Day 2 - Querying & Modifying Data

1. Create Database command.

create database InsuranceDB;

use InsuranceDB;

2. Create table commands for all the tables with constraints, relationships etc.

create table Customers(CustomerID int primary key not null, FirstName varchar (50), LastName varchar(50), DateOfBirth date, Phone varchar (20) ,Email varchar (50));

create table Policies(PolicyID int primary key not null,PolicyName varchar(50),PolicyType varchar(50),PremiumAmount money,DurationYears int);

create table Claims(ClaimID int primary key not null,AssignmentID int,ClaimDate date,ClaimAmount money,ClaimStatus varchar(20));

create table Agents(AgentID int primary key not null,AgentName varchar(50),Phone varchar(20),City varchar(50));

create table PolicyAssignments(AssignmentID int primary key not null,CustomerID int foreign key references Customers(CustomerID),PolicyID int foreign key references Policies(PolicyID),AgentID int references Agents(AgentID),StartDate date,EndDate date);

Alter table Claims add constraint FK_policyAssign_Claims Foreign key(AssignmentID) references PolicyAssignments(AssignmentID);

Alter table Customers add constraint UK_email Unique(Email);

3. Insert commands for all tables.

Insert into Customers values

(1,'Hari','Krishna','2002-04-12',9807654321,'hari123@gmail.com');

Insert into Customers values

(2,'Sita','Raman','2001-08-25',9876543210,'sita.raman@gmail.com');

Insert into Customers values

(3,'Arjun','Verma','2000-12-10',9123456789,'arjun.verma@gmail.com');

```
Insert into Customers values
(4,'Priya','Sharma','2003-05-18',9012345678,'priya.sharma@gmail.com');
Insert into Customers values
(5,'Ram','Krishna','2001-01-18',8033345678,'ram123@gmail.com');

Insert into Policies values (101,'Life Secure Plus', 'Life Insurance', 25000, 20);
Insert into Policies values (102,'Health Shield Gold', 'Health Insurance', 18000, 10);
Insert into Policies values (103,'Auto Protect Premium', 'Vehicle Insurance', 12000, 5);
Insert into Policies values (104,'Home Safe Advantage', 'Home Insurance', 15000, 15);
Insert into Policies values (105,'Travel Guard Elite', 'Travel Insurance', 6000, 2);
Insert into Policies values (106,'Life Protect next','Life Insurance',12000,1);

Insert into Agents values (1, 'Ramesh Kumar', '9876543210', 'Hyderabad');
Insert into Agents values (2, 'Suresh Reddy', '9123456789', 'Bangalore');
Insert into Agents values (3, 'Anita Sharma', '9012345678', 'Delhi');
Insert into Agents values (4, 'Vikram Rathod', '9988776655', 'Mumbai');
Insert into Agents values (5, 'Priya Mohan', '9090909090', 'Chennai');

Insert into PolicyAssignments values (201, 1, 101, 1, '2023-01-01', '2043-01-01');
Insert into PolicyAssignments values (202, 2, 102, 2, '2023-03-15', '2033-03-15');
Insert into PolicyAssignments values (203, 3, 103, 3, '2023-06-20', '2028-06-20');
Insert into PolicyAssignments values (204, 4, 104, 4, '2023-09-05', '2038-09-05');
Insert into PolicyAssignments values (205, 1, 105, 5, '2024-01-12', '2026-01-12');

Insert into Claims values (1, 201, '2024-01-15', 25000, 'approved');
Insert into Claims values (2, 202, '2024-02-10', 18000, 'pending');
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Insert into Claims values (3, 203, '2024-03-05', 32000, 'rejected');

Insert into Claims values (4, 204, '2024-04-18', 15000, 'approved');

Insert into Claims values (5, 205, '2024-05-02', 22000, 'pending');

4. Select commands

1. View all records Customers table.

select * from Customers;

	CustomerID	FirstName	LastName	DateOfBirth	Phone	Email
1	1	Hari	Krishna	2002-04-12	9807654321	hari123@gmail.com
2	2	Sita	Raman	2001-08-25	9876543210	sita.raman@gmail.com
3	3	Arjun	Verma	2000-12-10	9123456789	arjun.verma@gmail.com
4	4	Priya	Sharma	2003-05-18	9012345678	priya.sharma@gmail.c...
5	5	Ram	Krishna	2001-01-18	8033345678	ram123@gmail.com

2. View all records of PolicyAssignment table with CustomerId, PolicyId, StartDate and EndDate columns only.

select CustomerId, PolicyId, StartDate, EndDate from PolicyAssignments;

	CustomerId	PolicyId	StartDate	EndDate
1	1	101	2023-01-01	2043-01-01
2	2	102	2023-03-15	2033-03-15
3	3	103	2023-06-20	2028-06-20
4	4	104	2023-09-05	2038-09-05
5	1	105	2024-01-12	2026-01-12

3. Display all policies of Health type.

select * from Policies where PolicyType='Health Insurance';

	PolicyID	PolicyName	PolicyType	PremiumAmount	DurationYears
1	102	Health Shield Gold	Health Insurance	18000.00	10

4. Display policies having premium amount more than 10000 and DurationYears is 1.

select * from Policies where PremiumAmount>10000 and DurationYears=1;

	PolicyID	PolicyName	PolicyType	PremiumAmount	DurationYears
1	106	Life Protect next	Life Insurance	12000.00	1

5. Display unique city names from where agents belong to.

select distinct City from Agents;

	City
1	Bangalore
2	Chennai
3	Delhi
4	Hyderabad
5	Mumbai

6. List policies of type Life, Health, Motor use OR clause.

select * from Policies where PolicyType='Life Insurance' or PolicyType='Health Insurance' or PolicyType='Motor Insurance';

	PolicyID	PolicyName	PolicyType	PremiumAmount	DurationYears
1	101	Life Secure Plus	Life Insurance	25000.00	20
2	102	Health Shield Gold	Health Insurance	18000.00	10
3	106	Life Protect next	Life Insurance	12000.00	1

7. List policies of type Life, Health, Motor use IN operator.

select * from Policies where PolicyType in ('Life Insurance','Health Insurance','Motor Insurance');

	PolicyID	PolicyName	PolicyType	PremiumAmount	DurationYears
1	101	Life Secure Plus	Life Insurance	25000.00	20
2	102	Health Shield Gold	Health Insurance	18000.00	10
3	106	Life Protect next	Life Insurance	12000.00	1

8. Display list of customers born after January 1 st , 2001 and before December 31 st , 2020 using >= and <= operators.

select * from Customers where DateOfBirth>='2001-01-01' and DateOfBirth<='2020-12-31';

	CustomerID	FirstName	LastName	DateOfBirth	Phone	Email
1	1	Hari	Krishna	2002-04-12	9807654321	hari123@gmail.com
2	2	Sita	Raman	2001-08-25	9876543210	sita.raman@gmail.com
3	4	Priya	Sharma	2003-05-18	9012345678	priya.sharma@gmail.com
4	5	Ram	Krishna	2001-01-18	8033345678	ram123@gmail.com

9. Display list of customers born after January 1 st , 2001 and before December 31 st , 2020 using between operator.

select * from Customers where DateOfBirth between '2001-01-01' and '2020-12-31';

	CustomerID	FirstName	LastName	DateOfBirth	Phone	Email
1	1	Hari	Krishna	2002-04-12	9807654321	hari123@gmail.com
2	2	Sita	Raman	2001-08-25	9876543210	sita.raman@gmail.com
3	4	Priya	Sharma	2003-05-18	9012345678	priya.sharma@gmail.com
4	5	Ram	Krishna	2001-01-18	8033345678	ram123@gmail.com

10. Display claims data where claim status is Rejected.

select * from Claims where ClaimStatus='Rejected';

	ClaimID	AssignmentID	ClaimDate	ClaimAmount	ClaimStatus
1	3	203	2024-03-05	32000.00	rejected

11. Display records of Agents who stay in a city whose second letter is ‘a’.

select * from Agents where City like '_a%';

	AgentID	AgentName	Phone	City
1	2	Suresh Reddy	9123456789	Bangalore

12. Display highest and lowest claimAmount from Claims table.

select max(ClaimAmount) as HighestClaimAmount, min(ClaimAmount) as LowestClaimAmount from Claims;

	HighestClaimAmount	LowestClaimAmount
1	32000.00	15000.00

13. Display latest claim record.

select top 1 * from Claims order by ClaimDate desc;

Another way:

select * from Claims order by ClaimDate desc offset 0 rows fetch next 1 rows only;

	ClaimID	AssignmentID	ClaimDate	ClaimAmount	ClaimStatus
1	5	205	2024-05-02	22000.00	pending

14. Increase premium amount to 10% for all health insurance policies.

Update Policies set PremiumAmount = PremiumAmount * 1.10 where PolicyType = 'Health Insurance';

select PremiumAmount, PolicyType from Policies;

	PremiumAmount	PolicyType
1	25000.00	Life Insurance
2	19800.00	Health Insurance
3	12000.00	Vehicle Insurance
4	15000.00	Home Insurance
5	6000.00	Travel Insurance
6	12000.00	Life Insurance

15. Delete the record of PolicyAssignments whose EndDate is before today's date.

Delete from PolicyAssignments where EndDate < getdate();

select * from PolicyAssignments;

	AssignmentID	CustomerID	PolicyID	AgentID	StartDate	EndDate
1	201	1	101	1	2023-01-01	2043-01-01
2	202	2	102	2	2023-03-15	2033-03-15
3	203	3	103	3	2023-06-20	2028-06-20
4	204	4	104	4	2023-09-05	2038-09-05
5	205	1	105	5	2024-01-12	2026-01-12

16. Display no of claims rejected.

select count(*) as RejectedClaims from Claims where ClaimStatus = 'rejected';

	RejectedClaims
1	1

17. Display PolicyId, PolicyName, PremiumAmount along with computed fields not in table à 6% LocalTaxes, PremiumAmountWithTax and MonthlyPremiumAmount considering PremiumAmount is Annual.

select PolicyID, PolicyName, PremiumAmount, PremiumAmount * 0.06 as LocalTaxes, PremiumAmount * 1.06 as PremiumAmountWithTax, PremiumAmount / 12 as MonthlyPremiumAmount from Policies;

	PolicyID	PolicyName	PremiumAmount	LocalTaxes	PremiumAmountWithTax	MonthlyPremiumAmount
1	101	Life Secure Plus	25000.00	1500.0000...	26500.000000	2083.3333
2	102	Health Shield Gold	19800.00	1188.0000...	20988.000000	1650.00
3	103	Auto Protect Premium	12000.00	720.000000	12720.000000	1000.00
4	104	Home Safe Advanta...	15000.00	900.000000	15900.000000	1250.00
5	105	Travel Guard Elite	6000.00	360.000000	6360.000000	500.00
6	106	Life Protect next	12000.00	720.000000	12720.000000	1000.00

18. Write a command to add Address and City Columns in the Customers table.

Alter table Customers add Address varchar(50),City varchar(50);

19. Write a command to add a new column named DevOfId (DevelopmentOfficerId) in an existing Agents table.

Alter table Agents add DevOfId int;

select * from Agents;

	AgentID	AgentName	Phone	City	DevOfId
1	1	Ramesh Kumar	9876543210	Hyderabad	NULL
2	2	Suresh Reddy	9123456789	Bangalore	NULL
3	3	Anita Sharma	9012345678	Delhi	NULL
4	4	Vikram Rathod	9988776655	Mumbai	NULL
5	5	Priya Mohan	9090909090	Chennai	NULL

20. Write command to make the above DevOfId as a recursive foreign key to AgentId as Parent.

Alter table Agents add constraint FkAgentIDDev foreign key (DevOfId) references Agents(AgentID);

5. Queries using Joins, Group By, Having etc.

1. List all Policies for a CustomerId 5.

select po.* from Policies po join PolicyAssignments pa on po.PolicyID = pa.PolicyID

where pa.CustomerID = 5;

	PolicyID	PolicyName	PolicyType	PremiumAmount	DurationYears
1	106	Life Protect next	Life Insurance	12000.00	1

2. View all customers with their policies.

select c.FirstName, c.LastName, po.PolicyName

from Customers c

join PolicyAssignments pa

on pa.CustomerID=c.CustomerID

join Policies po

on pa.PolicyID = po.PolicyID;

	FirstName	LastName	PolicyName
1	Hari	Krishna	Life Secure Plus
2	Sita	Raman	Health Shield Gold
3	Arjun	Verma	Auto Protect Premium
4	Priya	Sharma	Home Safe Advantage
5	Hari	Krishna	Travel Guard Elite
6	Ram	Krishna	Life Protect next

3. View claims with customer name.

select c.FirstName, c.LastName, cl.ClaimAmount, cl.ClaimStatus

from Claims cl

join PolicyAssignments pa

on cl.AssignmentID = pa.AssignmentID

join Customers c

on pa.CustomerID = c.CustomerID;

	FirstName	LastName	ClaimAmount	ClaimStatus
1	Hari	Krishna	25000.00	approved
2	Sita	Raman	18000.00	pending
3	Arjun	Verma	32000.00	rejected
4	Priya	Sharma	15000.00	approved
5	Hari	Krishna	22000.00	pending
6	Priya	Sharma	56000.00	pending

4. Display FirstName, PolicyName, AgentName, StartDate and EndDate from their respective tables.

select c.FirstName, po.PolicyName, a.AgentName, pa.StartDate, pa.EndDate

from PolicyAssignments pa

join Customers c on pa.CustomerID = c.CustomerID

join Policies po on pa.PolicyID = po.PolicyID

join Agents a on pa.AgentID = a.AgentID;

	FirstName	PolicyName	AgentName	StartDate	EndDate
1	Hari	Life Secure Plus	Ramesh Kumar	2023-01-01	2043-01-01
2	Sita	Health Shield Gold	Suresh Reddy	2023-03-15	2033-03-15
3	Arjun	Auto Protect Premium	Anita Sharma	2023-06-20	2028-06-20
4	Priya	Home Safe Advantage	Vikram Rathod	2023-09-05	2038-09-05
5	Hari	Travel Guard Elite	Priya Mohan	2024-01-12	2026-01-12
6	Ram	Life Protect next	Suresh Reddy	2024-06-01	2025-06-01

5. Display claims report with FirstName, PolicyName, ClaimAmount, ClaimStatus, and ClaimDate from their respective tables.

```
select c.FirstName, po.PolicyName, cl.ClaimAmount, cl.ClaimStatus, cl.ClaimDate
from Claims cl
join PolicyAssignments pa on cl.AssignmentID = pa.AssignmentID
join Customers c on pa.CustomerID = c.CustomerID
join Policies po on pa.PolicyID = po.PolicyID;
```

	FirstName	PolicyName	ClaimAmount	ClaimStatus	ClaimDate
1	Hari	Life Secure Plus	25000.00	approved	2024-01-15
2	Sita	Health Shield Gold	18000.00	pending	2024-02-10
3	Arjun	Auto Protect Premium	32000.00	rejected	2024-03-05
4	Priya	Home Safe Advantage	15000.00	approved	2024-04-18
5	Hari	Travel Guard Elite	22000.00	pending	2024-05-02
6	Priya	Home Safe Advantage	56000.00	pending	2024-04-02

6. Display records of Customers with or without Policies.

```
select c.FirstName+' '+c.LastName as Name, p.PolicyName
from Customers c
left join PolicyAssignments pa
on c.CustomerID = pa.CustomerID
left join Policies p
on pa.PolicyID = p.PolicyID;
```

	Name	PolicyName
1	Hari Krishna	Life Secure Plus
2	Hari Krishna	Travel Guard Elite
3	Sita Raman	Health Shield Gold
4	Arjun Verma	Auto Protect Premium
5	Priya Sharma	Home Safe Advantage
6	Ram Krishna	Life Protect next

7. Display all Customers with NO Claims.

```
select distinct c.FirstName,c.LastName
from Customers c
left join PolicyAssignments pa
on c.CustomerID = pa.CustomerID
left join Claims cl
on pa.AssignmentID = cl.AssignmentID
where cl.ClaimID is null;
```

	FirstName	LastName
1	Ram	Krishna

8. Show CustomerName with Total Claim Amount per Customer.

```
select c.FirstName,c.LastName,sum(cl.ClaimAmount) as TotalClaimAmount
from Customers c
join PolicyAssignments pa on c.CustomerID = pa.CustomerID
join Claims cl on pa.AssignmentID = cl.AssignmentID
group by c.FirstName,c.LastName;
```

	FirstName	LastName	TotalClaimAmount
1	Hari	Krishna	47000.00
2	Sita	Raman	18000.00
3	Priya	Sharma	71000.00
4	Arjun	Verma	32000.00

9. Show names and total claim amount of Customers With Claim Amount > 50000 (Use HAVING Clause).

```
select c.FirstName,c.LastName,sum(cl.ClaimAmount) as TotalClaimAmount
from Customers c
join PolicyAssignments pa on c.CustomerID = pa.CustomerID
join Claims cl on pa.AssignmentID = cl.AssignmentID
group by c.FirstName,c.LastNameS
having sum(cl.ClaimAmount) > 50000;
```

	FirstName	LastName	TotalClaimAmount
1	Priya	Sharma	71000.00

10. Display list with Agent Wise Policy Count.

```
select a.AgentName, count(pa.PolicyID) as PolicyCount
from Agents a join PolicyAssignments pa
on a.AgentID = pa.AgentID
group by a.AgentName;
```

	AgentName	PolicyCount
1	Ramesh Kumar	1
2	Suresh Reddy	2
3	Anita Sharma	1
4	Vikram Rathod	1
5	Priya Mohan	1