

INFOST 410 Chapter 1 Practice Exercise

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Table structure for Problems 1–4: Given the table structure shown in Figure P1.1, answer Problems 1–4.

1. *How many records does the table contain? How many fields are there per record?*

7 records, 5 fields per record

2. *What problem would you encounter if you wanted to produce a listing by city? How would you solve this problem by altering the table structure?*

The entire address is stored as one field, so if you want to produce a listing by city you would have to parse the address field of each listing then store the relevant listing and re-query the database for the appropriate listings. This could be solved by breaking the address field into multiple field such as street_number, street_name, city, state, zip_code. A better solution might be to create a street_address field and a city field, then make the city field a foreign key to a table that store the city, state, and zip code combinations.

3. *If you wanted to produce a listing of the file contents by last name, area code, city, state, or zip code, how would you alter the table structure?*

You would have to make the project_manager field to a foreign key field to a table that had frame, lname, middle_initial and then break down the address into street_address field and a city field, then make the city field a foreign key to a table that store the city, state, and zip code combinations.

4. *What data redundancies do you detect? Give example of how could those redundancies lead to data anomalies?*

Each project is being assigned only one manager but this manager is having all of their information entered multiple time instead of simply keeping a table of managers and using a one to many relationship to assign a manager to a project. This could lead to the same manager having a different address or phone number on different project due to an input error. If a manager need to update any of their information is would also require altering multiple entries instead of a single entry if a relationship was used.

5. *Identify and discuss the serious data redundancy problems exhibited by the table structure shown in Figure P1.5.*

Both employee information, project information, and job information is being repeated multiple times.

6. *Looking at the EMP_NAME and EMP_PHONE contents in Figure P1.5, what change(s) would you recommend?*

I would recommend moving this information to its' own table and breaking the emp_name field down in the new table. Then linking to the new table through a primary key field called emp_id.

7. *Identify the various concepts captured in the table you examined in Problem 6 (e.g. Employee, Jobs, etc).*

A project has multiple employees. An employee has a first name, middle initial, last name, phone number, and specific job. A job has a job code and specific hourly rate.

8. Given your answer to Problem 7, what new tables should you create to help eliminate the data redundancies found in the table shown in Figure P1.5?

I would create a jobs table with code and chg_hour fields. An employees table with frame, name, middle_initial, phone_number fields, job_hours, and a one to many job field. Then a Projects table with id, name, and a many to one employee field.

9. Identify and discuss the serious data redundancy problems exhibited by the table structure shown in Figure P1.9. (The table is meant to be used as a teacher class assignment schedule. One of the many problems with data redundancy is the likely occurrence of data inconsistencies—two different initials have been entered for the teacher named Maria Cordoza.)

The Building and Rooms should be combined in a table so that only available rooms in a building can be assigned. This help in case a certain room is closed for repair or other issues. As it stands now any room number can be given to any building, and any building can be assigned to a classroom. The teacher should also be it's own table, holding the first name, last name, and middle initial. The days and time also occur repeatedly so these schedule block should be in their own table with fields for id, day, and time range.

10. Given the table structure shown in Figure P1.9, what problem(s) might you encounter if building KOM were deleted?

You would have to change the building_code field of each entry which was assigned to KOM.