 VALUES LESS THAN (40),
    PARTITION p02 VALUES LESS THAN (60),
    PARTITION p03 VALUES LESS THAN (80),
    PARTITION p04 VALUES LESS THAN (100),
    PARTITION p05 VALUES LESS THAN (120),
    PARTITION p06 VALUES LESS THAN MAXVALUE
);

```

Trước khi thêm partition:

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHMAS

Filter objects

- customer
- manufacturer
- mod
- mod_vehicle
- model
- occupation
- part_table
- policy
- vehicle
- Views
- Stored Procedures

Administration Schemas

Information

No object selected

SQL File 7* SQL File 8* part_table SQL File 11*

1 EXPLAIN SELECT

2 PolicyID,

3 FName,

4 PolicyStartDate,

5 YearsNCB

6 FROM part_Table

7 JOIN policy ON part_table.PolicyID = policy.ID

8 WHERE EngineClass IN (10, 50, 80, 140);

Result Grid

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	part_Table	ALL	ALL	ALL	ALL	ALL		100045	40.00	Using where
1	SIMPLE	policy	eq_ref	PRIMARY	PRIMARY	4		test.part_Table.PolicyID	1	100.00	

Result 24

Output

Action Output

#	Time	Action	Message	Duration / Fetch
2	21:46:31	EXPLAIN SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON...	2 row(s) returned	0.000 sec / 0.000 sec
3	21:47:43	DROP TABLE test `part_table`	0 row(s) affected	0.125 sec
4	21:47:57	CREATE TABLE test `part_table` SELECT policy ID AS PolicyID, FName, VehicleReg, VehicleValue, CASE WH...	70325 row(s) affected Records: 70325 Duplicates: 0 Warnings: 0	60.015 sec
5	21:49:28	DROP TABLE test `part_table`	0 row(s) affected	0.063 sec
6	21:49:33	CREATE TABLE test `part_table` SELECT policy ID AS PolicyID, FName, VehicleReg, VehicleValue, CASE WH...	200001 row(s) affected Records: 200001 Duplicates: 0 Warnings: 0	176.578 sec
7	21:53:00	SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON part_tabl...	28783 row(s) returned	5.537 sec / 0.016 sec
8	21:53:27	EXPLAIN SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON...	2 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

Sau khi thêm partition:

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHMAS

Filter objects

- customer
- manufacturer
- mod
- mod_vehicle
- model
- occupation
- part_table
- policy
- vehicle
- Views
- Stored Procedures

Administration Schemas

Information

No object selected

SQL File 7* SQL File 8* part_table SQL File 11*

1 EXPLAIN SELECT

2 PolicyID,

3 FName,

4 PolicyStartDate,

5 YearsNCB

6 FROM part_Table

7 JOIN policy ON part_table.PolicyID = policy.ID

8 WHERE EngineClass IN (10, 50, 80, 140);

Result Grid

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	part_Table	p00,p02,p04,p06	ALL	ALL	ALL	ALL		27015	40.00	Using where
1	SIMPLE	policy	eq_ref	PRIMARY	PRIMARY	4		test.part_Table.PolicyID	1	100.00	

Result 26

Output

Action Output

#	Time	Action	Message	Duration / Fetch
5	21:49:28	DROP TABLE test `part_table`	0 row(s) affected	0.063 sec
6	21:49:33	CREATE TABLE test `part_table` SELECT policy ID AS PolicyID, FName, VehicleReg, VehicleValue, CASE WH...	200001 row(s) affected Records: 200001 Duplicates: 0 Warnings: 0	176.578 sec
7	21:53:00	SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON part_tabl...	28783 row(s) returned	5.537 sec / 0.016 sec
8	21:53:27	EXPLAIN SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON...	2 row(s) returned	0.000 sec / 0.000 sec
9	21:56:21	ALTER TABLE test `part_table` PARTITION BY RANGE (EngineClass) (PARTITION p00 VALUES LESS THAN...	200001 row(s) affected Records: 200001 Duplicates: 0 Warnings: 0	9.000 sec
10	21:56:45	SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON part_tabl...	28783 row(s) returned	5.844 sec / 0.016 sec
11	21:57:01	EXPLAIN SELECT PolicyID, FName, PolicyStartDate, YearsNCB FROM part_Table JOIN policy ON...	2 row(s) returned	0.000 sec / 0.000 sec

Object Info Session