DBMS (CS310)

Project Report on
Vehicle Insurance Company

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Team Phoenix

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ABSTRACT

The “Vehicle Insurance Management System” has been developed to override the problems prevailing in the practicing manual system. This database system is supported to eliminate and, in some cases, reduce the hardships faced by existing manual systems. Main objective of this project is to design a simple software application for insurance companies for managing customers who buy new vehicles and take insurance for those vehicles. Details of payment, time period, vehicle details, customer personal details, insurance specifications are updated to the database. We can add, delete, modify, existing records and search for old records within short time.

INTRODUCTION

AIM:

This project provides an overall understanding of theoretical and practical concepts of DBMS, this project helps us in learning advanced modelling, normalization, transactional relational database design, SQL and Procedural language and SQL coding. In this project we get an experience to work on ‘MYSQL WORKBENCH’.

APPROACH:

After reading the pdf of vehicle insurance company, we tried to understand all the requirements which are needed to create an error free database. We created a conceptual data model to understand the relationship between different entities. We also created an entity relationship diagram (ER-Diagram) and created all the tables and inserted all relevant data to execute all queries.

TIMELINE

Project Implementation

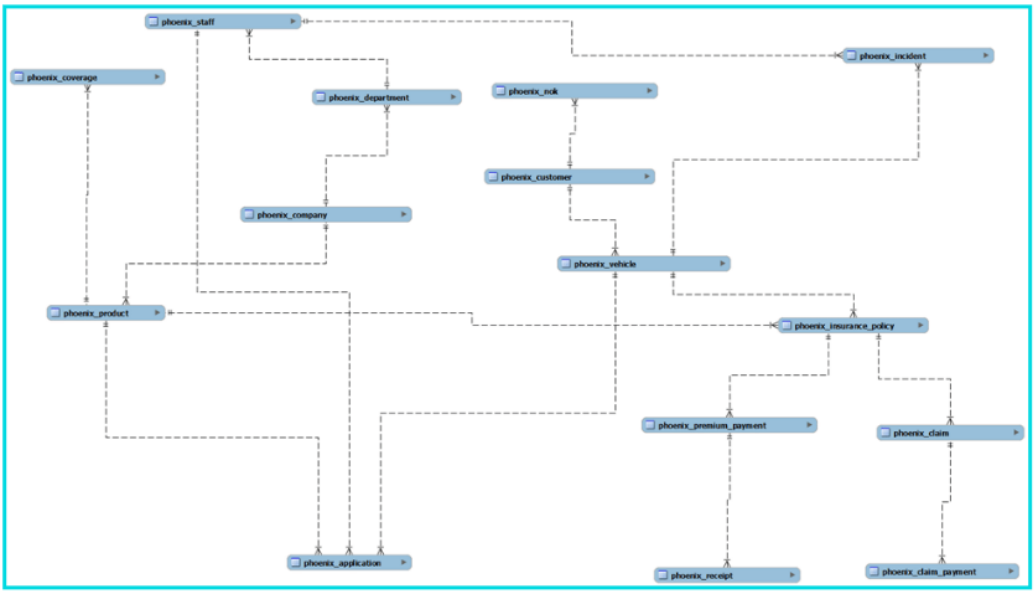
The project was implemented in line with the following steps:

- Database Development
- Conceptual Data Model (CDM)
- Physical Data Model (PDM)
- Executing the given queries
- Preparation of report based on the work done
- Exploring and understanding new ways and different topics in DBMS
- Working on the suggestions given by the supervisors and improving the database

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 conceptual data model represents the overall structure of data required to support the business requirements independent of any software or data storage structure.

CDM

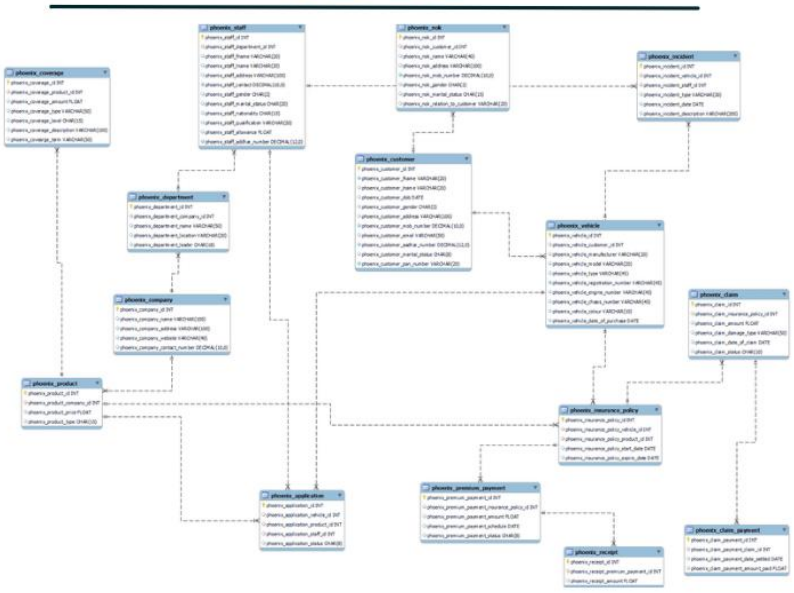


Physical Data Model (PDM)

A Physical Data Model describes a database-specific implementation of the data model. It offers database abstraction and helps generate the schema. This is because of the richness of meta-data offered by a Physical Data Model. The

physical data model also helps in visualizing database structure by replicating database column keys, constraints, indexes, triggers, and other RDBMS features.

PDM



Normalization of tables

Normal Form	Table
1NF	
2NF	Coverage, Incident, Vehicle, Claim, Claim_payment, Premium_payment, Incident, Receipt
3NF	Customer, Company, NOK, Insurance_policy, Staff, Application, Product

ENTITY RELATIONSHIP TABLE

ENTITY TYPE	RELATED TO ENTITIES	RELATIONSHIP
PHOENIX_ COMPANY	PHOENIX_PRODUCT PHOENIX_DEPARTMENT PHOENIX_STAFF	One To Many One to Many One to Many
PHOENIX_CUSTOMER	PHOENIX_VEHICLE PHOENIX_CLAIM	One to Many One to Many
PHOENIX_INSURANCE_POLICY	PHOENIX_COVERAGE PHOENIX_NOK	One to Many One to many
PHOENIX_PREMIUM_PAYMENT	PHOENIX_RECEIPT	One to Many
PHOENIX_INCIDENT	PHOENIX_CLAIM	One to One
PHOENIX_CLAIM	PHOENIX_CLAIM_PAYMENT	One to Many
PHOENIX_APPLICATION	PHOENIX_INSURANCE_POLICY PHOENIX_CUSTOMER	One to One One to many

ENTITY DESCRIPTION TABLE

TABLE NAME	DESCRIPTION
PHOENIX_CUSTOMER	Records all the personal details about the customer
PHOENIX_COMPANY	Details of the Insurance organization giving the insurance
PHOENIX_PRODUCT	Records the details of different insurances offered
PHOENIX_DEPARTMENT	Records details of the various departments
PHOENIX_STAFF	Records details of employees
PHOENIX_VEHICLE	Records details of Vehicle model, cost and registration
PHOENIX_COVERAGE	Records the details of everything covered under Insurance
PHOENIX_NOK	Records details of the next to kin
PHOENIX_INSURANCE_POLICY	Records details of Insurance agreement

PHOENIX_RECEIPT	Records details of Receipt of Premiums
PHOENIX_PREMIUM_PAYMENT	Records the payments done by customers timely
PHOENIX_INCIDENT	Records the details of accidents
PHOENIX_CLAIM	Records details of customer claims in case of an incident
PHOENIX_CLAIM_PAYMENT	Records details of customer claim payment after an incident
PHOENIX_APPLICATION	Records details of the insurance cover requested by Customer

TABLES

TABLE NAME: phoenix_customer

ATTRIBUTE	DATA TYPE	KEY
phoenix_customer_id	INT	PK
phoenix_customer_fname	VARCHAR(20)	
phoenix_customer_lname	VARCHAR(20)	
phoenix_customer_dob	DATE	
phoenix_customer_gender	CHAR(2)	
phoenix_customer_address	VARCHAR(100)	
phoenix_customer_mob_number	NUMERIC(10)	

ATTRIBUTE	DATA TYPE	KEY
phoenix_customer_id	INT	PK
phoenix_customer_fname	VARCHAR(20)	
phoenix_customer_lname	VARCHAR(20)	
phoenix_customer_dob	DATE	
phoenix_customer_email	VARCHAR(50)	
phoenix_customer_aadhar_number	NUMERIC(12)	
phoenix_customer_marital_status	CHAR(8)	
phoenix_customer_pan_number	VARCHAR(20)	

TABLE NAME: phoenix_company

ATTRIBUTE	DATA TYPE	KEY
phoenix_company_id	INT	PK
phoenix_company_name	VARCHAR(100)	
phoenix_company_address	VARCHAR(100)	
phoenix_company_website	VARCHAR(40)	
phoenix_company_contact_number	NUMERIC(10)	

TABLE NAME: phoenix_product

ATTRIBUTE	DATA TYPE	KEY
phoenix_product_id	INT	PK
phoenix_product_company_id	INT	FK(phoenix_company_id)
phoenix_product_price	FLOAT	
phoenix_product_type	CHAR(14)	

TABLE NAME: phoenix_department

ATTRIBUTE	DATA TYPE	KEY
phoenix_department_id	INT	PK
phoenix_department_company_id	INT	FK(phoenix_company_id)
phoenix_department_name	VARCHAR(50)	
phoenix_department_location	VARCHAR(20)	
phoenix_department_leader	CHAR(18)	

TABLE NAME: phoenix_nok

ATTRIBUTE	DATA TYPE	KEY
phoenix_nok_id	INT	PK
phoenix_nok_customer_id	VARCHAR(40)	
phoenix_nok_name	VARCHAR(100)	
phoenix_nok_address	NUMERIC(100)	
phoenix_nok_mob_number	NUMERIC(10)	
phoenix_nok_gender	CHAR(10)	
phoenix_nok_marital_status	CHAR(15)	
phoenix_nok_relation_to_customer	VARCHAR(20)	

TABLE NAME: phoenix_vehicle

ATTRIBUTE	DATA TYPE	KEY
phoenix_vehicle_id	INT	PK
phoenix_vehicle_customer_id	INT	FK(phoenix_customer_id)
phoenix_vehicle_manufacture	VARCHAR(20)	
phoenix_vehicle_model	VARCHAR(20)	
phoenix_vehicle_type	VARCHAR(45)	

phoenix_vehicle_regestration_number	VARCHAR(45)	
phoenix_vehicle_engine_number	VARCHAR(45)	
phoenix_vehicle_chasis_number	VARCHAR(45)	
phoenix_vehicle_color	VARCHAR(10)	
phoenix_vehicle_date_of_purcase	DATE	

TABLE NAME: phoenix_coverage

ATTRIBUTE	DATA TYPE	KEY
phoenix_coverage_id	INT	PK
phoenix_coverage_product_id	INT	FK(phoenix_product_id)
phoenix_coverage_amount	FLOAT	
phoenix_coverage_type	VARCHAR(50)	
phoenix_coverage_level	CHAR(50)	
phoenix_coverage_description	VARCHAR(100)	
phoenix_coverage_term	VARCHAR(50)	

TABLE NAME: phoenix_staff

ATTRIBUTE	DATA TYPE	KEY
phoenix_staff_id	INT	PK
phoenix_staff_department_id	INT	FK(phoenix_department_id)
phoenix_staff_fname	VARCHAR (20)	
phoenix_staff_lname	VARCHAR (20)	
phoenix_staff_address	VARCHAR (100)	
phoenix_staff_contact	NUMERIC (10)	
phoenix_staff_gender	CHAR(10)	
phoenix_staff_marital_status	CHAR(20)	
phoenix_staff_nationality	CHAR(15)	

phoenix_staff_qualification	VARCHAR(20)	
phoenix_staff_allowence	FLOAT	
phoenix_staff_aadhar_number	NUMERIC(12)	

TABLE NAME: phoenix_insurence_policy

ATTRIBUTE	**DATA TYPE**	**KEY**
phoenix_insurence_pliIcy_id	INT	PK
phoenix_insurence_polilcy_vehicle_id	INT	FK(phoenix_vehicle_id)
phoenix_insurence_policy_product_id	INT	FK(phoenix_product_id)
phoenix_insurence_policy_start_date	DATE	
phoenix_insurence_policy_expire_date	DATE	

TABLE NAME: phoenix_incident

ATTRIBUTE	**DATA TYPE**	**KEY**
phoenix_incident_id	INT	PK
phoenix_incident_vehicle_id	INT	FK(phoenixt_vehicle_id)
phoenix_incident_staff_id	INR	FKphoenix_staff_id()
phoenix_incident_type	VARCHAR(30)	
phoenix_incident_date	DATE	
phoenix_incident_description	VARCHAR(200)	

TABLE NAME: phoenix_premium_payment

ATTRIBUTE	**DATA TYPE**	**KEY**
phoenix_premium_payment_id	INT	PK
phoenix_premium_payment_insurence_polocy_id	INT	FK (phoenix_insurance_polocy_id)
phoenix_premium_payment_amount	FLOAT	

phoenix_premium_payment_schedule	DATE	
phoenix_premium_payment_status	CHAR (8)	

TABLE NAME: phoenix_receipt

ATTRIBUTE	DATA TYPE	KEY
phoenix_receipt_id	INT	PK
phoenix_receipt_premium_payment_id	INT	FK(phoenix_payment_id)
phoenix_receipt_amount	FLOAT	

TABLE NAME: phoenix_claim

ATTRIBUTE	DATA TYPE	KEY
phoenix_claim_id	INT	PK
phoenix_claim_insurence_policy_id	INT	FK(phoenix_insurence_policy_id)
phoenix_claim_amount	FLOAT	
phoenix_claim_damage_type	VARCHAR(50)	
phoenix_claim_date_of_claim	DATE	
phoenix_claim_status	CHAR(10)	

TABLE NAME: phoenix_claim_payment

ATTRIBUTE	DATA TYPE	KEY
phoenix_claim_payment_id	INT	PK
phoenix_claim_payment_claim_id	INT	FK(phoenix_claim_id)
phoenix_claim_payment_date_settled	DATE	
phoenix_claim_payment_iamount_paid	FLOAT	

TABLE NAME: phoenix_application

ATTRIBUTE	DATA TYPE	KEY

phoenix_application_id	INT	PK
phoenix_application_vehicle_id	INT	FK (phoenix_vehicle_id)
phoenix_application_product_id	INT	FK (phoenix_product_id)
phoenix_application_staff_id	INT	FK (phoenix_staff_id)
phoenix_application_status	CHAR (8)	

QUERIES

Query 1

Retrieve Customer and Vehicle details who has been involved in an incident and claim status is pending – Customer, vehicle, claim status, incident.

```
-- Query 1
select distinct c.*, v.* from phoenix_claim cl
inner join phoenix_insurance_policy ip on cl.phoenix_claim_insurance_policy_id=ip.phoenix_insurance_policy_id
inner join phoenix_vehicle v on v.phoenix_vehicle_id=ip.phoenix_insurance_policy_vehicle_id
inner join phoenix_customer c on c.phoenix_customer_id=v.phoenix_vehicle_customer_id
inner join phoenix_incident i on i.phoenix_incident_vehicle_id=v.phoenix_vehicle_id
where phoenix_claim_status='pending';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

phoenix_customer_id	phoenix_customer_fname	phoenix_customer_lname	phoenix_customer_dob	phoenix_customer_gender	phoenix_customer_address	phoenix_customer_mob_number	phoenix_customer_email	phoenix_customer_z
101	John	Pilot	1943-12-31	M	Hyderabad	8937629017	johnpilot@comedian.com	45567834

Query 2

Retrieve customer details who has premium payment amount greater than the sum of all the customer Ids in the database – premium payment, customer

```
401    -- Query 2
402 •  select distinct c.* from phoenix_customer c
403    inner join phoenix_vehicle v on c.phoenix_customer_id=v.phoenix_vehicle_customer_id
404    inner join phoenix_insurance_policy ip on v.phoenix_vehicle_id=ip.phoenix_insurance_policy_vehicle_id
405    inner join phoenix_premium_payment pp on pp.phoenix_premium_payment_insurance_policy_id=ip.phoenix_insurance_policy_id
406    where phoenix_premium_payment_amount > (select sum(phoenix_customer_id) from phoenix_customer);
407
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

phoenix_customer_id	phoenix_customer_fname	phoenix_customer_lname	phoenix_customer_dob	phoenix_customer_gender	phoenix_customer_address	phoenix_customer_mob_number	phoenix_customer_email
101	John	Pilot	1943-12-31	M	Hyderabad	8937629017	johnpilot@comedian.com
102	Tom	Paul	1961-07-01	M	Kochi	9027561813	tompaul@actor.com
104	Derik	Walker	1953-12-08	M	kanchipuram	9748632798	walker@iaf.com
107	Faiz	Iqbal	1859-05-15	M	Lucknow	8926778935	iqbal@stunts.com
115	Fiza	Obama	1859-05-15	F	Kottayam	7834003211	obama@iaf.com
110	Greeshma	Kelly	1948-10-16	F	Jhansi	9898450910	kelly@scientist.com
114	Gracy	Sood	1897-01-23	F	Mandi	6012389455	gracysood@iaf.com
112	Jitesh	Agrawal	1917-05-29	M	Mangalore	6734900434	jitesh@stunts.com
109	Akshay	Sharma	1933-04-19	M	Kacheguda	9834528945	sharma@nbabasketball.com
113	Luna	Singh	1936-06-18	F	Silchar	7198992201	lunasingh@nbabasketball.co
111	Kriti	Curie	1943-12-31	F	Mumbai	7865894599	kriticurie@stunts.com

Query 3

Retrieve Company details whose number of products is greater than departments, where the departments are located in more than one location—company, product, departments, office.

```
419    -- Query 3
420 •  select c.* from phoenix_company c
421    inner join phoenix_department d on c.phoenix_company_id=d.phoenix_department_company_id
422    inner join phoenix_product p on c.phoenix_company_id=p.phoenix_product_company_id
423    group by phoenix_company_id
424    having count( distinct phoenix_department_id) < count( distinct phoenix_product_id) and count( distinct phoenix_department_location) >1;
425
426
```

Query 4

Select Customers who have more than one Vehicle, where the premium for one of the

Vehicles is not paid and it is involved in accident

```
431
432   -- Query 4
433 • select * from phoenix_customer
434   where phoenix_customer_id in
435       (select phoenix_vehicle_customer_id from phoenix_vehicle
436       group by phoenix_vehicle_customer_id
437       having count(*)>1)
438   and phoenix_customer_id in
439       (select v.phoenix_vehicle_customer_id from phoenix_premium_payment pp
440       inner join phoenix_insurance_policy ip on pp.phoenix_premium_payment_insurance_policy_id=ip.phoenix_insurance_policy_id
441       inner join phoenix_vehicle v on v.phoenix_vehicle_id=ip.phoenix_insurance_policy_vehicle_id
442       inner join phoenix_customer c on c.phoenix_customer_id=v.phoenix_vehicle_customer_id
443       inner join phoenix_incident i on i.phoenix_incident_vehicle_id=v.phoenix_vehicle_id
444       where phoenix_premium_payment_status='pending');
445
446
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

phoenix_customer_id	phoenix_customer_fname	phoenix_customer_lname	phoenix_customer_dob	phoenix_customer_gender	phoenix_customer_address	phoenix_customer_mob_number	phoenix_customer_email	phoenix_customer_a
104	Derik	Walker	1993-12-08	M	kanchipuram	9748632798	walker@af.com	99085463
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Query 5

Select all vehicles which have premium more than its vehicle number.

```
451
452     -- Query 5
453 •  Select distinct v.* from phoenix_vehicle as v
454     inner join  phoenix_insurance_policy as ip on v.phoenix_vehicle_id=ip.phoenix_insurance_policy_vehicle_id
455     inner join phoenix_premium_payment as pp on pp.phoenix_premium_payment_insurance_policy_id=ip.phoenix_insurance_policy_id
456     where (phoenix_vehicle_registration_number < phoenix_premium_payment_amount);
457
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

phoenix_vehicle_id	phoenix_vehicle_customer_id	phoenix_vehicle_manufacturer	phoenix_vehicle_model	phoenix_vehicle_type	phoenix_vehicle_registration_number	phoenix_vehicle_engine_number	phoenix_vehicle_chasis_number
701	101	Toyota	A2020	sedan	6789	GU856GF	AFGY4567RT
702	102	Honda	B2020	SUV	1268	HDU846A	DFGT7894GH
704	104	TVS	D2020	motorcycle	6675	IT829TH	WERT0953HJ
705	104	TVS	D2020	motorcycle	0075	JT569IP	WEET4358FR

Query 6

Retrieve Customer details whose Claim Amount is less than Coverage Amount and Claim

Amount is greater than Sum of (CLAIM_SETTLEMENT_ID, VEHICLE_ID, CLAIM_ID, CUST_ID)

```
460     -- Query 6
461 •  select distinct c.* from phoenix_customer c
462     inner join phoenix_vehicle v on v.phoenix_vehicle_customer_id=c.phoenix_customer_id
463     inner join phoenix_insurance_policy ip on ip.phoenix_insurance_policy_vehicle_id=v.phoenix_vehicle_id
464     inner join phoenix_claim cl on cl.phoenix_claim_insurance_policy_id=ip.phoenix_insurance_policy_id
465     inner join phoenix_claim_payment cp on cp.phoenix_claim_payment_claim_id=cl.phoenix_claim_id
466     inner join phoenix_product p on ip.phoenix_insurance_policy_product_id=p.phoenix_product_id
467     inner join phoenix_coverage co on co.phoenix_coverage_product_id=p.phoenix_product_id
468     where phoenix_claim_amount < phoenix_coverage_amount and phoenix_claim_amount > (phoenix_customer_id+phoenix_vehicle_id+phoenix_claim_id+phoenix_claim_payment_id);
469
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

phoenix_customer_id	phoenix_customer_fname	phoenix_customer_lname	phoenix_customer_dob	phoenix_customer_gender	phoenix_customer_address	phoenix_customer_mob_number	phoenix_customer_email	phoenix_customer
102	Tom	Paul	1961-07-01	M	Kochi	9027561813	tompaul@actor.com	45987998
112	Jitesh	Agrawal	1917-05-29	M	Mangalore	6734900434	jitesh@stunts.com	22170956

CONCLUSION

The project was successfully executed and completed timely which was possible because of the great team spirit shown by each member and their contributions. The project was completed in the following major steps:

• Table Creations

• Data Insertions

• Testing Data for Anomalies

• Query Creation and Execution

Work done in all the above steps were divided equally among all the ten members and all the tasks which required collaboration were done on video conferencing with inputs from each and every member.