ASSIGNMENT 1

Database Concepts

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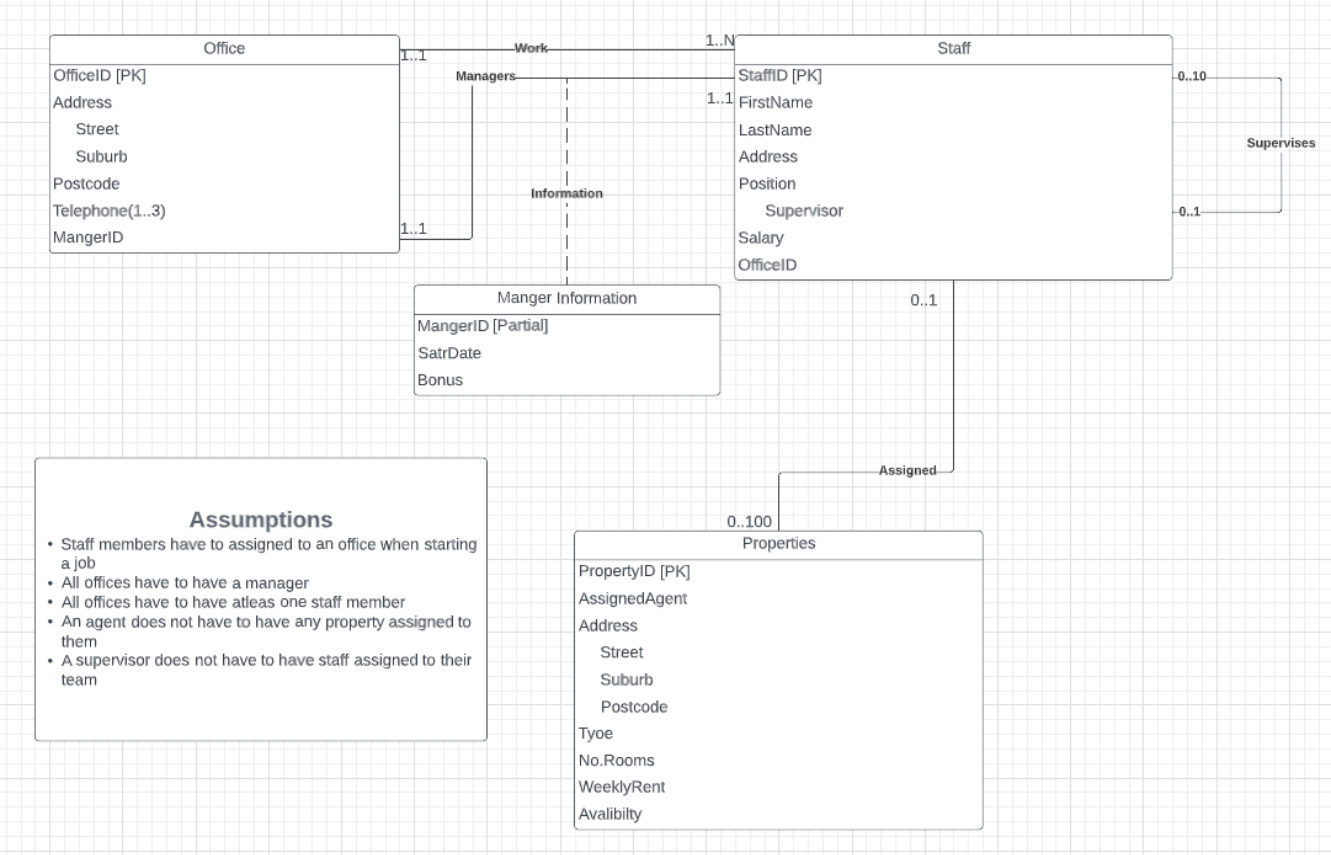
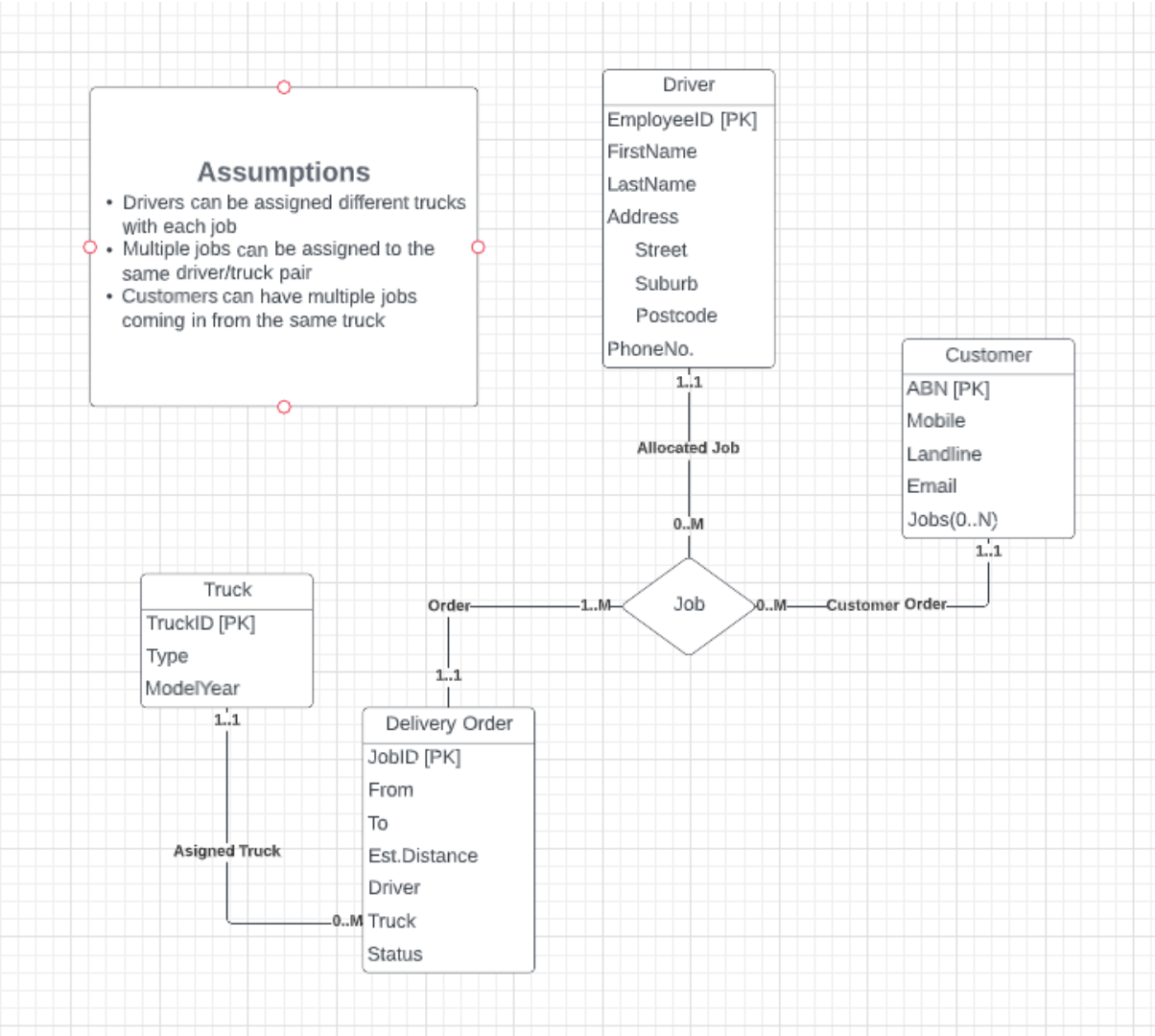
Contents

Task 1

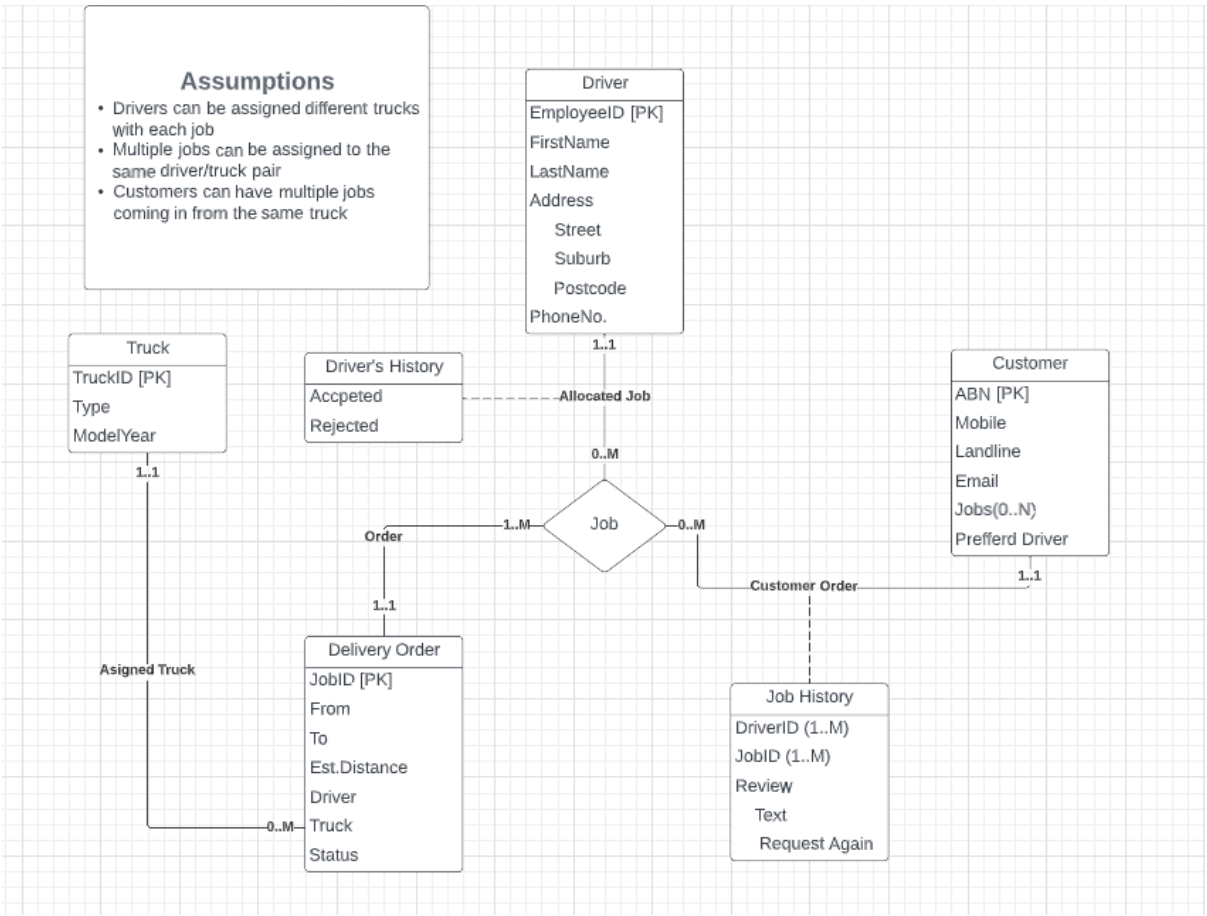

Office
OfficeID [PK]
Address
Street
Suburb
Postcode
Telephone(1..3)
MangerID
1..1
Work
Managers
1..1
1..N
1..1
Information
Staff
StaffID [PK]
FirstName
LastName
Address
Position
Supervisor
Salary
OfficeID
0..10
Supervises
0..1
Manger Information
MangerID [Partial]
SatrDate
Bonus
0..1
Assigned
0..100
Properties
PropertyID [PK]
AssignedAgent
Address
Street
Suburb
Postcode
Tyoe
No.Rooms
WeeklyRent
Avalibilty
Assumptions
Staff members have to assigned to an office when starting a job
All offices have to have a manager
All offices have to have atleas one staff member
An agent does not have to have any property assigned to them
A supervisor does not have to have staff assigned to their team

Task 2

Part 1


Assumptions
• Drivers can be assigned different trucks with each job
• Multiple jobs can be assigned to the same driver/truck pair
• Customers can have multiple jobs coming in from the same truck
Driver
EmployeeID [PK]
FirstName
LastName
Address
Street
Suburb
Postcode
PhoneNo.
1..1
Allocated Job
0..M
Customer
ABN [PK]
Mobile
Landline
Email
Jobs(0..N)
1..1
Truck
TruckID [PK]
Type
ModelYear
1..1
Asigned Truck
0..M
Order
1..M
Job
0..M
Customer Order
1..1
Delivery Order
JobID [PK]
From
To
Est.Distance
Driver
Truck
Status

Part 2


Assumptions
• Drivers can be assigned different trucks with each job
• Multiple jobs can be assigned to the same driver/truck pair
• Customers can have multiple jobs coming in from the same truck
Driver
EmployeeID [PK]
FirstName
LastName
Address
Street
Suburb
Postcode
PhoneNo.
Truck
TruckID [PK]
Type
ModelYear
Driver's History
Accpeted
Rejected
Allocated Job
Customer
ABN [PK]
Mobile
Landline
Email
Jobs(0..N)
Prefferd Driver
1..1
0..M
Job
1..M
Order
0..M
Customer Order
Asigned Truck
Delivery Order
JobID [PK]
From
To
Est.Distance
Driver
Truck
Status
Job History
DriverID (1..M)
JobID (1..M)
Review
Text
Request Again

Task 3

3.1A Mapping Strong Entities

Performer(Emp No, Name, Address, Bank BSB, Bank ACC)

Cruise(Cruise ID, Start Port, Destination Port, Start Date, End Date)

Show(Title, Duration, Type)

3.1B Mapping Weak Entities

Performance(Cruise ID, Title*, Duration, Type)*
- Because performance is a weak entity Cruise ID and Title are required to identify it, as each show can only be performed once on each cruise.

3.2A Mapping 1:1 Relationships

-None are present

3.2B Mapping 1:N Relationships

Performance(Cruise ID, Title*, Duration, Type)*
-Is the same as the weak entity as it is the only 1:N

3.2C Mapping N:M Relationships

Works On(Emp No, Cruise ID*)*

Participate(Emp No, Cruise ID*, Title*)*

3.3A Mapping Multivalued Attributes

-None are present

3.4A Mapping and Identifying Higher Degree relationship

-None are present

Final Schema

Performer(Emp No, Name, Address, Bank BSB, Bank ACC)

Cruise(Cruise ID, Start Port, Destination Port, Start Date, End Date)

Show(Title, Duration, Type)

Performance(Cruise ID, Title*, Duration, Type)*

Works On(Emp No, Cruise ID*)*

Participate(Emp No, Cruise ID*, Title*)*

Task 4 Questions

4.1

We can't ensure that there has to be a job associated. However based on the information provided we can assume that it is a requirement. We can make this assumption as no employee of the company doesn't have a job assigned to them. While the empjob_ID isn't a foreign key so it could hypothetically allow for null. Again we don't have enough information to make a definite answer.

4.2

Again we are not provided with enough information for a definitive answer for either question. However, we can make assumptions based on the data in the relationship schema and the database instance, that they can have multiple jobs or work for multiple departments at the same time. If we look at the 'JobHistory' in the schema. The primary key does not include job_id or department_id and as we don't know the relationship between these entities. It is possible that they can have an overlapping job however the data provided in the instance shows that the company works to avoid this by allowing for a new job to start the following day or week.

4.3

The statements would not work as they are essentially trying to add new rows into the department with the Department_id of 3. However, as department_id is the primary key (as shown in the relationship schema) it needs to remain unique and having three different instances of an id of three would lead to a error referring to breaking Unique constraints and would look similar to this:

```
SQLite error: UNIQUE constraint failed: Departments.Department_id.
```

4.4

The SQL statement does not update Adam's job information as his employee_id : 12 not 10 so therefore Jonny Dean's information would be the one being updated. However this specific line would not run as it is trying to update the Department Table with information that is specific to the Employee's table. Therefore returning an error. This also means that while you can return the previous contracts that Johnny has had up until this point, however the latest contract would not be possible to retrieve. If you would like it to be available the SQL statement must be updated to the following:

```
UPDATE Employees SET empjob_id=45 WHERE employee_id=10;
```

4.5

Assuming we are using SQLite as our Database Management System then it would throw an syntax error due to the ‘,’ in between the 1 and 2 value. If it was just a 1 or 2 then it would update the second row as this is the only row WHERE the location_id is 20.

4.6

```
CREATE TABLE Jobs(
        Job_id INT PRIMARY KEY,
        Job_title VARCHAR(225) NOT NULL,
        Min_salary NUMERIC NOT NULL DEFAULT 0,
        Max_Salary NUMERIC NOT NULL DEFAULT 0
        );
```

4.7

```
CREATE TABLE Employee(
        Employee_id INT PRIMARY KEY,
        First_Name VARCHAR(225) NOT NULL,
        Last_Name VARCHAR(225) NOT NULL,
        Phone_Number INT,
        Hire_Date DATETIME NOT NULL,
        EmpJob_id INT,
        Salary NUMERIC DEFAULT 0,
        Department_id INT NOT NULL
        );
```

4.8

```
INSERT INTO Employee (Employee_id, First_Name, Last_Name,Phone_Number, Hire_Date,
EmpJob_id, Salary, Department_id)
VALUES (100, ‘Aladdin’, ‘Brown’, NULL,  2021-01-07 ,NULL, 0, 3);
```