# DAD 220 Module Five Activity Template

Complete these steps as you work through the directions for this activity. Refer to the guidelines and rubric for help with how to complete these steps. Rename this template by adding your last name to the file name. Replace the bracketed text in the template with your responses and supporting screenshots as you complete the activity. Size each screenshot and its explanation to fit approximately one-quarter of the page. Review the Template Screenshot Example linked in the guidelines and rubric for this assignment to see how screenshots for your assignment should look. Submit the completed template for grading and feedback.

1. **Analyze the data** provided in FleetMaintenanceRecords **to** **identify themes**.
   1. Review part-replacement frequencies and types. Then create a hypothesis that the fleet management team can use to better handle maintenance.
      1. Create a table called Parts Maintenance. Put this table in the database named after yourself.
      2. Load the data set from the ‘/home/codio/workspace’ path and run queries to find the results. You should use the following line terminators when importing: \n.
      3. Answer the following questions and provide supporting screenshots.
         1. Which parts are being replaced most often?

A screenshot of a computer

Description automatically generated

The parts being replaced the most are the Fuel tanks.

* + - 1. Which region or regions of the country experience more part failures and replacements than others?
         1. Identify the region or regions with more reasons for the replacement of parts. The Midwest, Northeast and Southeast have the most reason counts of 9 each.
         2. Use the Region Definitions sheet to identify states in each region.

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* + - 1. How might the fleet maintenance team use the information to update its maintenance schedule? We can create a maintenance schedule query to retrieve upcoming maintenance to manage parts in each region. We could also focus on the most frequent repairs such as the fuel tank issues in Iowa and Illinois and the brake line replacements in Connecticut and Washington, D.C. to help with planning and preventive maintenance and reduce downtime in the company.

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* + - 1. Which parts are being replaced most often due to corrosion or rust? Wheel Arch, Fenders, Rocker Panels, Brake lines, Struts, Cab corner panel, Shocks, and Fuel tanks are the most parts being replaced due to corrosion or rust.

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* + - 1. Which parts are being replaced most often because of mechanical failure or an accident like a flat tire or rock through the windshield?

Tire repair, Tire replacement, Windshield replacement, Battery replacement, Dent Repair Left Fender, Transmission, and Dent Repair Rear are all parts being replaced most often due to mechanical failure or accidents.

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1. **Write a** brief **summary of** your **analysis** thattakes the information from step one and presents it in a way that nontechnical stakeholders can understand. Write your response in paragraph form.

From my analysis of the fleet maintenance records I can see the key insights into the most frequently replaced parts due to mechanical failures and accidents. The data shows that tires, windshields, and batteries are most commonly replaced parts. Tires are being both reparable and non-reparable as well as the cracked windshields as a frequent issue. Dead batteries, transmission issues, and gears slipping in and out are also notable mechanical failures that should be addressed. Monitoring these issues regularly we can ensure that we have adequate parts and resources available to minimize vehicle downtime and improve overall fleet reliability.

1. **Outline the approach** that you took to conduct the analysis.
   1. What queries did you use to identify trends or themes in the data?

The queries that I used to gather the necessary data include data verification and initial set up using the CSV file. I then created and verified the table from the csv file to ensure that all necessary columns were included. I identified common repairs to see which repairs were most frequent and to see which parts were being replaced most often. I analyzed regional trends to examine part failures by state and regions with higher failure rates. I identified reasons for part replacement by distinct reasons to understand common causes. I did a specific analysis for corrosion or rust. I showed the mechanical failures vs accidents of the parts being most often replaced to out rule common failures vs driver accidents.

* 1. What are the benefits of using these queries to retrieve the information in a way that allows you to provide valuable information to your stakeholders?

Stakeholders can learn about the industry and better stock parts for their customers and create a better workflow for workers that is organized by importance. We should also take data by listening to our employees and customers as some data may be skewed due to inventory not available in time of need while planning our forecasting.

1. **Explain** how the **functions in** the **analysis tool** (MySQL) allowed you to organize the data and retrieve records quickly.

Creating the tables first ensures that each column could be easily retrievable. LOAD DATA INFILE imported this data from the csv file into the PartsMaintenance table. We were able to filter out the bulk of the data using data retrieval and analysis. Our SELECT DSTINCT function was used to identify unique values in the Reason columns to help understand the different causes for part replacement. The filtering of data using the WHERE and Reason LIKE function filtered the records more with specific conditions. Joining the tables combined that data from the multiple tables we used such as the regions and states into the other sources. Leveraging these specific functions and features we were able to efficiently gather and analyze the data for potential business improvements and readiness.