Database Design Practice

1. **Design a Database for a company to Manage all its projects**.

- Company has diverse offices in several countries, which manage and co-ordinate the project of that country.
- Head office has a unique name, city, country, address, phone number and name of the director.
- Every head office manages a set of projects with Project code, title, project starting and end date, assigned budget and name of the person in-charge. One project is formed by the set of operations that can affect to several cities.
- We want to know what actions are realized in each city storing its name, country and number of inhabitants.

CREATE TABLE offices(office_name VARCHAR(100) PRIMARY KEY, head_office VARCHAR(100) NOT NULL FOREIGN KEY REFERENCES head_office (office_name))

CREATE TABLE head_office(office_name VARCHAR(100) PRIMARY KEY, city_id INT FOREIGN KEY REFERENCES city(city_id) , country_name VARCHAR(100) , address VARCHAR(100), phone_number VARCHAR(100), name_of_director VARCHAR(100), project_code INT FOREIGN KEY REFERENCES project (project_code))

CREATE TABLE project(project_code INT PPRIMARY KEY, title VARCHAR(100), start_date DATE, end_date DATE, budget MONEY, director_id INT FOREIGN KEY REFERENCES employee(employee_id))

CREATE TABLE office_project_conjunction(office_name VARCHAR(100) FOREIGN KEY REFERENCES head_office (office_name), project_code INT FOREIGN KEY REFERENCES project (project_code), PRIMARY KEY (office_name, project_code))

CREATE TABLE employee(employee_id INT PRIMARY KEY, first_name VARCHAR(40), last_name VARCHAR(40), birthday DATE, sex VARCHAR(1), salary INT)

CREATE TABLE opration(name VARCHAR(255) PRIMARY KEY, city_id INT FOREIGN KEY REFERENCES city(city_id))

CREATE TABLE opration_project_conjunction(opration_name VARCHAR(100) FOREIGN KEY REFERENCES opration (name), project_code INT FOREIGN KEY REFERENCES project (project_code), PRIMARY KEY (opration _name, project_code))

CREATE TABLE opration_city_conjunction(opration_name VARCHAR(100) FOREIGN KEY REFERENCES opration (name), city_id INT FOREIGN KEY REFERENCES city (city_id), PRIMARY KEY (opration _name, city_id))

CREATE TABLE city(city_id INT PRIMARY KEY, city_name VARCHAR(50)), inhabitant INT)

2. **+ Design a database for a lending company which manages lending among people (p2p lending)**

- Lenders that lending money are registered with an Id, name and available amount of money for the financial operations.
- Borrowers are identified by their id and the company registers their name and a risk value depending on their personal situation.
- When borrowers apply for a loan, a new loan code, the total amount, the refund deadline, the interest rate and its purpose are stored in database.
- Lenders choose the amount they want to invest in each loan. A lender can contribute with different partial amounts to several loans.

CREATE TABLE lenders(lender_id INT PRIMARY KEY, lender_name VARCHAR(50), available_amount MONEY)

CREATE TABLE borrower(borrower_id INT PRIMARY KEY, borrower_name VARCHAR(50), risk_value INT, loan_code INT FOREIGN KEY)

CREATE TABLE loan(loan_code INT PRIMARY KEY, amount INT, deadline DATE, interest_rate DECIMAL, purpose VARCHAR(255))

CREATE TABLE lender_loan_conjunction(lender_id INT FOREIGN KEY REFERENCES lenders(lender_id), loan_id INT FOREIGN KEY REFERENCES loan(loan_id), amount INT, PRIMARY KEY(lender_id, loan_id))

Database Design Practice

3. Design a database to maintain the menu of a restaurant.

- Each course has its name, a short description, photo and final price.
- Each course has categories characterized by their names, short description, name of the employee in-charge of them.
- Besides the courses some recipes are stored. They are formed by the name of their ingredients, the required amount, units of measurements and the current amount in the store.

CREATE TABLE course(name VARCHAR(100), description VARCHAR(200), photo VARBINARY(MAX), final_price MONEY, employee_id INT FOREIGN KEY REFERENCES employee (employee _id), recipe_id INT FOREIGN KEY REFERENCES recipes(recipe_id), PRIMARY KEY(name, description, employee_id))

CREATE TABLE employee(employee_id INT PRIMARY KEY, first_name VARCHAR(40), last_name VARCHAR(40), birthday DATE, sex VARCHAR(1), salary INT)

CREATE TABLE recipes(recipe_id INT PRIMARY KEY, recipe_name VARCHAR(200))

CREATE TABLE recipe_ingredient_conjunction(recipe_id INT FOREIGN KEY REFERENCES recipes (recipe_id), ingredient_id INT FOREIGN KEY REFERENCES ingredient(ingredient _id), require_amount INT, PRIMARY KEY(recipe_id, ingredient_id))

CREATE TABLE ingredient(ingredient_id INT PRIMARY KEY, ingredient_name VARCHAR(50), current_amount INT, unit_of_measurement VARCHAR(50))