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Department of Computer Science & Mathematics

DATABASE DESIGN FOR INSURANCE COMPANY

by

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➢ Grade:

➢ **Your satisfaction:**

	Very Good	**Good**	**Neutral**	**Bad**
ER Diagram				
PDF Report				

➢ **Notes:**

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I- Introduction and Report Overview

Almost every day, many people face several problems, such as car accidents, house robberies, and urgent medical conditions, and all this data about the citizens get messed up, especially in Lebanon, which makes it very chaotic and unorganized. Thus, our main goal, as an IT department in Safe Hands, is to facilitate stocking these data and details in a safe network or database, to help to make firms' and citizens' transactions and life to be easier, more reliable, organized, and more efficient.

Report Overview:

At "Safe Hands" insurance company, as in IT department, our main job is to take care of the data of the customers and what type of insurance services they want whether it is social or medical, or economic insurance. Also, we care about storing all the data about the income (as payments given to the company) and the expenses of the company, in addition to the data about its employees, so our database contains data for different sides of the company. Our report contains detailed information about each of the customers, employees, departments of the company, and its transactions and resources of money, all these entity types will be illustrated through an organized diagram that includes how they are all connected with each other.
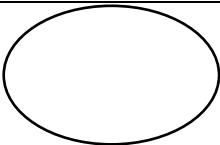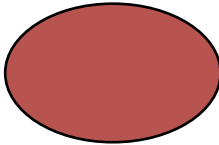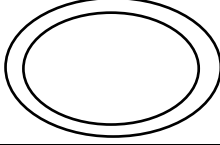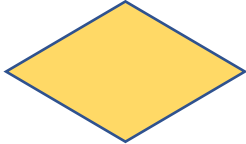
To complete our diagram in the most simple, efficient, and explicit way, we used an application called draw.io to design our database ER diagram, which contains various entities and relationships.

Being a part of this company is such an opportunity and an experience for us to improve our skills and get more knowledge about this system. In addition, it helps by providing a secure safe, and efficient database that people can trust and depend on.

II- System Description:

During the past few years, Lebanon has witnessed several continuous problems, from corruption to the revolution and covid lockdown, and economic crisis along with the Beirut explosion. Because of all these challenges that Lebanon faced, a numerous number of citizens every day get messed up because of the unorganized system that we have, which can no longer provide the right services for people. Therefore, in our department, in Safe Hands insurance company, we want to ensure and provide people with the best services we can, to create the most organized and efficient database which contains well-classified data about the customers and the employees themselves, during any kind of emergencies or accidents that require insurance coverage (robbery, natural and unnatural disasters, accidents). Thus, in our insurance company, we are contracted with several other companies, each one is specialized with a type of service that we insure, whether it is medical or social insurance. An insurance company, besides its clients, employees, and services, has different departments each one is different from the other, and despite all the income that an insurance company receives, it has also many other expenses which are necessary for it to grow more and to keep active and provide good profitable services. Being a worker in an insurance company, especially in an IT department, may seem like it is a simple task to do, but on the contrary, it is a very demanding job, and it requires a lot of attention and responsibility because we are dealing with a large detailed database of many people who are clients seeking for our services and help within different types of services that each one is completely different from the other, in addition to the employees' data and all the financial transactions and resources of the company. Even though working in such department may be demanding but helping citizens by insuring them and providing them with a safe place to store all of their data is like a trophy to us.

III- ER Diagram Symbols

Entity Type	
Weak Entity Type	
Attribute	
Key Attribute	
Multivalued Attribute	
Derived Attribute	
Relationship	
Total Participation	
Partial Participation	

IV- ER diagram for "Safe Hands" insurance company
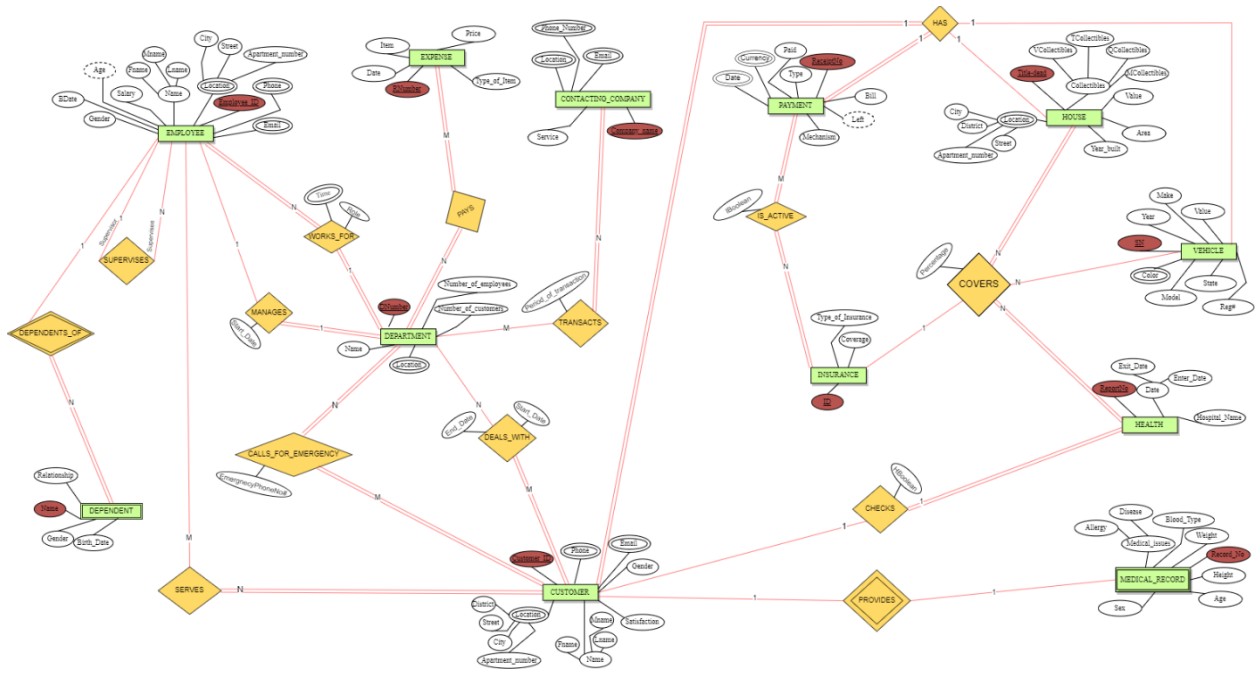
V- Entity Types:

1. EMPLOYEE
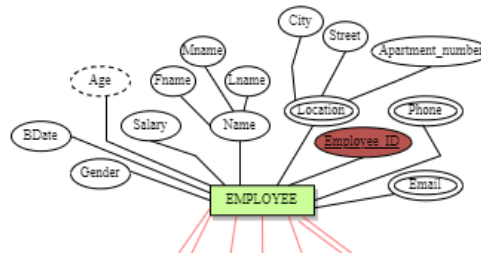
As we mentioned before, in our company, we do not care only about the customers, but about the employees as well. Therefore, we designed for employees an entity type on their own. Each employee has a special ID number on his/her own (known as a key) that identifies him/her. Also, the employee entity contains a composite attribute, which is the Name of the employee himself/herself divided into first (Fname), middle (Mname), and last name (Lname). Information such as the Gender and birth date (BDate) of each employee are also gathered, in addition to a derived attribute which is the Age of the employee (since it's connected to the birthday date). We also have multivalued attributes such as the Email and the phone number (Phone) of each employee, since every employee could possibly have more than one phone number or more than one email (email for work and personal email in case of emergencies). We do care also about the social security number of the employee (SSN) for guarantee during emergencies. Moreover, we have the Address of the employee, which is both a composite and multivalued attribute, since the employee might have more than one address (for example some people move on to their villages in summer and return to the city in winter), and it is divided into District, City, Street, and Apartment_number. One last attribute of the employee entity type is the Salary, which is considered a reward for this employee at the end of each month.

2. CUSTOMER
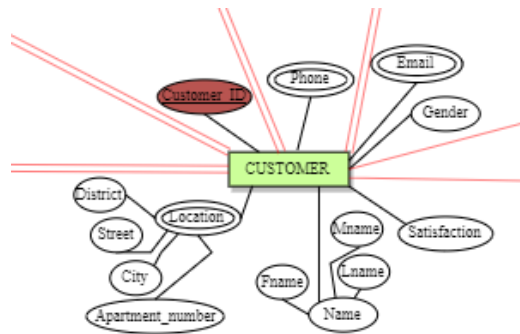
   Customer is a priority in our database, so in order to serve him/her well we need to collect data about our customers, so we assign a unique Customer_I for each customer to be a primary key in our data model. We save the Gender and the Name composited attribute divided into first (Fname) middle (Mname), and last name (Lname). We create a multivalued attribute of Email, Phone in case the customer has multiple ways to contact with. We assign a composite attribute for the Address of the customer (City, Street, Apartment_number, District). And finally, to track our progress and get feedback on our work, we created a Satisfaction attribute that will hold a value from 1 to 10 based on the satisfaction of the customer.

3. EXPENSE
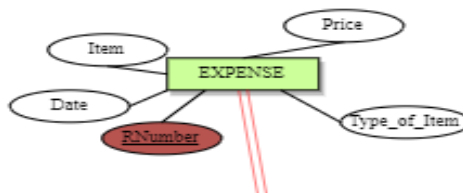
   This entity type is one of the important entities since it tracks and stores each expense that the company spends. So we create an attribute for the Item of the thing that the company spends money on, and an attribute for the Date of the expense the company paid, in addition, ion the type of item (Type_of_item), and the Price of it, and a unique receipt number (RNumber) the company paid, for illustration as an example, let's say the company bought 100 computers, so the items will be 100 computers of type equipment and of date 3 Oct 2022 with Number of 455793 and price of 200,000 $.

4. PAYMENT
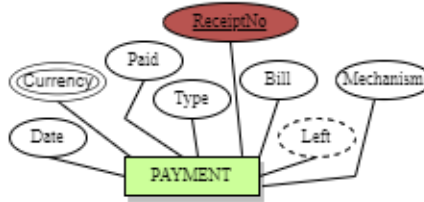
This is a very crucial entity to have. As an insurance company we need to track the payments of our customers to calculate what has been paid and left and for calculating our revenue as a company. So, we have created this entity type with the receipt number (ReceipetNo), which is an attribute number that will be the primary key for this entity type, and we created the Bill attribute which will store the whole amount of money that our customer has to pay. Moreover, we created a Currency attribute to know in which currency did the customer pay, since our company is a multinational company, and it is very important to know which and how much money of specific currency is entering our treasury. In addition, we created a multivalued Date attribute to track the date of payments if in case the employee preferred to pay in installments or directly. And we created an attribute called Type to know which method the customer is paying with. And for sure if he/she picked to pay in installments, we must track the amount of money that the customer has paid so far, so we created the Paid attribute. In addition, we created a derived attribute Left that is got by the formula of bills – paid so that we can know how much is left to pay. Lastly, we created an attribute which is the Mechanism that will store the mechanism that the customer wants to pay, for example, it could store payment by a transaction from the bank or cash or by bond, etc.…

$$left = bill - paid$$

5. DEPARTMENT
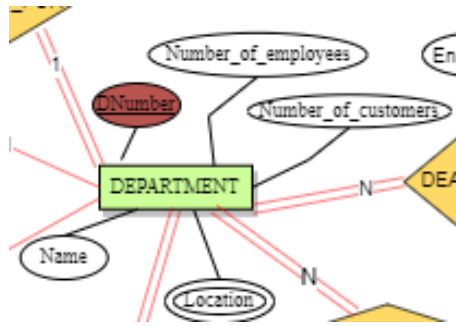
Our company has several departments, and each department is specialized in the part of it, for example, we as the group who are creating this database are working in the IT department. Now this department has several attributes to describe it. Firstly, the Name of the department and the number of the department (DNumber) will be unique and will be the primary key for this entity. We created the Number_of_employees attribute to track how many employees we have in each department, and the Number_of_customers attribute to track the number of customers in this department. In addition, we have a Location for each department in our company so, we created a multivalued attribute to save their locations.

6. DEPENDENT
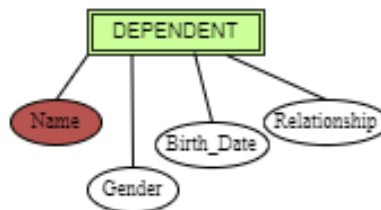
Now regarding the dependent entity which is a weak entity that relates and connects to the employees. Now, this dependent entity is created to track and save the information and data about the family of each employee, so that for example, if we as a company want to give a raise or help the employee with something or give him bonuses we can have the number of dependents and who are they so we could, for example, pay for school tuition for his/her kids, or give him vouchers for traveling with his/her wife/husband for example. Now we created the Name attribute which is a partial key, and the Gender attribute as well as the Birth_Date of the dependent and the Relationship of the dependent to our employee.

7. HOUSE
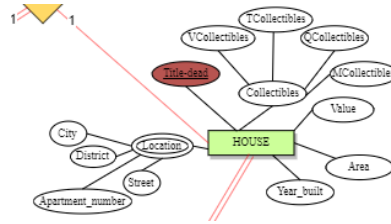
In case of house robbery, accidents such as tornadoes, fire, or even like the Beirut explosion in 2020, many houses indeed got destroyed, thus they needed insurance. This entity type contains one unique attribute which is the Title_deed, the key because each house has a special unique title deed that differentiates it from another. In addition, the house entity includes information about the house, which are the Area of the house (in meters), the Value of this house in the market, and its Year of built (the year in which the house became ready to be sold), and the Location of the house which is a composite attribute divided into District, City, Street, and Apartment_number. One last attribute in this entity is the Collectibles attribute, which is also a composite attribute divided into VCollectibles (the value of the collectibles), MCollectibles (the material used in this item of collectibles), TCollectibles (the type), and QCollectibles, the quantity of this item.

8. MEDICAL_RECORD
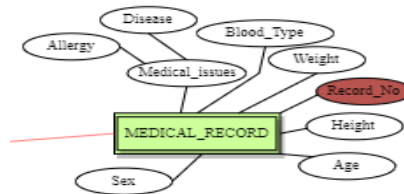
As mentioned before that in case of emergencies, people might go to the hospital for them to be treated or taken care of, therefore we need a medical record of both our clients and employees. This weak entity type includes basic information about the customer, which are the blood type (Blood_Type) of the customer, and the demographic data that includes the Age, Gender, Height, and Weight of the client. One last attribute for this weak entity type is the medical issues (Medical_issues) which is a composite attribute that is divided into Allergies and Diseases, in case the person suffers from any type of allergy or a certain disease. The MEDICAL_RECORD is a weak entity type since it does not have any key attribute and its identification depends on another entity type or specifically it must participate with an owner entity type which is the CUSTOMER entity type in this case with its partial key Record_No. Thus, the identification will be based on the partial key of the weak entity type and the entity it is related to in the identifying relationship type.

9. VEHICLE
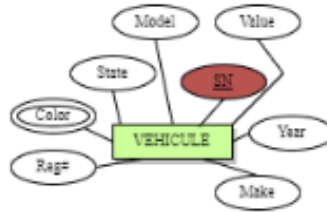
There are many types of insurance services, and vehicle insurance is one of them.

The vehicle entity contains a unique attribute, the SN, or the serial number which is the key that specializes in this vehicle. We also care about much other information about this vehicle such as the Value (cost of production) and its Make (for example if it's a car, what is it? Nissan, Toyota, BMW, and many others), the State of the vehicle, the Model of the vehicle (for example a model of BMW car could be X5), and the year of production (Year) of this vehicle. In addition, we have one multivalued attribute for the vehicle, which is its Color since vehicles can have more than one color. Finally, we have the Reg#, or the registration number which is the number of the car.

A vehicle's registration number in addition to the state is the license of the driver.

10. CONTRACTED_COMPANY
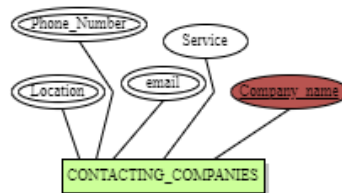
As an insurance company, we have contracts with many other companies which facilitate insurance transactions for the citizens (for example real estate circles, health, cars, or vehicle companies).

This entity type contains three multivalued attributes, which are the Location, the Email, and the phone number (Phone_Number) of the company, since it is a company so it might have more than one branch or location, and it might have several phone numbers and email to facilitate the way of communication with them. The company also has a unique Name on its own (which is the key) that identifies this company. Finally, this company also has an attribute known as Service, which is the type of insurance that this company provides.

11. HEALTH
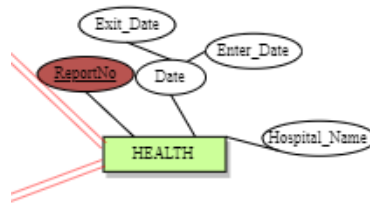
In case of health emergencies where there is a medical or life conditions, we are interested in having data about to which hospital to send the customers for them to get the best service.

This entity type includes a unique attribute, the key, which is the report number (ReportNo) because each patient has his/her report that identifies and explains their case and medical condition. We also care about the name of the hospital (Hospital_Name) that the customer went to, just to be aware in case of emergencies. Finally, we have the date attribute, which is a composite attribute that is divided into the Enter_Date, which is when the patient entered the hospital, and the Exit_Date which is when the patient came out of the hospital.

12. INSURANCE
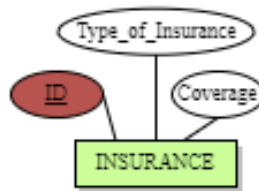
For this entity, we created a unique ID that will serve as a primary key, and this insurance entity will be related to the customer and to the items he/she is insured on. The type of insurance attribute will store the Type_of_Insurance, for example here in Lebanon there is a type of insurance that is mandatory by the government on the car, so its type will be mandatory, and there's insurance that covers your car repairments if someone hits you with his car…, and there is the Coverage attribute that will state the amount that will be covered by the insurance depending on the type of the insurance.

VI- Relationships:

    The Supervises relationship is between two entities both of type "EMPLOYEE". There is partial participation from both sides, because not each employee is a supervisor of another employee, and not each employee is supervised by another. The cardinality is 1:N since a supervisor can have many supervisees, but a supervisee can have only one supervisor.
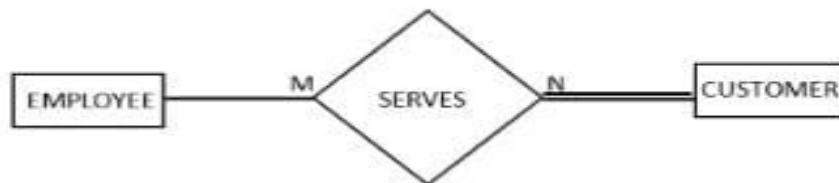
    The SERVES relationship is between the entities of types "EMPLOYEE" and "CUSTOMER". There is partial participation from the employee side because not all the employees in the company will serve a customer. On the other hand, the customer has total participation because each customer will always be served by an employee. The cardinality ratio is M: N because an employee can serve many customers and at the same time a customer can be served by many employees.

3- HAS:
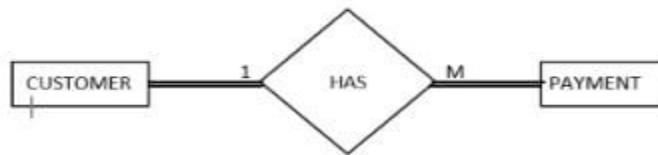
The HAS relationship is between two entity types "CUSTOMER" and "PAYMENTS". The total participation from both the customer and payments is because each customer has payments to pay for, and each payment required for the service is paid by a customer. The cardinality ratio is 1:M, because each payment is paid by one customer, but one customer can have many payments to pay.

4- WORKS_FOR:
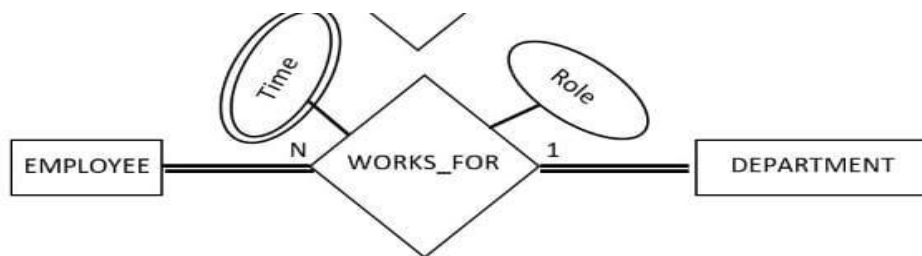
The WORKS_FOR relationship is between each of the "EMPLOYEE" and "DEPARTEMENT" entities. There is total participation for both the employee and the department because each employee works for a certain department, and each department has employees that work for it. The cardinality ratio N:1 is because each employee works for a single department, but a department has many employees that work in it. This relationship has the Time, which is a multivalued attribute that indicates the work time of that employee, and it is multivalued because the employee could have different work times (for example different times during winter/summer). In addition, there is a Role attribute, which indicates the role or the position of this employee in this specific department.

5- DEPENDENTS_OF:
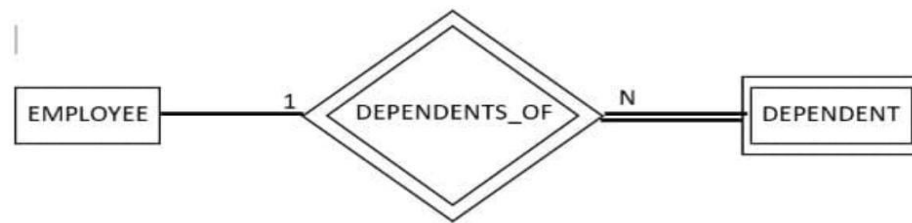
The DEPENDENTS_OF is a weak relationship between entities of types "EMPLOYEE" and "DEPENDENT" (which is a weak entity). There is partial participation from the employee side because not all employees have a dependent. However, there is total participation from the dependent side because each dependent has an employee on whom he/she is dependent. The cardinality ratio is 1:N because each employee can have several dependents but each dependent is only dependent on one employee.

6- CALLS_FOR_EMERGENCY:
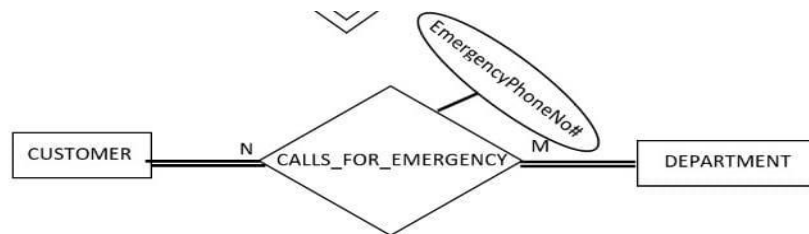
CALLS_FOR_EMERGENCY is a relationship between the "CUSTOMER" and "DEPARTMENT" entities. The total participation from both sides is because each customer must call a department for an emergency, and each emergency call received by a department is from a customer. The cardinality ratio N: M, is because each customer can call different and many departments, depending on the emergency type, and each department is called for an emergency by many customers. The EmergencyPhoneNo# is an attribute that indicates the phone number that should be called for by clients in case of emergency.

7- DEALS_WITH:

The DEALS_WITH relationship is also between the "CUSTOMER" and "DEPARTMENT" entities. And there is partial participation from the department because not all departments deal with customers. There is total participation from the customer since each customer must deal with a certain department. The cardinality ratio N:1 is because each customer has to deal with one department, but one department deals with many customers. The attributes Start Date and End Date are to indicate the date when the customer started dealing with the company and when he/she finished our services.

8- HAS: (Same relationship as above, but between the customer and the vehicle)
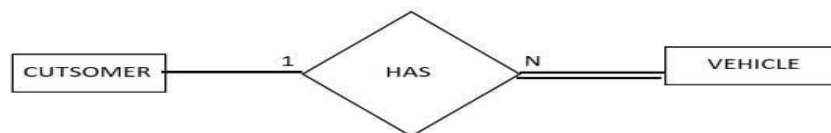
The HAS relationship is between a "CUSTOMER" and "VEHICLE" entities. There is partial participation from the customer because not all clients have vehicles. The total participation from the vehicle side is because each vehicle is owned by a customer. The cardinality ratio is 1:N because each customer can have multiple vehicles but each vehicle is owned by one person.

9- HAS: (Same relationship as above, but between the customer and the house)
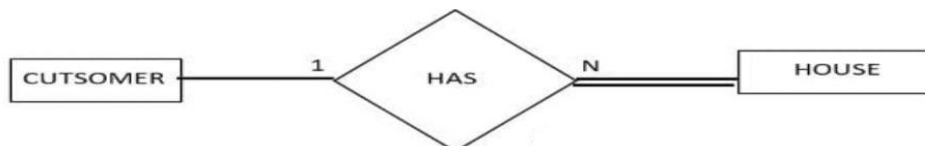
The HAS_A3 relationship is between two entities of types "CUSTOMER" and "HOUSE". The partial participation from the customer because not all customers own a house. The total participation from the house side is because each house is owned by a customer. As for cardinality 1: N is because each customer can have several houses, but each house is owned by one customer.

10- CHECKS:
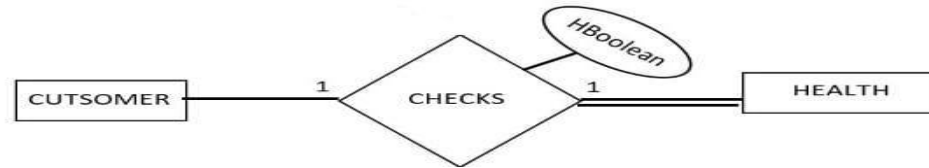
The CHECKS relationship is between the "CUSTOMER" and "HEALTH" entities. There is partial participation from the customer because not all customers check for their health if there is no need to. Regarding the health side, there is total participation, because each check or transaction for health is done by a customer. The cardinality is 1:1 since every customer checks only for his/her own medical state (health), and each health check is done by one customer. The attribute HBoolean is to indicate whether this customer has done a health check, in case of doing that, it is going to be related to the Medical_Record entity in order to finish the transactions.

11- PROVIDES:
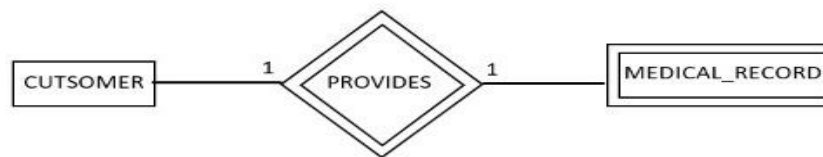
The PROVIDES relationship is between the "CUSTOMER" and "MEDICAL_RECORD" entities. There is partial participation from the medical record side because not all medical records provided to the company are from the customers (there are medical records of the employees). As for the cardinality 1:1, is because each customer can have only one medical record at a time, and each medical record contains data of one customer.

12- MANAGES:

      The MANAGES relationship is between "EMPLOYEE" and "DEPARTMENT" entities. There is partial participation from the employee side because not all employees manage a department. There is total participation from the department side because every department is managed by an employee, and it is 1:1 relationship cardinality as only one employee manages one department, and each department is managed by one employee. There is an attribute created for this relation which is Start_Date that will help us track when did the employee start managing a specific department.

13- PAYS:

      The PAYS relationship is between "DEPARTMENT" and "EXPENSE" entities. There is complete participation from both entities because each department has an expense on its own, and all expenses are needed for a department, and it is of N:M relationship cardinality as many departments pays many expenses and many expenses are paid by many departments.

(A thick line is a total participation, its two lines but because of the zoom it looks like one line).

14- TRANSACTS:
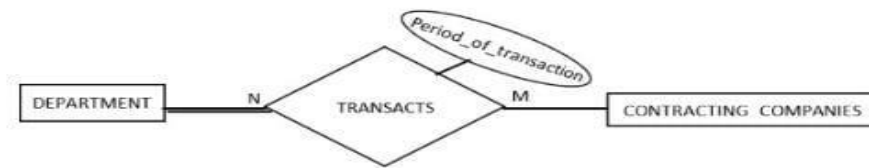
The TRANSACTS relationship is between "DEPARTMENT" and "CONTRACTING COMPANIES" entities. There is complete participation from the side of the DEPARTMENT entity because each department has transactions with a certain company, and partial participation from the CONTRACTING COMPANIES entity, because not all companies have transactions with certain departments and it is of M:N relationship cardinality as many departments do have transacts with contracting companies can be that many companies can transact with many departments in the company. In addition, there is an attribute of Period_of_transaction which will help us know the date of the transaction that happened.

15- IS_ACTIVE:

The IS_ACTIVE relationship is between the "INSURANCE" and "PAYMENTS" entities. There is complete participation from both entities, because each insurance should be paid, and each payment is from an insurance service, and it is of M:N relationship cardinality as many Insurances can have a relationship with payments and the opposite is true. In addition, there is an attribute for the relationship that will help us know if the insurance is active or not.

16- COVERS1:
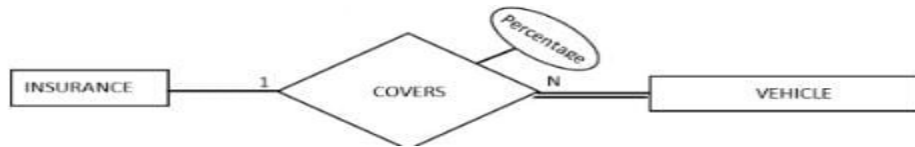
The COVERS1 relationship is between "INSURANCE" and "VEHICLE" entities. There is partial participation from the Insurance side because not all insurance services cover the vehicle's insurance, and total participation from the Vehicle side, is because all insured vehicles are insured by an insurance service, and it is of 1:N relationship cardinality as one insurance can cover many Vehicles. In addition, there is an attribute of Percentage that will indicate the percentage of coverage depending on the type of insurance.

17- COVERS2:
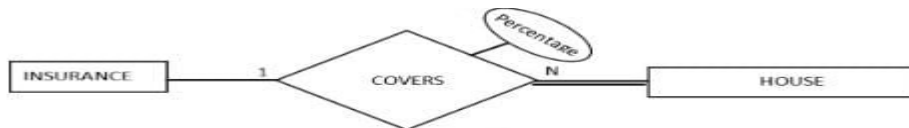
The COVERS1 relationship is between "INSURANCE" and "HOUSE" entities. There is partial participation from the Insurance side, because not all insurance services cover the house's insurance, and total participation from the House side, is because all insured houses are insured by an insurance service, and it is of 1:N relationship cardinality as one insurance can cover many houses. In addition, there is an attribute of Percentage that will indicate the percentage of coverage depending on the type of insurance.

18- COVERS3:
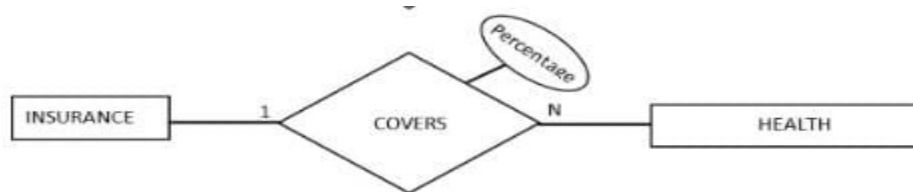
The COVERS1 relationship is between "INSURANCE" and "HEALTH" entities. There is partial participation from the Insurance side because no insurance services insure health, and total participation from the Health side is because all health insurances are insured by an insurance service and it is of 1:N relationship cardinality as one insurance can cover many Health. In addition, there is an attribute of Percentage that will indicate the percentage of coverage depending on the type of insurance.

VII. ER Diagram to Relational Database Schema Mapping:

After finishing the initial design of the database represented by the ER diagram which illustrates the concepts of our database as a collection of interrelated entity types, the diagram must be converted into a relational schema. To do this, a mapping algorithm is followed, the steps of which are explained thoroughly.

STEP 1: Mapping of Regular Entity Types

In the first step, the regular entity types are going to be mapped into relations. Every regular entity is going to have its own relation that includes all its simple attributes and one primary key which is underlined. The strong entity types in this database design for Safe Hands insurance company are EMPLOYEE, CUSTOMER, EXPENSE, PAYMENT, DEPARTMENT, HOUSE, VEHICLE, CONTRACTED_COMPANY, HEALTH, and INSURANCE.

1-EMPLOYEE:

Employee_ID	Fname	Mname	Lname	Salary	BDate	Gender

The EMPLOYEE entity type contains simple, derived, composite, and multivalued attributes. This relation includes all simple attributes with the primary key Employee_ID being underlined. The EMPLOYEE entity type has multivalued attributes named Phone and Email will be mapped into a separate relation in a later step. Also, there is another multivalued attribute named Location that is composite of only simple attributes City, Street, and Apartment_number that will be also mapped later on.

2-CUSTOMER:

Customer_ID	Fname	Mname	Lname	Satisfaction	Gender

The CUSTOMER entity type contains simple, composite, and multivalued attributes. This relation includes all simple attributes with the primary key Customer_ID being underlined. The CUSTOMER entity type has multivalued attributes named Phone and Email will be mapped into separate relations in a later step. Also, there is another multivalued attribute named Location that is composite of only simple attributes City, Street, District and Apartment_number that will be also mapped later on.

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3-EXPENSE:

Item	Price	RNumber	Date	Type_of_Item

The EXPENSE entity type contains only simple attributes. This relation includes all simple attributes with the primary key RNumber being underlined.

4-PAYMENT:

Paid	Type	Bill	Mechanism	ReceiptNo

The PAYMENT entity type contains simple, derived, and multivalued attributes. This relation included all simple attributes with the primary key ReceiptNo being underlined. The multivalued attribute Currency will be mapped into separate relations in a later step.

5- DEPARTMENT:

DName	DNumber	Number_of_employees	Number_of_customers

The DEPARTMENT entity type contains simple and multivalued attributes. This relation includes all simple attributes with the primary key DNumber being underlined. The DEPARTMENT entity type has a multivalued attribute, the Location which is going to be mapped into separate relations in a later step.

6-HOUSE:

Title_dead	VCollectibles	TCollectibles	QCollectibles	MCollectibles	Area	Year_built	Value

The HOUSE entity type contains simple, composite and multivalued attributes. This relation includes all simple attributes with the primary key Title_deed being underlined. The HOUSE entity type has Collectibles as a composite attribute of which only the simple attributes VCollectibles, MCollectibles, QCollectibles and TCollectibles are included in the relation. The HOUSE entity type has a multivalued attribute named Location composite of only simple attributes District, City, Street and Apartment_number which are going to be mapped into separate relation in later step.

7-VEHICLE:

SN	State	Year	Make	Value	Model	Reg#

The VEHICLE entity type contains simple and multivalued attributes. This relation includes all simple attributes with the primary key SN being underlined. The VEHICLE entity type multivalued attribute Color is not represented in this relation; it is going to be represented into separate relation in later step.

8-CONTRACTING_COMPANY:

CName	Service

The CONTRACTING_COMPANY entity type contains simple and multivalued attributes. This relation includes all simple attributes with the primary key Company_name being underlined. The multivalued attributes, Phone_Number, Email, and Location are not represented in this relation, these attributes are going to be represented in separate relations in a later step.

9-HEALTH:

ReportNo	Exit_Date	Enter_Date	Hospital_Name

The HEALTH entity type contains simple and composite attributes. This relation includes all simple attributes with the primary key ReportNo being underlined. The HEALTH entity type has the Date as a composite attribute of which only the simple attributes Exit_Date and Enter_Date is included in the relation, the attribute Date itself will be mapped into separate relation in a later step.

10- INSURANCE:

IID	Coverage	Type_of_Insurance

The INSURANCE entity type contains only simple attributes, which are all included in this relation with primary key ID being underlined, along with the other simple attributes which are the Coverage and the Type_of_Insurance.

STEP 2: Mapping of Weak Entity Types

In this step, the weak entity types are mapped into relations. As in step 1, only the simple attributes which are not multivalued or derived attributes are included in the relations. Furthermore, a weak entity relation has a foreign key attribute which is the primary key of the owner entity type. The combination of the foreign key added, and the partial key of the weak entity type represents the primary key of the relation. The weak entities in our database design are DEPENDENT and MEDICAL_RECORD.

1-DEPENDENT:

Gender	BDate	Relationship	<u>Name</u>	<u>EID</u>

The weak entity type DEPENDENT has the partial key Name. Thus, the DEPENDENT relation's primary key is the combination of the primary key of the relation corresponding to the employee entity type (EMPLOYEE) and the employee id attribute (**EID**). Employee_ID is the foreign key attribute referencing the primary key Employee_ID of the EMPLOYEE relation. Therefore, both Name and EID are underlined, forming the primary key. The simple attributes of the DEPENDENT entity type are included in the DEPENDENT relation.

2-MEDICAL_RECORD:

Blood_Type	Weight	Height	Age	Sex	Disease	Allergy	<u>RecordNo</u>	<u>CID</u>

The weak entity type MEDICAL_RECORD has the partial key RecordNo. Thus, the MEDICAL_RECORD relation's primary key is the combination of the primary key of the relation corresponding to the owner entity type (CUSTOMER) and the RecordNo attribute. **CID** is the foreign key attribute referencing the primary key Customer_ID of the CUSTOMER relation. Therefore, both Record_No and **CID** are underlined (forming the primary key). The simple attributes Blood_Type, Weight, Height, Age, and are also included in the MEDICAL_RECORD relation. And the composite attribute Medical_issues of which only simple attributes Allergies and Diseases are included in the relation.

STEP 3: Mapping of Binary 1:1 Relationship Types

In this third step, the binary one-to-one relationships are going to be mapped. To map each binary 1:1 relation type found in our ER diagram, there are three possible ways. The foreign key approach indicates taking the primary key of the relation corresponding to one of the participating entity types in this relationship and placing it in the other relation corresponding to the other participating entity type as a foreign key. But it is more desirable to place the foreign key in the relation corresponding to the entity type with total participation. The second choice is the merged relation approach, which is about creating a relationship that merges both entity types and the relationship between them. This might be appropriate when there is total participation in both entity types. The final approach, called the cross-reference or relationship approach, is about adding an additional relation that cross-references the primary keys of the relations corresponding to the entity types participating in this relation. Our design relied on the foreign key approach in mapping the 1:1 MANAGES, CHECKS, PROVIDES and HAS (between the CUSTOMER entity type and each of the VEHICLE, HOUSE, and PAYMENT entity types) relationships.

1-CUSTOMER(HAS):

Customer_ID	**Fname**	**Mname**	**Lname**	**Satisfaction**	**Gender**	**VSN**	**HTitle**

Every VEHICLE and HOUSE has a CUSTOMER. The "HAS" relationship links the CUSTOMER entity type with the VEHICLE entity type and the CUSTOMER entity type with the HOUSE entity type. There is total participation from CUSTOMER and partial participation from VEHICLE, as, for the other relationship, there is as well total participation from CUSTOMER and partial participation from HOUSE. We chose the CUSTOMER relation in which we added, as a foreign key, the primary key ID of the VEHICLE relation and we renamed it **VSN** and we added, as a foreign key, the primary key ID of the HOUSE relation and we renamed it to **HTitle**. Both of which of 1:1 cardinality relationship.

2-DEPARTMENT (MANAGES):

DName	**DNumber**	**Number_of_employees**	**Number_of_customers**	**EID**	**Manager_Start_Date**

Every DEPARTMENT is managed by an EMPLOYEE. The "MANAGES" relationship links the DEPARTMENT entity and the EMPLOYEE entity. There is total participation from the DEPARTMENT entity type and partial participation from the EMPLOYEE entity type. We chose the DEPARTMENT relation in which we added, as a foreign key, the primary key ID of the EMPLOYEE relation and we renamed it **EID**.

3-PAYMENT (HAS):

Paid	Type	Bill	Mechanism	ReceiptNo	CID

Every CUSTOMER has a PAYMENT. The "HAS" relationship links the CUSTOMER entity and the PAYMENT entity. On both sides of the participating entities, we have total participation. Thus, it does not matter where we add the foreign key that relates to both entities. We chose the PAYMENT relation in which we added, as a foreign key, the primary key ID of the CUSTOMER relation and we renamed it **CID.**

4-HEALTH (CHECKS):

ReportNo	Exit_Date	Enter_Date	Hospital_Name	CID	HBoolean

Every HEALTH is being checked by the CUSTOMER. The "CHECKS" relationship links the CUSTOMER entity and the HEALTH entity. There is total participation from the HEALTH entity type and partial participation from the CUSTOMER entity type. We chose the HEALTH relation in which we added, as a foreign key, the primary key ID of the CUSTOMER relation and we renamed it **CID**.

STEP 4: Mapping of Binary1:N Relationship Types:

In the fourth step, the binary one-to-many relationships are going to be mapped. We will add a foreign key in the entity type at the sides of many of the relationships. This foreign key is the primary key of the second entity type participating in this relationship. In addition, we must include any other simple attribute of the one-to-many relationships. The one-to-many relationships that need to be mapped are SUPERVISES, WORKS_FOR, and COVERS (between the INSURANCE entity type and each of the VEHICLE, HOUSE, and HEALTH entity types).

1-EMPLOYEE (SUPERVISES, WORKS_FOR):

Employee_ID	Fname	Mname	Lname	Salary	BDate	Gender	Super_ID	DNo	Role

The SUPERVISES relationship relates to two entities of type EMPLOYEE. Many employees are being supervised by another employee. We add to its relation the foreign key Employee_ID which is the primary key of the EMPLOYEE entity type, and we renamed it to **Super_ID**.

The WORKS_FOR relationship links the EMPLOYEE entity type and the DEPARTMENT entity type. Many employees work for a department. Therefore, the EMPLOYEE entity type is on the M side. Thus, we add to its relation the foreign key DNumber which is the primary key of the DEPARTMENT, and we renamed it to **DNo**. We also include the simple attribute of the relation, the **Role** of the employee.

2-HEALTH (COVERS1):

ReportNo	Exit_Date	Enter_Date	Hospital_Name	CID	IID	Percentage	Hboolean

The COVERS relationship links the entity type INSURANCE with the entity type HEALTH. Several people, their health, and medicines are covered by the insurance. Therefore, the HEALTH entity type is on the M side. Thus, we add to its relation the foreign key ID which is the primary key of the INSURANCE entity type, and we renamed it to **IID**. In addition, we include the simple attribute of the relation, the **Percentage** of covered insurance.

3-HOUSE (COVERS2):

Title_dead	VCollectibles	TCollectibles	QCollectibles	MCollectibles	Area	Year_built	Value
IID	Percentage						

The COVERS relationship links the entity type INSURANCE with the entity type HOUSE. Several houses are covered by insurance. Therefore, the HOUSE entity type is on the M side. Thus, we add to its relation the foreign key ID which is the primary key of the INSURANCE entity type, and we renamed it to **IID**. In addition, we include the simple attribute of the relation, the **Percentage** of covered insurance.

4-VEHICLE (COVERS3):

SN	State	Year	Make	Value	Model	Reg#	IID	Percentage

The COVERS relationship links the entity type INSURANCE with the entity type VEHICLE. Several vehicles are covered by insurance. Therefore, the VEHICLE entity type is on the M side. Thus, we add to its relation the foreign key ID which is the primary key of the INSURANCE entity type, and we renamed it to **IID**. In addition, we include the simple attribute of the relation, the **Percentage** of covered insurance.

Step 5: Mapping of Binary M:N Relationship Types:

In this step, we are going to map the binary many-to-many relationships. For each binary relationship many-to-many, a new relationship that includes foreign keys, the primary key of all participating relations is going to be created. Their combination will form the primary key to this newly created relationship. In addition, we must include any other simple attribute of the many-to-many relationship. The many-to-many relationships in our design that are needed to be mapped are: CALLS_FOR_EMERGENCY, PAYS, SERVES, TRANSACTS, DEALS_WITH and IS_ACTIVE.

1-CALLS_FOR_EMERGENCY:

DNum	CNum	EmergencyPhoneNo#

Many customers call many departments for emergencies. The CALLS_FOR_EMERGENCY relationship links the entity type CUSTOMER with the entity type DEPARTMENT. We created a new relation called CALLS_FOR_EMERGENCY that includes the primary keys of the CUSTOMER and DEPARTMENT entity types as well as the simple attribute EmergencyPhoneNo# of the relationship. The primary key of the CUSTOMER entity type, CUSTOMER_ID, is added to the relation and renamed CNum. Also, the primary key of the DEPARTMENT entity type, DNumber, is added and renamed by DNum.

2-PAYS:

DNum	ERNum

Many departments pay many expenses. The PAYS relationship relates to two entities of type DEPARTMENT and EXPENSE. We created a new relationship PAYS that includes the primary keys of the DEPARTMENT and EXPENSE entity types. The primary key of the DEPARTMENT entity type, DNumber, is added to the relation and renamed DNum. In addition, the primary key of the EXPENSE entity type, RNumber, is added and renamed ERNum.

3-SERVES:

CustID	EID

Many customers are being served by many employees. The SERVES relationship links the entity type EMPLOYEE with the entity type CUSTOMER. We created a new relation SERVES that includes the primary keys of the EMPLOYEE and CUSTOMER entity types. The primary key of the CUSTOMER entity type, Customer_ID, is being added to the relation and renamed CusID. Also, the primary key of the EMPLOYEE, the Employee_ID, is added and renamed EID.

4-TRANSACTS:

DNo#	Company_Name	Period_of_transaction

Many contracting companies' have transactions with many departments. The TRANSACTS relationship links the entity type CONTRACTING_COMPANY with the entity type DEPARTMENT. We created a new relationship TRANSACTS that includes the primary keys of the DEPARTMENT and CONTRACTING_COMPANY entity types. The primary key of the DEPARTMENT entity type, DNumber, is being added to the relation and renamed DNo. Also, the primary key of the CONTRACTING_COMPANY, Company_name, is added and renamed Company_Name.

5-DEALS_WITH:

DNo	Customer_Number	Start_Date	End_Date

Many departments deal with many customers. The DEALS_WITH relationship links entity type CUSTOMER with the entity type DEPARTMENT. We created a new relationship DEALS_WITH that includes the primary keys of DEPARTMENT and CUSTOMER entity types. The primary key of the DEPARTMENT entity type, DNumber, is being added to the relation and renamed DNo. Also, the primary key of the CUSTOMER, Customer_ID, is being added and renamed Customer_Number.

PNum	Insurance_ID	IBoolean

Many insurances have many active payments. The IS_ACTIVE relationship links entity type PAYMENT with the entity type INSURANCE. We created a new relationship IS_ACTIVE that includes the primary keys of PAYMENT and INSURANCE entity types. The primary key of the PAYMENT entity type, ReceiptNo, is being added to the relation and renamed PNum. Also, the primary key of the INSURANCE, ID, is being added and renamed Insurance_ID.

Step 6: Mapping of Multivalued attributes

In the sixth step, the multivalued which were ignored before are going to be mapped. For each multivalued attribute, we will create a new relation that contains the related attribute and the primary key of the entity to which it belongs. The primary key of the newly created relation will be presented by their combination. We have multivalued attributes which are: the employee's location, phone, and email, the customer's location, phone, and email, the department's location, the contracted companies' location, phone number, and email, the house's location, the payment's currency and date, and the vehicle's color.

EMPLOYEE_LOCATION:

Employee_ID	ECity	EStreet	EApartment_number

The multivalued and composite attribute Location belongs to the EMPLOYEE entity type. To represent it, we created a relation called EMPLOYEE_LOCATION. Its primary key is composed of Employee_ID, the primary key of the EMPLOYEE entity type, and the simple attributes ECity, EStreet, and EApartment_number which represents the different employee addresses and living locations that are divided into the city, street, and apartment number.

EMPLOYEE_PHONE:

Employee_ID	EPhone

The multivalued attribute Phone belongs to the EMPLOYEE entity type. To represent it, we created a relation called EMPLOYEE_PHONE. Its primary key is composed of Employee_ID, the primary key of the EMPLOYEE entity type, and the attribute EPhone which represents the various employee's phone numbers to communicate with him/her.

EMPLOYEE_EMAIL:

Employee_ID	EEmail

The multivalued attribute Email belongs to the EMPLOYEE entity type. To represent it, we created a relation called EMPLOYEE_EMAIL. Its primary key is composed of Employee_ID, the primary key of the EMPLOYEE entity type, and the attribute EEmail which represents the multiple emails that an employee has to reach him/her out.

CUSTOMER_LOCATION:

Customer_ID	CDistrict	CCity	CStreet	CApartment_number

The multivalued and composite attribute Location belongs to the CUSTOMER entity type. To represent it, we created a relation called CUSTOMER_LOCATION. Its primary key is composed of Customer_ID, the primary key of the CUSTOMER entity type, and the simple attributes CDistrict, CCity, CStreet and CApartment_number which represents the different customer's addresses and living locations that are divided into district, city, street and apartment number.

CUSTOMER_PHONE:

Customer_ID	CPhone

The multivalued attribute Phone belongs to the CUSTOMER entity type. To represent it, we created a relation called CUSTOMER_PHONE. Its primary key is composed of Customer_ID, the primary key of the CUSTOMER entity type, and the attribute CPhone which represents the diverse customer's phone numbers in order to communicate with him/her.

CUSTOMER_EMAIL:

Customer_ID	CEmail

The multivalued attribute Email belongs to the CUSTOMERentity type. To represent it, we created a relation called CUSTOMER_EMAIL. Its primary key is composed of Customer_ID, the primary key of the CUSTOMER entity type, and the attribute CEmail which represents the multiple emails that a customer has in order to reach him/her out.

DEPARTMENT_LOCATION:

DNumber	DLocation

The multivalued attribute Location belongs to the DEPARTMENT entity type. To represent it, we created a relation called DEPARTMENT_LOCATION. Its primary key is composed of DNumber, the primary key of the DEPARTMENT entity type, and the attribute DLocation which represents the various locations (branches) for each department.

CCOMPANIES_LOCATION:

Company_name	CCLocation

The multivalued attribute Location belongs to the CONTRACTING_COMPANY entity type. To represent it, we created a relation called CCOMPANIES_LOCATION. Its primary key is composed of Company_name the primary key of CONTRACTING_COMPANY entity type and the attribute CCLocation which represents the various locations (branches) for each company.

CCOMPANIES _PHONE_NUMBER:

Company_name	CCPhone_Number

The multivalued attribute Phone_Number belongs to the CONTRACTING_COMPANY entity type. To represent it, we created a relation called CCOMPANIES_PHONE_NUMBER. Its primary key is composed of Company_name the primary key of CONTRACTING_COMPANY entity type and the attribute CCPhone_Numvber which represents the multiple numbers of each company.

CCOMPANIES _EMAIL:

Company_name	CCEmail

The multivalued attribute Email belongs to the CONTRACTING_COMPANY entity type. To represent it, we created a relation called CCOMPANIES_EMAIL. Its primary key is composed of Company_name the primary key of CONTRACTING_COMPANY entity type and the attribute CCEmail which represents the multiple emails of each company.

Title_dead	HCity	HStreet	HDistrict	HApartment_Number

The multivalued attribute Location belongs to the HOUSE entity type. To represent it, we created a relation called HOUSE_LOCATION. Its primary key is Title_dead the primary key of HOUSE entity type and has attributes named HCity, HStreet, Hdistrict and HApartment_Number which are the simple attributes of the multivalued and composite attribute Location but renamed in such a way to represent specifically the location of the house.

PAYMENT_CURRENCY:

ReceiptNo	Currency

The multivalued attribute Currency belongs to the PAYMENT entity type. To represent it, we created a relation called PAYMENT_CURRENCY. Its primary key is composed of ReceiptNo the primary key of PAYMENT entity type and the attribute Currency which represents the multiple currencies paid.

PAYMENT_DATE:

ReceiptNo	PDate

The multivalued attribute Date belongs to the PAYMENT entity type. To represent it, we created a relation called PAYMENT_DATE. Its primary key is composed of ReceiptNo the primary key of PAYMENT entity type, and the attribute PDate which represents the multiple dates a payment was paid in.

VEHICLE_COLOR:

SN	VCOLOR

The multivalued attribute Color belongs to the VEHICLE entity type. To represent it, we created a relation called VEHICLE_COLOR. Its primary key is composed of SN the primary key of VEHICLE entity type and the attribute Color which represents the multiple colors a vehicle has.

Step 7: Mapping of N-ary relationships

In the seventh and final step, we go through the Mapping of N-ary relationship types which was not included in the previous steps. We are going to find each relationship type related to more than two entity types and then create a new relationship to represent such an N-ary relationship type. In this mapping, we include in the new relationship the key attribute for each participating entity type as a foreign key and any simple attributes of the N-ary relationship type as attributes in the new relationship. Also, if the N-ary relationship attributes were composite we just include their simple attributes. And the new relationship's primary key will be all the foreign keys.

We have only two N-ary relationships HAS and COVERS:

HAS:

Customer_ID	ReceiptNo	Title_dead	VSN

HAS relationship had four entity types connected to it which are the CUSTOMER, PAYMENT, VEHICLE, and HOUSE. And as mentioned in the introduction of this step that in the mapping of the N-ary relationship we take the key attribute of each entity type and it will be a foreign key in the new relationship thus, the Customer_ID, ReceiptNo, SN, and Title_dead are the keys of the above entity types respectively and they are the foreign keys of this new relationship. This HAS relationship has no attributes and thus the columns of its schema will be limited with its foreign keys as well as all will be considered as the primary key of HAS relationship.

COVERS:

IID	ReportNo	Title_dead	VSN	Percentage

COVERS relationship has four entity types connected to it which are INSURANCE, HEALTH, VEHICLE, and HOUSE. And as mentioned in the introduction of this step that in the mapping of the N-ary relationship we take the key attribute of each entity type and it will be a foreign key in the new relationship thus, the ID, ReportNo, SN, and Title_dead are the keys of the above entity types respectively and they are the foreign keys of this new relationship. This COVERS relationship has one attribute called Percentage and thus the columns of its schema will contain its foreign keys as well as its attribute and the foreign keys will be considered the primary key of the COVERS relationship.

VIII – SQL Queries and Oracle Server:

1. EMPLOYEE

CREATE   TABLE   EMPLOYEE

(

Employee_ID	INT	PRIMARY KEY **CHECK** (EMPLOYEE_ID>9999),	
Fname	VARCHAR(15)	NOT NULL,	
Mname	VARCHAR(15)	NOT NULL,	
Lname	VARCHAR(15)	NOT NULL,	
Salary	FLOAT	**DEFAULT** '6000'	**CHECK** (SALARY>5000),
BDate	DATE	**DEFAULT** '1950-01-01',	
Gender	VARCHAR(6)	**CHECK** (GENDER **IN** ('Male','Female',NULL)),	
Super_ID	INT,		
Role	VARCHAR(15)	NOT NULL,	

FOREIGN KEY (Super_ID) **REFERENCES** EMPLOYEE(Employee_ID)

);

2. CUSTOMER

CREATE   TABLE   CUSTOMER

(

Customer_ID	INT	PRIMARY KEY **CHECK** (CUSTOMER_ID>9999),	
Fname	VARCHAR(15)	NOT NULL,	
Mname	VARCHAR(15)	NOT NULL,	
Lname	VARCHAR(15)	NOT NULL,	
Satisfaction	INT	**CHECK** (SATISFACTION **BETWEEN** 0 **AND** 10),	
Gender	VARCHAR(6)	NOT NULL	**CHECK** (GENDER **IN** ('Male','Female',NULL)),
VSN	INT**,**		
HTitle	VARCHAR(100),		

FOREIGN KEY (VSN) **REFERENCES** VEHICLE(SN),

FOREIGN KEY (HTitle) **REFERENCES** HOUSE(Title_dead));

3. DEPARTMENT

CREATE   TABLE   DEPARTMENT

(

DName	VARCHAR(30)	NOT NULL,
DNumber	INT	PRIMARY KEY **CHECK** (DNUMBER>0),
Number_of_employees	INT	NOT NULL **CHECK**(NUMBER_OF_EMPLOYEES>0),
Number_of_customers	INT	NOT NULL **CHECK** (NUMBER_OF_CUSTOMERS>0),
EID	INT,	
Manager_Start_Date	DATE	NOT NULL;

FOREIGN KEY (EID) **REFERENCES** EMPLOYEE(Employee_ID)

);

4. INSURANCE

CREATE   TABLE   INSURANCE

(

IID	INT	PRIMARY KEY **CHECK**(IID>0),
Coverage	INT	**DEFAULT** 30 **CHECK** (COVERAGE **BETWEEN** 30 **AND** 100),
Type_of_Insurance	VARCHAR(20)	NOT NULL **CHECK** (TYPE_OF_INSURANCE **IN** ('Mandatory','Against others','Other')),

);

5. HOUSE

CREATE   TABLE   HOUSE

(

Title_dead   VARCHAR(100)   PRIMARY KEY,

VCollectibles   FLOAT,

TCollectibles   VARCHAR(30),

QCollectibles   INT,

MCollectibles   VARCHAR(30),

Area   FLOAT   NOT NULL,

Year_built   INT   NOT NULL**,**

Value   FLOAT   NOT NULL   **CHECK** (VALUE>5000),

IID   INT,

Percentage   FLOAT   **DEFAULT** 30 **CHECK** (PERCENTAGE **BETWEEN** 30 **AND** 100),

FOREIGN KEY (IID) **REFERENCES** INSURANCE (IID)

);

6. VEHICLE

CREATE   TABLE   VEHICLE

(

SN   INT   PRIMARY KEY   **CHECK** (SN>99999),

State   CHAR(1)   **CHECK** (STATE **BETWEEN** 'A' **AND** 'Z'),

Year   INT   NOT NULL,

Make   VARCHAR(15)   NOT NULL,

Value   FLOAT   NOT NULL,

Model   VARCHAR(15)   NOT NULL,

Reg#   INT,

IID   INT,

Percentage   FLOAT   **DEFAULT** 30 **CHECK** (PERCENTAGE **BETWEEN** 30 **AND** 100),

FOREIGN KEY (IID) **REFERENCES** INSURANCE (IID));

7. PAYMENT

CREATE TABLE PAYMENT

(

Paid	FLOAT	NOT NULL	**CHECK** (PAID>0),
Type	VARCHAR(15)	NOT NULL	**CHECK** (TYPE **IN** ('INSTALLMENT','LUNP SUM')),
Bill	FLOAT	NOT NULL	**CHECK** (BILL>0),
Mechanism	VARCHAR(20)	NOT NULL,	
ReceiptNo	INT	PRIMARY KEY	**CHECK** (RECEIPTNO>0),
CID	INT,		

FOREIGN KEY (CID) **REFERENCES** CUSTOMER(Customer_ID)

);

8. EXPENSE

CREATE TABLE EXPENSE

(

Item	VARCHAR(30)	NOT NULL,	
Price	REAL	NOT NULL,	
RNumber	INT	PRIMARY KEY	**CHECK** (RNUMBER>0),
Date	DATE	NOT NULL,	
Type_of_Item	VARCHAR(30)	NOT NULL,	

);

9. CONTRACTING_COMPANY

CREATE TABLE CONTRACTING_COMPANY

(

CName	VARCHAR(30)	PRIMARY KEY,

Service   VARCHAR(20)   NOT NULL,);

10. HEALTH

CREATE   TABLE   HEALTH

(

ReportNo	INT	PRIMARY KEY **CHECK** (REPORTNO>0),
Exit_Date	DATE	NOT NULL,
Enter_Date	DATE	NOT NULL,
Hospital_Name	VARCHAR(30)	NOT NULL,
CID	CHAR(9)	NOT NULL,
HBoolean	CHAR(1)	CHECK (HBoolean IN ('T','F')),
IID	INT	NOT NULL,
Percentage	FLOAT	NOT NULL **CHECK** (PERCENTAGE **BETWEEN** 30 **AND** 100),

FOREIGN KEY (CID) **REFERENCES** CUSTOMER (Customer_ID),

FOREIGN KEY (IID) **REFERENCES** INSURANCE (IID)

);

11. DEPENDENT

CREATE   TABLE   DEPENDENT

(

Gender	VARCHAR(6)	**CHECK** (GENDER IN ('Male','Female',NULL)),
BDate	DATE	**DEFAULT** '1950-01-01',
Relationship	VARCHAR(10)	NOT NULL,
Name	VARCHAR(15),	
EID	INT,	

PRIMARY KEY (Name,EID),

FOREIGN KEY (EID) **REFERENCES** EMPLOYEE (Employee_ID)

);

12. MEDICAL_RECORD

CREATE   TABLE   MEDICAL_RECORD

(

Blood_Type   VARCHAR(3)   **DEFAULT** 'O+'   **CHECK** (Blood_Type IN ('A+','A-','B+','B-','AB+','AB-','O+','O-')),

Weight   FLOAT   **NOT NULL**   **CHECK** (Weight>=3),

Height   FLOAT   **NOT NULL**   **CHECK** (Height>=40),

Age   INT   **NOT NULL**   **CHECK** (Age BETWEEN 1 AND 130),

Sex   VARCHAR(6)   **CHECK** (Sex IN ('Male','Female',NULL)),

Disease   VARCHAR(20),

Allergy   VARCHAR(20),

RecordNo   INT   **CHECK** (RecordNo>0),

CID   INT,

PRIMARY KEY (RecordNo,CID),

FOREIGN KEY (CID) **REFERENCES** CUSTOMER (Customer_ID)

);

13. CALLS_FOR_EMERGENCY

CREATE   TABLE   CALLS_FOR_EMERGENCY

(

DNum   INT ,

CNum   INT,

EmergencyPhoneNo#   CHAR(3)   NOT NULL,

PRIMARY KEY (DNum,CNum)

);

14. PAYS

CREATE TABLE PAYS

(

DNum   INT,

ERNum   INT,

PRIMARY KEY (DNum,ERNum)

);

15. SERVES

CREATE TABLE SERVES

(

CustID   INT,

EID   INT,

PRIMARY KEY (CustID,EID)

);

17. TRANSACTS

CREATE TABLE TRANSACTS

(

DNo   INT,

Company_Name   VARCHAR(30),

Period_of_transaction   INT   **DEFAULT** 1 **CHECK**(PERIOD_OF_TRANSACTION>=1),

PRIMARY KEY (DNo,Company_Name)

);

18. DEALS_WITH

CREATE   TABLE   DEALS_WITH

(

DNo   INT,

Customer_Number   INT,

Start_Date   DATE   NOT NULL,

End_Date   DATE   NOT NULL,

PRIMARY KEY (DNo, Customer_Number)

);

19. IS_ACTIVE

CREATE   TABLE   IS_ACTIVE

(

PNum   INT,

Insurance_ID   INT,

IBoolean   CHAR(1)   CHECK (IBoolean IN ('T', 'F')),

PRIMARY KEY (PNum, Insurance_ID)

);

20. EMPLOYEE_LOCATION

CREATE   TABLE   EMPLOYEE_LOCATION

(

Employee_ID   INT   PRIMARY KEY,

ECity   VARCHAR(20),

EStreet   VARCHAR(20),

EApartment_number   INT   **CHECK** (EAPARTMENT_NUMBER>0),

);

21. EMPLOYEE_PHONE

CREATE **TABLE** EMPLOYEE_PHONE

(

Employee_ID   INT,

EPhone   CHAR(8),

PRIMARY KEY (Employee_ID,EPhone)

);

22. EMPLOYEE_EMAIL

CREATE **TABLE** EMPLOYEE_EMAIL

(

Employee_ID   INT ,

EEmail   VARCHAR(50)   **CHECK** (EEMAIL **LIKE** '%@%.%'),

PRIMARY KEY (Employee_ID,EEmail)

);

23. CUSTOMER_LOCATION

CREATE **TABLE** CUSTOMER_LOCATION

(

Customer_ID   INT   PRIMARY KEY,

CDistrict   VARCHAR(20)   NOT NULL,

CCity   VARCHAR(20)   NOT NULL,

CStreet   VARCHAR(20),

CApartment_number   INT   **CHECK** (CAPARTMENT_NUMBER>0),

);

24. CUSTOMER_PHONE

CREATE   TABLE   CUSTOMER_PHONE

(

Customer_ID   INT ,

CPhone   CHAR(8),

PRIMARY KEY (Customer_ID,CPhone)

);

25. CUSTOMER_EMAIL

CREATE   TABLE   CUSTOMER_EMAIL

(

Customer_ID   INT,

CEmail   VARCHAR(50)   **CHECK**(CEMAIL **LIKE** '%@%.%'),

PRIMARY KEY (Customer_ID,CEmail)

);

26. DEPARTMENT_LOCATION

CREATE   TABLE   DEPARTMENT_LOCATION

(

DNumber   INT   ,

DLocation   VARCHAR(20),

PRIMARY KEY (DNumber,DLocation)

);

27. CCOMPANIES_LOCATION

CREATE   TABLE   CCOMPANIES_LOCATION

(

Company_name   VARCHAR(30),

CCLocation   VARCHAR(20),

PRIMARY KEY (Company_name,CCLocation)

);

28. CCOMPANIES_PHONE_NUMBER

CREATE   TABLE   CCOMPANIES_PHONE_NUMBER

(

Company_name   VARCHAR(30),

CCPhone_Number   CHAR(8),

PRIMARY KEY (Company_name, CCPhone_Number)

);

29. CCOMPANIES_EMAIL

CREATE   TABLE   CCOMPANIES_EMAIL

(

Company_name   VARCHAR(30),

CCEmail   VARCHAR(50)   **CHECK** (CCEMAIL **LIKE** '%@%.%'),

PRIMARY KEY (Company_name, CCEmail)

);

30. HOUSE_LOCATION

CREATE TABLE HOUSE_LOCATION

(

Title_dead	VARCHAR(100)	PRIMARY KEY,
HCity	VARCHAR(20)	NOT NULL,
HStreet	VARCHAR(20),	
HDistrict	VARCHAR(20)	NOT NULL,
HApartment_Number	INT	**CHECK**(HAPARTMENT_NUMBER>0);

);

31. PAYMENT_CURRENCY

CREATE TABLE PAYMENT_CURRENCY

(

ReceiptNo	INT,	
Currency	VARCHAR(10)	**DEFAULT** 'dollar',

PRIMARY KEY (ReceiptNo, Currency)

);

32. PAYMENT_DATE

CREATE TABLE PAYMENT_DATE

(

ReceiptNo	INT,
PDate	DATE,

PRIMARY KEY (ReceiptNo, PDate)

);

33. VEHICLE_COLOR

CREATE   TABLE   VEHICLE_COLOR

(

SN   INT,

VCOLOR   VARCHAR(10),

PRIMARY KEY (SN, VCOLOR)

);

34. HAS1

CREATE   TABLE   HAS1

(

Customer_ID   INT,

ReceiptNo   VARCHAR(10),

PRIMARY KEY (Customer_ID, ReceiptNo)

);

35. HAS2

CREATE   TABLE   HAS2

(

Customer_ID   INT,

Title_dead   VARCHAR(100),

PRIMARY KEY (Customer_ID, Title_dead)

);

36. HAS3

CREATE   TABLE   HAS3

(

Customer_ID   INT,

VSN   INT,

PRIMARY KEY (Customer_ID, VSN));

37. COVERS1

CREATE **TABLE** COVERS1

(

IID   INT,

ReportNo   VARCHAR(10),

Percentage   FLOAT   **DEFAULT** 30   **CHECK** (PERCENTAGE **BETWEEN** 30 **AND** 100),

PRIMARY KEY (IID, ReportNo)

);

38. COVERS2

CREATE **TABLE** COVERS2

(

IID   INT,

Title_dead   VARCHAR(100) ,

Percentage   FLOAT   **DEFAULT** 30   **CHECK** (PERCENTAGE **BETWEEN** 30 **AND** 100),

PRIMARY KEY (IID, Title_dead)

);

39. COVERS3

CREATE **TABLE** COVERS3

(

IID   INT,

VSN   INT,

Percentage   FLOAT   **DEFAULT** 30   **CHECK** (PERCENTAGE **BETWEEN** 30 **AND** 100),

PRIMARY KEY (IID, VSN)

);

IX – Tables Descriptions:

decs EMPLOYEE

Column Name	Data Type	Nullable	Default	Primary Key
EMPLOYEE_ID	NUMBER	No	-	1
FNAME	VARCHAR2(15)	No	-	-
MNAME	VARCHAR2(15)	No	-	-
LNAME	VARCHAR2(15)	No	-	-
SALARY	FLOAT	Yes	'6000'	-
BDATE	DATE	Yes	'01-01-1950'	-
GENDER	VARCHAR2(6)	Yes	-	-
SUPER_ID	NUMBER	Yes	-	-
ROLE	VARCHAR2(15)	No	-	-
DNO	NUMBER	Yes	-	-

decs CUSTOMER

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
FNAME	VARCHAR2(15)	No	-	-
MNAME	VARCHAR2(15)	No	-	-
LNAME	VARCHAR2(15)	No	-	-
SATISFACTION	NUMBER	Yes	-	-
GENDER	VARCHAR2(6)	No	-	-
VSN	NUMBER	Yes	-	-
HTITLE	VARCHAR2(100)	Yes	-	-

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decs DEPARTMENT

Column Name	Data Type	Nullable	Default	Primary Key
DNUMBER	NUMBER	No	-	1
DNAME	VARCHAR2(30)	No	-	-
NUMBER_OF_EMPLOYEES	NUMBER	No	-	-
NUMBER_OF_CUSTOMERS	NUMBER	No	-	-
EID	NUMBER	Yes	-	-
MANAGER_START_DATE	DATE	No	-	-

decs INSURANCE

Column Name	Data Type	Nullable	Default	Primary Key
IID	NUMBER	No	-	1
COVERAGE	NUMBER	Yes	'30'	-
TYPE_OF_INSURANCE	VARCHAR2(20)	No	-	-

decs HOUSE

Column Name	Data Type	Nullable	Default	Primary Key
TITLE_DEAD	VARCHAR2(100)	No	-	1
VCOLLECTIBLES	FLOAT	Yes	-	-
TCOLLECTIBLES	VARCHAR2(30)	Yes	-	-
QCOLLECTIBLES	NUMBER	Yes	-	-
MCOLLECTIBLES	VARCHAR2(30)	Yes	-	-
AREA	FLOAT	No	-	-
YEAR_BUILT	NUMBER	No	-	-
VALUE	FLOAT	No	-	-
IID	NUMBER	Yes	-	-
PERCENTAGE	FLOAT	Yes	'30'	-

decs **VEHICLE**

Column Name	Data Type	Nullable	Default	Primary Key
SN	NUMBER	No	-	1
STATE	CHAR(1)	Yes	-	-
YEAR	NUMBER	No	-	-
MAKE	VARCHAR2(15)	No	-	-
VALUE	FLOAT	No	-	-
MODEL	VARCHAR2(15)	No	-	-
REG#	NUMBER	Yes	-	-
IID	NUMBER	Yes	-	-
PERCENTAGE	FLOAT	Yes	'30'	-

decs **PAYMENT**

Column Name	Data Type	Nullable	Default	Primary Key
RECEIPTNO	NUMBER	No	-	1
PAID	FLOAT	No	-	-
TYPE	VARCHAR2(15)	No	-	-
BILL	FLOAT	No	-	-
MECHANISM	VARCHAR2(20)	No	-	-
CID	NUMBER	Yes	-	-

decs **EXPENSE**

Column Name	Data Type	Nullable	Default	Primary Key
RNUMBER	NUMBER	No	-	1
ITEM	VARCHAR2(30)	No	-	-
PRICE	FLOAT	No	-	-
Date	DATE	No	-	-
TYPE_OF_ITEM	VARCHAR2(30)	No	-	-

decs CONTRACTING_COMPANIES

Column Name	Data Type	Nullable	Default	Primary Key
CNAME	VARCHAR2(30)	No	-	1
SERVICE	VARCHAR2(20)	No	-	-

decs HEALTH

Column Name	Data Type	Nullable	Default	Primary Key
REPORTNO	NUMBER	No	-	1
EXIT_DATE	DATE	No	-	-
ENTER_DATE	DATE	No	-	-
HOSPITAL_NAME	VARCHAR2(30)	No	-	-
CID	NUMBER	No	-	-
HBOOLEAN	CHAR(1)	Yes	-	-
IID	NUMBER	No	-	-
PERCENTAGE	FLOAT	No	-	-

decs DEPENDENT

Column Name	Data Type	Nullable	Default	Primary Key
NAME	VARCHAR2(15)	No	-	1
EID	NUMBER	No	-	2
GENDER	VARCHAR2(6)	Yes	-	-
BDATE	DATE	Yes	'01-01-1950'	-
RELATIONSHIP	VARCHAR2(10)	No	-	-

decs MEDICAL_RECORD

Column Name	Data Type	Nullable	Default	Primary Key
RECORDNO	NUMBER	No	-	1
CID	NUMBER	No	-	2
BLOOD_TYPE	VARCHAR2(3)	Yes	'O+'	-
WEIGHT	FLOAT	No	-	-
HEIGHT	FLOAT	No	-	-
AGE	NUMBER	No	-	-
SEX	VARCHAR2(6)	Yes	-	-
DISEASE	VARCHAR2(20)	Yes	-	-
ALLERGY	VARCHAR2(20)	Yes	-	-

decs CALLS_FOR_EMERGENCY

Column Name	Data Type	Nullable	Default	Primary Key
DNUM	NUMBER	No	-	1
CNUM	NUMBER	No	-	-
EMERGENCYPHONENO#	CHAR(3)	No	-	-

decs PAYS

Column Name	Data Type	Nullable	Default	Primary Key
DNUM	NUMBER	No	-	1
ERNUM	NUMBER	No	-	-

decs SERVES

Column Name	Data Type	Nullable	Default	Primary Key
CUSTID	NUMBER	No	-	1
EID	NUMBER	No	-	-

decs TRANSACTS

Column Name	Data Type	Nullable	Default	Primary Key
DNO	NUMBER	No	-	1
COMPANY_NAME	VARCHAR2(30)	No	-	2
PERIOD_OF_TRANSACTION	NUMBER	Yes	1	-

decs DEALS_WITH

Column Name	Data Type	Nullable	Default	Primary Key
DNO	NUMBER	No	-	1
CUSTOMER_NUMBER	NUMBER	No	-	2
START_DATE	DATE	No	-	-
END_DATE	DATE	No	-	-

decs IS_ACTIVE

Column Name	Data Type	Nullable	Default	Primary Key
PNUM	NUMBER	No	-	1
INSURANCE_ID	NUMBER	No	-	2
IBOOLEAN	CHAR(1)	Yes	-	-

decs EMPLOYEE_LOCATION

Column Name	Data Type	Nullable	Default	Primary Key
EMPLOYEE_ID	NUMBER	No	-	1
ECITY	VARCHAR2(20)	No	-	-
ESTREET	VARCHAR2(20)	Yes	-	-
EAPARTMENT_NUMBER	NUMBER	Yes	-	-

decs EMPLOYEE_PHONE

Column Name	Data Type	Nullable	Default	Primary Key
EMPLOYEE_ID	NUMBER	No	-	1
EPHONE	CHAR(8)	No	-	2

decs EMPLOYEE_EMAIL

Column Name	Data Type	Nullable	Default	Primary Key
EMPLOYEE_ID	NUMBER	No	-	1
EEMAIL	VARCHAR2(50)	No	-	2

decs CUSTOMER_LOCATION

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
CDISTRICT	VARCHAR2(20)	No	-	-
CCITY	VARCHAR2(20)	No	-	-
CSTREET	VARCHAR2(20)	Yes	-	-
CAPARTMENT_NUMBER	NUMBER	Yes	-	-

decs CUSTOMER_PHONE

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
CPHONE	CHAR(8)	No	-	2

decs CUSTOMER_EMAIL

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
CEMAIL	VARCHAR2(50)	No	-	2

decs DEPARTMENT_LOCATION

Column Name	Data Type	Nullable	Default	Primary Key
DNUMBER	NUMBER	No	-	1
DLOCATION	VARCHAR2(20)	No	-	2

decs CCOMPANIES_LOCATION

Column Name	Data Type	Nullable	Default	Primary Key
COMPANY_NAME	VARCHAR2(30)	No	-	1
CCLOCATION	VARCHAR2(20)	No	-	2

decs CCOMPANIES_PHONE_NUMBER

Column Name	Data Type	Nullable	Default	Primary Key
COMPANY_NAME	VARCHAR2(30)	No	-	1
CCPHONE_NUMBER	CHAR(8)	No	-	2

decs CCOMPANIES_EMAIL

Column Name	Data Type	Nullable	Default	Primary Key
COMPANY_NAME	VARCHAR2(30)	No	-	1
CCEMAIL	VARCHAR2(50)	No	-	2

decs HOUSE_LOCATION

Column Name	Data Type	Nullable	Default	Primary Key
TITLE_DEAD	VARCHAR2(100)	No	-	1
HCITY	VARCHAR2(20)	No	-	-
HSTREET	VARCHAR2(20)	Yes	-	-
HDISTRICT	VARCHAR2(20)	No	-	-
HAPARTMENT_NUMBER	NUMBER	Yes	-	-

decs PAYMENT_CURRENCY

Column Name	Data Type	Nullable	Default	Primary Key
RECEIPTNO	NUMBER	No	-	1
CURRENCY	VARCHAR2(10)	No	'dollar'	2

decs PAYMENT_DATE

Column Name	Data Type	Nullable	Default	Primary Key
RECEIPTNO	NUMBER	No	-	1
PDATE	DATE	No	-	2

decs VEHICLE_COLOR

Column Name	Data Type	Nullable	Default	Primary Key
SN	NUMBER	No	-	1
VCOLOR	VARCHAR2(10)	No	-	2

decs HAS1

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
RECEIPTNO	VARCHAR2(10)	No	-	2

decs HAS2

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
TITLE_DEAD	VARCHAR2(100)	No	-	2

decs HAS3

Column Name	Data Type	Nullable	Default	Primary Key
CUSTOMER_ID	NUMBER	No	-	1
VSN	NUMBER	No	-	2

decs COVERS1

Column Name	Data Type	Nullable	Default	Primary Key
IID	NUMBER	No	-	1
REPORTNO	VARCHAR2(10)	No	-	2
PERCENTAGE	FLOAT	Yes	'30'	-

decs COVERS2

Column Name	Data Type	Nullable	Default	Primary Key
IID	NUMBER	No	-	1
TITLE_DEAD	VARCHAR2(100)	No	-	2
PERCENTAGE	FLOAT	Yes	'30'	-

Column Name	Data Type	Nullable	Default	Primary Key
IID	NUMBER	No	-	1
VSN	NUMBER	No	-	2
PERCENTAGE	FLOAT	Yes	'30'	-

X – Insert Tables:

EMPLOYEE:

INSERT INTO EMPLOYEE VALUES (202104, 'Omar', 'Wissam', 'Temsah', 9999, DATE '2004-03-18', 'Male', NULL, 'CEO');
INSERT INTO EMPLOYEE VALUES (202164, 'Ahmad', 'Nader', 'Mourad', 8675, DATE '2002-10-17', 'Male', 202104, 'Manager');
INSERT INTO EMPLOYEE VALUES (202133, 'Mohammad', 'Ghazi', 'Alizzi', 7500, DATE '2003-10-15', 'Male', 202104,'Manager');
INSERT INTO EMPLOYEE VALUES (202155, 'Mohammad', 'Amin', 'Alfallah', 7500, DATE '2003-03-25', 'Male', 202104,'Manager');
INSERT INTO EMPLOYEE VALUES (202108, 'Ola', 'Mohammad', 'Makki', 6777, DATE '2000-03-30', 'Female', 202104, 'Manager');
INSERT INTO EMPLOYEE VALUES (202177, 'Bilal', 'Mohammad', 'Delbani', 8000, DATE '2003-05-08', 'Male', 202104,'Manager');
INSERT INTO EMPLOYEE VALUES (202199, 'Jessica', 'William', 'Henwick', 7500, DATE '2002-06-18', 'Female', 202104, 'Manager');
INSERT INTO EMPLOYEE VALUES (202100,'Nazek', 'Ayman', 'Bohsali', 8000, DATE '1990-12-03', 'Female', 202104, 'Manager');
INSERT INTO EMPLOYEE VALUES (202109, 'Maria', 'Tawfiq', 'Alloush', 7666, DATE '2000-09-30', 'Female', 202104, 'Manager');
INSERT INTO EMPLOYEE VALUES (202122, 'Hadi', 'Firas', 'Sharafeddin', 7865, DATE '2002-02-15', 'Male', 202104,'Manager');
INSERT INTO EMPLOYEE VALUES (202126, 'Douaa', 'Houssam', 'Shamly', 7000, DATE '2003-08-04', 'Female', 202199, 'Trainer');
INSERT INTO EMPLOYEE VALUES (202147, 'Mohammad', 'Wissam', 'Temsah', 8000, DATE '1992-07-13', 'Male', 202100, 'Security');
INSERT INTO EMPLOYEE VALUES (202192, 'Karen', 'Habib', 'Khalife', 6000, DATE '2003-04-24', 'Female', 202199, 'Secretary');
INSERT INTO EMPLOYEE VALUES (202166, 'Zeinab', 'Nader', 'Olaywan', 7500, DATE '2003-11-29', 'Female', 202199, 'Trainer');

INSERT INTO EMPLOYEE VALUES (202182, 'Ahmad', 'Wissam', 'Temsah', 7500, DATE '1996-10-31', 'Male', 202133, 'Security');
INSERT INTO EMPLOYEE VALUES (202103, 'Lynn', 'Ibrahim', 'Chakaron', 7000, DATE '2003-09-26', 'Female', 202100, 'Advisor');
INSERT INTO EMPLOYEE VALUES (202115, 'Makhoul', 'Ahmad', 'Shbeib', 8700.5, DATE '2003-10-11', 'Male', 202109, 'Trainer');
INSERT INTO EMPLOYEE VALUES (202110, 'Batoul', 'Hussein', 'Saayed', 8000, DATE '2003-05-12', 'Female', 202177,'Secretary');
INSERT INTO EMPLOYEE VALUES (202198, 'Mohammad', 'Mostafa', 'Ballouz', 9200, DATE '2003-06-16', 'Male', 202133, 'Advisor');
INSERT INTO EMPLOYEE VALUES (202154, 'Nathalie', 'Karim', 'Delbani', 7000, DATE '2003-04-17', 'Female', 202100, 'Trainer');
INSERT INTO EMPLOYEE VALUES (202178, 'Ali', 'Mourad', 'Khalil', 8766, DATE '2001-10-26', 'Male', 202109, 'Secretary');
INSERT INTO EMPLOYEE VALUES (202123, 'Farah', 'Jawad', 'Farhat', 6789, DATE '1999-11-29', 'Female', 202164,'Trainer');
INSERT INTO EMPLOYEE VALUES (202124, 'Leen', 'Kamal', 'Almasri', 8888, DATE '2001-06-27', 'Female', 202133,'Advisor');
INSERT INTO EMPLOYEE VALUES (202106, 'Najib', 'Fariss', 'Bannout', 6000, DATE '1997-12-22', 'Male', 202199,'Advisor');
INSERT INTO EMPLOYEE VALUES (202148, 'Omar', 'Ali', 'Karaki', 6742, DATE '1998-09-11', 'Male', 202177, 'Security');
INSERT INTO EMPLOYEE VALUES (202151, 'Shikri', 'Faisal', 'Bakri',5500, DATE '2003-11-19', 'Male', 202122,'Secretary');
INSERT INTO EMPLOYEE VALUES (202159, 'Lamiss', 'Fadi', 'Ghandour', 6300, DATE '1993-01-01','Female', 202122, 'Trainer');
INSERT INTO EMPLOYEE VALUES (202191, 'Houssam','Walid', 'Kahled',6458, DATE '2003-10-09', 'Male',202164,'Advisor');
INSERT INTO EMPLOYEE VALUES (202193, 'Asmaa', 'Khalil','Ballouz', 7800,DATE '1994-12-12','Female', 202108, 'Trainer');
INSERT INTO EMPLOYEE VALUES (202187, 'Ali', 'Fouad','Solaiman',8300, DATE '2003-08-27','Male', 202100,'Security');
INSERT INTO EMPLOYEE VALUES (202183, 'Elias', 'Charbel','Shehab',6900, DATE '2004-01-28','Male', 202133,'Advisor');

CUSTOMER:

INSERT INTO CUSTOMER VALUES (202200, 'John', 'Cristopher', 'Wong', 8,'Male', 100000, '3925632');
INSERT INTO CUSTOMER VALUES (202204, 'Ghina', 'Youssef', 'Wehbe', 7,'Female', NULL, NULL);
INSERT INTO CUSTOMER VALUES (202213, 'Kareem', 'Ibrahim', 'Boulez', 9,'Male', 200000, NULL);
INSERT INTO CUSTOMER VALUES (202244, 'Sara', 'Rodwan', 'Roumani', 7,'Female', NULL, '8408742');
INSERT INTO CUSTOMER VALUES (202251, 'Ali', 'Mohammad', 'Zhour', 10,'Male', 300000, NULL);

INSERT INTO CUSTOMER VALUES (202289, 'Hassan', 'Ali', 'Malaeb', 4,'Male', NULL, NULL);
INSERT INTO CUSTOMER VALUES (202266, 'Zeina', 'Moahmmad', 'Al zahabi',6, 'Female', 400000, '4287653');
INSERT INTO CUSTOMER VALUES (202271, 'Layla', 'Wissam', 'Issa', 7,'Female', NULL, NULL);
INSERT INTO CUSTOMER VALUES (202255, 'Reem', 'Jad', 'Daher', 5,'Female', 100001, '9075567');
INSERT INTO CUSTOMER VALUES (202205, 'Jad', 'Wael', 'Lawlab', 10,'Male', 200002, NULL);
INSERT INTO CUSTOMER VALUES (202299, 'Wael', 'Emil', 'Kfoury',9, 'Male', 300003, '8298672');
INSERT INTO CUSTOMER VALUES (202219, 'Myriam', 'Salem', 'Klink', 10,'Female', 500005, '3463636');

DEPARTMENT:

INSERT INTO DEPARTMENT VALUES ('HR', 1, 10, 11, 202104, DATE '2014-06-06');
INSERT INTO DEPARTMENT VALUES ('IT', 502, 3, 8, 202155, DATE '2014-09-11');
INSERT INTO DEPARTMENT VALUES ('Health', 584, 4, 8, 202177, DATE '2015-02-17');
INSERT INTO DEPARTMENT VALUES ('Finance', 510, 5, 5, 202133, DATE '2014-07-13');
INSERT INTO DEPARTMENT VALUES ('Marketing', 588, 3, 13, 202199, DATE '2016-03-18');
INSERT INTO DEPARTMENT VALUES ('Electronic Trading', 513, 3, 1, 202164, DATE '2014-10-19');
INSERT INTO DEPARTMENT VALUES ('Claims', 577, 2, 7, 202108, DATE '2017-05-07');
INSERT INTO DEPARTMENT VALUES ('Underwriting', 555, 4, 6, 202100, DATE '2015-09-16');
INSERT INTO DEPARTMENT VALUES ('Maintenance', 544, 3, 3, 202109, DATE '2017-11-11');
INSERT INTO DEPARTMENT VALUES ('Executive',521, 2, 6,202122, DATE'2018-12-13');

INSURANCE:

INSERT INTO INSURANCE VALUES (39, 'Other', 40);
INSERT INTO INSURANCE VALUES (12, 'Mandatory', 30);
INSERT INTO INSURANCE VALUES (876, 'Against others', 50);
INSERT INTO INSURANCE VALUES (345, 'Mandatory', 90);
INSERT INTO INSURANCE VALUES (23, 'Other', 100);
INSERT INTO INSURANCE VALUES (53, 'Against others', 45);
INSERT INTO INSURANCE VALUES 11, 'Mandatory', 75);
INSERT INTO INSURANCE VALUES (665, 'Mandatory', 65);
INSERT INTO INSURANCE VALUES (5, 'Against others', 54);
INSERT INTO INSURANCE VALUES (6, 'Mandatory', 76);

HOUSE:

INSERT INTO HOUSE VALUES ('8408742' , 10547,'Furniture' , 20 , 'Furniture', 700 , 2024,20000 , 39, 50);

INSERT INTO HOUSE VALUES ('4287653' , 9000 , 'Antiquities' , 4 ,'Bronze',300 , 2000, 15500, 23, 60);
INSERT INTO HOUSE VALUES ('9075567' , 500,'Glass' , 5 , 'Glass',200,2001,60300,23,35);
INSERT INTO HOUSE VALUES ('8298672' , NULL , NULL , NULL , NULL,175 , 2015, 59900 , 53,87);
INSERT INTO HOUSE VALUES ('3212436' , NULL , NULL , NULL , NULL,300 ,2017,100300 , 11,90);
INSERT INTO HOUSE VALUES ('8486765' , 2100,'Jewelry' , 5 ,'Silver', 500 ,2009,13000,876,74);
INSERT INTO HOUSE VALUES ('1167466' , 30000,'Jewelry' , 3 , 'Diamond' , 800,1990,500000,5,97);
INSERT INTO HOUSE VALUES ('4478863' , 5725,'Furniture' , 30 ,'Furniture',200, 2004,9000,6,89);
INSERT INTO HOUSE VALUES ('3463636' , 13000,'Antiquities' , 7,'Silver' , 600, 2000,20000,665,85);

VEHICLE:

INSERT INTO VEHICLE VALUES (100000, 'B', 2011, 'BMW', 4500, 'X6', 1234, 39, 40);
INSERT INTO VEHICLE VALUES (200000, 'N', 2020, 'Audi', 19200, 'A3', 2345, 876, 50);
INSERT INTO VEHICLE VALUES (300000, 'N', 2019, 'Hyundai', 13400, 'Accent', 3456, 11, 75);
INSERT INTO VEHICLE VALUES (400000, 'S', 2010, 'Nissan', 6500, 'Versa', 3456, 665, 76);
INSERT INTO VEHICLE VALUES (100001, 'O', 2010, 'Chevrolet', 10000, 'Corvette',2356, 53, 45);
INSERT INTO VEHICLE VALUES (200002, 'B', 2011, 'Toyota', 8911, 'Prius', 2468, 23, 100);
INSERT INTO VEHICLE VALUES (300003, 'T', 2014, 'Volkswagen ', 9999, 'GTI', 2033, 665, 65);
INSERT INTO VEHICLE VALUES (400004, 'J', 2011, 'Kia', 5000, 'Sorento',1788, 23, 100);
INSERT INTO VEHICLE VALUES (500005, 'N', 2016, 'Toyota', 10200, 'Camry', 3395, 53, 45);
INSERT INTO VEHICLE VALUES (600006, 'O', 2020, 'Mercedes', 33795, 'A-Class',2070, 11, 75);

PAYMENT:

INSERT INTO PAYMENT VALUES (22, 'INSTALLMENT', 800,'CREDIT CARD',343, 202200);

INSERT INTO PAYMENT VALUES (54, 'INSTALLMENT', 38.5, 'BANK', 20,202204);
INSERT INTO PAYMENT VALUES (97, 'LUNP SUM', 285, 'CASH', 100,202213);
INSERT INTO PAYMENT VALUES (12, 'INSTALLMENT', 200, 'CASH', 130,202244);
INSERT INTO PAYMENT VALUES (2, 'LUNP SUM', 1244.7, 'CASH',1, 202251);
INSERT INTO PAYMENT VALUES (8,'INSTALLMENT', 67, 'BOND', 50,202289);
INSERT INTO PAYMENT VALUES (52, 'INSTALLMENT', 180, 'CREDIT CARD',80, 202266);
INSERT INTO PAYMENT VALUES (92, 'INSTALLMENT', 493, 'CREDIT CARD', 93, 202271);
INSERT INTO PAYMENT VALUES (32, 'LUNP SUM', 99.3, 'BANK', 2,202255);
INSERT INTO PAYMENT VALUES (73,'INSTALLMENT', 2345, 'BOND', 1000,202205);
INSERT INTO PAYMENT VALUES (45, 'LUNP SUM', 738, 'CASH', 3,202299);
INSERT INTO PAYMENT VALUES (26,'INSTALLMENT', 700.34,'CREDIT CARD',439, 202219);

EXPENSE:

INSERT INTO EXPENSE VALUES (101102, 'Computers', 100000, DATE '2018-10-11', 'Equipment');
INSERT INTO EXPENSE VALUES (101103,'White Board', 50000, DATE '2017-03-19', 'Equipment') ;
INSERT INTO EXPENSE VALUES (101104,'Name Badges', 5000, DATE '2015-04-03', 'Equipment') ;
INSERT INTO EXPENSE VALUES (100121, 'Rent ', 200000, DATE '2020-11-29', 'Land') ;

INSERT INTO EXPENSE VALUES (102111, 'Salaries', 100000, DATE '2021-01-15', 'Salary') ;
INSERT INTO EXPENSE VALUES (301001, 'Electronics',50000, DATE '2021-06-27' , 'Industrial') ;
INSERT INTO EXPENSE VALUES (211310, 'Trucks', 150000, DATE '2017-12-01' , 'Industrial') ;
INSERT INTO EXPENSE VALUES (113650, 'Raw Materials', 25000, DATE '2019-11-13', 'Equipment') ;
INSERT INTO EXPENSE VALUES (810720, 'Electricity Bills', 50000, DATE '2021-02-28', 'Land') ;
INSERT INTO EXPENSE VALUES (300010, 'Water Supply', 15000, DATE '2021-01-21' , 'Land');

CONTRACTING_COMPANY:

INSERT INTO CONTRACTING_COMPANY VALUES ('Safe Ride', 'Vehicles');
INSERT INTO CONTRACTING_COMPANY VALUES ('MOBM', 'Vehicles');
INSERT INTO CONTRACTING_COMPANY VALUES ('State Farm','Vehicles');
INSERT INTO CONTRACTING_COMPANY VALUES ('Happy House', 'Houses');
INSERT INTO CONTRACTING_COMPANY VALUES ('Aviva', 'Houses');
INSERT INTO CONTRACTING_COMPANY VALUES ('Homeprotect', 'Houses');
INSERT INTO CONTRACTING_COMPANY VALUES ('Anthem', 'Health');
INSERT INTO CONTRACTING_COMPANY VALUES ('Cigna', 'Health');
INSERT INTO CONTRACTING_COMPANY VALUES ('HHI', 'Health');
INSERT INTO CONTRACTING_COMPANY VALUES ('Geico', 'Vehicles');

HEALTH:

INSERT INTO HEALTH VALUES (53 , DATE'2000 - 03 - 25' , DATE'2003 - 03 - 29' , 'AUB', 202200 ,'T', 39 , 70);
INSERT INTO HEALTH VALUES (24 , DATE'2000 - 05 - 05' , DATE'2000 - 06 - 29' ,'Bahman', 202204 ,'T', 876 , 30);
INSERT INTO HEALTH VALUES (56 , DATE'2001 - 05 - 25' , DATE'2002 - 07 - 21' ,'LAUMC', 202213 ,'T', 345 , 40);
INSERT INTO HEALTH VALUES (123 , DATE'2010 - 06 - 25' , DATE'2010 - 08 - 11' ,'Najjar', 202244 ,'F', 23 , 55);
INSERT INTO HEALTH VALUES (77 , DATE'2005 - 06 - 22' , DATE'2006 - 03 - 02' , 'AUB',202266 ,'F', 11 , 100);
INSERT INTO HEALTH VALUES (345 , DATE'2004 - 09 - 25' , DATE'2007 - 06 - 09' ,'Rassul', 202251 ,'T', 12 , 100);
INSERT INTO HEALTH VALUES (39 , DATE'2007 - 08 - 25' , DATE'2008 - 02 - 01' ,'Jabal Amel', 202289 ,'T', 53 , 65);
INSERT INTO HEALTH VALUES (32 , DATE'2019 - 12 - 26' , DATE'2020 - 01 - 19' ,'San Goerge', 202271 ,'F', 12, 54);
INSERT INTO HEALTH VALUES (35 , DATE'2020 - 03 - 25' , DATE'2021 - 03 -

29' ,'Hiram', 202255 ,'F', 11 , 88);
INSERT INTO HEALTH VALUES (377 , DATE'2003 - 04 - 25' , DATE'2003 - 05 - 12' ,'Zahraa', 202205 , 'T',665 , 95);

DEPENDENT:

INSERT INTO DEPENDENT VALUES ('Male',DATE'2003-05-08','Son','Mahdi',202100);
INSERT INTO DEPENDENT VALUES ('Male',DATE'2000-07-10','Husband','Ali',202109);
INSERT INTO DEPENDENT VALUES ('Female',DATE'2003-02-15','Wife','Fatima',202122);
INSERT INTO DEPENDENT VALUES ('Male',DATE'2015-08-12','Son','Husam',202126);
INSERT INTO DEPENDENT VALUES ('Female',DATE'2010-04-02','Daughter','Hiba',202147);
INSERT INTO DEPENDENT VALUES ('Female',DATE'1998-09-25','Wife','Samira',202182);
INSERT INTO DEPENDENT VALUES ('Male',DATE'1999-07-19','Husband','Jamel',202166);
INSERT INTO DEPENDENT VALUES ('Female',DATE'2005-12-14','Sister','Rayan',202115);
INSERT INTO DEPENDENT VALUES ('Male',DATE'2000-07-12','Brother','Wisam',202110);
INSERT INTO DEPENDENT VALUES ('Female',DATE'1980-03-29','Mother','Huda',202148);

MEDICAL_RECORD:

INSERT INTO MEDICAL_RECORD VALUES ('AB+', 66.9, 148.3,25, 'Female', NULL, 'Rashes', 2, 202204);
INSERT INTO MEDICAL_RECORD VALUES ('B+', 88.2, 156.1,29, 'Male', 'Covid-19', 'Cough', 3, 202213);
INSERT INTO MEDICAL_RECORD VALUES ('O+', 56.8, 169.3, 21,'Female', 'Cancer', NULL, 4, 202244);
INSERT INTO MEDICAL_RECORD VALUES ('O+', 76.5, 177.2, 30,'Male', 'Covid-19', 'Cough', 5, 202251);
INSERT INTO MEDICAL_RECORD VALUES ('A-', 52.1, 156.5, 33,'Male', 'Diabetes', NULL, 6, 202289);
INSERT INTO MEDICAL_RECORD VALUES ('O-', 88.8, 177.7, 37,'Female', NULL, 'Throat Closing', 7, 202266);
INSERT INTO MEDICAL_RECORD VALUES ('O+', 55.7, 176.1, 30,'Female', 'Covid-19', 'Cough', 8, 202271);
INSERT INTO MEDICAL_RECORD VALUES ('A+', 66.6, 170.9, 26,'Female', 'heart diseases', 'Chest tightness',9, 202255);
INSERT INTO MEDICAL_RECORD VALUES ('O+', 70.0, 178.6, 45,'Male', NULL, NULL, 10, 202205);
INSERT INTO MEDICAL_RECORD VALUES ('B-', 81.1, 156.5, 38,'Male', 'Cancer', NULL, 11, 202299);
INSERT INTO MEDICAL_RECORD VALUES ('AB-', 51.6, 155.3, 23,'Female', 'High Blood Pressure', NULL, 12, 202219);

CALLS_FOR_EMERGENCY:

INSERT INTO CALLS_FOR_EMERGENCY VALUES (1, 202200, '111');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (502, 202204, '112');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (584, 202213, '113');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (510, 202244, '114');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (588, 202251, '115');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (513, 202289, '112');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (577, 202260, '116');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (555, 202271, '117');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (544, 202255, '118');
INSERT INTO CALLS_FOR_EMERGENCY VALUES (521, 202205, '112');

PAYS:

INSERT INTO PAYS VALUES (1, 102111);
INSERT INTO PAYS VALUES (1, 101102);
INSERT INTO PAYS VALUES (502, 101104);
INSERT INTO PAYS VALUES (584, 301001);
INSERT INTO PAYS VALUES (584, 113650);
INSERT INTO PAYS VALUES (510, 810720);
INSERT INTO PAYS VALUES (588, 300010);
INSERT INTO PAYS VALUES (513, 100121);
INSERT INTO PAYS VALUES (577, 113650);
INSERT INTO PAYS VALUES (555, 810720);
INSERT INTO PAYS VALUES (544, 301001);
INSERT INTO PAYS VALUES (521, 101104);
INSERT INTO PAYS VALUES (502, 100121);
INSERT INTO PAYS VALUES (510, 301001);
INSERT INTO PAYS VALUES (588, 101104);
INSERT INTO PAYS VALUES (1, 211310);

SERVES:

INSERT INTO SERVES VALUES (202200, 202126);
INSERT INTO SERVES VALUES (202200, 202147);
INSERT INTO SERVES VALUES (202204, 202166);
INSERT INTO SERVES VALUES (202204, 202103);
INSERT INTO SERVES VALUES (202213, 202115);
INSERT INTO SERVES VALUES (202213, 202110);
INSERT INTO SERVES VALUES (202244, 202198);
INSERT INTO SERVES VALUES (202251, 202154);
INSERT INTO SERVES VALUES (202289, 202178);
INSERT INTO SERVES VALUES (202266, 202123);
INSERT INTO SERVES VALUES (202271, 202124);
INSERT INTO SERVES VALUES (202255, 202106) ;
INSERT INTO SERVES VALUES (202205, 202151);
INSERT INTO SERVES VALUES (202299, 202159);
INSERT INTO SERVES VALUES (202219, 202191);
INSERT INTO SERVES VALUES (202219, 202193);
INSERT INTO SERVES VALUES (202299, 202182);
INSERT INTO SERVES VALUES (202205, 202182);
INSERT INTO SERVES VALUES (202255, 202159);
INSERT INTO SERVES VALUES (202271, 202193);

TRANSACTS:

INSERT INTO TRANSACTS VALUES (1,'Safe Ride',2);
INSERT INTO TRANSACTS VALUES (502, 'MOBM', 1);
INSERT INTO TRANSACTS VALUES (584, 'State Farm',5);
INSERT INTO TRANSACTS VALUES (510, 'Happy House', 5);
INSERT INTO TRANSACTS VALUES (588, 'Aviva', 4);
INSERT INTO TRANSACTS VALUES (513, 'Homeprotect',7);
INSERT INTO TRANSACTS VALUES (577, 'Anthem', 3);
INSERT INTO TRANSACTS VALUES (555, 'Cigna', 2);
INSERT INTO TRANSACTS VALUES (544, 'HHL', 6);
INSERT INTO TRANSACTS VALUES (521, 'Geico', 4);

DEALS_WITH:

INSERT INTO DEALS_WITH VALUES (1,202200,   DATE'2022-06-01', DATE'2025-06-01');
INSERT INTO DEALS_WITH VALUES (502,202204, DATE'2021-03-17', DATE'2027-03-17');
INSERT INTO DEALS_WITH VALUES (584,202213, DATE'2020-05-08', DATE'2022-05-08');
INSERT INTO DEALS_WITH VALUES (510,202244, DATE'2021-03-16', DATE'2024-09-10');
INSERT INTO DEALS_WITH VALUES (588,202251, DATE'2019-10-17', DATE'2022-12-31');
INSERT INTO DEALS_WITH VALUES (513,202289, DATE'2015-02-26', DATE'2020-07-13');
INSERT INTO DEALS_WITH VALUES (577,202266, DATE'2017-04-20', DATE'2023-01-02');
INSERT INTO DEALS_WITH VALUES (555,202271, DATE'2019-08-31', DATE'2027-11-07');
INSERT INTO DEALS_WITH VALUES (544,202255, DATE'2021-05-09', DATE'2024-05-09');
INSERT INTO DEALS_WITH VALUES (521,202205, DATE'2017-06-22', DATE'2025-06-22');

IS_ACTIVE:

INSERT INTO IS_ACTIVE VALUES (22,39, 'T');
INSERT INTO IS_ACTIVE VALUES (54,12, 'T');
INSERT INTO IS_ACTIVE VALUES (97,876, 'F');
INSERT INTO IS_ACTIVE VALUES (12,345, 'T');
INSERT INTO IS_ACTIVE VALUES (2,23, 'F');
INSERT INTO IS_ACTIVE VALUES (8,53, 'F');
INSERT INTO IS_ACTIVE VALUES (52,11, 'T');
INSERT INTO IS_ACTIVE VALUES (92,665, 'F');
INSERT INTO IS_ACTIVE VALUES (32,75, 'T');
INSERT INTO IS_ACTIVE VALUES (73,26, 'F');

EMPLOYEE_LOCATION:

INSERT INTO EMPLOYEE_LOCATION VALUES (202104, 'Beirut', 'Abdulghani' ,31);
INSERT INTO EMPLOYEE_LOCATION VALUES (202164, 'Arabssalim', NULL, 3);
INSERT INTO EMPLOYEE_LOCATION VALUES (202133, 'Nabatieh', 'Nabatieh Fawqa', 53);
INSERT INTO EMPLOYEE_LOCATION VALUES (202155, 'Dahye', 'Autostrad Sayd', 44);
INSERT INTO EMPLOYEE_LOCATION VALUES (202108, 'Batroun', 'Mahroun', 10);
INSERT INTO EMPLOYEE_LOCATION VALUES (202177, 'Sour','Sour', 130);
INSERT INTO EMPLOYEE_LOCATION VALUES (202199, 'Kaslik', 'AlRoum' 320);
INSERT INTO EMPLOYEE_LOCATION VALUES (202100, 'Alay', NULL, 300);
INSERT INTO EMPLOYEE_LOCATION VALUES (202109, 'Hasbayya', 'Ain Jafra', 2);
INSERT INTO EMPLOYEE_LOCATION VALUES (202122, 'Qureitem', 'Marie-Curie',12);
INSERT INTO EMPLOYEE_LOCATION VALUES (202126, 'Aramoun', 'AlRammal', 111);
INSERT INTO EMPLOYEE_LOCATION VALUES (202147, 'Beirut', 'AlHamra' NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202192, 'Beirut', 'Zoqaq AlBlat', 68);
INSERT INTO EMPLOYEE_LOCATION VALUES (202166, 'Bchamoun', 'Bchamoun',210);
INSERT INTO EMPLOYEE_LOCATION VALUES (202182, 'Beirut', 'Fayza AlSolh', 10);
INSERT INTO EMPLOYEE_LOCATION VALUES (202103, 'Nabatieh', NULL, 690);
INSERT INTO EMPLOYEE_LOCATION VALUES (202115,'Zahlah', NULL, NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202110, 'Yahmor', NULL, NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202198, 'Mazboud', NULL, NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202148, 'Saida', 'Hariri Street', NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202154,'Rashaya', NULL, 5);
INSERT INTO EMPLOYEE_LOCATION VALUES (202178, 'Bint Jbeil', NULL, 1);
INSERT INTO EMPLOYEE_LOCATION VALUES (202123,'Haris', 'Haris', NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202124, 'Tayr Harfa', NULL, 2);
INSERT INTO EMPLOYEE_LOCATION VALUES (202106, 'Hasbayya', NULL, NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202151, 'Aamrani', 'Aazieh', 4);
INSERT INTO EMPLOYEE_LOCATION VALUES (202159, 'Houmin', 'Houmin alfawqa', NULL);
INSERT INTO EMPLOYEE_LOCATION VALUES (202191, 'Chtoura','Jdita' 7);
INSERT INTO EMPLOYEE_LOCATION VALUES (202193, 'Tal Alkhayat', NULL,1);
INSERT INTO EMPLOYEE_LOCATION VALUES (202187, 'Anssar','Anssar',11);
INSERT INTO EMPLOYEE_LOCATION VALUES (202182, 'Baalbek','Brital', NULL);

EMPLOYEE_PHONE:

INSERT INTO EMPLOYEE_PHONE VALUES (202104, '71214707');
INSERT INTO EMPLOYEE_PHONE VALUES (202104, '71136925');
INSERT INTO EMPLOYEE_PHONE VALUES (202164, '03111111');
INSERT INTO EMPLOYEE_PHONE VALUES (202133, '03111112');
INSERT INTO EMPLOYEE_PHONE VALUES (202155, '03111113');
INSERT INTO EMPLOYEE_PHONE VALUES (202108, '03111110');
INSERT INTO EMPLOYEE_PHONE VALUES (202177, '03111102');
INSERT INTO EMPLOYEE_PHONE VALUES (202199, '03121117');
INSERT INTO EMPLOYEE_PHONE VALUES (202100, '71111111');
INSERT INTO EMPLOYEE_PHONE VALUES (202109, '71111112');
INSERT INTO EMPLOYEE_PHONE VALUES (202122, '71111113');
INSERT INTO EMPLOYEE_PHONE VALUES (202126, '71111101');
INSERT INTO EMPLOYEE_PHONE VALUES (202147, '71111102');
INSERT INTO EMPLOYEE_PHONE VALUES (202192, '71111103');
INSERT INTO EMPLOYEE_PHONE VALUES (202166, '70111111');
INSERT INTO EMPLOYEE_PHONE VALUES (202182, '70111112');
INSERT INTO EMPLOYEE_PHONE VALUES (202103, '70111113');
INSERT INTO EMPLOYEE_PHONE VALUES (202115, '70111101');
INSERT INTO EMPLOYEE_PHONE VALUES (202110, '70111102');
INSERT INTO EMPLOYEE_PHONE VALUES (202198, '70111103');
INSERT INTO EMPLOYEE_PHONE VALUES (202148, '76111111');
INSERT INTO EMPLOYEE_PHONE VALUES (202154, '76111112');
INSERT INTO EMPLOYEE_PHONE VALUES (202178, '76111113');
INSERT INTO EMPLOYEE_PHONE VALUES (202123, '76111101');
INSERT INTO EMPLOYEE_PHONE VALUES (202124, '76111102');
INSERT INTO EMPLOYEE_PHONE VALUES (202106, '76111103');
INSERT INTO EMPLOYEE_PHONE VALUES (202151, '81111111');
INSERT INTO EMPLOYEE_PHONE VALUES (202159, '81111112');
INSERT INTO EMPLOYEE_PHONE VALUES (202191, '81111113');
INSERT INTO EMPLOYEE_PHONE VALUES (202193, '81111101');
INSERT INTO EMPLOYEE_PHONE VALUES (202187, '81111102');
INSERT INTO EMPLOYEE_PHONE VALUES (202182, '81111103');

EMPLOYEE_EMAIL:

INSERT INTO EMPLOYEE_EMAIL VALUES (202104, 'omartemsah2004@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202104, 'Omar.Temsah@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202164, 'Ahmad.Mourad@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202133, 'Mohammad.Alizzi@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202155, 'Mohammad.AlFallah@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202108, 'OlaMakki@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202177, 'Bilal.Delbani@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202199, 'Jessica.Henwick@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202100, 'Nazek.Bohsali@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202109, 'MariaAlloush2000@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202122, 'Hadi.Sharafeddin01@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202126, 'Douaa.shamly@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202147, 'Mohammad.Temsah@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202192, 'KarenH.Khalife@gamil.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202166, 'Zeinab.olaywan@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202182, 'Ahmad.temsah@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202103, 'LynnChakaron@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202115, 'Makhoul.Shbeib@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202110, 'Batoul.Saayed@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202198, 'Mohammad.Ballouz@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202148, 'Omar.karaki@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202154, 'Nathalie.delbani@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202178, 'Ali.khalil2001@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202123, 'Farah.Farhat@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202124, 'Leen.almasri@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202106, 'najib.bannout@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202151, 'Shikri.aamrani@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202159, 'lamissGhandour90@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202191, 'Houssam.khaled@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202193, 'Asmaa.Hnaini@gmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202187, 'ali.mezher@hotmail.com');
INSERT INTO EMPLOYEE_EMAIL VALUES (202182, 'Elias.charbel@gmail.com');

CUSTOMER_LOCATION:

INSERT INTO CUSTOMER_LOCATION VALUES (202200, 'Almaten', 'Aley' , 'Bsous', 8);
INSERT INTO CUSTOMER_LOCATION VALUES (202204, 'Nabatieh' , 'Habboush' ,'Hay-Almaslakh' , 10);
INSERT INTO CUSTOMER_LOCATION VALUES (202213, 'Beirut' , 'Mazraa' , 'Tadros' ,7);
INSERT INTO CUSTOMER_LOCATION VALUES (202213, 'Jnoub' , 'Blat', NULL, NULL);
INSERT INTO CUSTOMER_LOCATION VALUES (202244, 'Nabatieh' , 'Deir-Alzahrani' , 'Deir-Alzahrani' , 10);
INSERT INTO CUSTOMER_LOCATION VALUES (202251, 'Beirut' , 'Msaytbeh' , 'Maalouf' , 8);
INSERT INTO CUSTOMER_LOCATION VALUES (202289, 'Beirut' , 'Badaro' , 'Bardawil' , 9);
INSERT INTO CUSTOMER_LOCATION VALUES (202266, 'Jnoub', 'Saida' , 'Saida' , 10);
INSERT INTO CUSTOMER_LOCATION VALUES (202271, 'Chmel' ,'Tripoli' ,'Riad Elsolh', 6);
INSERT INTO CUSTOMER_LOCATION VALUES (202255, 'Chmel' , 'Anjar' , 'Majdel-Aanjar' ,9);
INSERT INTO CUSTOMER_LOCATION VALUES (202205, 'Chmel', 'Akkar' , 'Halba' , 10);
INSERT INTO CUSTOMER_LOCATION VALUES (202299, 'Beirut' , 'Ashrafieh' , 'Sassine' , 11);
INSERT INTO CUSTOMER_LOCATION VALUES (202299, 'Chmel' , 'Batroun' , NULL, 26);
INSERT INTO CUSTOMER_LOCATION VALUES (202219, 'Mountain' , 'Kaslik' , 'AlRoum' , 13);

CUSTOMER_PHONE:

INSERT INTO CUSTOMER_PHONE VALUES (202200, '71520901');
INSERT INTO CUSTOMER_PHONE VALUES (202204, '81720444');
INSERT INTO CUSTOMER_PHONE VALUES (202213, '03890112');
INSERT INTO CUSTOMER_PHONE VALUES (202213, '71567890');
INSERT INTO CUSTOMER_PHONE VALUES (202244, '76113478');
INSERT INTO CUSTOMER_PHONE VALUES (202251, '81333786');
INSERT INTO CUSTOMER_PHONE VALUES (202289, '70981379');
INSERT INTO CUSTOMER_PHONE VALUES (202266, '70325689');
INSERT INTO CUSTOMER_PHONE VALUES (202271, '03619625');
INSERT INTO CUSTOMER_PHONE VALUES (202255, '76477889');
INSERT INTO CUSTOMER_PHONE VALUES (202205, '78144589');
INSERT INTO CUSTOMER_PHONE VALUES (202299, '71230988');
INSERT INTO CUSTOMER_PHONE VALUES (202299, '81999401');
INSERT INTO CUSTOMER_PHONE VALUES (202219, '03659872');
INSERT INTO CUSTOMER_PHONE VALUES (202219, '78330912');

CUSTOMER_EMAIL:

INSERT INTO CUSTOMER_EMAIL VALUES (202200, 'John.Wong@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202204, 'Ghina.Wehbe@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202213, 'Kareem.Boulez@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202213, 'kareem2000@hotmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202244, 'Sara.roumani@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202251, 'ali.zhour@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202289, 'Hassan.Malaeb@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202289, 'HassounMalaeb@hotmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202266, 'ZeinaAlzahabi@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202271, 'LaylaIssa@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202255, 'Reem.daher03@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202205, 'JadLawlab@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202299, 'WaelKfoury@gmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202299, 'Wael.Kfoury2000@hotmail.com');
INSERT INTO CUSTOMER_EMAIL VALUES (202219, 'MyriamKlinlk@gmail.com');

DEPARTMENT_LOCATION:

INSERT INTO DEPARTMENT_LOCATION VALUES (1, 'Beirut');
INSERT INTO DEPARTMENT_LOCATION VALUES (502, 'Kaslik');
INSERT INTO DEPARTMENT_LOCATION VALUES (584, 'Saida');
INSERT INTO DEPARTMENT_LOCATION VALUES (510, 'Saida');
INSERT INTO DEPARTMENT_LOCATION VALUES (588, 'Beirut');
INSERT INTO DEPARTMENT_LOCATION VALUES (513, 'Tripoli');
INSERT INTO DEPARTMENT_LOCATION VALUES (577, 'Beirut');
INSERT INTO DEPARTMENT_LOCATION VALUES (555, 'Sour');
INSERT INTO DEPARTMENT_LOCATION VALUES (544, 'Kaslik');
INSERT INTO DEPARTMENT_LOCATION VALUES (521, 'Jounieh');

CCOMPANIES_LOCATION:

INSERT INTO CCOMPANIES_LOCATION VALUES ('Safe Ride', 'Beirut');
INSERT INTO CCOMPANIES_LOCATION VALUES ('MOBM', 'Saida');
INSERT INTO CCOMPANIES_LOCATION VALUES ('State Farm','Zahlah');
INSERT INTO CCOMPANIES_LOCATION VALUES ('Happy House', 'Beirut');

INSERT INTO CCOMPANIES_LOCATION VALUES ('Aviva', 'Tripoli');
INSERT INTO CCOMPANIES_LOCATION VALUES ('Homeprotect', 'Sour');
INSERT INTO CCOMPANIES_LOCATION VALUES ('Anthem', 'Batroun');
INSERT INTO CCOMPANIES_LOCATION VALUES ('Cigna', 'Beirut');
INSERT INTO CCOMPANIES_LOCATION VALUES ('HHI', 'Jounieh');
INSERT INTO CCOMPANIES_LOCATION VALUES ('Geico', 'Jall Eldib');

CCOMPANIES_PHONE_NUMBER:

INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202200, '71520901');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202204, '81720444');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202213, '03890112');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202213, '71567890');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202244, '76113478');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202251, '81333786');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202289, '70981379');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202266, '70325689');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202271, '03619625');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202255, '76477889');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202205, '78144589');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202299, '71230988');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202299, '81999401');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202219, '03659872');
INSERT INTO CCOMPANIES_PHONE_NUMBER VALUES (202219, '78330912');

CCOMPANIES_EMAIL:

INSERT INTO CCOMPANIES_EMAIL VALUES ('Safe Ride', 'saferideoffice@gmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('MOBM', 'mobm.official@hotmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('State Farm', 'State.Farm@gmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('Happy
House', 'HappyHouse.management@gmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('Aviva', 'avivaofficial@hotmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('Homeprotect', 'Homeprotect.oce@hotmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('Anthem', 'anthemoffice@gmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('Cigna', 'Cigna.office@hotmail.com');
INSERT INTO CCOMPANIES_EMAIL VALUES ('HHI', 'hhi.management@gmail.me');
INSERT INTO CCOMPANIES_EMAIL VALUES ('Geico', 'geico@hotmail.com');

HOUSE_LOCATION:

INSERT INTO HOUSE_LOCATION VALUES ('392', 'BEIRUT' , NULL , 'Beirut',31);
INSERT INTO HOUSE_LOCATION VALUES ('840', 'BEDNAYEL', 'JABBENEH' ,'Bekaa', 158);
INSERT INTO HOUSE_LOCATION VALUES ('42', 'ARNAOUN', NULL ,'Shmel', 330);

INSERT INTO HOUSE_LOCATION VALUES ('90', 'SOUR', 'ABO DIB' ,'Jnoub', 71);
INSERT INTO HOUSE_LOCATION VALUES ('82', 'BEIRUT', 'AMROUSIEH' , 'Mount Lebanon', 67);
INSERT INTO HOUSE_LOCATION VALUES ('32' , 'BEIRUT' , 'BLISS' , 'Beirut', 210);
INSERT INTO HOUSE_LOCATION VALUES ('84', 'SAIDA', 'MINA','Saida', 400);
INSERT INTO HOUSE_LOCATION VALUES ('11', 'ARAB SALIM', NULL,'Jnoub', 28);
INSERT INTO HOUSE_LOCATION VALUES ('44', 'TRIPOLI', 'ABYAD','Shmel' ,17);
INSERT INTO HOUSE_LOCATION VALUES ('34', 'BYBLOS', 'Karam Alaris','Shmel', 1);

PAYMENT_CURRENCY:

INSERT INTO PAYMENT_CURRENCY VALUES (22, 'Lira');
INSERT INTO PAYMENT_CURRENCY VALUES (54, 'Dollar');
INSERT INTO PAYMENT_CURRENCY VALUES (97, 'Lira');
INSERT INTO PAYMENT_CURRENCY VALUES (12, 'Euro');
INSERT INTO PAYMENT_CURRENCY VALUES (2, 'Dollar');
INSERT INTO PAYMENT_CURRENCY VALUES (8, 'Lira');
INSERT INTO PAYMENT_CURRENCY VALUES (52, 'Derham');
INSERT INTO PAYMENT_CURRENCY VALUES (92, 'Lira');
INSERT INTO PAYMENT_CURRENCY VALUES (32, 'Dollar');
INSERT INTO PAYMENT_CURRENCY VALUES (73, 'Euro');
INSERT INTO PAYMENT_CURRENCY VALUES (45, 'Lira');
INSERT INTO PAYMENT_CURRENCY VALUES (26, 'Dollar');

PAYMENT_DATE:

INSERT INTO PAYMENT_DATE VALUES (22, DATE'2010 - 04 - 25');
INSERT INTO PAYMENT_DATE VALUES (54, DATE'2011 - 08 - 11');
INSERT INTO PAYMENT_DATE VALUES (97, DATE'2004 - 01 - 23');
INSERT INTO PAYMENT_DATE VALUES (12, DATE'2002 - 02 - 12');
INSERT INTO PAYMENT_DATE VALUES (2, DATE'2005 - 03 - 27');
INSERT INTO PAYMENT_DATE VALUES (8, DATE'2015 - 09 - 30');
INSERT INTO PAYMENT_DATE VALUES (52, DATE'2017 - 11 - 01');
INSERT INTO PAYMENT_DATE VALUES (92, DATE'2018 - 12 - 02');
INSERT INTO PAYMENT_DATE VALUES (32, DATE'2020 - 06 - 04');
INSERT INTO PAYMENT_DATE VALUES (73, DATE'2022 - 03 - 15');
INSERT INTO PAYMENT_DATE VALUES (45, DATE'2021 - 07 - 17');
INSERT INTO PAYMENT_DATE VALUES (26, DATE'2010 - 09 - 20');

VEHICLE_COLOR:

INSERT INTO VEHICLE_COLOR VALUES (100000, 'White');
INSERT INTO VEHICLE_COLOR VALUES (100000, 'Black');
INSERT INTO VEHICLE_COLOR VALUES (200000, 'White');
INSERT INTO VEHICLE_COLOR VALUES (300000, 'Blue');
INSERT INTO VEHICLE_COLOR VALUES (400000, 'Red');
INSERT INTO VEHICLE_COLOR VALUES (400000, 'Black');
INSERT INTO VEHICLE_COLOR VALUES (100001, 'Red');

```sql
INSERT INTO VEHICLE_COLOR VALUES (200002, 'Yellow');
INSERT INTO VEHICLE_COLOR VALUES (300003, 'Blue');
INSERT INTO VEHICLE_COLOR VALUES (400004, 'Red');
INSERT INTO VEHICLE_COLOR VALUES (500005, 'White');
INSERT INTO VEHICLE_COLOR VALUES (500005, 'Grey');
INSERT INTO VEHICLE_COLOR VALUES (600006, 'Grey');
```

HAS1:

```sql
INSERT INTO HAS1 VALUES (202200, 22);
INSERT INTO HAS1 VALUES (202204, 54);
INSERT INTO HAS1 VALUES (202213, 97);
INSERT INTO HAS1 VALUES (202244, 12);
INSERT INTO HAS1 VALUES (202251, 2);
INSERT INTO HAS1 VALUES (202289, 8);
INSERT INTO HAS1 VALUES (202266, 52);
INSERT INTO HAS1 VALUES (202271, 92);
INSERT INTO HAS1 VALUES (202255, 32);
INSERT INTO HAS1 VALUES (202205, 73);
INSERT INTO HAS1 VALUES (202299, 45);
INSERT INTO HAS1 VALUES (202219, 26);
```

HAS2:

```sql
INSERT INTO HAS2 VALUES (202200, '1234');
INSERT INTO HAS2 VALUES (202244, '2980');
INSERT INTO HAS2 VALUES (202266, '9788');
INSERT INTO HAS2 VALUES (202255, '1447');
INSERT INTO HAS2 VALUES (202299, '1001');
INSERT INTO HAS2 VALUES (202219, '1332');
```

HAS3:

```sql
INSERT INTO HAS3 VALUES (202200, 397864);
INSERT INTO HAS3 VALUES (202213, 143095);
INSERT INTO HAS3 VALUES (202251, 983713);
INSERT INTO HAS3 VALUES (202266, 897111);
INSERT INTO HAS3 VALUES (202255, 888222);
INSERT INTO HAS3 VALUES (202205, 213900);
INSERT INTO HAS3 VALUES (202299, 333666);
INSERT INTO HAS3 VALUES (202219, 121415);
```

COVERS1:

```sql
INSERT INTO COVERS1 VALUES (39, 53, 70);
INSERT INTO COVERS1 VALUES (876, 24, 30);
INSERT INTO COVERS1 VALUES (345, 56, 40);
INSERT INTO COVERS1 VALUES (23, 123, 55);
INSERT INTO COVERS1 VALUES (11, 77, 100);
INSERT INTO COVERS1 VALUES (12, 345, 100);
INSERT INTO COVERS1 VALUES (53, 39, 65);
INSERT INTO COVERS1 VALUES (26, 32, 54);
INSERT INTO COVERS1 VALUES (75, 35, 88);
INSERT INTO COVERS1 VALUES (66, 377, 95);
```

COVERS2:

```sql
INSERT INTO COVERS2 VALUES (12,'392',30);
INSERT INTO COVERS2 VALUES (345,'840',90);
INSERT INTO COVERS2 VALUES (53,'42',45);
INSERT INTO COVERS2 VALUES (11,'90', 75);
INSERT INTO COVERS2 VALUES (12,'82',30);
INSERT INTO COVERS2 VALUES (6,'32',76);
INSERT INTO COVERS2 VALUES (665,'84',65);
INSERT INTO COVERS2 VALUES (11,'44',75);
INSERT INTO COVERS2 VALUES (5,'34',54);
```

COVERS3:

```sql
INSERT INTO COVERS3 VALUES (39, 100000, 40);
INSERT INTO COVERS3 VALUES (876, 200000, 50);
INSERT INTO COVERS3 VALUES (11, 300000, 75);
INSERT INTO COVERS3 VALUES (26, 400000, 76);
INSERT INTO COVERS3 VALUES (53, 100001, 45);
INSERT INTO COVERS3 VALUES (23, 200002, 100);
INSERT INTO COVERS3 VALUES (665, 300003, 65);
INSERT INTO COVERS3 VALUES (53, 500005, 45);
```

➢ **EMPLOYEE**

EMPLOYEE_ID	FNAME	MNAME	LNAME	SALARY	BDATE	GENDER	SUPER_ID	ROLE	DNO
202103	Lynn	Ibrahim	Chakaron	7000	09/26/2003	Female	202100	Advisor	555
202115	Makhoul	Ahmad	Shbeib	8700.5	10/11/2003	Male	202109	Trainer	544
202110	Batoul	Hussein	Saayed	8000	05/12/2003	Female	202177	Secretary	510
202198	Mohammad	Mostafa	Ballouz	9200	06/16/2003	Male	202133	Advisor	502
202154	Nathalie	Karim	Delbani	7000	04/17/2003	Female	202100	Trainer	555
202178	Ali	Mourad	Khalil	8766	10/26/2001	Male	202109	Secretary	544
202123	Farah	Jawad	Farhat	6789	11/29/1999	Female	202164	Trainer	513
202124	Leen	Kamal	Almasri	8888	06/27/2001	Female	202133	Advisor	510
202106	Najib	Fariss	Bannout	6000	12/22/1997	Male	202199	Advisor	588
202148	Omar	Ali	Karaki	6742	09/11/1998	Male	202177	Security	584
202151	Shikri	Faisal	Bakri	5500	11/19/2003	Male	202122	Secretary	521
202159	Lamiss	Fadl	Ghandour	6300	01/01/1993	Female	202122	Trainer	521
202191	Houssam	Walid	Kahled	6458	10/09/2003	Male	202164	Advisor	513
202193	Asmaa	Khalil	Ballouz	7800	12/12/1994	Female	202108	Trainer	577
202187	Ali	Fouad	Solaiman	8300	08/27/2003	Male	202100	Security	555

202183	Elias	Charbel	Shehab	6900	01/28/2004	Male	202133	Advisor	510
202104	Omar	Wissam	Temsah	9999	03/18/2004	Male	-	CEO	1
202100	Nazek	Ayman	Bohsali	8000	12/03/1990	Female	202104	Manager	555
202164	Ahmad	Nader	Mourad	8675	10/17/2002	Male	202104	Manager	513
202133	Mohammad	Ghazi	Alizzi	7500	10/15/2003	Male	202104	Manager	510
202155	Mohammad	Amin	Alfallah	7500	03/25/2003	Male	202104	Manager	502
202108	Ola	Mohammad	Makki	6777	03/30/2000	Female	202104	Manager	577
202177	Bilal	Mohammad	Delbani	8000	05/08/2003	Male	202104	Manager	584
202199	Jessica	William	Henwick	7500	06/18/2002	Female	202104	Manager	588
202109	Maria	Tawfiq	Alloush	7666	09/30/2000	Female	202104	Manager	544
202122	Hadi	Firas	Sharafeddin	7865	02/15/2002	Male	202104	Manager	521
202126	Douaa	Houssam	Shamly	7000	08/04/2003	Female	202199	Trainer	584
202147	Mohammad	Wissam	Temsah	8000	07/13/1992	Male	202100	Security	510
202192	Karen	Habib	Khalife	6000	04/24/2003	Female	202199	Secretary	502
202166	Zeinab	Nader	Olaywan	7500	11/29/2003	Female	202199	Trainer	588
202182	Ahmad	Wissam	Temsah	7500	10/31/1996	Male	202133	Security	584

➢ **CUSTOMER**

CUSTOMER_ID	FNAME	MNAME	LNAME	SATISFACTION	GENDER	VSN	HTITLE
202204	Ghina	Youssef	Wehbe	7	Female	-	-
202213	Kareem	Ibrahim	Boulez	9	Male	200000	-
202251	Ali	Mohammad	Zhour	10	Male	300000	-
202289	Hassan	Ali	Malaeb	4	Male	-	-
202271	Layla	Wissam	Issa	7	Female	-	-
202205	Jad	Wael	Lawlab	10	Male	200002	-
202200	John	Cristopher	Wong	8	Male	100000	3925632
202244	Sara	Rodwan	Roumani	7	Female	-	8408742
202266	Zeina	Moahmmad	Al zahabi	6	Female	400000	4287653
202255	Reem	Jad	Daher	5	Female	100001	9075567
202299	Wael	Emil	Kfoury	9	Male	300003	8298672
202219	Myriam	Salem	Klink	10	Female	500005	3463636

DEPARTMENT

DNO	CUSTOMER_NUMBER	START_DATE	END_DATE
1	202200	06/01/2022	06/01/2025
502	202204	03/17/2021	03/17/2027
584	202213	05/08/2020	05/08/2022
510	202244	03/16/2021	09/10/2024
588	202251	10/17/2019	12/31/2022
513	202289	02/26/2015	07/13/2020
577	202266	04/20/2017	01/02/2023
555	202271	08/31/2019	11/07/2027
544	202255	05/09/2021	05/09/2024
521	202205	06/22/2017	06/22/2025

INSURANCE

IID	COVERAGE	TYPE_OF_INSURANCE
39	40	Other
12	30	Mandatory
345	90	Mandatory
23	100	Other
11	75	Mandatory
665	65	Mandatory
6	76	Mandatory
876	50	Against others
53	45	Against others
5	54	Against others

➢ HOUSE

TITLE_DEAD	VCOLLECTIBLES	TCOLLECTIBLES	QCOLLECTIBLES	MCOLLECTIBLES	AREA	YEAR_BUILT	VALUE	IID	PERCENTAGE
3925632	5693	Jewelry	6	Gold	200	2012	80000	39	90
8408742	10547	Furniture	20	Furniture	700	2024	20000	39	50
4287653	9000	Antiquities	4	Bronze	300	2000	15500	23	60
9075567	500	Glass	5	Glass	200	2001	60300	23	35
8298672	-	-	-	-	175	2015	59900	53	87
8486765	2100	Jewelry	5	Silver	500	2009	13000	876	74
1167466	30000	Jewelry	3	Diamond	800	1990	500000	5	97
4478863	5725	Furniture	30	Furniture	200	2004	9000	6	89
3463636	13000	Antiquities	7	Silver	600	2000	20000	665	85

➢ VEHICLE

SN	STATE	YEAR	MAKE	VALUE	MODEL	REG#	IID	PERCENTAGE
300003	T	2014	Volkswagen	9999	GTI	2033	665	65
400004	J	2011	Kia	5000	Sorento	1788	23	100
500005	N	2016	Toyota	10200	Camry	3395	53	45
600006	O	2020	Mercedes	33795	A-Class	2070	11	75
400000	S	2010	Nissan	6500	Versa	3456	665	76
100000	B	2011	BMW	4500	X6	1234	39	40
200000	N	2020	Audi	19200	A3	2345	876	50
300000	N	2019	Hyundai	13400	Accent	3456	11	75
100001	O	2010	Chevrolet	10000	Corvette	2356	53	45
200002	B	2011	Toyota	8911	Prius	2468	23	100

➤ **PAYMENT**

PAID	TYPE	BILL	MECHANISM	RECEIPTNO	CID
22	INSTALLMENT	800	CREDIT CARD	343	202200
54	INSTALLMENT	38.5	BANK	20	202204
12	INSTALLMENT	200	CASH	130	202244
8	INSTALLMENT	67	BOND	50	202289
52	INSTALLMENT	180	CREDIT CARD	80	202266
92	INSTALLMENT	493	CREDIT CARD	93	202271
73	INSTALLMENT	2345	BOND	1000	202205
26	INSTALLMENT	700.34	CREDIT CARD	439	202219
97	LUNP SUM	285	CASH	100	202213
2	LUNP SUM	1244.7	CASH	1	202251
32	LUNP SUM	99.3	BANK	2	202255
45	LUNP SUM	738	CASH	3	202299

➤ **EXPENSE**

RNUMBER	ITEM	PRICE	Date	TYPE_OF_ITEM
101102	Computers	100000	10/11/2018	Equipment
101103	White Boards	50000	03/19/2017	Equipment
101104	Name Badges	5000	04/03/2015	Equipment
100121	Rent	20000	11/29/2020	Land
102111	Salaries	100000	01/15/2021	Salary
301001	Electronics	50000	06/27/2021	Industrial
211310	Trucks	150000	12/01/2017	Industrial
113650	Raw Materials	25000	11/13/2019	Equipment
810720	Electricity Bills	50000	02/28/2021	Land
300010	Water Supply	15000	01/21/2021	Land

➢ **CONTRACTING_COMPANIES**

CNAME	SERVICE
Safe Ride	Vehicles
MOBM	Vehicles
State Farm	Vehicles
Happy House	Houses
Aviva	Houses
Homeprotect	Houses
Anthem	Health
Cigna	Health
HHI	Health
Geico	Vehicles

➢ **HEALTH**

Column Name	Data Type	Nullable	Default	Primary Key
REPORTNO	NUMBER	No	-	1
EXIT_DATE	DATE	No	-	-
ENTER_DATE	DATE	No	-	-
HOSPITAL_NAME	VARCHAR2(30)	No	-	-
CID	NUMBER	No	-	-
HBOOLEAN	CHAR(1)	Yes	-	-
IID	NUMBER	No	-	-
PERCENTAGE	FLOAT	No	-	-

➢ DEPENDENT

GENDER	BDATE	RELATIONSHIP	NAME	EID
Male	05/08/2003	Son	Mahdi	202100
Male	07/10/2000	Husband	Ali	202109
Female	02/15/2003	Wife	Fatima	202122
Male	08/12/2015	Son	Husam	202126
Female	04/02/2010	Daughter	Hiba	202147
Female	09/25/1998	Wife	Samira	202182
Male	07/19/1999	Husband	Jamel	202166
Female	12/14/2005	Sister	Rayan	202115
Male	07/12/2000	Brother	Wisam	202110
Female	03/29/1980	Mother	Huda	202148

➢ MEDICAL_RECORD

BLOOD_TYPE	WEIGHT	HEIGHT	AGE	SEX	DISEASE	ALLERGY	RECORDNO	CID
AB+	66.9	148.3	25	Female	-	Rashes	2	202204
B+	88.2	156.1	29	Male	Covid-19	Cough	3	202213
O+	56.8	169.3	21	Female	Cancer	-	4	202244
O+	76.5	177.2	30	Male	Covid-19	Cough	5	202251
A-	52.1	156.5	33	Male	Diabetes	-	6	202289
O-	88.8	177.7	37	Female	-	Throat Closing	7	202266
O+	55.7	176.1	30	Female	Covid-19	Cough	8	202271
A+	66.6	170.9	26	Female	heart diseases	Chest tightness	9	202255
O+	70	178.6	45	Male	-	-	10	202205
B-	81.1	156.5	38	Male	Cancer	-	11	202299
AB-	51.6	155.3	23	Female	High Blood Pressure	-	12	202219

➢ **CALLS_FOR_EMERGENCY**

DNUM	CNUM	EMERGENCYPHONENO#
1	202200	111
502	202204	112
584	202213	113
510	202244	114
588	202251	115
513	202289	112
577	202260	116
555	202271	117
544	202255	118
521	202205	112

➢ **PAYS**

DNUM	ERNUM
1	102111
502	101104
584	301001
510	810720
588	300010
513	100121
577	113650
555	810720
544	301001
521	101104

> **SERVES**

CUSTID	EID
202200	202126
202204	202166
202213	202115
202244	202198
202251	202154
202289	202178
202266	202123
202271	202124
202255	202106
202205	202151
202299	202159
202219	202191

> **TRANSACTS**

DNO	COMPANY_NAME	PERIOD_OF_TRANSACTION
1	Safe Ride	2
502	MOBM	1
584	State Farm	5
510	Happy House	5
588	Aviva	4
513	Homeprotect	7
577	Anthem	3
555	Cigna	2
544	HHL	6
521	Geico	4

a. DEALS_WITH

DNO	CUSTOMER_NUMBER	START_DATE	END_DATE
1	202200	06/01/2022	06/01/2025
502	202204	03/17/2021	03/17/2027
584	202213	05/08/2020	05/08/2022
510	202244	03/16/2021	09/10/2024
588	202251	10/17/2019	12/31/2022
513	202289	02/26/2015	07/13/2020
577	202266	04/20/2017	01/02/2023
555	202271	08/31/2019	11/07/2027
544	202255	05/09/2021	05/09/2024
521	202205	06/22/2017	06/22/2025

➢ **IS_ACTIVE**

PNUM	INSURANCE_ID	IBOOLEAN
22	39	T
54	12	T
97	876	F
12	345	T
2	23	F
8	53	F
52	11	T
92	665	F
32	75	T
73	26	F

➢ **EMPLOYEE_LOCATION**

EMPLOYEE_ID	ECITY	ESTREET	EAPARTMENT_NUMBER
202104	Beirut	Abdulghani	31
202164	Arabssalim	-	3
202133	Nabatieh	Nabatieh Fawqa	53
202155	Dahye	Autostrad Sayd	44
202108	Batroun	Mahroun	10
202177	Sour	Sour	130
202100	Alay	-	300
202109	Hasbayya	Ain Jafra	2
202122	Qureitem	Marie-Curie	12
202126	Aramoun	AlRammal	111
202192	Beirut	Zoqaq AlBlat	68
202166	Bchamoun	Bchamoun	210
202182	Beirut	Fayza AlSolh	10
202103	Nabatieh	-	690
202115	Zahlah	-	-
202110	Yahmor	-	-
202198	Mazboud	-	-
202148	Saida	Hariri Street	-
202154	Rashaya	-	5
202178	Bint Jbeil	-	1
202123	Haris	Haris	-
202124	Tayr Harfa	-	2
202106	Hasbayya	-	-
202151	Aamrani	Aazieh	4
202159	Houmin	Houmin alfawqa	-
202193	Tal Alkhayat	-	1
202187	Anssar	Anssar	11

➢ **EMPLOYEE_PHONE**

EMPLOYEE_ID	EPHONE
202100	71111111
202103	70111113
202104	71136925
202104	71214707
202106	76111103
202108	03111110
202109	71111112
202110	70111102
202115	70111101
202122	71111113
202123	76111101
202124	76111102
202126	71111101
202133	03111112
202147	71111102
202148	76111111
202151	81111111
202154	76111112
202155	03111113
202159	81111112
202164	03111111
202166	70111111
202177	03111102
202178	76111113
202182	70111112
202182	81111103
202187	81111102
202191	81111113
202192	71111103
202193	81111101
202198	70111103
202199	03121117

➤ **EMPLOYEE_EMAIL**

EMPLOYEE_ID	EEMAIL
202100	Nazek.Bohsali@gmail.com
202103	LynnChakaron@gmail.com
202104	Omar.Temsah@gmail.com
202104	omartemsah2004@hotmail.com
202106	najib.bannout@gmail.com
202108	OlaMakki@gmail.com
202109	MariaAlloush2000@gmail.com
202110	Batoul.Saayed@gmail.com
202115	Makhoul.Shbelb@gmail.com
202122	Hadi.Sharafeddin01@gmail.com
202123	Farah.Farhat@gmail.com
202124	Leen.almasri@hotmail.com
202126	Douaa.shamly@gmail.com
202133	Mohammad.Alizzi@hotmail.com
202147	Mohammad.Temsah@gmail.com
202148	Omar.karaki@gmail.com
202151	Shikri.aamrani@gmail.com
202154	Nathalie.delbani@gmail.com
202155	Mohammad.AlFallah@gmail.com
202159	lamissGhandour90@hotmail.com
202164	Ahmad.Mourad@gmail.com
202166	Zeinab.olaywan@hotmail.com
202177	Bilal.Delbani@gmail.com
202178	Ali.khalil2001@gmail.com
202182	Ahmad.temsah@hotmail.com
202182	Elias.charbel@gmail.com
202187	ali.mezher@hotmail.com
202191	Houssam.khaled@gmail.com
202192	KarenH.Khalife@gamil.com
202193	Asmaa.Hnalni@gmail.com
202198	Mohammad.Ballouz@hotmail.com
202199	Jessica.Henwick@gmail.com

➢ **CUSTOMER_LOCATION**

CUSTOMER_ID	CDISTRICT	CCITY	CSTREET	CAPARTMENT_NUMBER
202200	Almaten	Aley	Bsous	8
202204	Nabatieh	Habboush	Hay-Almaslakh	10
202213	Beirut	Mazraa	Tadros	7
202244	Nabatieh	Deir-Alzahrani	Deir-Alzahrani	10
202251	Beirut	Msaytbeh	Maalouf	8
202289	Beirut	Badaro	Bardawil	9
202266	Jnoub	Saida	Saida	10
202271	Chmel	Tripoli	Riad Elsolh	6
202255	Chmel	Anjar	Majdel-Aanjar	9
202205	Chmel	Akkar	Halba	10
202299	Beirut	Ashrafieh	Sassine	11
202219	Mountain	Kaslik	AlRoum	13

➢ **CUSTOMER_PHONE**

CUSTOMER_ID	CPHONE
202200	71520901
202204	81720444
202205	78144589
202213	03890112
202213	71567890
202219	03659872
202219	78330912
202244	76113478
202251	81333786
202255	76477889
202266	70325689
202271	03619625
202289	70981379
202299	71230988
202299	81999401

➢ **CUSTOMER_EMAIL**

CUSTOMER_ID	CEMAIL
202200	John.Wong@gmail.com
202204	Ghina.Wehbe@gmail.com
202205	JadLawlab@gmail.com
202213	Kareem.Boulez@gmail.com
202213	kareem2000@hotmail.com
202219	MyriamKlinik@gmail.com
202244	Sara.roumani@gmail.com
202251	ali.zhour@gmail.com
202255	Reem.daher03@gmail.com
202266	ZeinaAlzahabi@gmail.com
202271	LaylaIssa@gmail.com
202289	Hassan.Malaeb@gmail.com
202289	HassounMalaeb@hotmail.com
202299	Wael.Kfoury2000@hotmail.com
202299	WaelKfoury@gmail.com

➢ **DEPARTMENT_LOCATION**

DNUMBER	DLOCATION
1	Beirut
502	Kaslik
510	Saida
513	Tripoli
521	Jounieh
544	Kaslik
555	Sour
577	Beirut
584	Saida
588	Beirut

➢ **CCOMPANIES_LOCATION**

COMPANY_NAME	CCLOCATION
Anthem	Batroun
Aviva	Tripoli
Cigna	Beirut
Geico	Jall Eldib
HHI	Jounieh
Happy House	Beirut
Homeprotect	Sour
MOBM	Saida
Safe Ride	Beirut
State Farm	Zahlah

➢ **CCOMPANIES_PHONE_NUMBER**

COMPANY_NAME	CCPHONE_NUMBER
Anthem	01826002
Aviva	01789123
Cigna	01320021
Geico	01833996
HHI	01123321
Happy House	01810003
Homeprotect	01980111
MOBM	01800001
Safe Ride	01800000
State Farm	01800002

➢ **CCOMPANIES_EMAIL**

COMPANY_NAME	CCEMAIL
Anthem	anthemoffice@gmail.com
Aviva	avivaofficial@hotmail.com
Cigna	Cigna.office@hotmail.com
Geico	geico@hotmail.com
HHI	hhi.management@gmail.me
Happy House	HappyHouse.management@gmail.com
Homeprotect	Homeprotect.oce@hotmail.com
MOBM	mobm.official@hotmail.com
Safe Ride	saferideoffice@gmail.com
State Farm	State.Farm@gmail.com

➢ **HOUSE_LOCATION**

TITLE_DEAD	HCITY	HSTREET	HDISTRICT	HAPARTMENT_NUMBER
3925632	BEIRUT	-	Beirut	31
8408742	BEDNAYEL	JABBENEH	Bekaa	158
4287653	ARNAOUN	-	Shmel	330
9075567	SOUR	ABO DIB	Jnoub	71
8298672	BEIRUT	AMROUSIEH	Mount Lebanon	67
3212436	BEIRUT	BLISS	Beirut	210
1167466	ARAB SALIM	-	Jnoub	28
3463636	BYBLOS	Karam Alaris	Shmel	1
4478863	TRIPOLI	ABYAD	Shmel	17
8486765	SAIDA	MINA	Saida	400

➢ **PAYMENT_CURRENCY**

RECEIPTNO	CURRENCY
2	Dollar
8	Lira
12	Euro
22	Lira
26	Dollar
32	Dollar
45	Lira
52	Derham
54	Dollar
73	Euro
92	Lira
97	Lira

➢ **PAYMENT_DATE**

RECEIPTNO	PDATE
2	03/27/2005
8	09/30/2015
12	02/12/2002
22	04/25/2010
26	09/20/2010
32	06/04/2020
45	07/17/2021
52	11/01/2017
54	08/11/2011
73	03/15/2022
92	12/02/2018
97	01/23/2004

➢ **VEHICLE_COLOR**

SN	VCOLOR
100000	Black
100000	White
100001	Red
200000	White
200002	Yellow
300000	Blue
300003	Blue
400000	Black
400000	Red
400004	Red
500005	Grey
500005	White
600006	Grey

➢ **HAS1**

CUSTOMER_ID	RECEIPTNO
202200	22
202204	54
202205	73
202213	97
202219	26
202244	12
202251	2
202255	32
202266	52
202271	92
202289	8
202299	45

➢ **HAS2**

CUSTOMER_ID	TITLE_DEAD
202200	1234
202219	1332
202244	2980
202255	1447
202266	9788
202299	1001

➢ **HAS3**

CUSTOMER_ID	VSN
202200	397864
202205	213900
202213	143095
202219	121415
202251	983713
202255	888222
202266	897111
202299	333666

- COVERS1

IID	REPORTNO	PERCENTAGE
39	53	70
876	24	30
345	56	40
23	123	55
11	77	100
12	345	100
53	39	65
26	32	54
75	35	88
66	377	95

- COVERS2

IID	TITLE_DEAD	PERCENTAGE
12	392	30
345	840	90
53	42	45
11	90	75
12	82	30
6	32	76
665	84	65
11	44	75
5	34	54

➢ **COVERS3**

IID	VSN	PERCENTAGE
39	100000	40
876	200000	50
11	300000	75
26	400000	76
53	100001	45
23	200002	100
665	300003	65
53	500005	45

XI- Sample Transactions:

QUERY 1: Rami is in search of an old house

Rami is a real estate engineer who likes all things vintage and thinks that the earlier have greater worth than the latter. He looked all across Beirut for an old house, but he found it difficult, so he decided to check with every insurance company to see if any of their customers have a home that is insured and was constructed before 2005 and he would want to offer to purchase their houses. Rami sought our assistance from our insurance business, "Safe Hands" which has become well-known throughout Lebanon. Naturally, our helpful employees did not turn down his request and were delighted to assist him. The company's database system is well-organized, and our staff was certain that it would be simple to comply with Rami's requirements. Rami wanted the customer's phone number and full name if the employees were able to locate any customer as per his request.

```
SELECT C.Fname, C.Mname, C.Lname, CPN.CPhone
FROM   CUSTOMER C,
       CUSTOMER_PHONE CPN,
       HOUSE_LOCATION HL,
        HOUSE H
WHERE C.HTitle = H.Title_dead
      AND H.Year_built<=2005
      AND HL.Title_dead = H.Title_dead
      AND HL.HCity = 'SOUR'
       AND CPN.Customer_ID = C.Customer_ID;
```

FNAME	MNAME	LNAME	CPHONE
Reem	Jad	Daher	76477889

QUERY 2: Explosion in 'Health' department

An unfortunate explosion has happened in the "Health" department, but likely no one has been injured. Of course, we will not let these employees get fired, but instead, we will assign them to the HR department and as a reward, their salaries will be increased by 5%.

Note: We know that the HR department number is assigned to 1.

```
UPDATE EMPLOYEE

SET Salary = 1.05*Salary

WHERE Dno IN (SELECT DEPARTMENT.DNumber

                FROM DEPARTMENT

                 WHERE DEPARTMENT.DName = 'Health');

AND

UPDATE EMPLOYEE

SET Dno = 1

WHERE Dno IN (SELECT DEPARTMENT.DNumber

                FROM DEPARTMENT

                WHERE DEPARTMENT.DName = 'Health');
```

EMPLOYEE_ID	FNAME	MNAME	LNAME	SALARY	BDATE	GENDER	SUPER_ID	ROLE	DNO
202104	Omar	Wissam	Temsah	9999	03/18/2004	Male	-	CEO	1
202164	Ahmad	Nader	Mourad	8675	10/17/2002	Male	202104	Manager	513
202133	Mohammad	Ghazi	Alizzi	9000	10/15/2003	Male	202104	Manager	510
202155	Mohammad	Amin	Alfallah	9000	03/25/2003	Male	202104	Manager	502
202108	Ola	Mohammad	Makki	8132.4	03/30/2000	Female	202104	Manager	577
202177	Bilal	Mohammad	Delbani	8379	05/08/2003	Male	202104	Manager	1
202199	Jessica	William	Henwick	9000	06/18/2002	Female	202104	Manager	588
202100	Nazek	Ayman	Bohsali	8000	12/03/1990	Female	202104	Manager	555
202109	Maria	Tawfiq	Alloush	7666	09/30/2000	Female	202104	Manager	544
202122	Hadi	Firas	Sharafeddin	7865	02/15/2002	Male	202104	Manager	521
202126	Douaa	Houssam	Shamly	8797.95	08/04/2003	Female	202199	Trainer	1
202147	Mohammad	Wissam	Temsah	8000	07/13/1992	Male	202100	Security	510
202192	Karen	Habib	Khalife	7200	04/24/2003	Female	202199	Secretary	502
202166	Zeinab	Nader	Olaywan	9000	11/29/2003	Female	202199	Trainer	588
202182	Ahmad	Wissam	Temsah	7855.3125	10/31/1996	Male	202133	Security	1
202103	Lynn	Ibrahim	Chakaron	8400	09/26/2003	Female	202100	Advisor	555
202115	Makhoul	Ahmad	Shbeib	8700.5	10/11/2003	Male	202109	Trainer	544
202110	Batoul	Hussein	Saayed	8000	05/12/2003	Female	202177	Secretary	510
202198	Mohammad	Mostafa	Ballouz	9200	06/16/2003	Male	202133	Advisor	502
202154	Nathalie	Karim	Delbani	8400	04/17/2003	Female	202100	Trainer	555
202178	Ali	Mourad	Khalil	8766	10/26/2001	Male	202109	Secretary	544
202123	Farah	Jawad	Farhat	8146.8	11/29/1999	Female	202164	Trainer	513
202124	Leen	Kamal	Almasri	8888	06/27/2001	Female	202133	Advisor	510
202106	Najib	Fariss	Bannout	7200	12/22/1997	Male	202199	Advisor	588
202148	Omar	Ali	Karaki	8473.6827	09/11/1998	Male	202177	Security	1
202151	Shikri	Faisal	Bakri	6600	11/19/2003	Male	202122	Secretary	521
202159	Lamiss	Fadi	Ghandour	6577.2	01/01/1993	Female	202122	Trainer	521
202191	Houssam	Walid	Kahled	7749.6	10/09/2003	Male	202164	Advisor	513
202193	Asmaa	Khalil	Ballouz	7800	12/12/1994	Female	202108	Trainer	577
202187	Ali	Fouad	Solaiman	8300	08/27/2003	Male	202100	Security	555

QUERY UPDATED.

QUERY 3: Punishment!!

Wael Emil Kfoury filed a complaint against the employees who served him. We absolutely won't tolerate this behavior as a firm with a good reputation and will discipline anyone who has served him. As a punishment, we will reduce 13% of their salaries to be an example to others.

```
UPDATE EMPLOYEE
SET Salary = 0.87*Salary
WHERE Employee_ID IN (SELECT S.EID
                      FROM SERVES S, CUSTOMER C
                      WHERE C.Fname = 'Wael'
                      AND C.Mname = 'Emil'
                      AND C.Lname = 'Kfoury'
                      AND C.Customer_ID = S.CUSTID);
```

EMPLOYEE_ID	FNAME	MNAME	LNAME	SALARY	BDATE	GENDER	SUPER_ID	ROLE	DNO
202104	Omar	Wissam	Temsah	9999	03/18/2004	Male	-	CEO	1
202164	Ahmad	Nader	Mourad	8675	10/17/2002	Male	202104	Manager	513
202133	Mohammad	Ghazi	Alizzi	9000	10/15/2003	Male	202104	Manager	510
202155	Mohammad	Amin	Alfallah	9000	03/25/2003	Male	202104	Manager	502
202108	Ola	Mohammad	Makki	8132.4	03/30/2000	Female	202104	Manager	577
202177	Bilal	Mohammad	Delbani	8379	05/08/2003	Male	202104	Manager	1
202199	Jessica	William	Henwick	9000	06/18/2002	Female	202104	Manager	588
202100	Nazek	Ayman	Bohsali	8000	12/03/1990	Female	202104	Manager	555
202109	Maria	Tawfiq	Alloush	7666	09/30/2000	Female	202104	Manager	544
202122	Hadi	Firas	Sharafeddin	7865	02/15/2002	Male	202104	Manager	521
202126	Douaa	Houssam	Shamly	8797.95	08/04/2003	Female	202199	Trainer	1
202147	Mohammad	Wissam	Temsah	8000	07/13/1992	Male	202100	Security	510
202192	Karen	Habib	Khalife	7200	04/24/2003	Female	202199	Secretary	502
202166	Zeinab	Nader	Olaywan	9000	11/29/2003	Female	202199	Trainer	588
202182	Ahmad	Wissam	Temsah	7855.3125	10/31/1996	Male	202133	Security	1
202103	Lynn	Ibrahim	Chakaron	8400	09/26/2003	Female	202100	Advisor	555
202115	Makhoul	Ahmad	Shbeib	8700.5	10/11/2003	Male	202109	Trainer	544
202110	Batoul	Hussein	Saayed	8000	05/12/2003	Female	202177	Secretary	510
202198	Mohammad	Mostafa	Ballouz	9200	06/16/2003	Male	202133	Advisor	502
202154	Nathalie	Karim	Delbani	8400	04/17/2003	Female	202100	Trainer	555
202178	Ali	Mourad	Khalil	8766	10/26/2001	Male	202109	Secretary	544
202123	Farah	Jawad	Farhat	8146.8	11/29/1999	Female	202164	Trainer	513
202124	Leen	Kamal	Almasri	8888	06/27/2001	Female	202133	Advisor	510
202106	Najib	Fariss	Bannout	7200	12/22/1997	Male	202199	Advisor	588
202148	Omar	Ali	Karaki	8473.6827	09/11/1998	Male	202177	Security	1
202151	Shikri	Faisal	Bakri	6600	11/19/2003	Male	202122	Secretary	521
202159	Lamiss	Fadi	Ghandour	6577.2	01/01/1993	Female	202122	Trainer	521
202191	Houssam	Walid	Kahled	7749.6	10/09/2003	Male	202164	Advisor	513
202193	Asmaa	Khalil	Ballouz	7800	12/12/1994	Female	202108	Trainer	577
202187	Ali	Fouad	Solaiman	8300	08/27/2003	Male	202100	Security	555

QUERY UPDATED.

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QUERY 4: Robbery in the Finance department

It was a rainy night. All the employees were home with their families (supposedly). As known, only the employees of each department had the department's key in addition to the security.

On this night, a catastrophic thing has blown our company and transformed this night into a nightmare. IT'S A ROBBERY! The Finance department which is the home of all our money has been robbed. The thief was so smart to the extent that he/she did not check if there exist any cameras around.

Likely, we know that only the security and the employees of the 'Finance' department were able to enter the department and we can exclude the manager because he was seen that night at the bar. Hence, we are in the circle of employees in the 'Finance' department without its manager. Moreover, the cameras in the department were blurry but we were able to ensure that the person who robbed was 'Male'.

Therefore, we investigate with all the males in the finance department to catch the thief.

(

SELECT E.Employee_ID

FROM EMPLOYEE E,

      DEPARTMENT D

WHERE E.Dno = D.DNumber

      AND D.DName = 'Finance'

      AND E.Role = 'Trainer'

      AND E.Gender = 'Male'

)

UNION

(

SELECT E.Employee_ID

FROM EMPLOYEE E,

      DEPARTMENT D

WHERE E.Dno = D.Number

AND D.Name = 'Finance'

AND E.Role = 'Secretary'

AND E.Gender = 'Male'

)

UNION

(

SELECT E.Employee_ID

FROM EMPLOYEE E,

DEPARTMENT D

WHERE E.Dno = D.Number

AND D.Name = 'Finance'

AND E.Role = 'Security'

AND E.Gender = 'Male'

)

UNION

(

SELECT E.Employee_IDs

FROM EMPLOYEE E,

DEPARTMENT D

WHERE E.Dno = D.Number

AND D.Name = 'Finance'

AND E.Role = 'Advisor'

AND E.Gender = 'Male');

EMPLOYEE_ID
202147
202183

QUERY 5: Tragedy is Happening, and we are here to help!!

The world is going through hard times, from hyperinflation to the monopoly of goods from dealers and traders to capital control on people's money. So, we as a respectful insurance company should help our employees to get through this tragedy because we do care a lot about our employees. So, we decided to give a raise to the ones whom we think need it very much.

So, to be fair, we decided to give the raise to only employees whose salary is below the average salary of all employees in the year, and the raise will be only to the employees that have dependents. So, we believe that this policy is a great solution that will help a lot of our employees during this hard time.

The raise will be 20%.

Therefore, we will update the salary of each employee whose salary is below the average salary of all employees where the update will be the current salary*1.2.

UPDATE EMPLOYEE

SET Salary = Salary*1.2

WHERE EXISTS (**SELECT** *

                  FROM DEPENDENT DEP, EMPLOYEE E

                WHERE E.Employee_ID = DEP.EID)

AND Salary < (**SELECT** AVG(Salary)

                FROM Employee);

EMPLOYEE_ID	FNAME	MNAME	LNAME	SALARY	BDATE	GENDER	SUPER_ID	ROLE	DNO
202104	Omar	Wissam	Temsah	9999	03/18/2004	Male	-	CEO	1
202164	Ahmad	Nader	Mourad	8675	10/17/2002	Male	202104	Manager	513
202133	Mohammad	Ghazi	Alizzi	9000	10/15/2003	Male	202104	Manager	510
202155	Mohammad	Amin	Alfallah	9000	03/25/2003	Male	202104	Manager	502
202108	Ola	Mohammad	Makki	8132.4	03/30/2000	Female	202104	Manager	577
202177	Bilal	Mohammad	Delbani	8379	05/08/2003	Male	202104	Manager	1
202199	Jessica	William	Henwick	9000	06/18/2002	Female	202104	Manager	588
202100	Nazek	Ayman	Bohsali	8000	12/03/1990	Female	202104	Manager	555
202109	Maria	Tawfiq	Alloush	7666	09/30/2000	Female	202104	Manager	544
202122	Hadi	Firas	Sharafeddin	7865	02/15/2002	Male	202104	Manager	521
202126	Douaa	Houssam	Shamly	8797.95	08/04/2003	Female	202199	Trainer	1
202147	Mohammad	Wissam	Temsah	8000	07/13/1992	Male	202100	Security	510
202192	Karen	Habib	Khalife	7200	04/24/2003	Female	202199	Secretary	502
202166	Zeinab	Nader	Olaywan	9000	11/29/2003	Female	202199	Trainer	588
202182	Ahmad	Wissam	Temsah	7855.3125	10/31/1996	Male	202133	Security	1
202103	Lynn	Ibrahim	Chakaron	8400	09/26/2003	Female	202100	Advisor	555
202115	Makhoul	Ahmad	Shbeib	8700.5	10/11/2003	Male	202109	Trainer	544
202110	Batoul	Hussein	Saayed	8000	05/12/2003	Female	202177	Secretary	510
202198	Mohammad	Mostafa	Ballouz	9200	06/16/2003	Male	202133	Advisor	502
202154	Nathalie	Karim	Delbani	8400	04/17/2003	Female	202100	Trainer	555
202178	Ali	Mourad	Khalil	8766	10/26/2001	Male	202109	Secretary	544
202123	Farah	Jawad	Farhat	8146.8	11/29/1999	Female	202164	Trainer	513
202124	Leen	Kamal	Almasri	8888	06/27/2001	Female	202133	Advisor	510
202106	Najib	Fariss	Bannout	7200	12/22/1997	Male	202199	Advisor	588
202148	Omar	Ali	Karaki	8473.6827	09/11/1998	Male	202177	Security	1
202151	Shikri	Faisal	Bakri	6600	11/19/2003	Male	202122	Secretary	521
202159	Lamiss	Fadi	Ghandour	6577.2	01/01/1993	Female	202122	Trainer	521
202191	Houssam	Walid	Kahled	7749.6	10/09/2003	Male	202164	Advisor	513
202193	Asmaa	Khalil	Ballouz	7800	12/12/1994	Female	202108	Trainer	577
202187	Ali	Fouad	Solaiman	8300	08/27/2003	Male	202100	Security	555

QUERT UPDATED

QUERY 6: All Customers should be satisfied

We as a respectful company should have all our customers satisfied with our services, and we can't continue our work if there are some customers who s is not satisfied. And this is the reason why we included an attribute of satisfaction that has a range from 0 to 10.

So, to satisfy those customers we should send to them an agent from our company to discuss with them more about our company and its services and to get to know why they are dissatisfied and get feedback from them and why they left our company.

Therefore, we should get their name, location, and number in order to inform them before our agent come to their location. And to know which customers are dissatisfied we see who has a satisfaction rate below 6. And we should only select the customers who deleted their insurance from our company and no longer want our insurance.

SELECT DISTINCT C.Fname, C.Lname, CP.CPhone, CL.CCity, CL.CDistrict, CL.CStreet, CL.CApartment_number

FROM CUSTOMER C, CUSTOMER_PHONE CP, CUSTOMER_LOCATION CL, INSURANCE

WHERE Satisfaction<6

 AND C.CUSTOMER_ID= CL.CUSTOMER_ID

AND C.CUSTOMER_ID= CP.CUSTOMER_ID

AND NOT **EXISTS** (**SELECT** *

                FROM INSURANCE, CUSTOMER

                WHERE Customer_ID = IID);

FNAME	LNAME	CPHONE	CCITY	CDISTRICT	CSTREET	CAPARTMENT_NUMBER
Hassan	Malaeb	70981379	Badaro	Beirut	Bardawil	9
Reem	Daher	76477889	Anjar	Chmel	Majdel-Aanjar	9
Sara	Roumani	76113478	Deir-Alzahrani	Nabatieh	Deir-Alzahrani	10

Today is Mother's Day. So, we wanted to celebrate this day in our company. But we can't be happy if our customers didn't celebrate with us. So, we decided on this day to give a small gift to all our Employees and Customers who are mothers that can thank them for being mothers.

So, to inform them about their gifts, we should retrieve their Name and phone number to contact them.

Now to know who the Employees who are mothers in our company we should check if they are Females and have Daughters or Sons in the DEPENDENT table.

Now regarding Customers, we can know if they are mothers if they are females.

Therefore, in this way, we can contact all the mothers and celebrate with them.

SELECT DISTINCT E.Fname, E.Lname,EP.EPhone

FROM EMPLOYEE E, EMPLOYEE_PHONE EP

WHERE E.Gender='Female'

    AND E.Employee_ID= EP.Employee_ID

    AND EXISTS (**SELECT** *

                FROM DEPENDENT D, EMPLOYEE EM

                WHERE EM.Employee_ID = D.EID

                AND (D.Relationship='Son'

                OR D.Relationship='Daughter'))

UNION

(**SELECT** DISTINCT C.Fname, C.Lname, CP.CPhone

FROM CUSTOMER C, CUSTOMER_PHONE CP

WHERE Gender='Female'

AND C.CUSTOMER_ID= CP.CUSTOMER_ID);

FNAME	LNAME	EPHONE
Asmaa	Ballouz	81111101
Batoul	Saayed	70111102
Douaa	Shamly	71111101
Farah	Farhat	76111101

110

QUERY 8: New fatal Disease!!

A new disease has spread all over the world, and governments are closing airports. And as a company to benefit from this situation, we will encourage every customer who has a low coverage percentage on his/her health to change their plan and pay some more so that we could cover their payments if they caught that disease. For two main reasons: not to lose our customers (if they are dead) and thus not lose their payments, and benefit and gain more profit when they change their plan.

Note that we will not contact customers who are 50 years old and older, because he has a good risk of dying from the disease and may have a lot of diseases that may make them go to the hospital a lot, and we don't want that.

So, to do that we will find the customer who applies for Health insurance that has coverage lower than the average, and so we can contact them by email and convince them to change their coverage plan.

SELECT DISTINCT C.Fname, C.Lname, CE.CEMail

FROM CUSTOMER C, CUSTOMER_EMAIL CE, HEALTH H, MEDICAL_RECORD M

WHERE C.Customer_ID =M.CID

AND C.Customer_ID=H.CID

AND C.CUSTOMER_ID = CE.CUSTOMER_ID

AND H.Percentage < (**SELECT** AVG(Percentage)

                      FROM HEALTH)

AND M.Age<50;

FNAME	LNAME	CEMAIL
Kareem	Boulez	Kareem.Boulez@gmail.com
Ghina	Wehbe	Ghina.Wehbe@gmail.com
Hassan	Malaeb	Hassan.Malaeb@gmail.com
Layla	Issa	LaylaIssa@gmail.com
Sara	Roumani	Sara.roumani@gmail.com
Hassan	Malaeb	HassounMalaeb@hotmail.com
Kareem	Boulez	kareem2000@hotmail.com

7 rows returned in 0.01 seconds   Download

QUERY 9: Happy Anniversary!!

Every year we celebrate our Anniversary only with the family of the CEO. But this year is different, we want to celebrate our success, our determination, and our power with all Employees who work in the executive department, and all managers.

So, we will get their emails with their names to contact them and inform them about our event.

SELECT A.Fname, A.Lname, E.EEMail

FROM EMPLOYEE A, EMPLOYEE_EMAIL E, DEPARTMENT D

WHERE A.Employee_ID =E.Employee_ID

AND D.DNumber= A.DNo

AND D.DName= 'Executive'

UNION

(

SELECT Em.Fname, Em.Lname, E.EEMail

FROM EMPLOYEE Em, EMPLOYEE_EMAIL E

WHERE Em.Employee_ID =E.Employee_ID

AND (Em.Role= 'Manager' **OR** Em.Role= 'CEO')

);

FNAME	LNAME	EEMAIL
Ahmad	Mourad	Ahmad.Mourad@gmail.com
Bilal	Delbani	Bilal.Delbani@gmail.com
Hadi	Sharafeddin	Hadi.Sharafeddin01@gmail.com
Jessica	Henwick	Jessica.Henwick@gmail.com
Lamiss	Ghandour	lamissGhandour90@hotmail.com
Maria	Alloush	MariaAlloush2000@gmail.com
Mohammad	Alfallah	Mohammad.AlFallah@gmail.com
Mohammad	Alizzi	Mohammad.Alizzi@hotmail.com
Nazek	Bohsali	Nazek.Bohsali@gmail.com
Ola	Makki	OlaMakki@gmail.com
Omar	Temsah	Omar.Temsah@gmail.com
Omar	Temsah	omartemsah2004@hotmail.com
Shikri	Bakri	Shikri.aamrani@gmail.com

13 rows returned in 0.01 seconds   Download

QUERY 10: New Policy!!

The Government released a new policy that every company should apply. Which are all employees that work in maintenance should retire at the age of 60 instead of 80. This was shocking to us, as the employees who are old have a great experience and we benefit from them a lot, yet we must comply with the rules of the Government.

So, we must delete the record of every employee whose age is greater than 60 that works in the department of maintenance.

After this, we should update the number of employees that work in that department to keep data up to date.

DELETE FROM EMPLOYEE

WHERE (**UPDATE** DEPARTMENT

       SET Number_of_employees = Number_of_employees – (**SELECT** COUNT(*)

                                     FROM EMPLOYEE

                                     WHERE BDate< '01-01-1962')

       WHERE DName='Maintenance')

AND BDate< '01-01-1962';

Output:

```
0 row(s) deleted.
```


Since we have zero employees who are older than 60 in our company.

XII-Normalization Up to BCNF Normal Form:

After creating all relations, we should improve them by normalizing according to several normal forms.

Here we are going to normalize our database up to the fourth normal form which is the Boyce-Codd

Normal Form. On each relation we are going to apply the four normal forms. We start with the first then

second then third and at last the BCNF normal form. Let us first start by a general description to each

normal form.

First Normal Form:

This form does not allow multivalued attributes, composite attributes, and their combinations to exist in
a relation.

1. Only attribute values permitted are single atomic values.

2. Domain of an attribute must only include atomic values and the value of an attribute in a tuple

must be a single value from the domain of that attribute.

3. Disallows having a set of values as an attribute value for a single tuple.

Second Normal Form:

The Second normal form is based on the concept of full functional dependency. Before explaining the

second form let us define some concepts used in this form and other forms also.

Functional Dependencies: A constraint between two sets of attributes from the database. The values of
the Y component of a tuple in relation R depend on or are determined by the values of an X component.
We say that Y is functionally dependent on X.

Prime attribute: An attribute that is a member of a candidate key in a relation R. An attribute is called non-prime if it is not a prime attribute that is, if it is not a member of any candidate key.

Full functional dependency: A functional dependency X →Y is a full functional dependency if removal of any attribute A from X means that the dependency does not hold anymore.

Partial Dependency: A functional dependency X →Y is a partial functional dependency if removal of any attribute A from X means that the dependency still holds.

A relation schema R is in the second normal form if every nonprime attribute in R is fully functionally dependent on every key of R and every nonprime attribute A in R is not partially dependent on any key in R.

Third Normal Form:

The third normal form is based on the concept of transitive dependency. So let us first define a transitive dependency.

Transitive Dependency: A functional dependency X →Y in a relation schema R is a transitive dependency if there exists a set of attributes Z in R that is neither a candidate key nor a subset of any key of R, and both X →Z and Z →Y hold. A relation schema R is in the third normal form if it satisfies the second normal form, and no nonprime attribute of R is transitively dependent on the primary key. For every nontrivial functional dependency X →Y either X should be a super key or Y is a prime attribute.

Boycee-Codd Normal Form:

The Boycee-Codd normal form is a stricter form than the third normal form. The BCNF differs from the definition of the third normal form in only one condition. The third normal form allows the right hand side of the functional dependency to be a prime attribute while BCNF does not allow that.

1. EMPLOYEE:

Employee_ID	Fname	Mname	Lname	Salary	BDate	Gender	Super_ID	DNo	Role

FN1
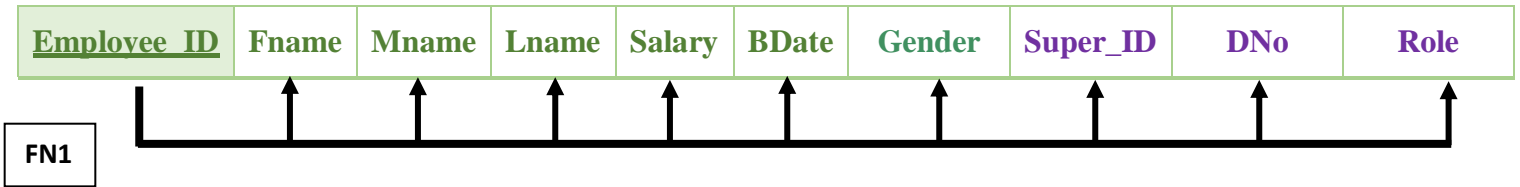
1- The "EMPLOYEE" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "EMPLOYEE" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the Employee_ID.

3- In addition, the "EMPLOYEE" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key Employee_ID.

4- Lastly, the "EMPLOYEE" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.
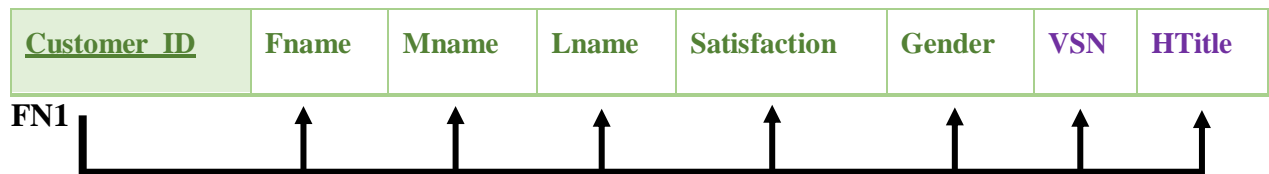
2. PAYMENT:

| Paid	Type	Bill	Mechanism	ReceiptNo	CID

FN1

1- The "PAYMENT" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "PAYMENT" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the RecieptNo

3- In addition, the "PAYMENT" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key RecieptNo.

4- Lastly, the "PAYMENT" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

3. CUSTOMER:

Customer_ID	Fname	Mname	Lname	Satisfaction	Gender	VSN	HTitle

FN1

1- The "CUSTOMER" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "CUSTOMER" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the Customer_ID.

3- In addition, the "CUSTOMER" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key Customer_ID.

4- Lastly, the "CUSTOMER" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

4. HEALTH:

ReportNo	Exit_Date	Enter_Date	Hospital_Name	CID	IID	Percentage	Hboolean

FN1

1- The "HEALTH" relation is already in the first normal formal since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- The "HEALTH" relation satisfies the conditions of the second normal form as well since all the non-prime attributes are fully functionally dependent on the primary key ReportNo.

3- The "HEALTH" relation is in 3NF since it is in 2NF and no non-prime attribute in the relation is transitively dependent on the primary key ReportNo.

4- This relation schema is in BCNF since there is no functional dependency x➔A where X is not a superkey.

5. DEPENDENT:

Gender	BDate	Relationship	Name	EID

FN1
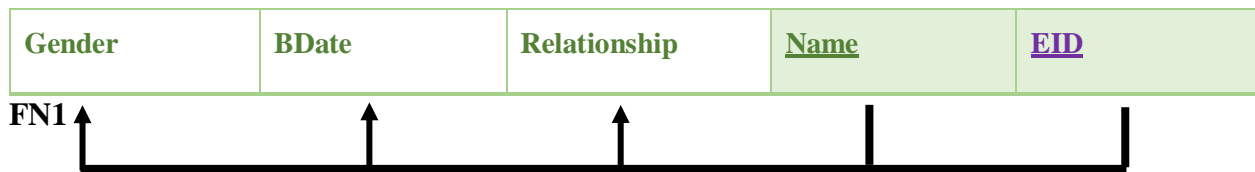
1- The "DEPENDENT" relation is already in the first normal formal since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- The "DEPENDENT" relation satisfies the conditions of the second normal form as well since all the non-prime attributes are fully functionally dependent on the primary key {Name, EID}.
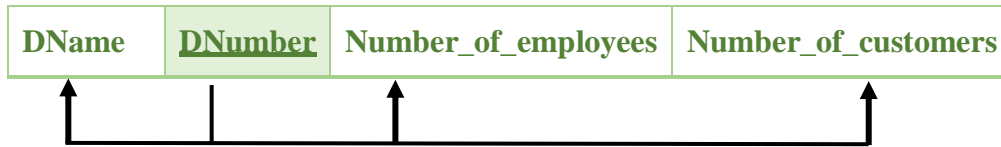
3- The "DEPENDENT" relation is in 3NF since it is in 2NF and no non-prime attribute in the relation is transitively dependent on the primary key {Name, EID}.

4- This relation schema is in BCNF since there is no functional dependency x→A where X is not a superkey.

6. EXPENSE:

Item	Price	RNumber	Date	Type_of_Item
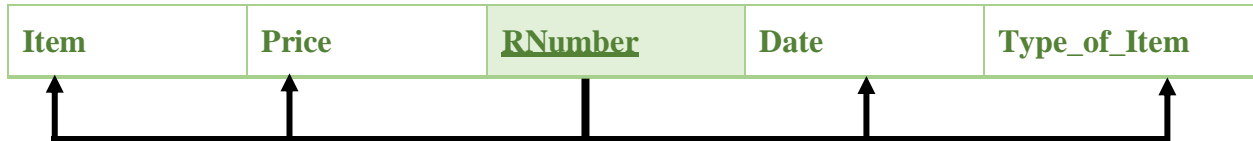
1- The "EXPENSE" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "EXPENSE" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the RNumber.

3- In addition, the "EXPENSE" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key RNumber.

4- Lastly, the "EXPENSE" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

7. DEPARTMENT:

DName	DNumber	Number_of_employees	Number_of_customers

1- The "DEPARTMENT" relation is already in the first normal form since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- This relation is also in second normal form since every non-prime attribute is fully functionally dependent on the primary key DNumber.

3- This relation is also in 3NF since it is in 2NF and there are no non-prime attributes that are transitively dependent on the primary key DNumber.

4- This relation is in BCNF since it satisfies all the requirements of this normal form. That is, there exists no functional dependency X→Y, where X is not a superkey.

8. VEHICLE:

SN	State	Year	Make	Value	Model	Reg#

1- The "VEHICLE" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "VEHICLE" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the SN.

3- In addition, the "VEHICLE" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key SN.

4- Lastly, the "VEHICLE" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X➔Y holds in this relation schema, then X is a superkey.
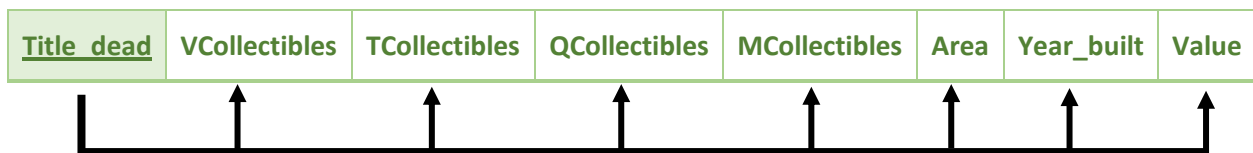
9. MEDICAL_RECORD:

Blood_Type	Weight	Height	Age	Sex	Disease	Allergy	RecordNo	CID
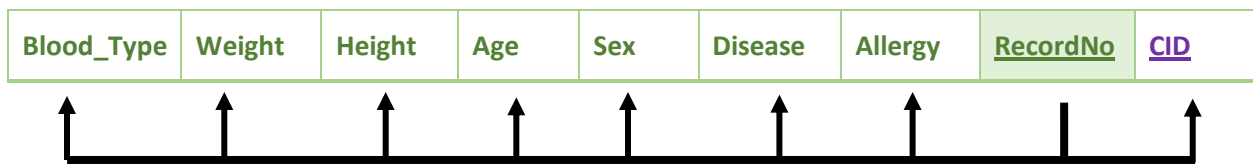
1- The "MEDICAL_RECORD" relation is already in the first normal form since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- This relation is also in second normal form since every non-prime attribute is fully functionally dependent on the primary key {RecordNo, CID}.

3- This relation is also in 3NF since it is in 2NF and there are no non-prime attributes that are transitively dependent on the primary key {RecordNo, CID}.

4- This relation is in BCNF since it satisfies all the requirements of this normal form. That is, there exists no functional dependency X➔Y, where X is not a superkey.

10. INSURANCE:

IID	Coverage	Type_of_Insurance

1- The "INSURANCE" relation is already in the first normal form since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- This relation is also in second normal form since every non-prime attribute is fully functionally dependent on the primary key IID.

3- This relation is also in 3NF since it is in 2NF and there are no non-prime attributes that are transitively dependent on the primary key IID.

4- This relation is in BCNF since it satisfies all the requirements of this normal form. That is, there exists no functional dependency X→A, where X is not a superkey.

11. HOUSE:

Title_dead	VCollectibles	TCollectibles	QCollectibles	MCollectibles	Area	Year_built	Value

1- The "HOUSE" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "HOUSE" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the Title_dead.

3- In addition, the "HOUSE" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key Title_dead.

4- Lastly, the "HOUSE" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

12. COVERS1:

IID	ReportNo	Percentage

FN1

1- The "COVERS1" relation is already in the first normal form since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- This relation is also in second normal form since every non-prime attribute is fully functionally dependent on the primary key {IID, ReportNo}.

3- This relation is also in 3NF since it is in 2NF and there are no non-prime attributes that are transitively dependent on the primary key {IID, ReportNo}.

4- This relation is in BCNF since it satisfies all the requirements of this normal form. That is, there exists no functional dependency X→A, where X is not a superkey.

13. CONTRACTING_COMPANY:

CName	Service

FN1

1- The "CONTRACTING_COMPANY" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes. Therefore, it satisfies all the conditions of 1NF.

2- The "CONTRACTING_COMPANY" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the CName.
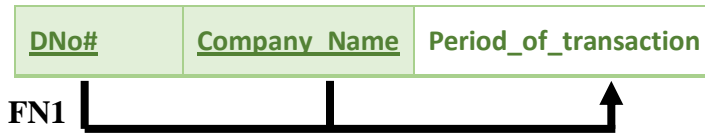
3- In addition, the "CONTRACTING_COMPANY" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key CName.

4- Lastly, the "CONTRACTING_COMPANY" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

14. CALLS_FOR_EMERGENCY:

DNum	CNum	EmergencyPhoneNo#

FN1

1- The "CALLS_FOR_EMERGENCY" relation is already in the first normal form since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- This relation is also in second normal form since every non-prime attribute is fully functionally dependent on the primary key {DNum, CNum}.

3- This relation is also in 3NF since it is in 2NF and there are no non-prime attributes that are transitively dependent on the primary key {DNum, CNum}.

4- This relation is in BCNF since it satisfies all the requirements of this normal form. That is, there exists no functional dependency X→A, where X is not a superkey.

15. TRANSACTS:

DNo#	Company_Name	Period_of_transaction

FN1

1- The "TRANSACTS" relation is already in the first normal form since there are no attributes that could have non-atomic values. All attributes of the relation are simple and neither composite nor multivalued.

2- This relation is also in second normal form since every non-prime attribute is fully functionally dependent on the primary key {DNo#, Company_Name}.

3- This relation is also in 3NF since it is in 2NF and there are no non-prime attributes that are transitively dependent on the primary key {DNo#, Company_Name}.

4- This relation is in BCNF since it satisfies all the requirements of this normal form. That is, there exists no functional dependency X→A, where X is not a superkey.

16. DEALS_WITH

DNo	Customer_Number	Start_Date	End_Date

FN1
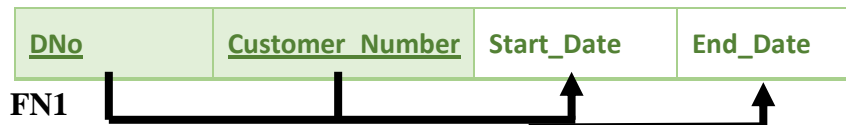
1- The "DEALS_WITH" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes. Therefore, it satisfies all the conditions of 1NF.

2- The "DEALS_WITH" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key {DNo, Customer_Number}.

3- In addition, the "DEALS_WITH" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key {DNo, Customer_Number}.

4- Lastly, the "DEALS_WITH" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

17. IS_ACTIVE

PNum	Insurance_ID	IBoolean

FN1

1- The "IS_ACTIVE" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "IS_ACTIVE" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key {PNum, Insurance_ID}.

3- In addition, the "IS_ACTIVE" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key {PNum, Insurance_ID}.

4- Lastly, the "IS_ACTIVE" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

18. COVERS2:

IID	Title_dead	Percentage

FN1
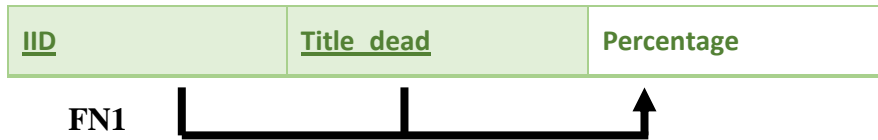
1- The "COVERS2" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "COVERS2" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the {IID, Title_dead}.

3- In addition, the "COVERS2" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key {IID, Title_dead}.

4- Lastly, the "COVERS2" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

19. COVERS3:

IID	VSN	Percentage

FN1

1- The "COVERS3" relation schema's attributes all of them are single and atomic. The relation schema does not contain any multivalued or composed attributes.   Therefore, it satisfies all the conditions of 1NF.

2- The "COVERS3" relation schema is also in the second normal form since all its non-prime attributes are fully functionally dependent on the primary key the {IID, VSN}.

3- In addition, the "COVERS3" relation schema is in the third form since it is in the second normal form and there are no non-prime attributes that are transitively dependent on the primary key {IID, VSN}.

4- Lastly, the "COVERS3" relation schema is in Boyce_Codd Normal form (BCNF) since whenever a functional dependency X→Y holds in this relation schema, then X is a superkey.

20. Relation Schemas without non-prime attributes:

HOUSE_LOCATION:

Title_dead	HCity	HStreet	HDistrict	HApartment_Number

CUSTOMER_LOCATION:

Customer_ID	CDistrict	CCity	CStreet	CApartment_number

EMPLOYEE_LOCATION:

Employee_ID	ECity	EStreet	EApartment_number

PAYS:

DNum	ERNum

SERVES:

CustID	EID

EMPLOYEE_PHONE:

Employee_ID	EPhone

EMPLOYEE_EMAIL:

Employee_ID	EEmail

CUSTOMER_PHONE:

Customer_ID	CPhone

CUSTOMER_EMAIL:

Customer_ID	CEmail

DEPARTMENT_LOCATION:

DNumber	DLocation

CCOMPANIES_LOCATION:

Company_name	CCLocation

CCOMPANIES _PHONE_NUMBER:

Company_name	CCPhone_Number

CCOMPANIES _EMAIL:

Company_name	CCEmail

PAYMENT_CURRENCY:

ReceiptNo	Currency

PAYMENT_DATE:

ReceiptNo	PDate

VEHICLE_COLOR:

SN	VCOLOR

HAS1:

Customer_ID	ReceiptNo

HAS2:

Customer_ID	Title_dead

HAS3:

Customer_ID	VSN

XIII- Conclusion:

In Safe Hands insurance company, it is not only about accidents, robberies, covering damages and providing insurance services. In order to keep our company running safe and doing its job properly to the fullest, it is necessary to document subtle details about all transactions happening on its ground and employee/customer data. When customers come to Safe Hands, there are many procedures and steps need to be done in order for them to benefit from our services to the fullest, including their demographic data, housing data, their medical conditions, if they own any vehicles, in addition to data about their payment and what mechanisms are going to be followed while they are dealing with us. The employees' data is also of our concern, their demographic data, salaries, where they live and who is supervisor on who, and many other data collected regarding each employee. To ensure that services run smoothly, receipts must be correctly recorded to provide the correct access to the service. The highest priority of the database is to keep track of maintenance dates and insurance coverages for the protection of both the employees' and customers' safety and well-being. Therefore, it is evident that a database is an integral part of the insurance company's business and reputation.