DATABASE DESIGN FOR A VEHICLE INSURANCE COMPANY

CS301 , DBMS - V SEMESTER.

Group Members :

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Project title : A database for a Vehicle Insurance Company

Project Purpose :

To gain practical experience in advanced entity modelling; normalisation; transactional relational database design; SQL and PL/SQL coding; and generation of data backed management reports. Students gain practical experience using contemporary database modelling and design tools and technologies, and apply sound design principles for creating effective decision support solutions for realistic business scenarios.

Project Objectives :

1. Develop Database in 3 steps :

   PART A : Conceptual Data Model

   PART B: Logical Data Model (LDM)

   PART C: Physical Data Model (PDM)

2. Executing the given queries and showing the result.
3. Preparing reports on the work done
4. Exploring different new Topics in DBMS and SQL and understanding them.

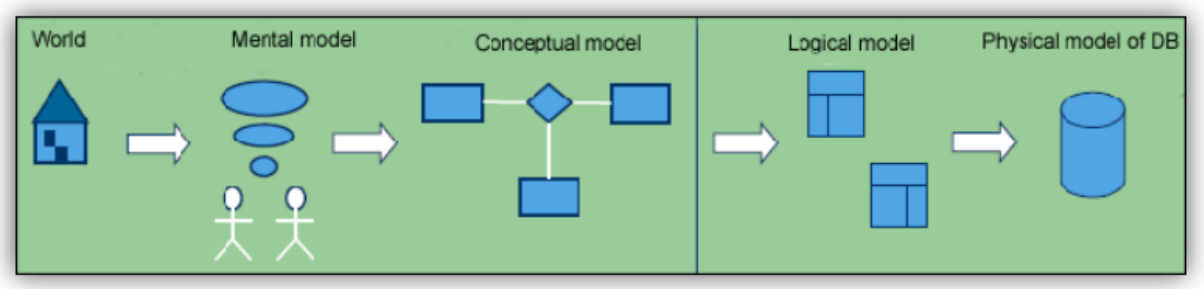
Project Scope :

Boundaries of the project are: knowledge of the students delivering the outputs; their back ground in different fields; learning the process of Data Base (DB) design; knowing how to use the tools to design DB; what kind of DB to be deliver; time management.

Data Base Modelling :

Data modelling is an activity that makes physical world become digital stored in data base, as seen in Figure, how the process from real world become Data base model.

Figure : Process of data base building

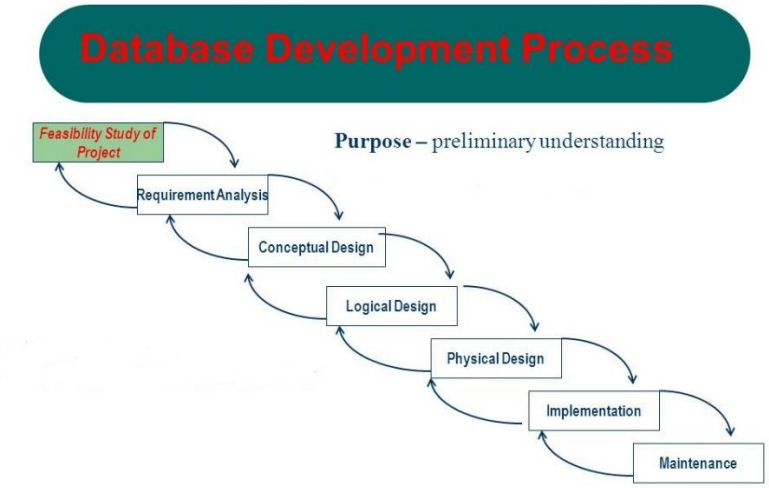


The data model in principal describes the structure of data entities and their relationships. Like in our case – Vehicle insurance, entities will include Customers, Insurance policy, Employees etc. Customer has several attributes, as costumer number, address, status and number of insurance policy.

• **Conceptual.** The model focuses on the entities and their relationships and properties that are imbedded in the problem. Best use for communication with stakeholders.

• **Logical.** Is a step from conceptual data model to a data management technology (relation databases) and is subject of normalization.

• **Physical.** This is a model with implementation of data entities. With optimizations that have partitioning or merging entities, duplicating data, creating identification keys and indexes .



Project Benefits:

To make a good model of DB for car insurance and get the highest mark. 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.

Team Organization Details :

Database Designing :

CDM – By Ankit, Sachin , Tushar

LDM – By Prabhdeep , Sufyan

PDM – By Sumith , Rishabh , Shantanu

Project Queries :

Sumith , Rishabh , Tushar , Prabhdeep , Ankit , Sachin

Query testing :

Shantanu , Rishabh

Add-On's like Stored Procedures , Functions , Views etc :

Sumith , Sufyan

Part A: Conceptual Data Model

Design Rules

To design our car insurance database conceptual data model we first needed to decide what characteristics underpin the model under investigation. As a group we decided on various rules that need to be implemented in order for the model to be consistent and precise.

Design Rule	Description	Example
Rule 1	An underscore is used to label an entity type with more than one word.	INSURANCE_POLICY
Rule 2	Plurals are not used when labelling entity types.	APPLICATION
Rule 3	No abbreviations are used when labelling entity types.	QUOTE
Rule 4	Every entity must contain a Primary key.	CUST_Id,CLAIM_Id

Assumptions

To design the Conceptual Data Model (CDM) we certain set of assumptions. These assumptions will help shape our model to allow consistency within our design.

Assumption	Description
Assumption 1	Customer must be a permanent international driving licence
Assumption 2	The online insurance has no physical high-street presence
Assumption 3	The online insurance is given to customers over 18 years of age
Assumption 4	The online insurance needs some driving history of customer
Assumption 5	The online insurance needs to know type of car customer drives
Assumption 6	The online insurance needs to know about insurance history of customer
Assumption 7	Claim is settled only when it is either Rejected or Approved but not Pending.

Entity Types

Entity	Description
1 . CUSTOMER	Records all the personal details about the customer
2 . APPLICATION	Records details of the insurance cover requested by customer
3 . QUOTE	Records details of customer potential cost of the insurance product
4 . INSURANCE_POLICY	Records details of Insurance agreement
5 . PREMIUM_PAYMENT	Records details of customer cost of payments
6 . VEHICLE	Records details of Vehicle model, cost and registration
7 . CLAIM	Records details of customer claims in case of an incident
8 . CLAIM_SETTLEMENT	Records details of settlement made on claims
9 . STAFF	Records details of employees
10 . DEPARTMENT	Records details of the various departments

11 . OFFICE	Records details of different office locations
12 . MEMBERSHIP	Records details of customer membership, clubs, societies
13 . NOK	Records details of the next of kin
14 . INSURANCE_COMPANY	Details of the Insurance organization giving the insurance cover
15 . POLICY_RENEWABLE	Records details of due date of insurance policy
16 . INCIDENT	Records details of the accident, theft, fire, etc.
17 . INCIDENT_REPORT	Records details of the individual incident
18 . COVERAGE	Records all terms and conditions in regard to the policy
19 . PRODUCT	Records details of the products offered by insurance company
20 . RECEIPT	Details of premium payments to customer
21 . INSURANCE_POLICY_ COVERAGE	It shows agreement and coverage details

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[We dropped the vehicle_service table because we found it not so useful for the insurance because servicing in case of damages is not included generally in an Insurance Company Database and if we include it, we have to get data from an outer entity like the Manufacturing Company which is not so feasible.]

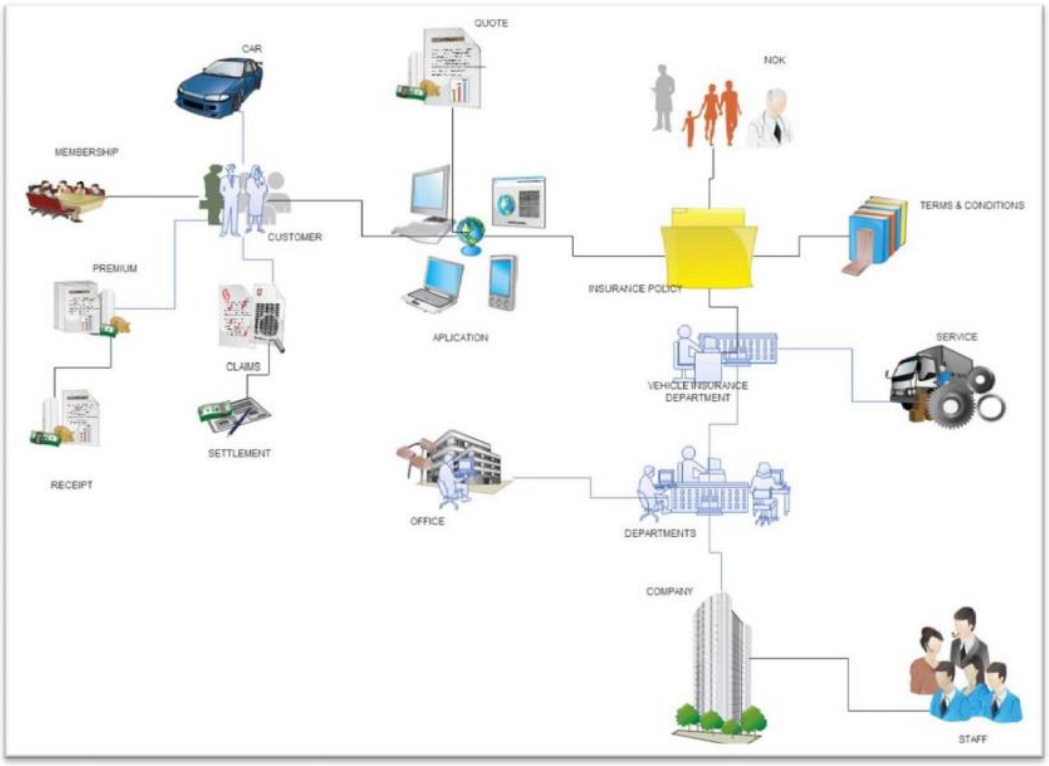
Relationships in CDM

Applying Relationships to Entities

Entity Type	Related to Entities	Relationship
T7_APPLICATION	T7_QUOTE	one to one
	T7_INSURANCE_POLICY	one to many
T7_CUSTOMER	T7_APPLICATION	one to many
	T7_CLAIM	one to many
	T7_MEMBERSHIP	one to many
	T7_PREMIUM_PAYMENT	one to many
	T7_INCIDENT_REPORT	one to many
	T7_VEHICLE	one to many
T7_INCIDENT_REPORT	T7_INCIDENT	one to one
T7_PREMIUM_PAYMENT	T7_RECEIPT	one to many
T7_CLAIM	T7_CLAIM_SETTLEMENT	one to many

T7_INSURANCE_POLICY	T7_POLICY_RENEWABLE	one to many
	T7_NOK	one to many
	T7_COVERAGE	many to many
T7_INSURANCE_COMPANY	T7_COVERAGE	one to many
	T7_DEPARTMENT	one to many
	T7_PRODUCT	one to many
	T7_STAFF	one to many
T7_DEPARTMENT	T7_OFFICE	one to many

Graphical presentation of CDM :



Conceptual Data Model :