

**Project Phase 3****Matthew Walsh**

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**August 27, 2020****CS 166 Database Management Systems****Instructor P. Bakalov****Section B21****TA: Pranshu Shrivastava****In completing this project, we consulted:**

- R. Ramakrishnan and J. Gehrke: Database Management Systems, Third Edition. McGraw Hill Higher Education 2003 was referenced for SL queries.
- CS 166 course slides 05\_SQL1 and 06\_SQL2 were referenced for SQL keywords and examples while coding the project.

**All code is original, made while referencing the above textbook and slides.**

## **Project Description**

In this project, we designed a conceptual database for a Mechanic's Shop using Java and SQL within the PostgreSQL server protocol. The data files, create.sql file and MechanicShop class files were provided to us by the TA. For Project Phase 3, we implemented 10 functions under MechanicShop.java. We worked on 5 functions each and mainly collaborated when testing and fixing errors.

## **Project Contributions**

The even-numbered functions in the code (#2, #4, #6, #8, #10) were completed by Raajitha Rajkumar. The CloseServiceRequest function (#5) and the README.md file were a collaboration between Raajitha Rajkumar and Matthew Walsh. The odd functions (#1, #3, #7, #9), the extra credit GUI, and the write-ups were completed by Matthew Walsh. Both partners agree that the work was divided evenly and equitably (50% and 50%).

## **Approach & Execution**

Our approach for this project was very simple and direct. We followed the prompt within the provided code, then built from the result for ease of use. We did not modify sample data; we left all service requests within the database and did not delete any when closed. To know if a service request is closed, it must be searched within the Closed\_Request table. The program allows users to make any new service request and be added into the database when making a new service request. The program also allows returning customers to make new service requests using their stored information. When closing a service request, the program ensures that the service request and mechanic are within the system before continuing with the request. Once the program closes a request, both the service request and closed request remain in the system. In our approach, we allowed all service requests to remain in the system, and had all closed requests be explicitly marked as closed. In terms of listing attributes within project criteria, we used simple SQL techniques that we have learned in CS166.

## **Changes and Modifications**

We made multiple changes to our code throughout the development of our project. We utilized the readChoice() function much later because it parsed integers for us. We replaced most of the inputs being read with integers using that function. Another change was automating the reading of customer, mechanic, and request IDs. Each table has a unique ID, and we utilized the executeQuery() function to count rows. Since all IDs on the table are labeled from 0 upward, the row number returns the corresponding ID value for each table. Instead of asking for the user to

input the ID, the program automatically assigns it instead of managing individual, disparate IDs. We made additional modifications to the code by adding exceptions. For inserting requests and closing requests, you'll see that many inputs that are required have checks that go through the input and make sure they are valid input. For example, when the user inputs their car VIN, the program checks if it is a valid VIN and asks again if it is not valid. In closing the request, you can also see that the program will repeatedly ask the user for the RID and mechanic ID until they are valid because it automatically checks if they exist. The date for closing requests is also handled by checking it is in the correct format so it doesn't run into errors by making sure it is the correct length and that indices 2 and 5 are dashes. Most of the handling is commented.