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Project 2

* **Part 2 - Translating E/R diagram to Relations:**

**Here is the relational schema using the notation of Section 2.2.7. Also, I have listed functional dependencies for each relation. Primary keys are underlined. All constraints are listed, if there are any. Stated Data Types for each attribute.**

1. InsurancePlan (

PlanNo INT,

PlanName CHAR(100),

PlanType CHAR(100),

Benefits VARCHAR(1000),

Rate INT,

Deductible INT

)

PlanNo -> PlanName, PlanType, Benefits, Rate, Deductible

1. Customer (

CID INT,

Name CHAR(30),

DOB DATE,

Phone INT,

SSN INT,

CustomerStreet VARCHAR(255),

CustomerZipCode INT

)

CID -> Name, DOB, Phone, SSN, CustomerStreet, CustomerZipCode

We can set CID as auto increment number so when inserting new customer in database we do not have to worry about manually entering it.

1. Address (

Street VARCHAR(255),

ZipCode INT,

City CHAR(30),

State CHAR(30)

)

Street, ZipCode -> City, State

1. Accident (

ReportNo INT,

Date DATE,

Description VARCHAR(1000),

AccidentStreet VARCHAR(255),

AccidentZip INT

)

ReportNo -> Date, Description, AccidentStreet, AccidentZip

We can set ReportNo as auto increment number so when inserting new accident report in database we do not have to worry about manually entering it.

1. HouseInfo (

HID INT,

BuildYear INT,

Type CHAR(30),

Price INT,

PlanNo INT

)

HID -> BuildYear, Type, Price, PlanNo

Here, we can set constraint to our database for BuildYear in case someone enter 3-digit number or value that does not make sense.

1. CarInfo (

VIN CHAR(30),

Make CHAR(30),

Model CHAR(30),

Year INT,

Color CHAR(30),

LicensePlate CHAR(15),

PlanNo INT

)

VIN -> Make, Model, Year, Color, LicensePlate, PlanNo

Here, we can set constraint for Year attribute, so the value makes sense.

1. Agent (

AID INT,

Name CHAR(30),

Phone INT

)

AID -> Name, Phone

1. HousePolicy (

PlanNo INT

)

1. CarPolicy (

PlanNo INT

)

1. Contract (

PlanNo INT,

CID INT,

AID INT

)

PlanNo -> CID, AID

1. CarInvolved (

VIN CHAR(30),

ReportNo INT,

RepairCost INT

)

VIN, ReportNo -> RepairCost

1. CustomerInvolved (

CID INT,

ReportNo INT,

IsGuilty BOOL

)

CID, ReportNo -> IsGuilty

* **Part 3 – Q&A:**

There are no flaws in the relational database schema in part 2. There is no opportunity to combine relations without introducing redundancy because the way relations are created all tables are Normalized in BCNF forms. For Address table, I thought about combining with Customer table but I am also using address for accidents so why not make separate table which can have relationships with both tables. All the keys on the left side functionally determines right side of FD’s. All relations fully satisfy BCNF form so we do not need further Normalization. I have named all attributes appropriately so they make sense in real world.