CS2300 Project Phase 3

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Problem Statement

For this project I hope to create a DBMS that would allow a printing company that creates t-shirts, business cards, brochures, badges, hoodies, etc. to manage the entire backend of their company through the DBMS. Using a DBMS will make the entire logistical process of running and maintaining a business streamlined and allow for customers and employees to get the information they need daily.

Conceptual Database Design

The database consists of 2 major entities, the 'Employee' entity and the 'Client' entity. The 'Employee' entity consists of said employee's name, ID (last 4 of SSN), hire date, date of birth, and their SSN. Employees must work for a single department (meaning they cannot be part of multiple departments) which is managed by one manager. Departments are assigned projects which also have a manager that is within the department to allow for more efficient communication between department manager's and their employees.

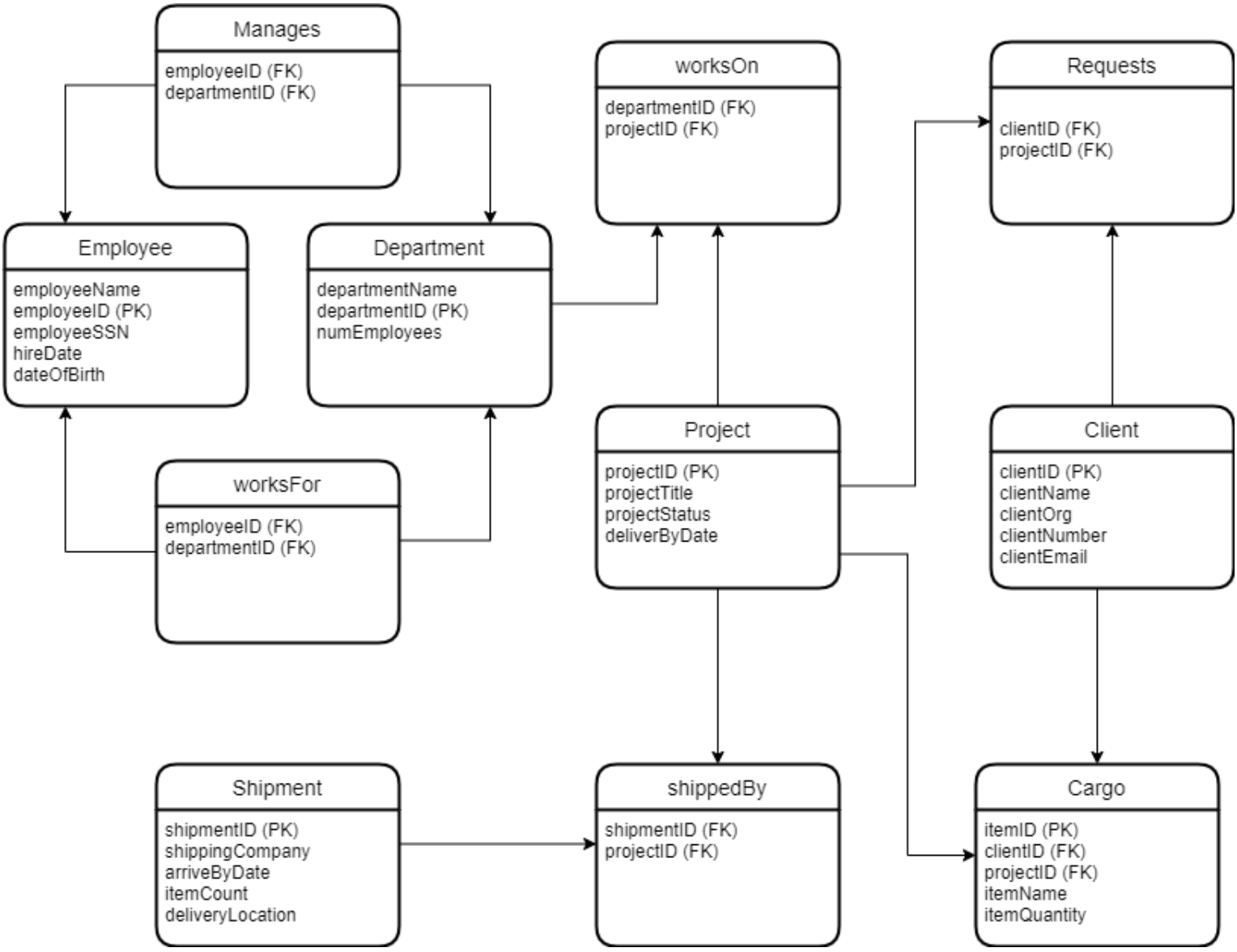
The 'Client' entity consists of a client's name, ID, organization, number, and email. A client can request as many projects as they want that can go out to any department.

The 'Project' entity consists of a project's title (which gives information to the employees working on it), ID, deliver by date, and the current status of the project (0-100%). Projects are delivered to the clients through shipments.

The 'Shipment' entity contains all the data regarding the shipment, such as its estimated arrival date, delivery location, ID, the company shipping it, an item count, and the cargo (relevant to the client) being shipped.

The 'Cargo' weak entity contains the item's ID, name, quantity, the client's ID to keep track of who owns an item, and the ID of the project associated with the item.

Logical Database Design



Summary Table of Data Types

Table	Attribute	Type	Constraint
Employee	employeeName	VARCHAR(255)	NOT NULL
Employee	employeeID	INTEGER	PRIMARY KEY
Employee	employeeSSN	INTEGER	NOT NULL
Employee	hireDate	DATE	
Employee	dateOfBirth	DATE	
Department	departmentName	VARCHAR(255)	NOT NULL
Department	departmentID	INTEGER	PRIMARY KEY
Department	numEmployees	DATE	
Client	clientID	INTEGER	PRIMARY KEY
Client	clientName	VARCHAR(255)	NOT NULL
Client	clientOrg	VARCHAR(255)	
Client	clientNumber	VARCHAR(255)	
Client	clientEmail	VARCHAR(255)	
Project	projectID	INTEGER	PRIMARY KEY
Project	projectTitle	VARCHAR(255)	NOT NULL
Project	projectStatus	VARCHAR(255)	NOT NULL
Project	deliverByDate	VARCHAR(255)	
Shipment	shipmentID	INTEGER	PRIMARY KEY
Shipment	shippingCompany	VARCHAR(255)	
Shipment	arriveByDate	DATE	
Shipment	itemCount	INTEGER	
Shipment	deliveryLocation	VARCHAR(255)	
Cargo	itemID	INTEGER	PRIMARY KEY
Cargo	clientID	INTEGER	FOREIGN KEY
Cargo	projectID	INTEGER	FOREIGN KEY
Cargo	itemName	VARCHAR(255)	NOT NULL
Cargo	itemQuantity	INTEGER	
Manages	employeeID	INTEGER	FOREIGN KEY
Manages	departmentID	INTEGER	FOREIGN KEY
worksFor	employeeID	INTEGER	FOREIGN KEY
worksFor	departmentID	INTEGER	FOREIGN KEY
worksOn	departmentID	INTEGER	FOREIGN KEY
worksOn	projectID	INTEGER	FOREIGN KEY
Requests	clientID	INTEGER	FOREIGN KEY
Requests	projectID	INTEGER	FOREIGN KEY
shippedBy	shipmentID	INTEGER	FOREIGN KEY
shippedBy	projectID	INTEGER	FOREIGN KEY

Application Program Design

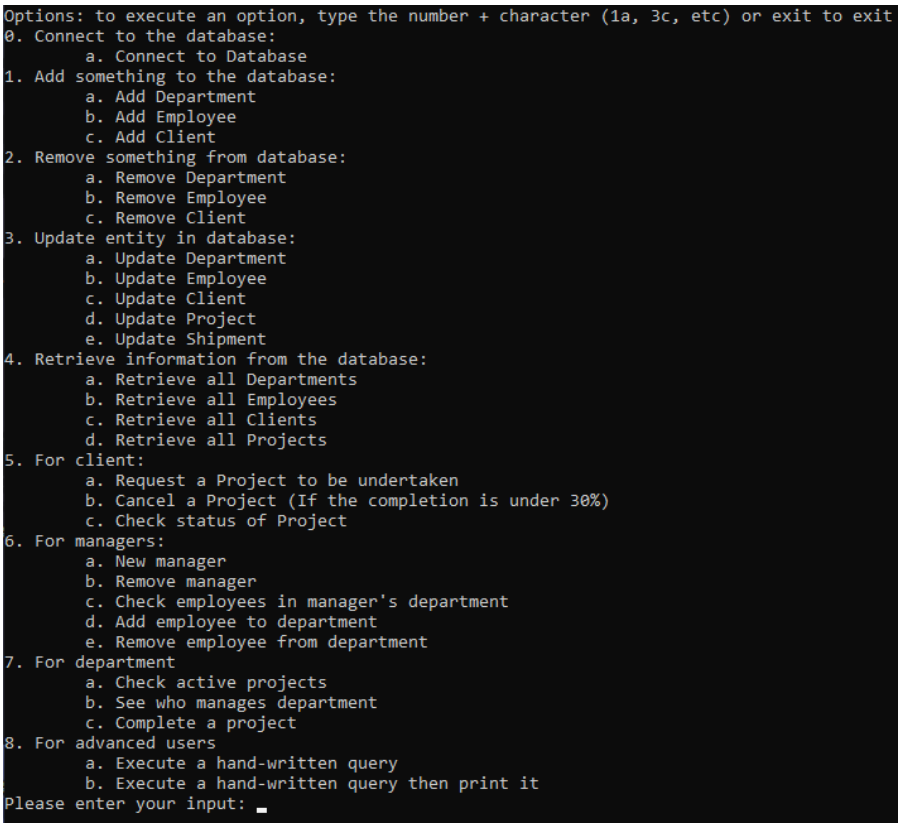
You can see every single function that was created for this project in the freshPrints.py file inside the deliverable.

Installation Instructions

To install the database, all you need to do is run the runMe.bat file. The database was intended to run on windows and was only tested on windows, I have no reason to believe that it will work on anything other than windows. Also, a weird caveat of the mysql-connector-python requires that python be installed to its default installation location (being local appdata). I do not know if this is an issue on other machines, but it was on mine. So, if it will not let you install the connector due to lack of privileges (which was the error I was getting), reinstall python to its default location.

User Manual

To use the database, run the runMe.bat file, and enter the root user password when prompted. This should create the database and get you to this screen here:



This is the main menu, and gives you information on all the possible things you can do with the database, but first you must make a connection by typing 0a, which will again prompt for the root user password:

```
Please enter your input: 0a
Please enter the password to the root user: password
Connected to freshPrints database successfully
Input anything to continue:
```

After every input is executed, the console will pause allowing you to read what was printed out. When you input anything to continue (press enter) it will bring you back to the main menu where you may enter any of the options which will prompt you (if needed) for the required data, for example, lets add a new employee (1b):

```
Please enter your input: 1b
Please enter the employee's name: Vector Victor
Please enter the employee's SSN (No hyphens please): 123654789
Please enter the employee's join date (YYYY-MM-DD): 2021-05-08
Please enter the employee's date of birth (YYYY-MM-DD): 1980-07-02
Query:
        INSERT INTO Employee (employeeName, employeeID, employeeSSN, hireDate, dateOfBirth)
        VALUES ('Vector Victor', '4789', '123654789', '2021-05-08', '1980-07-02')
    executed successfully
Input anything to continue:
```

If the query was successful, the system will let you know as well as the exact query executed. If the query is unsuccessful, the system will let you know along with the error code:

```
Please enter your input: 1b
Please enter the employee's name: No One
Please enter the employee's SSN (No hyphens please): Woah
Please enter the employee's join date (YYYY-MM-DD): ?
Please enter the employee's date of birth (YYYY-MM-DD): Never
Error: '1366 (HY000): Incorrect integer value: '' for column 'employeeID' at row 1'
Input anything to continue:
```

You can also create hand-written queries to do what you would be otherwise unable to with the system:

```
Please enter your input: 8b
Please enter your query, it might be easier to type in notepad first:
SELECT * FROM Shipment
[]
```

This should be everything you need to successfully navigate the freshPrints database application!