CSCI 330 Assignment 5

Maintain automobile records in a database

Write a shell script to create, view and modify a simple database that contains automobile records. The shell script has to be done in Bourne shell syntax (bash as a matter of fact). You may use all features of bash and any Unix command (in the version that is available on your personal Linux system or turing and hopper).

The name of your script is formed from your Z-id followed by ".db". For example, if your Z-id is "z123456" then your script must be called "z123456.db".

The first parameter is always the database being queried. The second parameter is always the command that will be executed. Any parameters that follow are specific to the command that was issued.

The general syntax of script invocation is:

```
z123456.db dbname command param1 ... paramN
```

where:

- `dbname` is the name of the file that contains the database records
- `command` is one of: new, add, show or delete
- `param1` ... `paramN` are parameters to the specified command

Description of commands and parameters

- `new "title text"`
  creates a new database with name `dbname`. The text following the new command will become the first line in the database file. If no text is given, the default is "Automobile Database".
  An error occurs if the database already exists.
  Upon success, the new command reports "New database created".
- `add make model year color`
  adds a new record to the database. 4 parameters must be listed in this order: make, model, year, color.
  The year must be a 4 digit number greater than 1870 and smaller than 2020. The other parameters are strings.
  Upon success, the add command reports "Successfully added a record to the database".
- `show all`
  `show single number`
  `show range number1 number2`
  allows the user to view all records, just a single record or a range of records in the database. To show a single record the record number is specified after the keyword "single". To show a range of records the 2 numbers after the keyword "range" indicate the start and the end of the range, they are inclusive. The second number must be larger than the first.
  The output of the show command lists records in the database. The first line of output always is the title text from the database. Then follow the lines for the requested entries in the database, either all, a single line, or a range.

An example "show all" output looks like this:

```
Automobile Database
Ford, Mustang, 2008, blue with white stripes
Mitsubishi, Lancer, 2009, white
Toyota, Camry LE, 2004, black
Porsche, Cayenne S, 2007, red
```

An example "show range 2 3" output looks like this:

```
Automobile Database
Mitsubishi, Lancer, 2009, white
Toyota, Camry LE, 2004, black
```

- `delete all`
  `delete single number`
  `delete range number1 number2`
  allows the user to delete records: either all, just a single record or a range of records. To delete a single record the record number is specified after the keyword "single". To delete a range of records the 2 numbers after the keyword "range" indicate the start and the end of the range, they are inclusive. The second number must be larger than the first.
  The delete command reports the number of lines deleted, such as "Successfully deleted 4 records from the database". Note that the title line in the database is never deleted.

Error checking

If an an error occurs, print an error message and exit the script. Specifically your script should:

- ensure that the command is spelled correctly
- ensure that all required parameters to the appropriate command are present
- ensure that line numbers fall within the lines present in the database file
- ensure that the database file exists and is readable, and in the case of "add" and "delete" also writable
- if the file is empty (ie. no records), your script should print out a message that no records are found

Database file format

The first line in the database file contains the title text specified in the "new" command. The remaining lines specify automobile entries with fields that are separated by ", ".

For example, the database file for the above "show all" command would contain:

```
Automobile Database
Ford, Mustang, 2008, blue with white stripes
Mitsubishi, Lancer, 2009, white
Toyota, Camry LE, 2004, black
Porsche, Cayenne S, 2007, red
```

Example run

```
% ./z123456.db DB new "Example for Assignment"
New database created
% ./z123456.db DB add Ford Mustang 2008 "blue with white stripes"
Successfully added a record to the database
% ./z123456.db DB add Mitsubishi Lancer 2009 white
Successfully added a record to the database
% ./z123456.db DB add Toyota "Camry LE" 2004 black
Successfully added a record to the database
% ./z123456.db DB add Porsche "Cayenne S" 2007 red
Successfully added a record to the database
% ./z123456.db DB show all
Example for Assignment
Ford, Mustang, 2008, blue with white stripes
Mitsubishi, Lancer, 2009, white
Toyota, Camry LE, 2004, black
Porsche, Cayenne S, 2007, red
% ./z123456.db DB delete single 2
1 record deleted
% ./z123456.db DB show all
Example for Assignment
Ford, Mustang, 2008, blue with white stripes
Toyota, Camry LE, 2004, black
Porsche, Cayenne S, 2007, red
% cat DB
Example for Assignment
Ford, Mustang, 2008, blue with white stripes
Toyota, Camry LE, 2004, black
Porsche, Cayenne S, 2007, red
%
```

Additional notes:

- Be sure to test your script thoroughly.
- Your file must use /bin/bash in its shebang line.
- Make sure your script does not leave any temporary files behind.
- Make sure that your shell script file is a regular Unix text file.
- Don't modify your file on Windows using notepad, it will add extra ^M characters at the end of each line.

Submit your assignment as a single file via Blackboard before the deadline.