

C2- S7 - PRACTICE

NOTE: check your **THEORY slides** to answer those questions!

EXERCISE 1 – THE COMPANY DATABASE

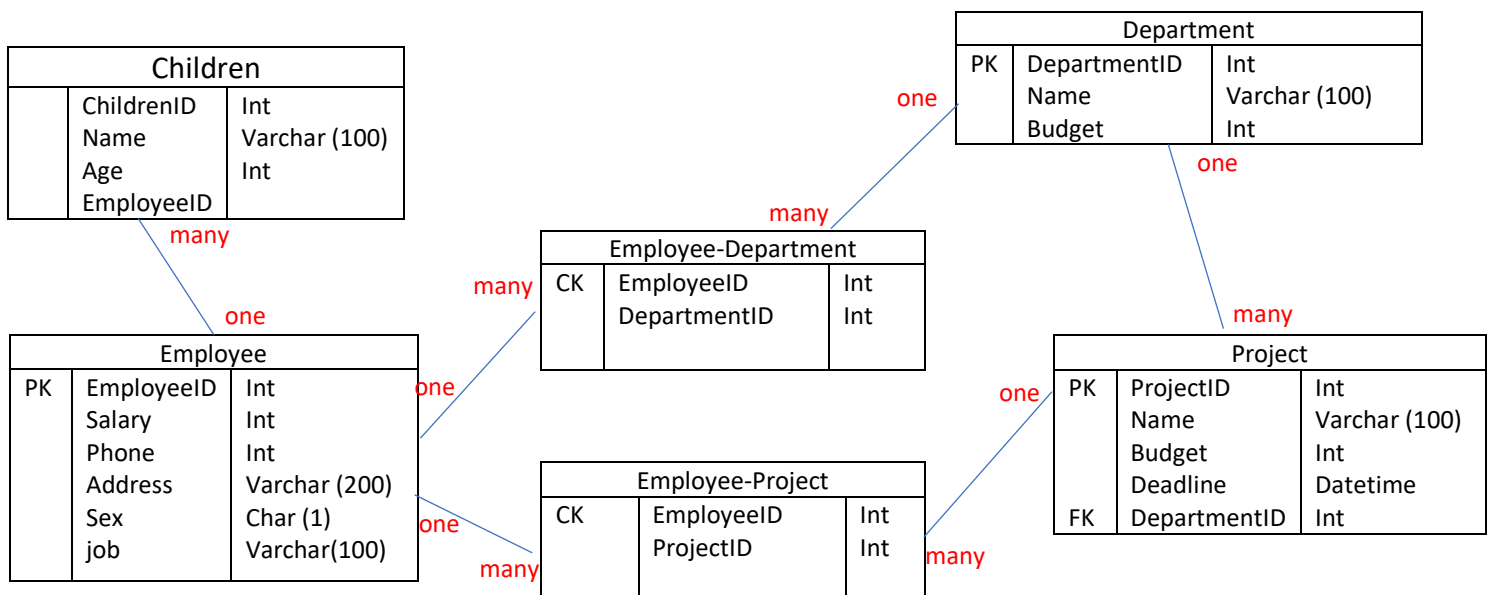
A company database needs to store information about:

- **Employees** that are described by their **salary** and **phone** and **email address** and **sex** and **job**
- **Departments** that are described by their **name** and their **budget**
- **Children** of employees that are described by their **name** and **age**
- **Project** of each department that are described by their **name**, **budget** and **deadline**

Here is some more information on how works the company:

- Employees work in departments. One employee can work for different departments.
- One department can have many employees working in it.
- Each child has only one parent that works in the company.
 - We are not interested in information about a child once the parent leaves the company.
- One employee can work on many project
- Many employees can work on one project
- A project is assigned to one department
- One department can have assigned many different projects

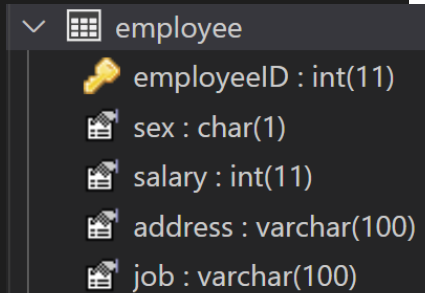
Q1 – Design the ERD Physical Model of the company database



Q2 – Implement this database in MySQL

Employee table

```
CREATE TABLE IF NOT EXISTS employee (  
    employeeID int NOT NULL AUTO_INCREMENT,  
    salary int,  
    sex char(1) NOT NULL,  
    address varchar(255),  
    phone int,  
    job varchar(100),  
    PRIMARY KEY (employeeID)  
);
```

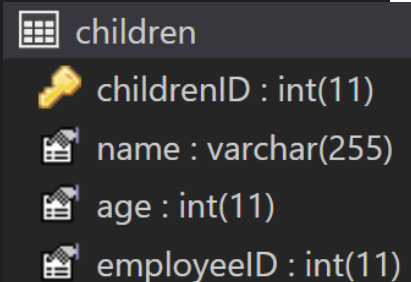


MySQL table structure for employee table:

Field	Type
employeeID	int(11)
sex	char(1)
salary	int(11)
address	varchar(100)
job	varchar(100)

Children table

```
CREATE TABLE IF NOT EXISTS children (  
    childrenID INT PRIMARY KEY AUTO_INCREMENT,  
    name VARCHAR(255) NOT NULL,  
    age INT NOT NULL,  
    employeeID int,  
    FOREIGN KEY (employeeID)  
        REFERENCES employee (employeeID)  
        ON DELETE CASCADE  
);
```

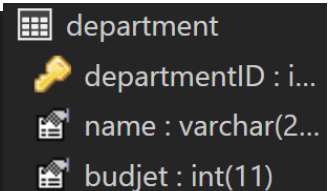


MySQL table structure for children table:

Field	Type
childrenID	int(11)
name	varchar(255)
age	int(11)
employeeID	int(11)

Department table

```
CREATE TABLE IF NOT EXISTS department (  
    departmentID INT PRIMARY KEY AUTO_INCREMENT,  
    name VARCHAR(255) NOT NULL,  
    budget INT NOT NULL  
);
```

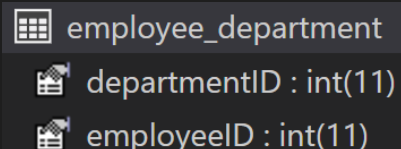


MySQL table structure for department table:

Field	Type
departmentID	int(11)
name	varchar(255)
budget	int(11)

Employee_Department

```
CREATE TABLE IF NOT EXISTS employee_department (  
    departmentID INT ,  
    employeeID int,  
    FOREIGN KEY(departmentID)  
        REFERENCES department(departmentID),  
    FOREIGN KEY(employeeID)  
        REFERENCES employee(employeeID)  
);
```



MySQL table structure for employee_department table:

Field	Type
departmentID	int(11)
employeeID	int(11)

Project table

```
CREATE TABLE IF NOT EXISTS project (
  projectID INT AUTO_INCREMENT PRIMARY KEY ,
  employeeID int,
  name varchar (255) NOT NULL,
  budget int not NULL,
  deadline datetime NOT NULL,
  departmentID int,
  FOREIGN KEY (departmentID)
    REFERENCES department(departmentID)
);
```

project
projectID : int(11)
employeeID : int(11)
name : varchar(255)
budget : int(11)
deadline : datetime
departmentID : int(11)

Employee-project

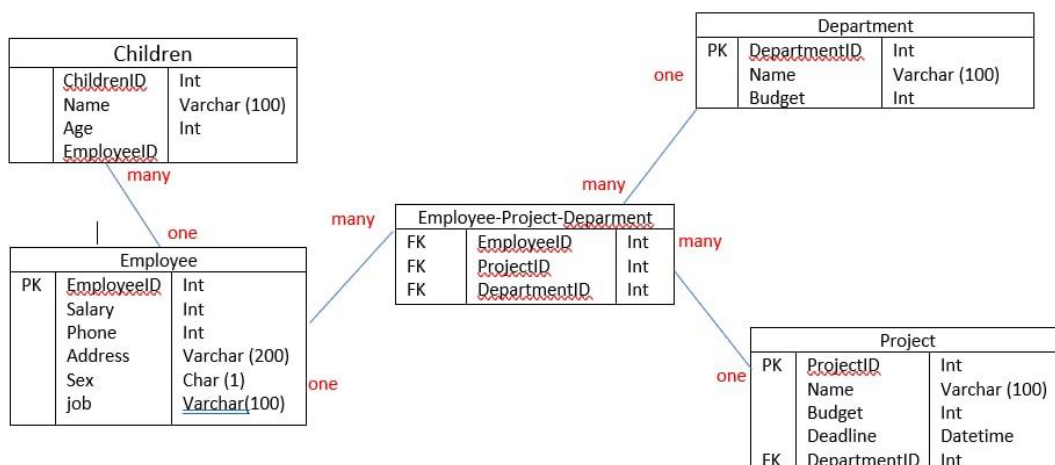
```
CREATE TABLE IF NOT EXISTS employee_project (
  projectID INT ,
  employeeID int,
  FOREIGN KEY(projectID)
    REFERENCES project(projectID),
  FOREIGN KEY(employeeID)
    REFERENCES employee(employeeID)
);
```

employee_project
projectID : int(11)
employeeID : int(11)

Company database

company_database
children
department
employee
employee_department
employee_project
project

The best ERD

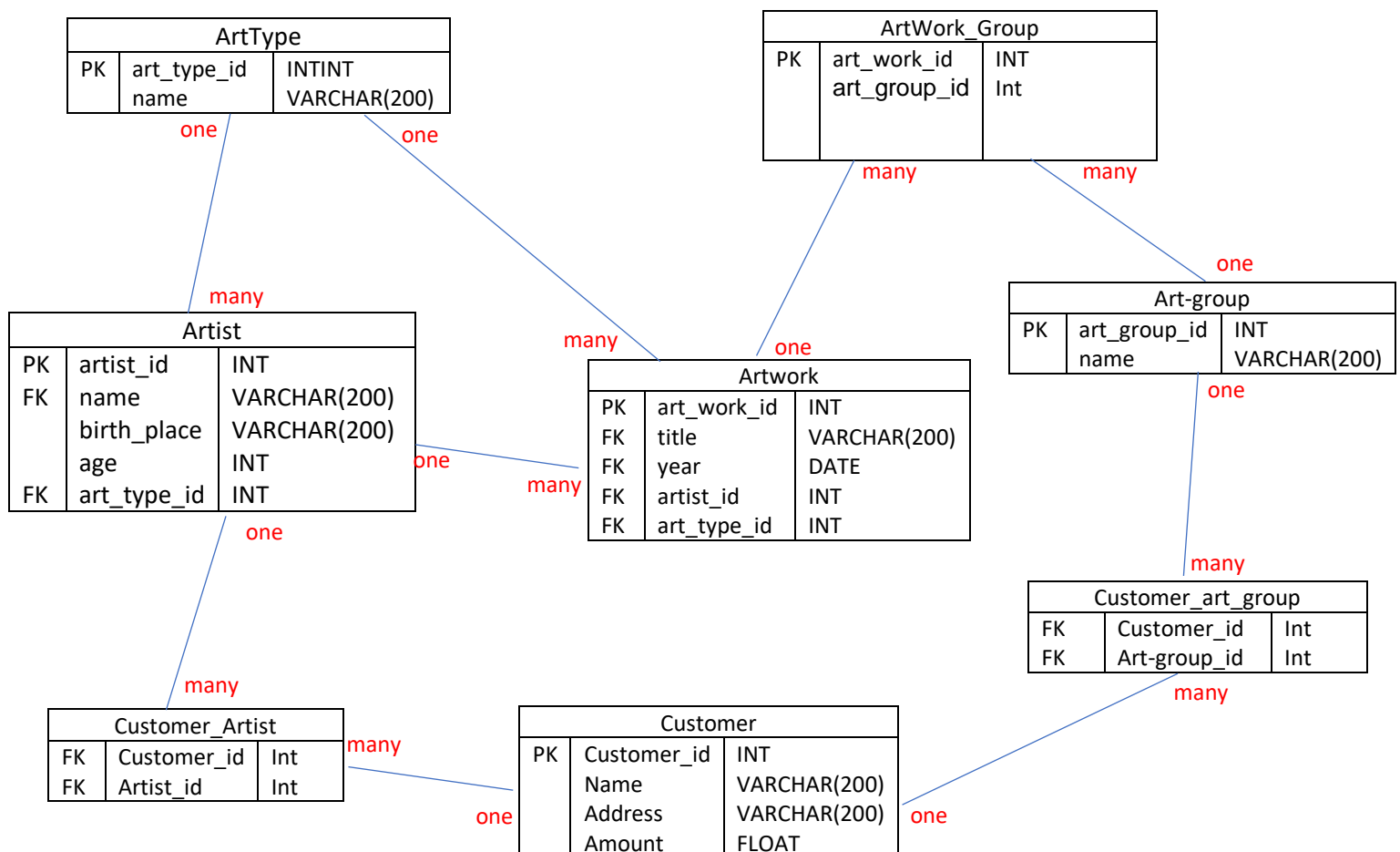


EXERCISE 2 – THE ARTBASE DATABASE

An application named ARTBASE want to sell a product for art galleries. It is an application that stores in a database all the information that an art gallery needs to keep, to work effectively.

- Gallery keep information about artists, their names (which are unique), birthplaces, age, and style of art.
- For each piece of artwork, the artist, the year it was made, its unique title, its type of art (e.g., painting, lithograph, sculpture, photograph), and its price must be stored. Pieces of artwork are also classified into groups of various kinds, for example, portraits, works by Picasso, or works of the 19th century.
- a given piece may belong to more than one group.
- Each group is identified by a name (like those just given) that describes the group.
- Finally, galleries keep information about customers. For each customer, galleries keep that person's unique name, address, total amount of dollars spent in the gallery (very important!), and the artists and groups of art that the customer tends to like.

Q1 – Design the ERD Physical Model of the company database



Q2 – Implement this database in MySQL

Art_type table

```
CREATE TABLE IF NOT EXISTS art_type(  
    art_type_id int AUTO_INCREMENT PRIMARY KEY,  
    name varchar (255) NOT NULL  
);
```

art_type
art_type_id : int(11)
name : varchar(255)

Artist table

```
CREATE TABLE IF NOT EXISTS artist(  
    artist_id int AUTO_INCREMENT PRIMARY KEY,  
    name varchar (255) NOT NULL,  
    birth_place varchar(255),  
    art_type_id int,  
    age int,  
    FOREIGN KEY(art_type_id)  
        REFERENCES art_type(art_type_id)  
);
```

artist
artist_id : int(11)
name : varchar(255)
birth_place : varchar(255)
art_type_id : int(11)
age : int(11)

Artwork table

```
CREATE TABLE artwork (  
    artwork_id int NOT NULL PRIMARY KEY,  
    title varchar(255) UNIQUE,  
    year date UNIQUE,  
    art_type_id int,  
    artist_id int,  
    FOREIGN KEY(art_type_id)  
        REFERENCES art_type (art_type_id),  
    FOREIGN KEY(artist_id)  
        REFERENCES artist(artist_id)  
);
```

artwork
artwork_id : int(11)
title : varchar(255)
year : date
art_type_id : int(11)
artist_id : int(11)

Art_group table

```
CREATE TABLE IF NOT EXISTS art_group (  
    art_group_id int AUTO_INCREMENT PRIMARY KEY,  
    name varchar (255) not null  
);
```

art_group
art_group_id : int(11)
name : varchar(255)

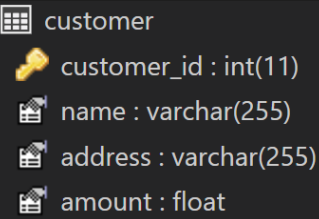
Artwork_group table






```
CREATE TABLE artwork_group (  
    artwork_id int ,  
    art_group_id int,  
    FOREIGN KEY(artwork_id)  
        REFERENCES artwork (artwork_id),  
    FOREIGN KEY(art_group_id)  
        REFERENCES art_group(art_group_id)  
);
```

artwork_group
artwork_id : int(11)
art_group_id : int(11)

Customer table

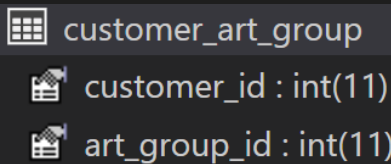
```
CREATE TABLE customer (  
    customer_id int AUTO_INCREMENT PRIMARY KEY ,  
    name varchar (255) not null,  
    address varchar (255),  
    amount float not null  
);
```






	customer
	customer_id : int(11)
	name : varchar(255)
	address : varchar(255)
	amount : float

Customer art group table

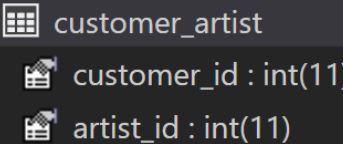
```
CREATE TABLE customer_art_group (  
    customer_id int ,  
    art_group_id int,  
    FOREIGN KEY(customer_id)  
        REFERENCES customer (customer_id),  
    FOREIGN KEY(art_group_id)  
        REFERENCES art_group(art_group_id)  
);
```






	customer_art_group
	customer_id : int(11)
	art_group_id : int(11)

Customer artist table

```
CREATE TABLE customer_artist (  
    customer_id int ,  
    artist_id int,  
    FOREIGN KEY(customer_id)  
        REFERENCES customer (customer_id),  
    FOREIGN KEY(artist_id)  
        REFERENCES artist(artist_id)  
);
```



	customer_artist
	customer_id : int(11)
	artist_id : int(11)