Assessment (Weeks 1 & 2)

Data : Table format

The flowing is Employee data given. Note that Equipment and Training has multiple entries showing the need for normalisation.

Name	PhoneNumber	Address	HireDate	Equipment	Department	Training
Andy Wong [1]	(603) 555-6880	345 South Street	January 15, 2001	Notebook Computers [1]	Production [2]	Code of Conduct Training [2]; Safety Traning [3]
Vivek Pandey [3]	(603) 555-4420	15 Mineral Drive	November 15, 2003	Notebook Computers [1]; Headsets [2]; Computer Monitor [3]	IT Support [3]	Code of Conduct Training [2]; Microsoft Certifications [6]; Security and Privacy [7]
Kathy Cooper [5]	(212) 555-9630	15 Hatter Drive	November 18, 2011	Notebook Computers [1]; Headsets [2]; Computer Monitor [3]	Human Resource Management [8]	Code of Conduct Training [2]; Employee Relations [10]
John Wilson [2]	(518) 555-6690	560 Broadway	March 19, 2017	Notebook Computers [1]; Computer Monitor [3]	Research & Development [1]	Code of Conduct Training [2]; Intro to Python 4]; Machine Learning [5]
Nola Davis [4]	(478) 555-8822	15 Long Ave	March 23, 2016	Notebook Computers [1]; Headsets [2]	Sales & Marketing [7]	Code of Conduct Training [2]; Product Knowledg

						e [8]; Sales Skills [9]
Tom Harper [6]	(212) 555-7755	64 Highland Street	April 11, 2010	Notebook Computers [1]; Computer Monitor [3]	Accounting and Finance [9]	Code of Conduct Training [2]; Travel and Expense Management [11]

Assumptions/Observations as per given data:

1. There are 6 Employees given in data. It is not clear which are required fields. We can assume Name, Phone Number, Hire Date and Functional Business Unit to be mandatory. But other fields may or may not be required.
2. There are departments(Functional Business Unit) which do not have an employee in given data.
3. There are Equipment which is not requested by any of the given employee,
4. There are Training which is not needed by any of the given employee.
5. More than one employee may work for the same business unit
6. Trainers are NOT considered as employees of the Business
7. A Training can have multiple Trainers.
8. There is no Trainer who does not have a Training

Open ended questions from the data:

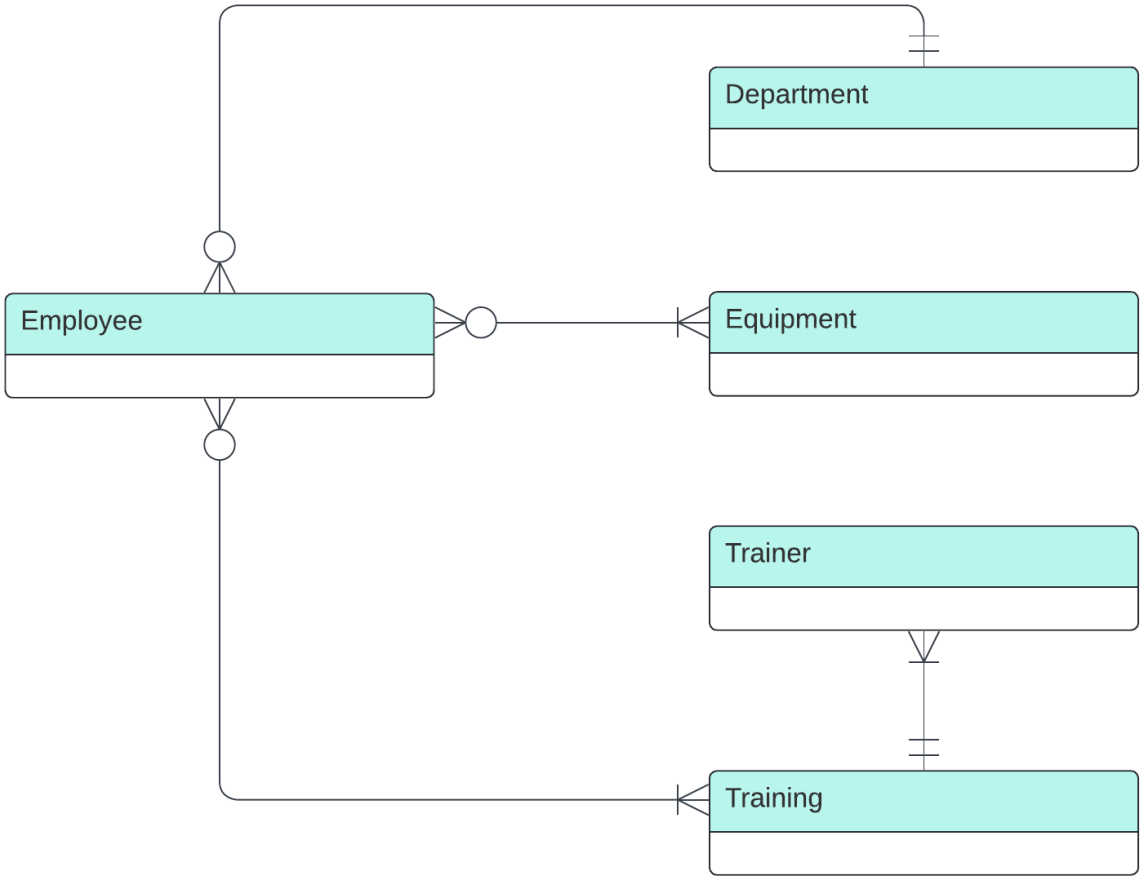
1. Can there be an employee who do not need any Equipment ?
2. Can there be an employee who do not need any Training ?

Because of open ended questions, I can have two answers. I give them as two cases for the sake of simplicity.

CASE 1: Employee should have at least one Equipment and Training need.

Q1. Conceptual Model

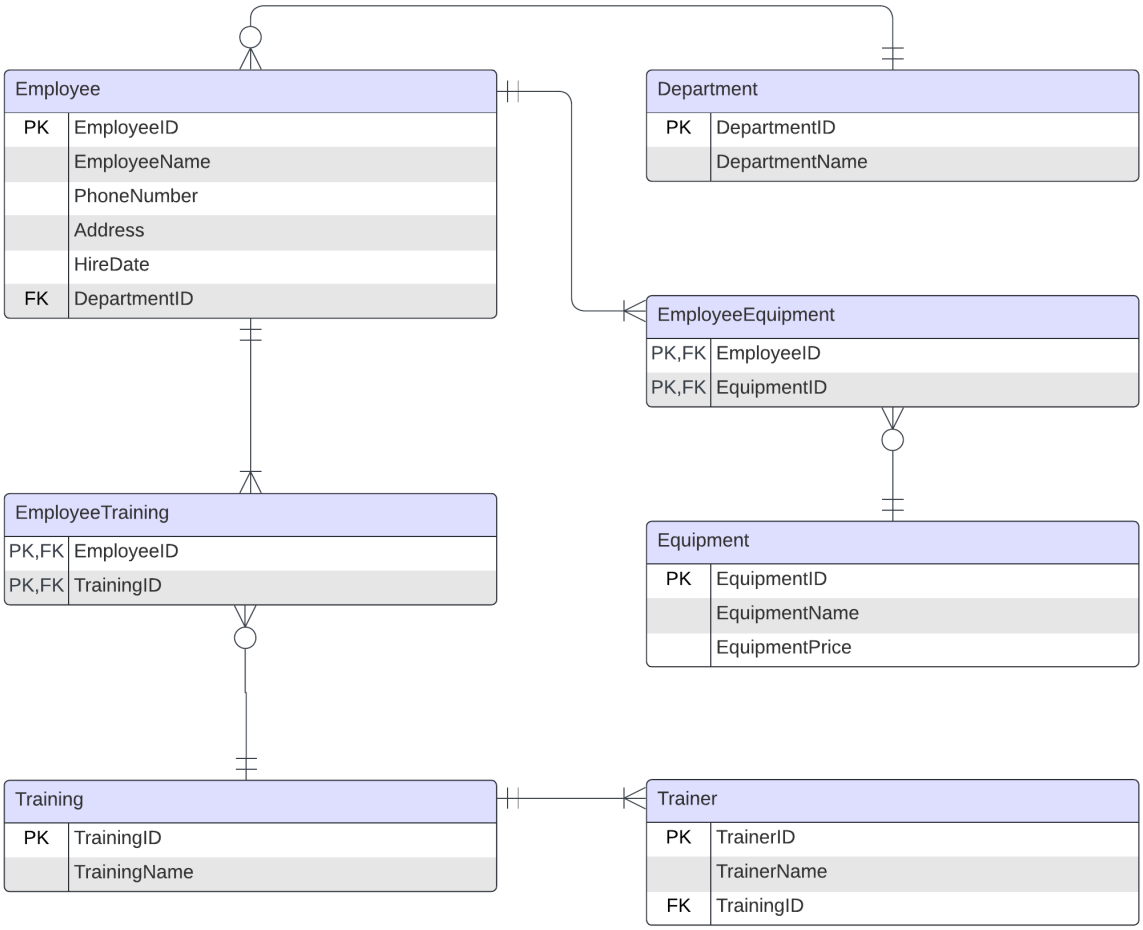
Build Conceptual Model as per understanding of the data ---> (a) Add entities (b) Add Relationships



Q2. Logical Model

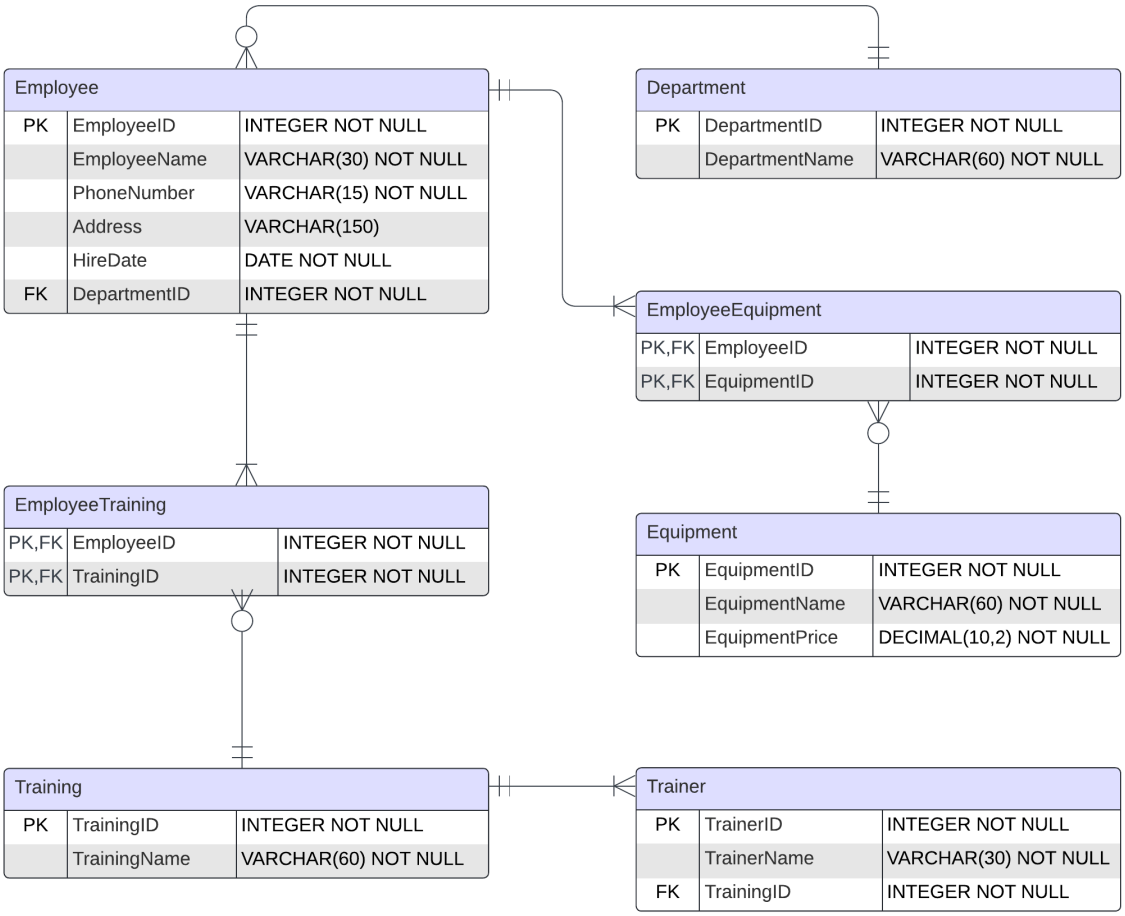
Build Logical Model on top of the Conceptual Model built in Q1. ---> (a) Add Non-key Attributes (b) Add Primary/Foreign Key Attributes wheresoever needed (c) Add Junction tables to resolve many-many relationships if existing. *** Note: (I.) Comply with the Normalization Process (II.) Use proper names to identify attributes and entities ***

Here **EmployeeEquipment** and **EmployeeTraining** are Junction tables.



Q3. Physical Model

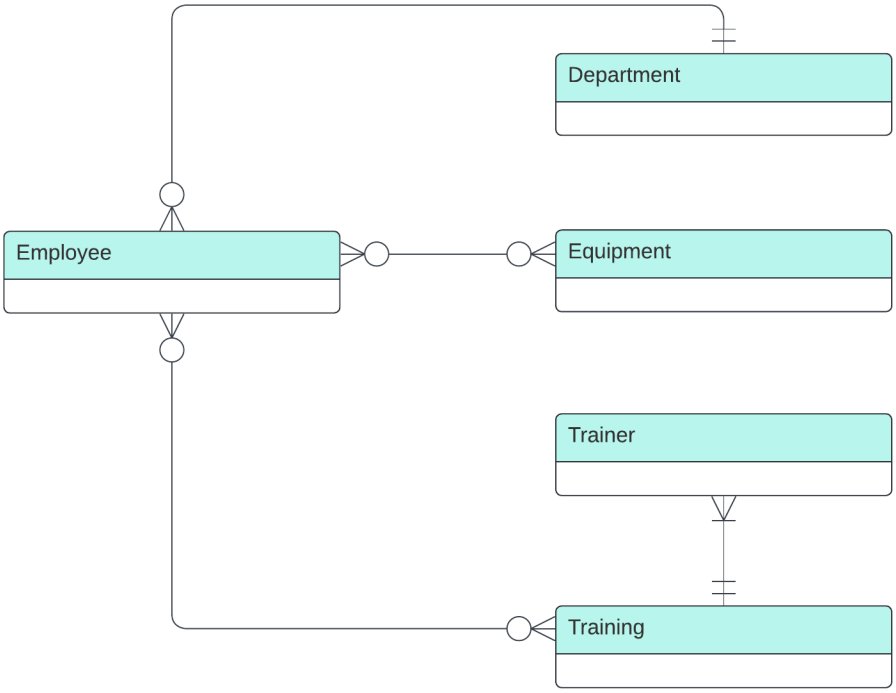
Build Physical Model on top of the Logical Model built in Q2. ---> (a) Add datatypes (b) Add constraints if any (c) Use proper naming convention to format names of entities and attributes.


Employee
PK EmployeeID INTEGER NOT NULL
EmployeeName VARCHAR(30) NOT NULL
PhoneNumber VARCHAR(15) NOT NULL
Address VARCHAR(150)
HireDate DATE NOT NULL
FK DepartmentID INTEGER NOT NULL
Department
PK DepartmentID INTEGER NOT NULL
DepartmentName VARCHAR(60) NOT NULL
EmployeeEquipment
PK,FK EmployeeID INTEGER NOT NULL
PK,FK EquipmentID INTEGER NOT NULL
EmployeeTraining
PK,FK EmployeeID INTEGER NOT NULL
PK,FK TrainingID INTEGER NOT NULL
Equipment
PK EquipmentID INTEGER NOT NULL
EquipmentName VARCHAR(60) NOT NULL
EquipmentPrice DECIMAL(10,2) NOT NULL
Training
PK TrainingID INTEGER NOT NULL
TrainingName VARCHAR(60) NOT NULL
Trainer
PK TrainerID INTEGER NOT NULL
TrainerName VARCHAR(30) NOT NULL
FK TrainingID INTEGER NOT NULL

CASE 2: Employee can be without any of Equipment and Training need.

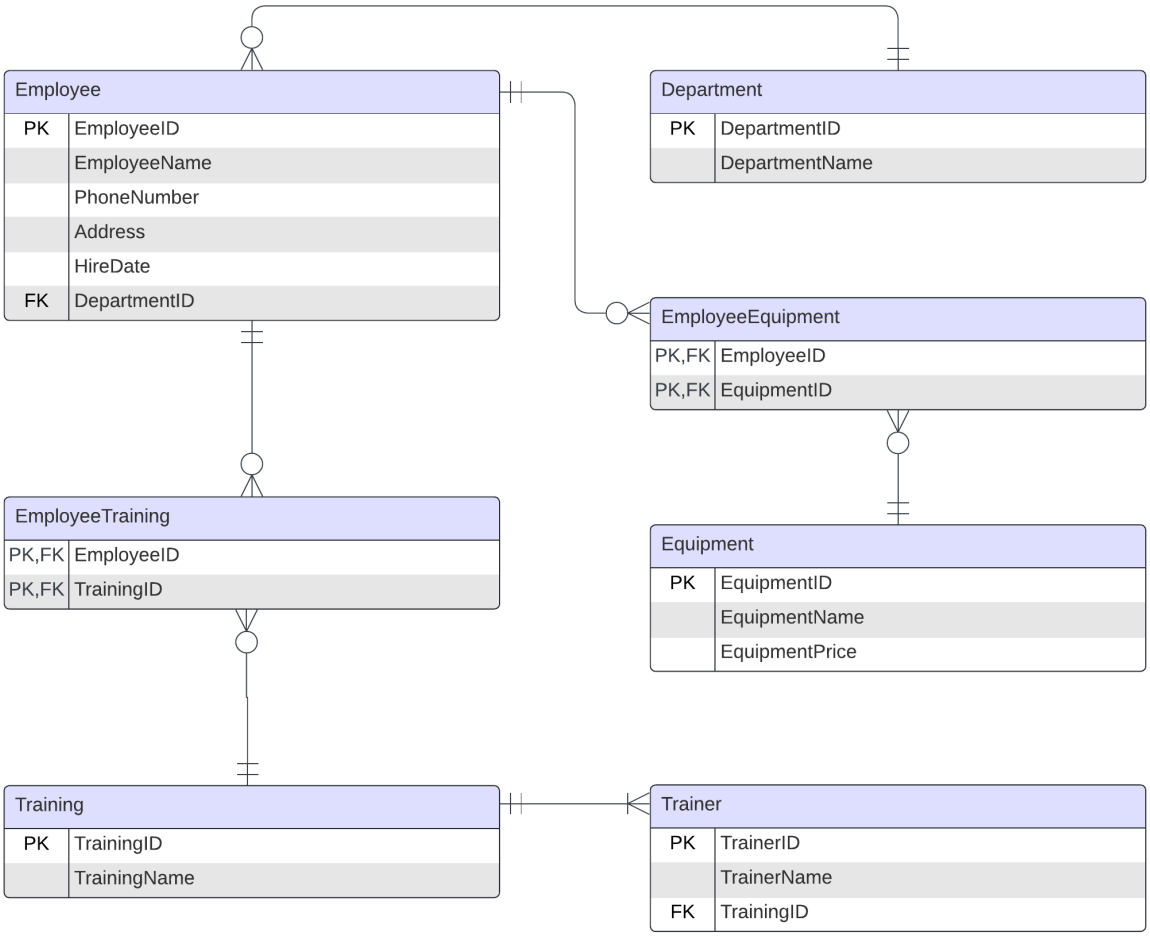
Q1. Conceptual Model

Build Conceptual Model as per understanding of the data ---> (a) Add entities (b) Add Relationships



Q2. Logical Model

Build Logical Model on top of the Conceptual Model built in Q1. ---> (a) Add Non-key Attributes (b) Add Primary/Foreign Key Attributes wheresoever needed (c) Add Junction tables to resolve many-many relationships if existing. *** Note: (I.) Comply with the Normalization Process (II.) Use proper names to identify attributes and entities ***



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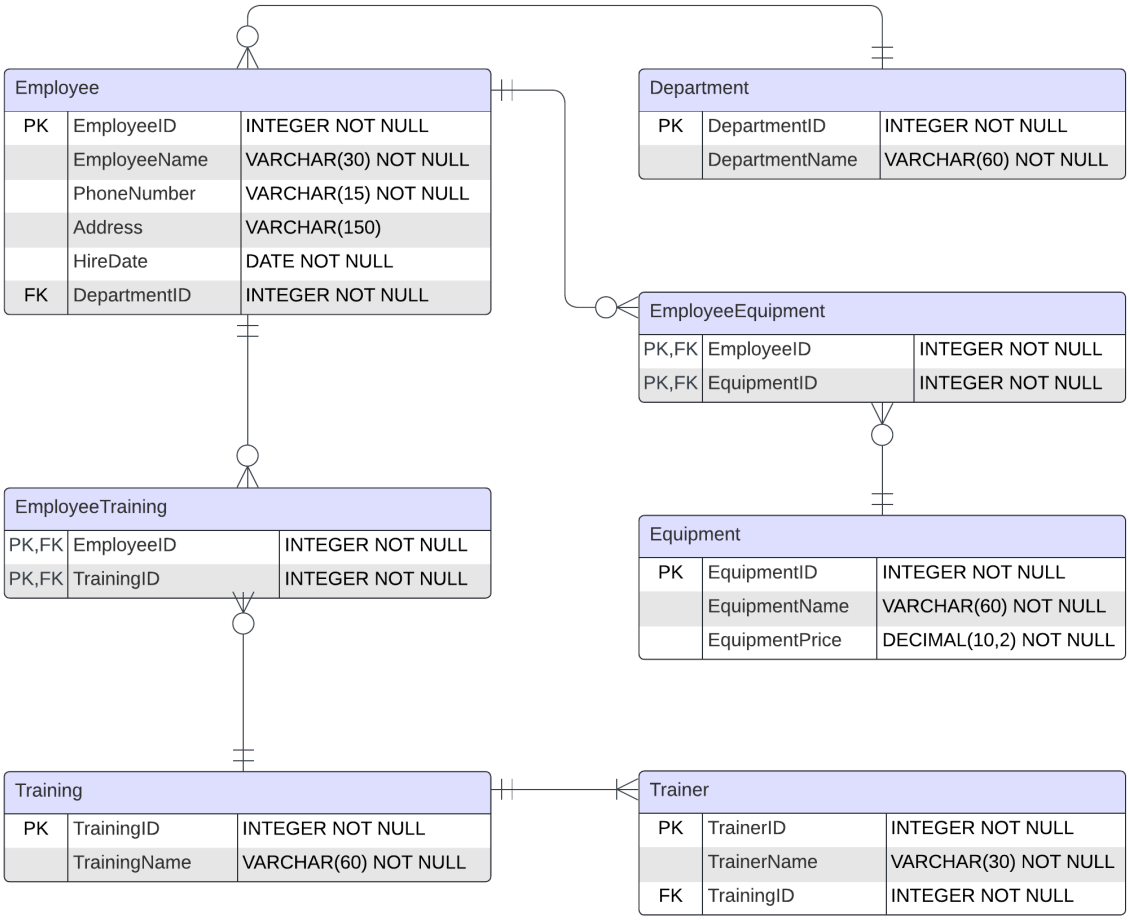
Employee
PK EmployeeID INTEGER NOT NULL
EmployeeName VARCHAR(30) NOT NULL
PhoneNumber VARCHAR(15) NOT NULL
Address VARCHAR(150)
HireDate DATE NOT NULL
FK DepartmentID INTEGER NOT NULL
Department
PK DepartmentID INTEGER NOT NULL
DepartmentName VARCHAR(60) NOT NULL
EmployeeEquipment
PK,FK EmployeeID INTEGER NOT NULL
PK,FK EquipmentID INTEGER NOT NULL
EmployeeTraining
PK,FK EmployeeID INTEGER NOT NULL
PK,FK TrainingID INTEGER NOT NULL
Equipment
PK EquipmentID INTEGER NOT NULL
EquipmentName VARCHAR(60) NOT NULL
EquipmentPrice DECIMAL(10,2) NOT NULL
Training
PK TrainingID INTEGER NOT NULL
TrainingName VARCHAR(60) NOT NULL
Trainer
PK TrainerID INTEGER NOT NULL
TrainerName VARCHAR(30) NOT NULL
FK TrainingID INTEGER NOT NULL