

LAB 4

In this lab, we will expand on the same case which we used in the earlier labs.

Going through the old records of the retail store you have discovered a flat-file based system which was used to store employee-related information. The following fields were present in the flat file, and all information was stored in a 2-dimensional (tabular) form.

Employee Id, Employee Name, Employee Date Of Birth, Employee Address Id, Employee Address 1, Employee Address 2, Employee Address City, Employee Address Zip, Employee Address State, Employee Social Security Number, Employee Designation Id, Employee Designation Description, Employee Salary, Dependant Id, Dependant Name, Dependant Date Of Birth, Employee Dependant Relationship, Sales Office Id, Sales Office Address Id, Sales Office Address 1, Sales Office Address 2, Sales Office Address City, Sales Office Address Zip, Sales Office Address State, Sales Office Manager Id

Please use the following assumptions when forming your answer

- An employee can have many dependants (ex: Wife, Son, Daughter)
- Many employees could provide for the same dependant (ex: When both parents are working for the company)
- Sales Office Manager Id is the Employee Id of the Manager of the sales office, and a sales office can have only one manager.
- An employee belongs to only one sales office, but a sales office can have many employees.

1. (15 Marks) Identify a field or a combination of fields which will eliminate all multivalued attributes, thereby bringing the fields into the 1st Normal Form.
2. (25 Marks) Identify fields which are partially dependant on the primary key and move them into new relations. Look at all the relations and see whether all attributes are fully functionally dependant on the primary key. If so the tables are in the 2nd Normal Form.
3. (25 Marks) Identify fields which are transitively dependant on the primary key and move them into new relations. When all the transitive dependencies have been removed the tables will be in the 3rd Normal Form.
4. (15 Marks) Can any of the tables be brought to the Boyce-Codd Normal Form? If so perform the task.
5. (20 Marks) Draw an ER diagram based on the tables. Is this what you would expect if you created an ER diagram from the business requirements alone?