



# Northeastern University

## CS-3200 Homework

SQL procedures, functions, triggers and prepared statements in MySQL.

This assignment gives you an opportunity to create stored procedures functions, triggers and prepared statements from queries you created for the Lotr of the Rings schema. There is no starter file for this assignment. You should complete this assignment given the *lotrfinal* schema provided to you for homework 4.

Please submit one .sql file to blackboard named LastnameFirstNameHwk6.sql where Lastname = your last name, and Firstname = you first name. The file should contain the SQL code for each question named The .sql file should be broken into a section per question. Each section starts with a comment that lists the question number as well as the question description and any other comment you believe helps to describe the solution. This is followed by the solution. The solution is followed by test code that runs the solution, make sure you provide different executions of the solution.

1. Write a procedure `track_character(character)` that accepts a character name and returns a result set that contains a list of the other characters that the provided character has encountered. The result set should contain the character's name, the region name, the book name, and the name of the encountered character. (10 points)
2. Write a procedure `track_region(region)` that accepts a region name and returns a result set that contain the region name, the book name, and the number of encounters for that region. (10 points)
3. Write a function named `region_homeland(region)`. It accepts a region name and returns the number of characters that have this region listed as a homeland. (10 points)
4. Write a function named `region_most_encounters(character)` that accepts a character name and returns the name of the region where the character has had the most encounters. (10 points)
5. Write a function named `home_region_encounter(character)` that accepts a character name and returns TRUE if the character has had a first encounter in his homeland. FALSE if the character has not had a first encounter in his homeland. or NULL if the character's homeland is not known. (10 points)
6. Write a function named `encounters_in_num_region(region_name)` that accepts a region's name as an argument and returns the number of encounters for that region. (10 points)

7. Write a procedure named `fellowship_encounters(book)` that accepts a book's name and returns the fellowship characters having first encounters in that book. (10 points)
  
8. Modify the `books` table to contain a field called `encounters_in_book` and write a procedure called `initialize_encounters_count(book)` that accepts a book id and initializes the field to the number of encounters that occur in that book for the current encounters table. The book table modification can occur outside or inside of the procedure. (10 points)
  
9. Write a trigger that updates the field `encounters_in_book` for the book records in the `lotrbook` table. The field should contain the number of first encounters for that book. Call the trigger `firstencounters_after_insert`. Insert the following records into the database. Insert a first encounter in Rivendell between Legolas and Frodo for book 1. Ensure that the `encounters_in_book` field is properly updated for this data. (10 points)
  
10. Create and execute a prepared statement from the SQL workbench that calls `home_region_encounter` with the argument 'Frodo'. Use a user session variable to pass the argument to the function. (5 points)
  
11. Create and execute a prepared statement that calls `encounters_in_num_region()` with the argument 'Shire'. Once again use a user session variable to pass the argument to the function. (5 points)