



## **DATABASE MANAGEMENT SYSTEM (CS310)**

### **PROJECT TITLE -**

**Database design on Car vehicle insurance company**

### **Under the Guidance of -**

**Dr.Uma s**

**Ms. Supriya Nadiger**

### **GROUP MEMBERS**

**ADVAY AGGARWAL (18BCS002)**

**AKASH KUMAR (18BCS003)**

**ANIRUDDHA MUJUMDAR (18BCS005)**

**BHARGAVA H.S (18BCS018)**

**JAGRUT NEMADE (18BCS034)**

**KSHITIZ MICHAEL (18BCS042)**

**AKARSH MAURYA (18BCS051)**

**MITHIL GANESH ANCHAN (18BCS054)**

**UDIT PAL (18BCS107)**

## **PROJECT TITLE**

A database for a Vehicle Insurance Company.

## **PURPOSE**

This module provides a comprehensive discussion of, and practical experience in, advanced entity modelling; normalisation; transactional relational database design; SQL coding; and generation of data backed management reports.

## **PROJECT BENEFITS**

To make a good DB, that could be used with analytical tools and faster in delivering the right data at the right time for better decision making.

## **ABSTRACT**

The Insurance management system is a complete solution for organizations, which need to manage insurance for their vehicles, equipment, buildings, and other resources. Organizes and tracks insurance vendors and the policies provided under different coverage.

Insurance policy administration system consists of a mathematical notation that captures the relationship between policies and objects and the entities that manage policies for those objects.

Hence there is a need for an automated system, which can efficiently manage the company, records, provides instant access and one that improves productivity. As a result of this automated system, the activities of the company are performed within the stipulated time and the reliable and efficient service is ensured to its users.

The insurance company needs to keep track of details of its target companies, agents, policyholders, their premium payments and the various products that are available with it. Hence it is under tremendous pressure maintaining their day-to-day activities, which is currently being done manually.

Entire records have to be updated timely, even a slight mistake could complicate things.. It is time consuming to summarize these details to produce the reports.

## **INTRODUCTION**

Relational databases are logical collections of inter-related data in tabular form relational databases have always been core to any management system. Its relevance is profound and hence the need to incorporate new functionalities, utilities becomes important. These are currently the predominant choice in storing financial records manufacturing and logistical information, personnel data and much more.

Relational databases are used in huge management systems like Post Office, Banking, Railway, Defence Logistics. Databases pertaining to Educational Institutions and other large collection of related data.

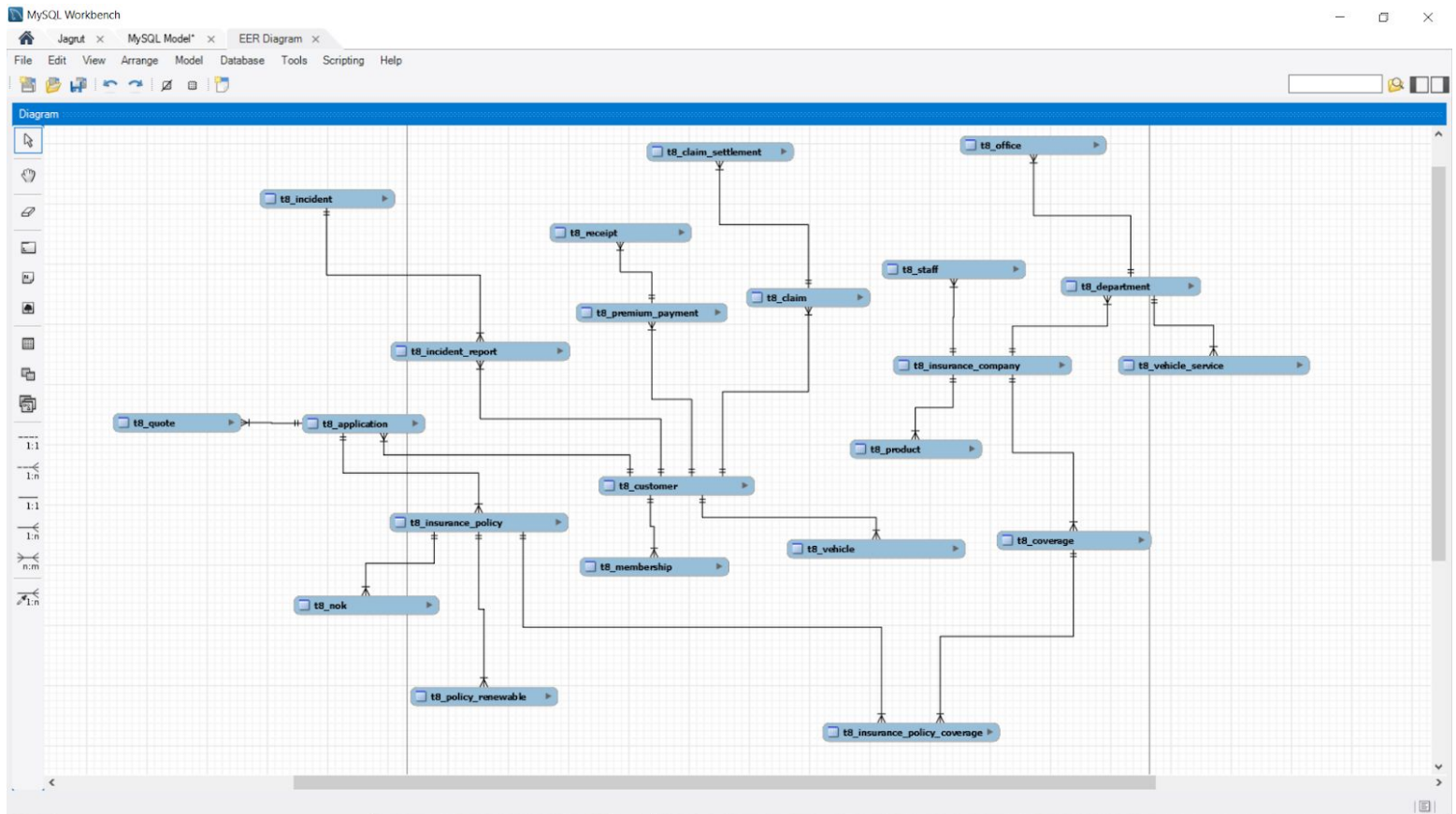
Relational databases have largely replaced hierarchical databases and network databases because they are easy to understand and use even though they are much less efficient.

**The software components used in our project are as under:**

MY SQL WORKBENCH

## Conceptual Data Model (CDM)

The conceptual data model is a structured business view of the data required to support business processes, record business events, and track related performance measures. This model focuses on identifying the data used in the business but not its processing flow or physical characteristics. This model's perspective is independent of any underlying business applications.



The above diagram describes how each table is conceptually related to each other.

**Customer** owns **Vehicles**

**Customer** files for **Claim**

**Customer** applies for the **Application**

**Customer** holds the **Membership**

**Customer** having any **Incident report**

**Incident** details stored in **Incident report**

**Claim** approved claim settlement **Been settled**

**Premium Payment** has details shown in **Receipt**

**Insurance Company** has different number of **Products**

**Insurance Company** covers **Coverage**

**Insurance Company** has **Staff**

**Insurance Company** has different **Departments**

**Department** is in **Office**

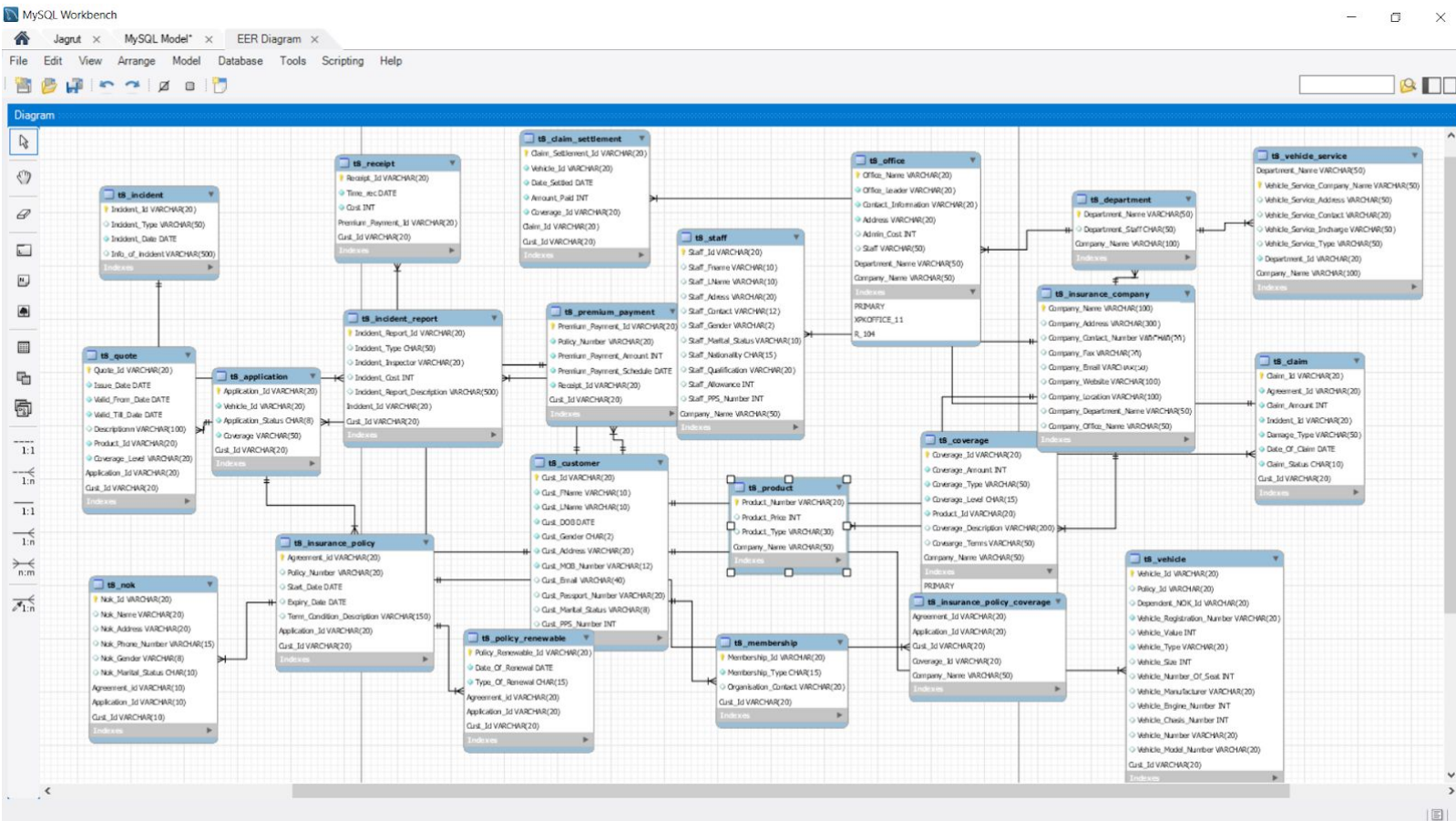
**Application** has **Quote**

**Insurance Policy** shows details **Insurance policy coverage**

**Application** customer applied **Insurance policy**

**Application** applies **Customer**

# Logical Data Model (LDM)



## Relationship of entities for car insurance database

**Customer** one to many **Claim**

**Customer** one to many **Vehicle**

**Customer** one to many **Premium payment**

**Customer** many to many **Membership**

**Customer** many to many **Incident**

**Customer** one to many **Incident report**

**Customer** one to many **Application**

**Application** one to many **Quote**

**Application** one to many **Insurance policy**

**Insurance policy** one to many **Insurance policy coverage**

**Insurance policy** one to many **Policy renewable**

**Insurance policy** one to many **Nok**

**Premium\_payment** one to many **Receipt**

**Claim** one to many **Claim settlement**

**Insurance company** one to many **Staff**

**Insurance company** one to many **Coverage**

**Insurance company** one to many **Product**

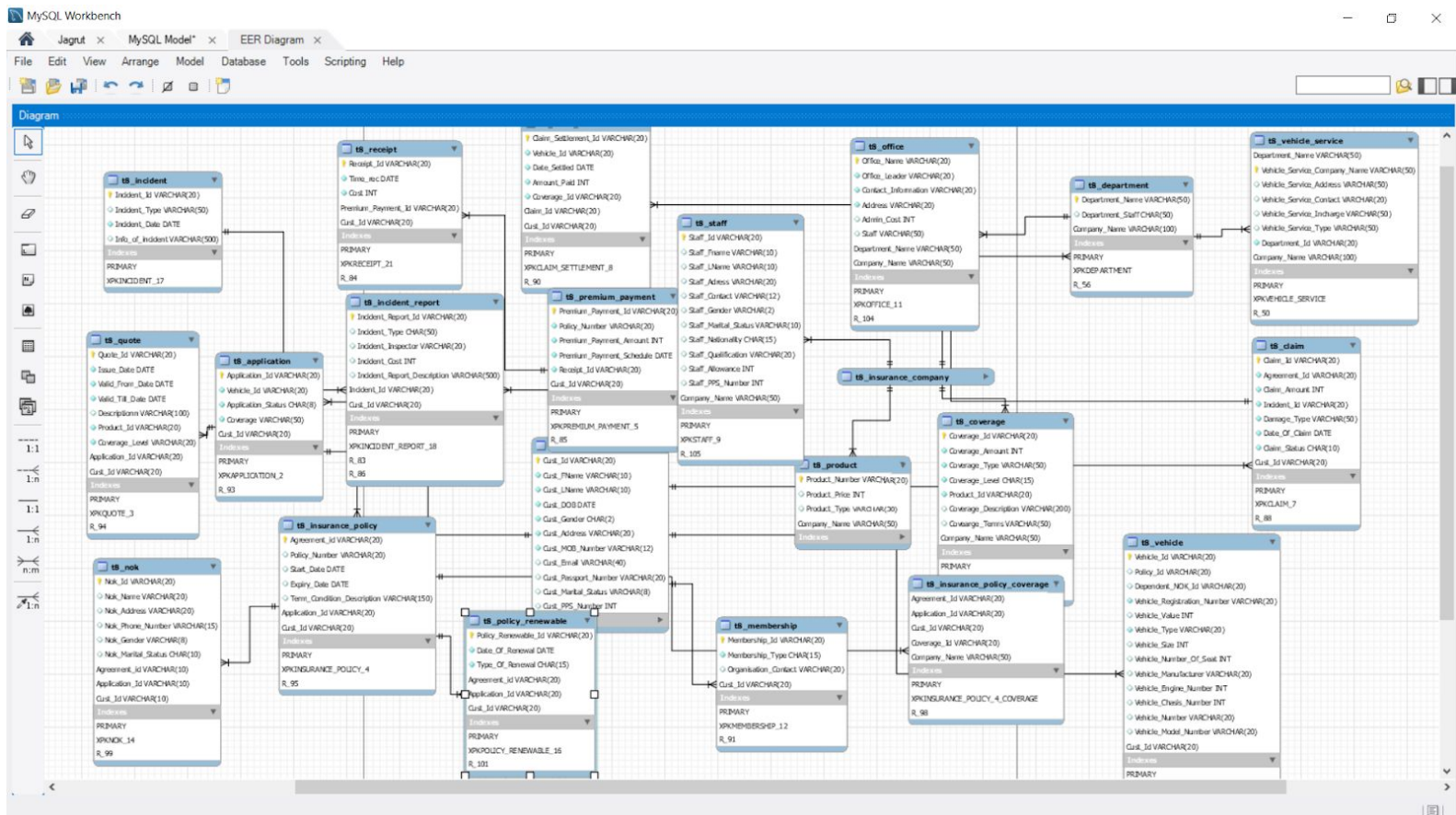
**Insurance company** one to many **Department**

**Department** one to many **Vehicle service**

**Office** many to many **Department**

**Coverage** one to many **Insurance policy coverage**

# Physical Data Model (PDM)



The above diagram shows the physical data model of the vehicle insurance company DBMS.



Activities MySQL Workbench Nov 25 11:23 AM MySQL Workbench

CAR\_INSURANCE

File Edit View Query Database Server Tools Scripting Help

Car\_Insurance\_project

Limit to 1000 rows

```

910 ('80411','80211','80111',81911,"Reliance Vehicle Insurance Company Limited"),
911 ('80412','80212','80112',81912,"Kotak Vehicle Insurance Company Limited"),
912 ('80413','80213','80113',81913,"Kotak Vehicle Insurance Company Limited"),
913 ('80414','80214','80114',81914,"SBI Vehicle Insurance Company Limited"),
914 ('80415','80215','80115',81915,"SBI Vehicle Insurance Company Limited"),
915 ('80416','80216','80116',81916,"Birla Sun Vehicle Insurance Company Limited"),
916 ('80417','80217','80117',81917,"Kotak Vehicle Insurance Company Limited"),
917 ('80418','80218','80118',81918,"Kotak Vehicle Insurance Company Limited"),
918 ('80419','80219','80119',81919,"Kotak Vehicle Insurance Company Limited"),
919 ('80420','80220','80120',81920,"Birla Sun Vehicle Insurance Company Limited");
920
921
922
923 -- query 1
924 select *
925 from T8_VEHICLE v inner join T8_CUSTOMER c on v.Cust_id=c.Cust_id
926 where c.Cust_id in (
927     select c1.Cust_id
928     from T8_CUSTOMER c1, T8_CLAIM x, T8_INCIDENT_REPORT i
929     where i.Cust_id = c1.Cust_id and c1.Cust_id = x.Cust_id and x.Claim_Status = 'Pending');
930

```

Filter Rows: Export: Wrap Cell Content:

#	Vehicle_Id	Policy_Id	Dependent	NC_Vehicle	Registrati	Vehicle_Val	Vehicle_Ty	Vehicle_S	Vehicle	Man_Vehicle	En_Vehicle	Cl_Vehicle	Nui_Vehicle	Model	Cust_Id	Cust_Id	Cust_FNa	Cust_LN	Cust_DOB	Cust	Cust_Address	Cust_MOB	I_Cust	Email
1	80604	20004	81404	MH 35 DW 6336	1200000	4-wheeler	19	8	Mercedes	51704	52704	549101	FZS-487100	80104	80104	Bhargava	H.S	1998-12-12	M	New Delhi	8875456264	18bcs018@iit		
	80606	20006	81406	UP 29 RU 4554	800000	4-wheeler	15	4	Maruti	51706	52706	991181	FZS-587533	80106	80106	Kshilz	Micheal	1999-12-07	M	Madhya Prad...	6654565855	18bcs085@iit		
	80613	20013	81413	UP 18 MN 2222	700000	4-wheeler	12	4	Maruti	51713	52713	459110	FZS-5554100	80113	80113	Kiran	Bedi	1994-11-12	F	Pune	7894561230	kiranbedi@g...		
	80619	20019	81419	DL 34 JK 8888	650000	4-wheeler	12	4	Maruti	51718	52719	998741	FZS-5433100	80119	80119	Ashok	Kumar	1967-07-01	M	Lucknow	7842024575	ashokkumar...		
	80616	20016	81416	MH 07 EF 5555	1700000	4-wheeler	19	5	Ford	51716	52716	999901	FZS-2340100	80116	80116	Kalpna	Chaw...	1995-10-23	F	Lucknow	6658400123	kalpnachawal...		
	80611	20011	81411	CH 35 KP 0000	2500000	4-wheeler	25	8	AUDI	51711	52711	881101	FZS-343100	80111	80111	Rahul	Gandhi	1999-07-25	M	Hyderabad	8875469568	rahulgandhi@		

Result 1

Action Output

Query Completed

```

select *
from T8_VEHICLE v inner join T8_CUSTOMER c on v.Cust_id = c.Cust_id
where c.Cust_id in (
    select c1.Cust_id
    from T8_CUSTOMER c1, T8_CLAIM x, T8_INCIDENT_REPORT i
    where i.Cust_id = c1.Cust_id and c1.Cust_id = x.Cust_id and
    x.Claim_Status='Pending');

```

Activities MySQL Workbench Nov 25 11:24 AM

MySQL Workbench

File Edit View Query Database Server Tools Scripting Help

Car\_Insurance\_project

Limit to 1000 rows

```
-- query 2
select *
from T8_CUSTOMER c1
where c1.Cust_id in
(select c.Cust_id from T8_CUSTOMER c, T8_PREMIUM_PAYMENT p
where (p.Cust_id = c.Cust_id and p.Premium_Payment_Amount > (select sum(CAST(Cust_id as unsigned)) from T8_CUSTOMER)));
```

#	Cust_Id	Cust_FName	Cust_LN	Cust_DOB	Cust_Gender	Cust_Address	Cust_MOB_Number	Cust_Email	Cust_Passport_Number	Cust_Marital_Status	Cust_PPS_Number
1	80104	Bhargava	H.S	1998-12-12	M	New Delhi	8875456264	18bcs018@iitdwd.ac.in	4565855855	Single	804
2	80112	Kapil	Dev	1997-10-23	M	Kolkata	6520012301	kapildev@gmail.com	7776758364	Divorced	812

T8\_CUSTOMER 2

Action Output

Query Completed

```
select *
from T8_CUSTOMER c1
where c1.Cust_id in
(select c.Cust_id from T8_CUSTOMER c, T8_PREMIUM_PAYMENT p
where (p.Cust_id = c.Cust_id and p.Premium_Payment_Amount > (select
sum(CAST(Cust_id as unsigned)) from T8_CUSTOMER)));
```

Activities MySQL Workbench Nov 25 11:25 AM MySQL Workbench

CAR\_INSURANCE

File Edit View Query Database Server Tools Scripting Help

Car\_Insurance\_project Limit to 1000 rows

```

941
942
943 -- query 3
944 select *
945 from T8_INSURANCE_COMPANY
946 where Company_Name in
947 (select T8_OFFICE.Company_Name
948 from T8_OFFICE
949 group by Company_Name
950 having count(distinct (Address))>1 and Company_Name in
951 (select T8_DEPARTMENT.Company_Name
952 from T8_PRODUCT inner join T8_DEPARTMENT
953 on T8_DEPARTMENT.Company_Name = T8_PRODUCT.Company_Name
954 group by T8_DEPARTMENT.Company_Name
955 having count(distinct (Product_Number)) > count(distinct (Department_Name))));
956
957

```

#	Company_Name	Company_Address	Company_Contact_Number	Company_Fax	Company_Email	Company_Website	Company_Location	Company_Department_Name	Company_Office_Name
1	Birla Sun Vehicle Insurance Compa...	One World Center, Tower 1, 16th Fl...	9769915765	5033256700	care.Vehicleinsurance@adityabirla...	https://Vehicleinsurance.adityabirla...	Mumbai	Birla Sun Vehicle Insurance	Birla Sun Vehicle Insurance
2	Kotak Vehicle Insurance Company ...	Kotak Mahindra Vehicle Insurance ...	4659878185	4659875642	KotakVehicleInsurance@help.com	KotakVehicleInsurance.com	Mumbai	Kotak Vehicle Insurance	Kotak Vehicle Insurance

T8\_INSURANCE\_COMPANY 3

Action Output

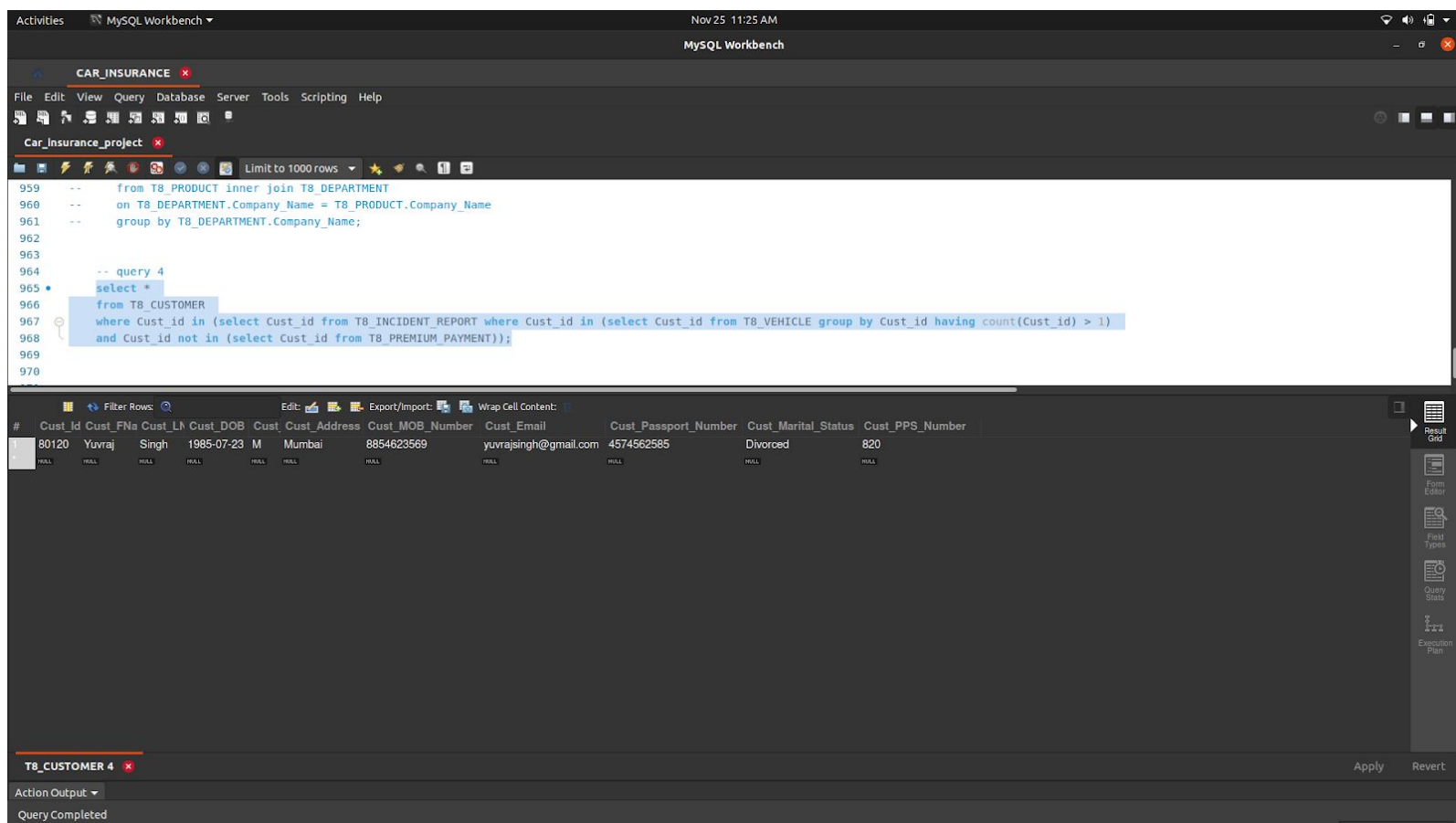
Query Completed

Apply Revert

```

select *
from T8_INSURANCE_COMPANY
where Company_Name in
(select T8_OFFICE.Company_Name
from T8_OFFICE
group by Company_Name
having count(distinct(Address))>1 and Company_Name in
(select T8_DEPARTMENT.Company_Name
from T8_PRODUCT inner join T8_DEPARTMENT
on T8_DEPARTMENT.Company_Name = T8_PRODUCT.Company_Name
group by T8_DEPARTMENT.Company_Name
having count(distinct(Product_Number)) > count(distinct(Department_Name))));

```



Activities MySQL Workbench Nov 25 11:25 AM

MySQL Workbench

CAR\_INSURANCE

File Edit View Query Database Server Tools Scripting Help

Car\_Insurance\_project

Limit to 1000 rows

```
967 where Cust_id in (select Cust_id from T8_INCIDENT_REPORT where Cust_id in (select Cust_id from T8_VEHICLE group by Cust_id having count(Cust_id) > 1)
968 and Cust_id not in (select Cust_id from T8_PREMIUM_PAYMENT));
969
970
971
972
973 -- query 5
974 select *
975 from T8_VEHICLE as v, T8_PREMIUM_PAYMENT as p where v.Cust_id = p.Cust_id and p.Premium_Payment_Amount > v.Vehicle_Number;
976
977
978
```

Filter Rows: Export: Wrap Cell Content:

#	Vehicle_Id	Policy_Ic	Dependent_NC	Vehicle_Registrati	Vehicle_Val	Vehicle_Ty	Vehicle_S	Vehicle_Man	Vehicle_En	Vehicle_Ci	Vehicle_Nu	Vehicle_Model	Cust_Id	Premium_Payment_I	Policy_Numbe	Premium_Payment_Amou	Premium_Payment_Scl	
1	80604	20004	81404	MH 35 DW 6336	1200000	4 wheeler	19	6	Mercedes	51704	52704	549101	FZS-487100	80104	80504	20004	2000000	2019-05-15
2	80612	20012	81412	MP 27 LO 1111	1699990	4 wheeler	19	6	Skoda	51712	52712	998641	FZS-3450100	80112	80512	20012	3400000	2019-12-14

Result 5

Action Output

Query Completed

```
select *
from T8_VEHICLE as v, T8_PREMIUM_PAYMNET as p where v.Cust_id =
p.Cust_id and p.Premium_Payment_Amount > v.Vehicle_Number;
```

Activities MySQL Workbench Nov 25 11:26 AM

MySQL Workbench

CAR\_INSURANCE

File Edit View Query Database Server Tools Scripting Help

Car\_Insurance\_project Limit to 1000 rows

```

976
977
978
979
980 - query 6
981 select *
982 from T8_CUSTOMER
983 where Cust_id
984 in (select distinct (cl.Cust_id)
985 from T8_CLAIM as cl, T8_CLAIM_SETTLEMENT as cs, T8_COVERAGE as co where cl.Claim_Amount > cs.Claim_Settlement_id + cs.Vehicle_id + cl.Claim_id + cl.Cust_id and cl.Claim_Amount < Coverage_Amount );
986
987

```

#	Cust_Id	Cust_FName	Cust_LName	Cust_DOB	Cust_Gender	Cust_Address	Cust_MOB_Number	Cust_Email	Cust_Passport_Number	Cust_Marital_Status	Cust_PPS_Number
1	80120	Yuvraj	Singh	1985-07-23	M	Mumbai	8854623569	yuvrajsingh@gmail.com	4574562585	Divorced	820
2	80117	Ramesh	Athe	1980-01-24	M	Pune	9966596532	rameshathe.com	7126854512	Divorced	817
3	80114	Pooja	Sharma	1998-10-03	F	Banglore	9876543210	poojasharma@gmail....	7496555364	Divorced	814
4	80113	Kiran	Bedi	1994-11-12	F	Pune	7894561230	kiranbedi@gmail.com	9999758364	Divorced	813
5	80112	Kapil	Dev	1997-10-23	M	Kolkata	6520012301	kapildev@gmail.com	7776758364	Divorced	812
6	80108	Mithil	Anchan	1999-04-25	M	Mumbai	5574856300	18bcs072@iitdwd.ac.in	7490000564	Divorced	808
7	80103	Aniruddha	Muju...	1999-05-22	M	Kashmir	9855654754	18bcs005@iitdwd.ac.in	5565842365	Divorced	803
8	80102	Akash	Kumar	2000-01-28	M	Himachal Pr...	8540045339	18bcs003@iitdwd.ac.in	1245512455	Single	802
9	80101	Advay	Aggar...	1999-01-03	M	Ludhiana	9546335667	18bcs002@iitdwd.ac.in	4745255465	Single	801
10	80110	Amit	Shah	1998-09-16	M	Banglore	9857565810	amitshah@gmail.com	4548200364	Divorced	810

T8\_CUSTOMER 6

Action Output

Query Completed

Apply Revert

```

select*
from T8_CUSTOMER
where Cust_id
in (select distinct(c1.Cust_id)
from T8_CLAIM as c1, T8_CLAIM_SETTLEMENT as cs, T8_COVERAGE as c0
where c1.Claim_Amount > cs.Claim_Settlement_id + cs.Vehicle_id + c1.Claim_id
+ c1.Cust_id and c1.Claim_Amount < Coverage_Amount);

```

# PROCEDURES and VIEWS

Activities MySQL Workbench Nov 28 6:00 PM

MySQL Workbench

CAR\_INSURANCE

File Edit View Query Database Server Tools Scripting Help

Final\_Car\_Insurance Car\_Insurance\_views Car\_Insurance\_results car\_insurance\_procedures\* query

Limit to 50000 rows

```
1 DELIMITER //
2 CREATE PROCEDURE query_1(
3   in status1 varchar(20))
4 BEGIN
5   select *
6   from T8_VEHICLE v inner join T8_CUSTOMER c on v.Cust_id=c.Cust_id
7   where c.Cust_id in (
8     select x.Cust_id
9     from T8_CLAIM x
10    where x.Claim_Status = status1);
11 END //
12 DELIMITER ;
13 call query_1('pending');
14
15
16
```

Filter Rows: Export: Wrap Cell Content:

#	Vehicle_Id	Policy_Id	Dependent	NC	Vehicle_Registrati	Vehicle_Val	Vehicle_Ty	Vehicle_S	Vehicle_Man	Vehicle_En	Vehicle_Ci	Vehicle_Nui	Vehicle_Model	Cust_Id	Cust_Id	Cust_FNa	Cust_LN	Cust_DOB	Cust	Cust_Address	Cust_MOB_Number	Cust
1	80604	20004	81404	MH 35 DW 6336	1200000	4 wheeler	19	6	Mercedes	51704	52704	549101	FZS-487100	80104	80104	Bhargava	H.S	1998-12-12	M	New Delhi	8875456264	180c
2	80606	20006	81406	UP 29 FU 4554	800000	4 wheeler	15	4	Maruti	51706	52706	991181	FZS-587533	80106	80106	Kshitiz	Micheal	1999-12-07	M	Madhya Prad...	6654565855	180c
3	80611	20011	81411	CH 35 KP 0000	2500000	4 wheeler	25	8	AUDI	51711	52711	881101	FZS-343100	80111	80111	Rahul	Gandhi	1999-07-25	M	Hyderabad	8875489568	rahu
4	80613	20013	81413	UP 18 MN 2222	700000	4 wheeler	12	4	Maruti	51713	52713	459110	FZS-5554100	80113	80113	Kiran	Bedi	1994-11-12	F	Pune	7894561230	kirar
5	80616	20016	81416	MH 07 EF 5555	1700000	4 wheeler	19	5	Ford	51716	52716	999901	FZS-2340100	80116	80116	Kalpna	Chaw...	1995-10-23	F	Lucknow	6658400123	kalp
6	80619	20019	81419	DL 34 JK 8888	650000	4 wheeler	12	4	Maruti	51718	52719	998741	FZS-5433100	80119	80119	Ashok	Kumar	1967-07-01	M	Lucknow	7842024575	ashc

Result 1

Query Completed



Activities MySQL Workbench Nov 28 6:01 PM

MySQL Workbench

File Edit View Query Database Server Tools Scripting Help

Final\_Car\_Insurance Car\_Insurance\_views Car\_Insurance\_results car\_insurance\_procedures\* query

Limit to 50000 rows

```
17
18 -- query 2
19 DELIMITER $$
20 CREATE FUNCTION query2(
21 )
22 RETURNS int
23 DETERMINISTIC
24 BEGIN
25     return(select sum(CAST(Cust_Id as unsigned)) from T8_CUSTOMER);
26 END $$
27 DELIMITER ;
28
29
30 DELIMITER //
31 CREATE PROCEDURE cust_details_query_2()
32 BEGIN
33     select *
34     from T8_CUSTOMER c1
35     where c1.Cust_id in
36     (select p.Cust_id from T8_PREMIUM_PAYMENT p
37     where (p.Premium_Payment_Amount > query2()));
38 END //
39 DELIMITER ;
40 call cust_details_query_2();
41
```

Filter Rows: Export: Wrap Cell Content:

#	Cust_Id	Cust_FName	Cust_LName	Cust_DOB	Cust_Gender	Cust_Address	Cust_MOB_Number	Cust_Email	Cust_Passport_Number	Cust_Marital_Status	Cust_PPS_Number
1	80104	Bhargava	H.S	1998-12-12	M	New Delhi	8875456264	18bcs018@iitdwd.ac.in	4565855855	Single	804
2	80112	Kapil	Dev	1997-10-23	M	Kolkata	6520012301	kapildev@gmail.com	7776758364	Divorced	812

Result 2 Read Only

Query Completed

Activities MySQL Workbench Nov 28 6:01 PM

MySQL Workbench

File Edit View Query Database Server Tools Scripting Help

Final\_Car\_Insurance Car\_Insurance\_views\* Car\_Insurance\_results car\_insurance\_procedures\* query

Limit to 50000 rows

```
1 -- query4
2 create view query_4 as
3 select *
4 from T8_CUSTOMER
5 where Cust_id in (
6     select Cust_id
7     from T8_INCIDENT_REPORT
8     where Cust_id in (
9         select Cust_id
10        from T8_VEHICLE
11        group by Cust_id
12        having count(Cust_id) > 1) and Cust_id not in (select Cust_id from T8_PREMIUM_PAYMENT));
13
14 select * from query_4;
15
16
```

Filter Rows: Export: Wrap Cell Content:

#	Cust_Id	Cust_FName	Cust_LName	Cust_DOB	Cust_Gender	Cust_Address	Cust_MOB_Number	Cust_Email	Cust_Passport_Number	Cust_Marital_Status	Cust_PPS_Number
1	80120	Yuvraj	Singh	1985-07-23	M	Mumbai	8854623569	yuvrajsingh@gmail.com	4574562585	Divorced	820

query\_4.1 Read Only

Query Completed