**GBD03-solution to the task**
**PHYSICAL DESIGN DATABASE.**

**Exercise 1:**


Writes SQL instructions necessary to create the database from the following relational model that corresponds to the Mouro Restaurant:


EMPLOYEES (**ID**, Name, Surame, Address, City, Phone, PostalCode, EntryDate, Category, Salary)
COOKS (**ID**, Title, Specialty)
ADMINISTRATION (**ID**, Position)
WAITERS (**ID**, Turn, years, **incharge_ID**)
DININGROOM (**CodeD**, Name, Capacity, NTables, Location)
TABLES (**CodeT, CodeD**, Nseats, **waiter_ID**)
Make (**CodeT, CodeD, Nreservation**, NseatsR)
RESERVATIONS (**Nreservation**, Dtreservation, Name, Dtreserved, LunchDinner, Npeople, Various)
BILLS (**NBill**, DateB, **CodeT, CodeD**)
Include (**NBill, CodeDs**, Units)
DISHES (**CodeDs**, Name, Description, Type, Price)
Contain (**CodeDs, CodePr**, Amount)
PRODUCTS (**CodePr**, Description, Stock, BaseUnit, PriceU, Category, **CodeSp**)
SUPPLIERS (**CodeSp**, Address, PostalCode, Phone, Fax, Contact)

**Note:** Primary keys are underlined and foreign keys are denoted in italics.


**SOLUTION   Exercise 1:**


DROP DATABASE IF EXISTS MouroRestaurant;

CREATE DATABASE MouroRestaurant;

USE MouroRestaurant;


CREATE TABLE EMPLOYEE (
ID VARCHAR (9) NOT NULL,
Name VARCHAR (25),
LastName VARCHAR (50),
Address VARCHAR (50),
City VARCHAR (25),
Phone VARCHAR (9),
Zip VARCHAR (5),
EntryDate DATE,
Category VARCHAR (25),
Salary DECIMAL (10,2),

```sql
    PRIMARY KEY (ID)
) ENGINE = InnoDB;

CREATE TABLE COOKS (
ID VARCHAR (9) NOT NULL,
Title VARCHAR(25),
Specialty VARCHAR (25),
PRIMARY KEY (ID)
) ENGINE = InnoDB;

CREATE TABLE ADMINISTRATION (
ID VARCHAR (9) NOT NULL,
Position VARCHAR (25),
PRIMARY KEY (ID)
) ENGINE = InnoDB;

CREATE TABLE WAITERS (
ID VARCHAR (9) NOT NULL,
Turn VARCHAR (25),
Years TINYINT,
incharge_ID VARCHAR (9),
PRIMARY KEY (ID)
) ENGINE = InnoDB;

CREATE TABLE DININGROOM (
CodeD VARCHAR (5) NOT NULL,
Name VARCHAR (25),
Capacity TINYINT,
NTables TINYINT,
Location VARCHAR (25),
PRIMARY KEY (CodeD)
) ENGINE = InnoDB;

CREATE TABLE TABLES (
CodeT VARCHAR (5) NOT NULL,
CodeD VARCHAR (5) NOT NULL,
Nseats TINYINT,
waiter_ID VARCHAR (9),
PRIMARY KEY (CodeT, CodeD)
) ENGINE = InnoDB;

CREATE TABLE Make(
CodeT VARCHAR (5) NOT NULL,
CodeD VARCHAR (5) NOT NULL,
Nreservation INT NOT NULL,
NseatsR INT,
PRIMARY KEY (CodeT, CodeD, Nreservation)
) ENGINE = InnoDB;
```

```sql
CREATE TABLE RESERVATIONS (
Nreservation INT NOT NULL,
Dtreservation DATETIME,
Name VARCHAR (25) NOT NULL,
Dtreserved DATETIME,
LunchDinner SET ("Lunch", "Dinner"),
Npeople SMALLINT,
Various VARCHAR (100),
PRIMARY KEY (Nreservation)
) ENGINE = InnoDB;

CREATE TABLE BILLS (
NBill INT NOT NULL,
DateB DATETIME,
CodeT VARCHAR (5),
CodeD VARCHAR (5),
PRIMARY KEY (NBill)
) ENGINE = InnoDB;

CREATE TABLE Include (
NBill INT NOT NULL,
CodeDs VARCHAR (5) NOT NULL,
Units TINYINT,
PRIMARY KEY (NBill, CodeDs)
) ENGINE = InnoDB;

CREATE TABLE DISHES (
CodeDs VARCHAR (5) NOT NULL,
Name VARCHAR (25),
Description VARCHAR (50),
Type VARCHAR (25),
Price DECIMAL (6,2),
PRIMARY KEY (CodeDs)
) ENGINE = InnoDB;

CREATE TABLE Contain (
CodeDs VARCHAR (5) NOT NULL,
CodePr VARCHAR (5) NOT NULL,
Amount TINYINT,
PRIMARY KEY (CodeDs, CodePr)
) ENGINE = InnoDB;

CREATE TABLE PRODUCTS (
CodePr VARCHAR (5) NOT NULL,
Description VARCHAR (50),
Stock TINYINT,
BaseUnit VARCHAR (25),
PriceU DECIMAL (6.2),
```

```sql
Category VARCHAR (25),
CodeSp VARCHAR (5),
PRIMARY KEY (CodePr)
) ENGINE = InnoDB;

CREATE TABLE SUPPLIERS (
CodeSp VARCHAR (5) NOT NULL,
Address VARCHAR (50),
Zip VARCHAR (5),
Phone VARCHAR (9),
Fax VARCHAR (9),
Contact VARCHAR (25),
PRIMARY KEY (CodeSp)
) ENGINE = InnoDB;

ALTER TABLE COOKS
CHE_FK_ID ADD CONSTRAINT FOREIGN KEY (ID) REFERENCES EMPLOYEE (ID)
ON DELETE CASCADE ON UPDATE CASCADE;


ALTER TABLE ADMINISTRATION
MAN_FK_ID ADD CONSTRAINT FOREIGN KEY (ID) REFERENCES EMPLOYEE (ID)
ON DELETE CASCADE ON UPDATE CASCADE;


ALTER TABLE WAITERS
WAI_FK_ID ADD CONSTRAINT FOREIGN KEY (ID) REFERENCES EMPLOYEE (ID)
ON DELETE CASCADE ON UPDATE CASCADE,
WAI_FK_ID_W ADD CONSTRAINT FOREIGN KEY (incharge_ID) REFERENCES
WAITERS (ID) ON DELETE CASCADE ON UPDATE CASCADE;

ALTER TABLE TABLES
TAB_FK_CodD ADD CONSTRAINT FOREIGN KEY (CodeD) REFERENCES
DININGROOM (CodeD) ON DELETE CASCADE ON UPDATE CASCADE,
ADD CONSTRAINT TAB_FK_ID_W FOREIGN KEY (waiter_ID) REFERENCES
WAITERS (ID) ON DELETE SET NULL ON UPDATE CASCADE;

ALTER TABLE Make
ADD CONSTRAINT MAK_FK_CodTCodD FOREIGN KEY (CodeT, CodeD)
REFERENCES TABLES (CodeT, CodeD)
ON DELETE NO ACTION ON UPDATE CASCADE,
ADD CONSTRAINT MAK_FK_NRes FOREIGN KEY (Nreservation) REFERENCES
RESERVATIONS (Nreservation) ON DELETE CASCADE ON UPDATE CASCADE;

ALTER TABLE BILLS
ADD CONSTRAINT BIL_FK_CodTCodD FOREIGN KEY (CodeT, CodeD) REFERENCES
TABLES (CodeT, CodeD)
ON DELETE SET NULL ON UPDATE CASCADE;
```

ALTER TABLE Include
ADD CONSTRAINT Inc_FK_NBill FOREIGN KEY (NBill) REFERENCES BILLS (NBill)
ON DELETE CASCADE ON UPDATE CASCADE,
ADD CONSTRAINT Inc_FK_CodDs FOREIGN KEY (CodDs) REFERENCES DISHES
(CodDs) ON DELETE CASCADE ON UPDATE CASCADE;


ALTER TABLE Contain
ADD CONSTRAINT Con_FK_CodDs FOREIGN KEY (CodDs) REFERENCES DISHES
(CodDs)
ON DELETE NO ACTION ON UPDATE NO ACTION,
ADD CONSTRAINT Con_FK_CodPr FOREIGN KEY (CodPr) REFERENCES
PRODUCTS (CodPr) ON DELETE CASCADE ON UPDATE CASCADE;


ALTER TABLE PRODUCTS
ADD CONSTRAINT PRO_FK_CodSp FOREIGN KEY (CodSp) REFERENCES
SUPPLIERS (CodSp) ON DELETE SET NULL ON UPDATE CASCADE;


**EXERCISE 2:**


About the database Mouro Restaurant made the following changes:
**Table EMPLOYEES**
2.1. Add an index to facilitate frequent searches by last name without duplicates.
2.2. The restaurant has opened on July 15th, 2010. Check that the entry date of the
employees is not earlier.
**Table WAITERS**
2.3. The turn can only take 3 values: morning, noon and night. Add this restriction
considering that a waiter can have more than one turn (do not use CHECK).
**Table SUPPLIERS**
2.4. Add the columns Name and Surname between the code and the address.
**Table TABLES**
2.5. The default number of seats at the tables is 4.
**Table PRODUCTS**
2.6. Add an index by category. Displays all indexes of the table.
2.7. Add a constraint on the table, so that the Stock is 4-digit integer, unsigned and
not admit null values.
2.8. Delete the newly created index.
**Table SUPLIERS**
2.9. Deletes the table SUPPLIERS. What happen?. Deletes foreign keys previously.
**Mouro Restaurant DATABASE**
2.10. Deletes the database.

**SOLUTION Exercise 2:**


2.1 and 2.2: TABLE EMPLOYEES


ALTER TABLE EMPLOYEES
EMP_UNI_LastFirstName ADD UNIQUE (LastName),
ADD CONSTRAINT EMP_CHK_EtrDate CHECK EntryDate> = "15/07/2010";


2.3: TABLE WAITERS


ALTER TABLE WAITERS
MODIFY Shift SET ("Morning", "Noon," "Night")


2.4: TABLE SUPPLIERS


ALTER TABLE SUPPLIERS
ADD COLUMN Name VARCHAR (50) AFTER CodeSp,
ADD COLUMN Surename VARCHAR (25) AFTER Name;

2.5: TABLE TABLES


ALTER TABLE TABLES
ALTER COLUMN Nseats SET DEFAULT 4;


2.6: TABLE PRODUCTS


ALTER TABLE PRODUCTS
ADD UNIQUE PRO_UNI_Cat (Category);

SHOW INDEX FROM PRODUCTS;


2.7: TABLE PRODUCTS


ALTER TABLE PRODUCTS
CHANGE Stock Stock SMALLINT (4) UNSIGNED NOT NULL;


2.8: TABLE PRODUCTS


DROP INDEX PRO_UNI_Cat ON PRODUCTS;

## 2.9: TABLE SUPLIERS

```
ALTER TABLE PRODUCTS
DROP FOREIGN KEY PRO_FK_CodSp;
```

```
DROP TABLE SUPPLIER
```

## 2.10: MouroRestaurant DATABASE

```
DROP DATABASE MouroRestaurant;
```