CSE441: DATABASE SYSTEMS

ASSIGNMENT 1

In this assignment, you are supposed write a mini-sql engine which will run a subset of SQL Queries using **command line interface**. _

PLEASE ADHERE TO THE SPECIFICATIONS, AUTOMATIC EVALUATIONS WILL BE DONE FOR THIS ASSIGNMENT AND HENCE, NOT FOLLOWING THE DETAILS CORRECTLY MIGHT LEAD TO A STRAIGHT ZERO.

Dataset:

1. csv files for tables.
    a. If a file is : *File1.csv*, the table name would be File1.
    b. There will be no tab-separation or space-separation, so you are not required to handle it but you have to make sure to take care of both csv file type cases: the one where values are in double quotes and the one where values are without quotes.
2. All the elements in files would be **only INTEGERS**.
3. A file named: **metadata.txt**(note the extension) would be given to you which will have the following structure for each table:

    <begin_table>
    <table_name>
    <attribute1>
    ....
    <attributeN>
    <end_table>

Type of Queries: You'll be presented with the following set of queries:

1. Select all records : Select * from table_name;
2. Aggregate functions: Simple aggregate functions on a single column. Sum, average, max and min. They will be very trivial given that the data is only numbers: select max(col1) from table1;
3. Project Columns(could be any number of columns) from one or more tables : Select col1, col2 from table_name;
4. **Select with distinct from one table : select distinct(col1),col2 from table_name;**
5. Select with where from one or more tables: select col1,col2 from table1,table2 where col1 = 10 AND col2 = 20;
    a. In the where queries, there would be a maximum of one AND/OR operator with no NOT operators.
6. Projection of one or more(including all the columns) from two tables with one join condition :
    a. select * from table1, table2 where table1.col1=table2.col2;
    b. select col1,col2 from table1,table2 where table1.col1=table2.col2;
    c. NO REPITION OF COLUMNS – THE JOINING COLUMN SHOULD BE PRINTED ONLY ONCE.
7. Errors : If there are any sort of errors in the query like no such table, wrong sql query etc, simply print "error\n" on the console.
8. Empty sets : If a resulting query has no rows as output, just print the column names.
9. **IMPORTANT:**
    a. ERROR HANDLING: 10% marks will be for error handling.
    b. For the above queries, please note all the permutations and combinations of SQL that MySQL permits, specially when it comes to

multiple tables. What is mentioned above are examples of what the queries could be.

c. Please look at the output as mentioned in the sample output file, specially the column names.

10. **Parser: You can use pre-built parsers for SQL queries.**

Format of Input:

1. Command lines input such that: {compiled files} “SQL Query”. Here SQL Query would be a command line argument. Example :
   a. For C++ it will be – ./a.out “select * from table_name where condition”
   b. For Java it will be – java classfile.class “select * from table_name where condition”
2. **IMPORTANT** : **At one time only one query would run. Don’t make an interface which will keep on taking queries and giving out results.**

Output:

The format of output is : comma-separated column names as the first row, followed by a new line character(‘\n’) and then the result row as comma-separated. Two rows will be separated by a new line character. ***You have to write the output to the terminal not a file.***

NOTE :There should be no new line character after the last row.

Bash Script:

You are supposed to write a bash to execute your code such that when we run the script with the query as the command line argument.

1. Name of the bash file : rollnum
2. Running format is : ./rollnum “query”

Deliverables:

1. Java/C++ Source Code files.
2. Compiled Java/C++ files.
3. Bash script as your roll number.
4. **Keep all of this in a folder Roll-Number and zip it. ONLY ZIP FILES.**
5. **UPLOAD ONLY ZIP FILE ON THE COURSES PORTAL.**

   Refer to the sample zip file attached. It will also be uploaded on the courses portal.
   DEADLINE: 9:00 pm, JANUARY 16th ,2015.