Министерство науки и высшего образования Российской Федерации

Федеральное государственное автономное учреждение высшего образования

МОСКОВСКИЙ ПОЛИТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ (МОСКОВСКИЙ ПОЛИТЕХ)

Факультет информационных технологий

Кафедра «Прикладная информатика»

Форма обучения: очная

Лабораторная работа №2

Реализация структуры Data Vault

по дисциплине

«Хранилища данных»

|  |  |  |
| --- | --- | --- |
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## Структура базы данных в соответствии с моделью 3NF

Вариант 9 Система должна описывать работу одного из участков автосалона.

Создадим таблицы машины, клиенты, менеджеры по продажам и сделки (продажи) в соответствии с моделью 3NF (ПРИЛОЖЕНИЕ А):

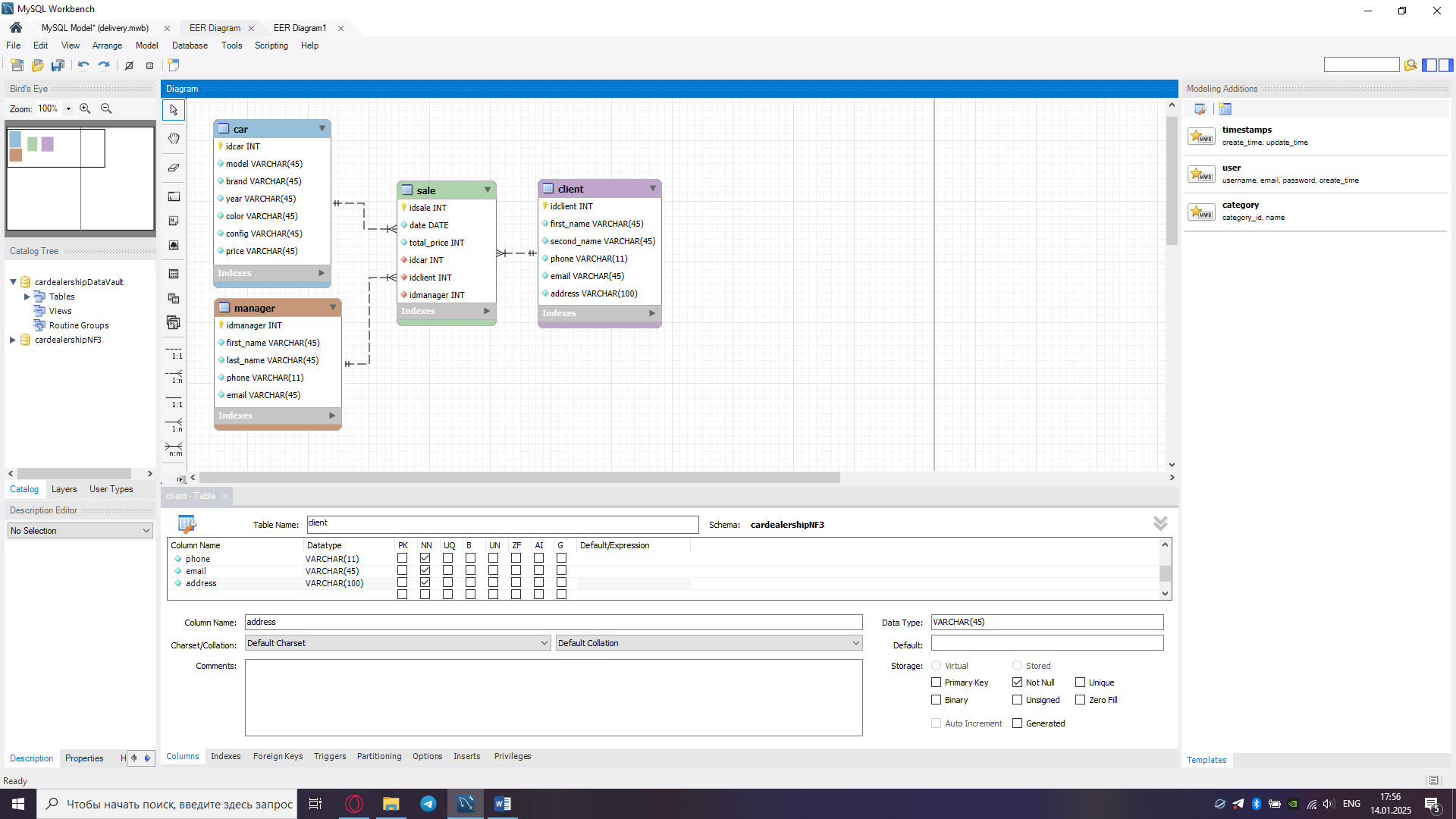


Рисунок 1 - База данных, модель 3NF

## Структура базы данных в соответствии с моделью DataVault

Создадим таблицы машины, клиенты, менеджеры по продажам и сделки (продажи) в соответствии с моделью Data Vault (ПРИЛОЖЕНИЕ Б):

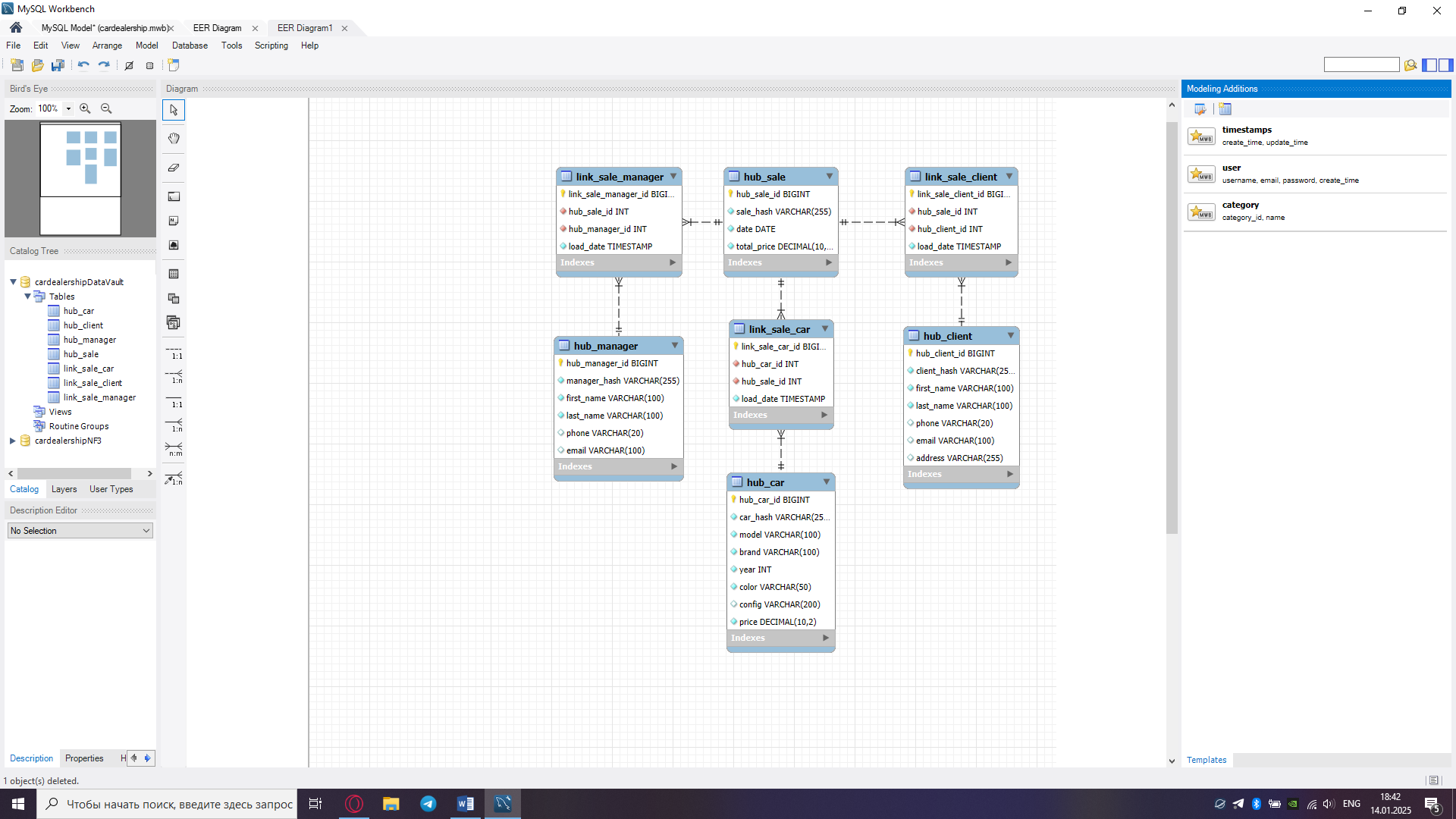


Рисунок 2 - База данных, модель Data Vault

# ПРИЛОЖЕНИЕ А

-- MySQL Script generated by MySQL Workbench

-- Tue Jan 14 22:52:00 2025

-- Model: New Model Version: 1.0

-- MySQL Workbench Forward Engineering

SET @OLD\_UNIQUE\_CHECKS=@@UNIQUE\_CHECKS, UNIQUE\_CHECKS=0;

SET @OLD\_FOREIGN\_KEY\_CHECKS=@@FOREIGN\_KEY\_CHECKS, FOREIGN\_KEY\_CHECKS=0;

SET @OLD\_SQL\_MODE=@@SQL\_MODE, SQL\_MODE='ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES,NO\_ZERO\_IN\_DATE,NO\_ZERO\_DATE,ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_ENGINE\_SUBSTITUTION';

-- -----------------------------------------------------

-- Schema cardealershipNF3

-- -----------------------------------------------------

-- -----------------------------------------------------

-- Schema cardealershipNF3

-- -----------------------------------------------------

CREATE SCHEMA IF NOT EXISTS `cardealershipNF3` DEFAULT CHARACTER SET utf8 ;

USE `cardealershipNF3` ;

-- -----------------------------------------------------

-- Table `cardealershipNF3`.`manager`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipNF3`.`manager` (

`idmanager` INT NOT NULL AUTO\_INCREMENT,

`first\_name` VARCHAR(45) NOT NULL,

`last\_name` VARCHAR(45) NOT NULL,

`phone` VARCHAR(11) NOT NULL,

`email` VARCHAR(45) NOT NULL,

PRIMARY KEY (`idmanager`),

UNIQUE INDEX `idproduct\_UNIQUE` (`idmanager` ASC) VISIBLE)

ENGINE = InnoDB

DEFAULT CHARACTER SET = utf8

COLLATE = utf8\_bin

COMMENT = 'Товары';

-- -----------------------------------------------------

-- Table `cardealershipNF3`.`car`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipNF3`.`car` (

`idcar` INT NOT NULL AUTO\_INCREMENT,

`model` VARCHAR(45) NOT NULL,

`brand` VARCHAR(45) NOT NULL,

`year` VARCHAR(45) NOT NULL,

`color` VARCHAR(45) NOT NULL,

`config` VARCHAR(45) NOT NULL,

`price` VARCHAR(45) NOT NULL,

PRIMARY KEY (`idcar`),

UNIQUE INDEX `idshop\_UNIQUE` (`idcar` ASC) VISIBLE)

ENGINE = InnoDB

DEFAULT CHARACTER SET = utf8

COLLATE = utf8\_bin

COMMENT = 'Киоски';

-- -----------------------------------------------------

-- Table `cardealershipNF3`.`client`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipNF3`.`client` (

`idclient` INT NOT NULL AUTO\_INCREMENT,

`first\_name` VARCHAR(45) NOT NULL,

`second\_name` VARCHAR(45) NOT NULL,

`phone` VARCHAR(11) NOT NULL,

`email` VARCHAR(45) NOT NULL,

`address` VARCHAR(100) NOT NULL,

PRIMARY KEY (`idclient`),

UNIQUE INDEX `idsupplier\_UNIQUE` (`idclient` ASC) VISIBLE)

ENGINE = InnoDB

COMMENT = 'Поставщики';

-- -----------------------------------------------------

-- Table `cardealershipNF3`.`sale`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipNF3`.`sale` (

`idsale` INT NOT NULL AUTO\_INCREMENT,

`date` DATE NOT NULL,

`total\_price` INT NOT NULL,

`idcar` INT NOT NULL,

`idclient` INT NOT NULL,

`idmanager` INT NOT NULL,

PRIMARY KEY (`idsale`),

INDEX `idshop\_idx` (`idcar` ASC) VISIBLE,

INDEX `idsuppliers\_idx` (`idclient` ASC) VISIBLE,

INDEX `idproduct\_idx` (`idmanager` ASC) VISIBLE,

UNIQUE INDEX `iddelivery\_UNIQUE` (`idsale` ASC) VISIBLE,

CONSTRAINT `idshop`

FOREIGN KEY (`idcar`)

REFERENCES `cardealershipNF3`.`car` (`idcar`)

ON DELETE CASCADE

ON UPDATE CASCADE,

CONSTRAINT `idsuppliers`

FOREIGN KEY (`idclient`)

REFERENCES `cardealershipNF3`.`client` (`idclient`)

ON DELETE CASCADE

ON UPDATE CASCADE,

CONSTRAINT `idproduct`

FOREIGN KEY (`idmanager`)

REFERENCES `cardealershipNF3`.`manager` (`idmanager`)

ON DELETE CASCADE

ON UPDATE CASCADE)

ENGINE = InnoDB

DEFAULT CHARACTER SET = utf8

COLLATE = utf8\_bin

SET SQL\_MODE=@OLD\_SQL\_MODE;

SET FOREIGN\_KEY\_CHECKS=@OLD\_FOREIGN\_KEY\_CHECKS;

SET UNIQUE\_CHECKS=@OLD\_UNIQUE\_CHECKS;

# ПРИЛОЖЕНИЕ Б

-- MySQL Script generated by MySQL Workbench

-- Tue Jan 14 22:52:00 2025

-- Model: New Model Version: 1.0

-- MySQL Workbench Forward Engineering

SET @OLD\_UNIQUE\_CHECKS=@@UNIQUE\_CHECKS, UNIQUE\_CHECKS=0;

SET @OLD\_FOREIGN\_KEY\_CHECKS=@@FOREIGN\_KEY\_CHECKS, FOREIGN\_KEY\_CHECKS=0;

SET @OLD\_SQL\_MODE=@@SQL\_MODE, SQL\_MODE='ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES,NO\_ZERO\_IN\_DATE,NO\_ZERO\_DATE,ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_ENGINE\_SUBSTITUTION';

-- -----------------------------------------------------

-- Schema cardealershipDataVault

-- -----------------------------------------------------

-- -----------------------------------------------------

-- Schema cardealershipDataVault

-- -----------------------------------------------------

CREATE SCHEMA IF NOT EXISTS `cardealershipDataVault` DEFAULT CHARACTER SET utf8 ;

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`hub\_car`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`hub\_car` (

`hub\_car\_id` BIGINT NULL DEFAULT NULL,

`car\_hash` VARCHAR(255) NOT NULL,

`model` VARCHAR(100) NOT NULL,

`brand` VARCHAR(100) NOT NULL,

`year` INT NOT NULL,

`color` VARCHAR(50) NOT NULL,

`config` VARCHAR(200) NULL DEFAULT NULL,

`price` DECIMAL(10,2) NOT NULL,

PRIMARY KEY (`hub\_car\_id`),

UNIQUE INDEX (`car\_hash` ASC) VISIBLE);

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`hub\_client`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`hub\_client` (

`hub\_client\_id` BIGINT NULL DEFAULT NULL,

`client\_hash` VARCHAR(255) NOT NULL,

`first\_name` VARCHAR(100) NOT NULL,

`last\_name` VARCHAR(100) NOT NULL,

`phone` VARCHAR(20) NULL DEFAULT NULL,

`email` VARCHAR(100) NULL DEFAULT NULL,

`address` VARCHAR(255) NULL DEFAULT NULL,

PRIMARY KEY (`hub\_client\_id`),

UNIQUE INDEX (`client\_hash` ASC) VISIBLE);

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`hub\_manager`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`hub\_manager` (

`hub\_manager\_id` BIGINT NULL DEFAULT NULL,

`manager\_hash` VARCHAR(255) NOT NULL,

`first\_name` VARCHAR(100) NOT NULL,

`last\_name` VARCHAR(100) NOT NULL,

`phone` VARCHAR(20) NULL DEFAULT NULL,

`email` VARCHAR(100) NULL DEFAULT NULL,

PRIMARY KEY (`hub\_manager\_id`),

UNIQUE INDEX (`manager\_hash` ASC) VISIBLE);

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`hub\_sale`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`hub\_sale` (

`hub\_sale\_id` BIGINT NULL DEFAULT NULL,

`sale\_hash` VARCHAR(255) NOT NULL,

`date` DATE NOT NULL,

`total\_price` DECIMAL(10,2) NOT NULL,

PRIMARY KEY (`hub\_sale\_id`),

UNIQUE INDEX (`sale\_hash` ASC) VISIBLE);

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`link\_sale\_car`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`link\_sale\_car` (

`link\_sale\_car\_id` BIGINT NULL DEFAULT NULL,

`hub\_car\_id` INT NOT NULL,

`hub\_sale\_id` INT NOT NULL,

`load\_date` TIMESTAMP NOT NULL DEFAULT CURRENT\_TIMESTAMP(),

PRIMARY KEY (`link\_sale\_car\_id`),

INDEX (`hub\_car\_id` ASC) VISIBLE,

INDEX (`hub\_sale\_id` ASC) VISIBLE,

CONSTRAINT ``

FOREIGN KEY (`hub\_car\_id`)

REFERENCES `cardealershipDataVault`.`hub\_car` (`hub\_car\_id`),

CONSTRAINT ``

FOREIGN KEY (`hub\_sale\_id`)

REFERENCES `cardealershipDataVault`.`hub\_sale` (`hub\_sale\_id`));

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`link\_sale\_client`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`link\_sale\_client` (

`link\_sale\_client\_id` BIGINT NULL DEFAULT NULL,

`hub\_sale\_id` INT NOT NULL,

`hub\_client\_id` INT NOT NULL,

`load\_date` TIMESTAMP NOT NULL DEFAULT CURRENT\_TIMESTAMP(),

PRIMARY KEY (`link\_sale\_client\_id`),

INDEX (`hub\_sale\_id` ASC) VISIBLE,

INDEX (`hub\_client\_id` ASC) VISIBLE,

CONSTRAINT ``

FOREIGN KEY (`hub\_sale\_id`)

REFERENCES `cardealershipDataVault`.`hub\_sale` (`hub\_sale\_id`),

CONSTRAINT ``

FOREIGN KEY (`hub\_client\_id`)

REFERENCES `cardealershipDataVault`.`hub\_client` (`hub\_client\_id`));

-- -----------------------------------------------------

-- Table `cardealershipDataVault`.`link\_sale\_manager`

-- -----------------------------------------------------

CREATE TABLE IF NOT EXISTS `cardealershipDataVault`.`link\_sale\_manager` (

`link\_sale\_manager\_id` BIGINT NULL DEFAULT NULL,

`hub\_sale\_id` INT NOT NULL,

`hub\_manager\_id` INT NOT NULL,

`load\_date` TIMESTAMP NOT NULL DEFAULT CURRENT\_TIMESTAMP(),

PRIMARY KEY (`link\_sale\_manager\_id`),

INDEX (`hub\_sale\_id` ASC) VISIBLE,

INDEX (`hub\_manager\_id` ASC) VISIBLE,

CONSTRAINT ``

FOREIGN KEY (`hub\_sale\_id`)

REFERENCES `cardealershipDataVault`.`hub\_sale` (`hub\_sale\_id`),

CONSTRAINT ``

FOREIGN KEY (`hub\_manager\_id`)

REFERENCES `cardealershipDataVault`.`hub\_manager` (`hub\_manager\_id`));

ENGINE = InnoDB

SET SQL\_MODE=@OLD\_SQL\_MODE;

SET FOREIGN\_KEY\_CHECKS=@OLD\_FOREIGN\_KEY\_CHECKS;

SET UNIQUE\_CHECKS=@OLD\_UNIQUE\_CHECKS;