A database for a Vehicle Insurance Company

Indian Institute of Information Technology, Dharwad

Team 3

Derik **L**ytten (17BCS008) - **CDM/LDM Assist**

Rayhaan (18BCS055) - **CDM/LDM Assist**

Sahana **N H** (18BCS086) - **CDM/LDM Assist**

Amitabh **P**aliwal (18BCS004) - **PDM Developer**

Souvik **D**as (18BCS099) - **PDM Developer**

Logical Data Model(LDM)

Elements

Elements in the data model are named entities. This is any distinguishable object that presents part of the database. It can be related to any object in the real world such as: a car, a customer (person), a policy, a company, etc. with respective attributes that are relevant to the software system.

Properties of **entities** can have values:

1. Name

2. Description of the meaning and significance

3. Weather entity is dependent or non-dependent

4. List of attributes (Car entity: year, manufacturer, model, mileage, owner, licence, book of maintenance) with properties (data type, size, is it required or not). - The attributes (or attribute) are used to precisely identify an entity (primary key – PK, foreigner key – FK, …)

5. Constraints of individual or combined attributes values (e.g. date of issue of new policy can't be prior to renewal date of policy)

6. Rules to grant permission to users or user groups to access the entity

7. Expected number of entity instances and expected growth rate

Or additional:

1. List of attributes to be indexed to optimize access time

2. List of attributes to be encrypted or compressed

3. Whether entity should become a database view or a table

4. Weather entity should become a materialized view

5. List of database triggers to be implemented for that entity.

Relations

Relationship - Designates logical association between entities, with cardinality of the participant entities: one-to-one, one-to-many, or many-to-many relationships. Relationships can be identifying or non-identifying (identifying A-B; existence of B depends on existence of A).

Generalization/specialization – Indicates an "is a" relationship between entities. For example department entity is a generalization of different types of departments; at the same time vehicle insurance department or travel insurance department is specialization of department entity.

Aggregation - is an abstraction that turns relationships between entities into an aggregate entity, rarely used. Example: "customer-insurance advisor -date" can be an aggregate entity called Appointment.

Constraints

The database normalization technique is used to impose restrictions on data models that are based on dependencies between entities and their attributes. Normalization is used with the goal objective to avoid duplication of information in order to safeguard the consistency (integrity) of the data.

Data types

When we assign attributes to entities with primary keys and foreign keys do the normalization, we identify each attribute with the data type for each data management system – **MySQL Workbench** as listed below.

Table-LDM 1: t3_CUSTOMER

CUST_ID - *VARCHAR*(20) - ***PRIMARY KEY***

CUST_FNAME - *VARCHAR*(10)

CUST_LNAME - *VARCHAR*(10)

CUST_DOB - *DATE*

CUST_GENDER - *CHAR*(2)

CUST_ADDRESS - *VARCHAR*(20)

CUST_MOB_NUMBER - *BIGINT*

CUST_EMAIL - *VARCHAR*(20)

CUST_PASSPORT_NUMBER - *VARCHAR*(20)

CUST_MARITAL_STATUS - *CHAR*(8)

CUST_PPS_NUMBER - *INTEGER*

Table-LDM 2: t3_APPLICATION

APPLICATION_ID - *VARCHAR*（20） - ***PK***

CUST_ID - *VARCHAR*（20） - ***FK***

VEHICLE_ID - *VARCHAR*（20）

APPLICATION_STATUS - *CHAR*（8）

COVERAGE - *VARCHAR*（50）

Table-LDM 3: t3_QUOTE

QUOTE_ID - *VARCHAR*（20）- ***PK***

APPLICATION_ID - *VARCHAR*（20）- ***FK***

CUST_ID - *VARCHAR* (20) - ***FK***

ISSUE_DATE - *DATE*

VALID_FROM_DATE - *DATE*

VALID_TILL_DATE - *DATE*

DESCRIPTION - *VARCHAR*（100）

PRODUCT_ID - *VARCHAR*（20）

COVERAGE_LEVEL - *VARCHAR*（20）

Table-LDM 4: t3_INSURANCE_POLICY

AGREEMENT_ID - *VARCHAR*（20）- ***PK***

APPLICATION_ID - *VARCHAR*（20）- ***FK***

CUST_ID - *VARCHAR*（20）- ***FK***

DEPARTMENT_NAME - *VARCHAR*（20）

POLICY_NUMBER - *VARCHAR*（20）

START_DATE - *DATE*

EXPIRY_DATE - *DATE*

TERM_CONDITION_DESCRIPTION - *VARCHAR*（100）

*Please refer to git repo for detailed table creation(creation.sql)

Graphical presentation of LDM

The Logical Data Model (LDM) that we have designed for this part of report in graphical

Figure-LDM 1. It has all the entity types, attributes and relationships that are valid and pertinent

in designing our online vehicle insurance database system.