

Instructions for CSI 300 Midterm Exam

I. Introduction

For this midterm you will design build and populate a database for a client. The client is Sam Smythe who runs a training center to teach “problem” puppies a series of tricks. All of the assumptions you need are contained in the section “Business Rules and Processes for Sam Smythe”.

II. Background Information

Sam Smythe grew up loving dogs. He spent a great deal of time training dogs and puppies in his life time. In his retirement Sam has decided to open a training facility to train troubled and deranged puppies. His belief is if he can get a puppy before it is considered an adult dog he can train it to be a great pet. Nice idea but it doesn't always work.

He has hired four trainers who specialize in training puppies. The trainers are Bruce Jones, Sheryl Begin, John Smith and Jane Williams. Each has many years of training and defending themselves from deranged animals.

Sam needs a database system to help manage the puppies and their training at his facility. What he lacks is the ability to tie together the trainers, the puppies they train, the grade a puppy receives for each trick learned and who the respective owners are for each puppy.

When a puppy is taken in for training, each puppy is given one week to be trained on any number of tricks. Sam is not so sure how efficient this system is but he has no data to either support or contradict if one week to do all of the training is problematic. Puppies must be registered on Sunday and then training begins every Monday. All training is completed by the following Sunday. Trainers work weekends if needed. All puppy grades are submitted on Sunday or earlier if possible.

Your job is to develop and implement a solution for Sam Smythe. Using the business rules and processes provided, you must develop the following:

- | | |
|--------------------|----------------------------|
| A) External Schema | E) Insert data as required |
| B) Internal Schema | F) Update data as required |
| C) Logical Design | G) Delete data as required |
| D) Physical Design | |

You are free to place into one document the external and internal schema. You can develop these in Word or Excel. Please save the file as either **schema.xlsx** or **schema.docx**. The logical design must be completed in Workbench and saved as **puppy.mwb**. You are free to forward engineer the final logical design you develop in Workbench. Your logical design must be normalized to 3NF.

There are assumptions in the next section that should help you get through the external and internal schema development process as well as the logical design. You are free to add more to this. Be sure if you add any assumptions that they are added in order to help you simplify the completion of this exam

In the spreadsheet **sam_data.xlsx** you will find all of the data you need for this project (mid-term exam). Do not create any additional data for this exam, use only what is given to you. You are to insert all of the data provided.

You will need to update and delete data. Be sure you decide in advance if you should use the ON UPDATE CASCADE/ON DELETE CASCADE or other setting for these two activities. You will not need to use indexing for this exam.

III. Business Rules & Processes for Sam Smythe

This section provides the business rules and the business processes that Sam uses to run his training facility. These are your basic assumptions. You are free to add more if it will help manage the completion of this exam. If you add new

assumptions please include them in the schema file you will submit. You are free to ask any clarifying questions regarding these assumptions.

1. Owners can own more than 1 puppy
2. A puppy has 1 and only one owner
3. A puppy is assigned to one and only one kennel/room
4. Each Kennel has 4 identical rooms
5. A puppy NEVER changes rooms/kennels
6. A trainer can train more than one puppy in a given week
7. A trainer can teach one or more tricks
8. A puppy learns at least one trick
9. A puppy is assigned a grade when it has completed its training for a specific trick
10. A puppy is graded on a scale of 1 (lowest) to 10 (highest), no decimal values
11. Owners can have more than one contact
12. A trainer completes all training of a trick once it has begun
13. A grade is assigned once the training has ended
14. Each training session is a maximum of one week (7 days) long
15. Owners can opt to pick up a puppy before training is completed
16. An owner has one and only one address

IV. Data Queries

Below are the questions/tasks you must complete with the data. You are free to use JOIN statements or other methods of developing a query. Please save all queries in a file named **exam_queries.sql**.

1. Which puppy has the highest overall grade average?
2. Which trick gets puppies the best grade?
3. Based on puppy averages, which trainer is the most successful?
4. The trick "Heel" is a data entry error. Update the name of this trick to "Sit".
5. Delete all references to the puppy named Idiot.
6. Which puppy has the lowest average grade?

7. Based on the grades, which trick is the toughest?
8. Which owner has the best performing puppy?
9. Which week was the busiest week based on the number of puppies in training?
10. Based on the grades, which puppy makes the best coffee?

V. Exam Submission

When you are done, please use the MySQL Data Export tool found under the Server menu in Workbench. Export the data to a self-contained file named **puppies.sql**. All of your data, including the database itself with all data inserts will be saved in this export. Please be sure you manage the path so you know where it will be on your system. In the center, bottom part of this feature be sure to click on the checkbox that says **“Include Create Schema”**. If you do not include this it could result in an error when the file is imported for grading.

The files you need to upload to Canvas include the following:

1. puppies.sql: data dump of the entire database
2. puppy.mwb: entity relationship diagram used to forward engineer the DB
3. schema.docx or schema.xlsx: internal and external schema
4. exam_queries.sql: the 10 queries required for the exam

Please zip the files into one compressed file which you should save as **SP18_midterm.zip** and then upload the file to Canvas.