

## 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.

- **Analyze the data** provided in FleetMaintenanceRecords **to identify themes.**
  - Review part-replacement frequencies and types. Then create a hypothesis that the fleet management team can use to better handle maintenance.
    - Create a table called Parts Maintenance. Put this table in the database named after yourself.
    - 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: \r\n.
    - Answer the following questions and provide supporting screenshots.
      - Which parts are being replaced most often?

- Fule tanks have been replaced the most with 95.

```

mysql> create table PartsMaintenance (
  -> Vehicle_ID VARCHAR(255),
  -> State VARCHAR(255),
  -> Repair VARCHAR(255),
  -> Reason VARCHAR(255),
  -> YEAR INT,
  -> Make VARCHAR(255),
  -> Body_Type VARCHAR(255)
  -> );
Query OK, 0 rows affected (0.46 sec)

mysql> describe PartsMaintenance;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Vehicle_ID | varchar(255) | YES | | NULL | |
| State | varchar(255) | YES | | NULL | |
| Repair | varchar(255) | YES | | NULL | |
| Reason | varchar(255) | YES | | NULL | |
| YEAR | int | YES | | NULL | |
| Make | varchar(255) | YES | | NULL | |
| Body_Type | varchar(255) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> load data infile '/home/codio/workspace/FleetMaintenanceRecords.csv'
  -> into table PartsMaintenance
  -> fields terminated by ','
  -> lines terminated by '\r\n'
  -> ignore 1 rows;
Query OK, 0 rows affected (0.00 sec)
Records: 0 Deleted: 0 Skipped: 0 Warnings: 0

mysql> load data infile '/home/codio/workspace/FleetMaintenanceRecords.csv'
  -> into table PartsMaintenance
  -> fields terminated by ','
  -> lines terminated by '\n'
  -> ignore 1 rows;
Query OK, 805 rows affected (0.22 sec)
Records: 805 Deleted: 0 Skipped: 0 Warnings: 0

mysql> select repair, count(*) as ReplacementCount
  -> from PartsMaintenance
  -> group by Repair
  -> order by ReplacementCount desc;
+-----+-----+
| repair | ReplacementCount |
+-----+-----+
| Fuel tank | 95 |
| Tire repair | 74 |
| Tire replacement | 66 |
| Windshield replacement | 63 |
| Battery replacement | 56 |
| Wheel Arch | 55 |
| Fender replacement | 54 |
| Rocker Panel | 53 |
| Brake line replacement | 52 |
| Struts | 51 |
| Cab corner panel | 49 |
| Shocks | 47 |
| Dent Repair Left Fender | 37 |
| Transmission | 28 |
| Dent Repair Rear | 25 |
+-----+-----+
15 rows in set (0.00 sec)

mysql>

```

- Which region or regions of the country experience more part failures and replacements than others?
  - Identify the region or regions with more reasons for the replacement of parts.
  - Use the Region Definitions sheet to identify states in each region.

-The MidWest region experiences more part failures and replacements than any other region.

The screenshot shows a Codio IDE window with a project named "DAD-220 SQL Lab Environment". The terminal window is active, showing a MySQL prompt. The first query displays a table of parts maintenance records. The second query displays a table of failure counts by state.

part	count
Cab corner panel	49
Shocks	47
Dent Repair Left Fender	37
Transmission	28
Dent Repair Rear	25

15 rows in set (0.00 sec)

```
mysql> select state, count(*) as FailureCount
-> from PartsMaintenance
-> group by State
-> order by FailureCount desc;
```

state	FailureCount
IL	34
IA	32
MI	27
WV	27
OH	27
PA	26
MN	26
VA	26
MO	26
WI	25
IN	25
OK	25
NY	24
CT	24
RI	24
NH	22
MD	22
NJ	22
ME	22
MA	22
DC	22
DE	22
VT	22
AZ	20
SC	14
LA	14
FL	13
TX	11
KS	11
UT	10
TN	10
CO	10
AR	10
ND	9
NE	9
SD	9
MT	8
AL	8
CA	8
NM	7
ID	7
WY	7
WA	6
OR	5
NV	5
NC	5
MS	5
KY	5
GA	5

49 rows in set (0.11 sec)

```
mysql>
```

- How might the fleet maintenance team use the information to update its maintenance schedule?
- The fleet maintenance team can use this information to update its maintenance schedule by prioritizing resources and scheduling preventive maintenance activities in regions with

**higher part failure rates, such as the Midwest. By focusing more on these regions, they can be more efficient and proactive with addressing issues.**

- Which parts are being replaced most often due to corrosion or rust?

- Wheel Arches, fenders and rocker panels are replaced most often due to rust.
- Brake lines and fuel tanks are replaced more often due to corrosion.

```

Codio Project File Edit Find View Tools Education Help Configure... Project Index (static) Configure...
Filetree x
JCASSELLO
DAD-220 SQL Lab Environment
DAD-220 SQL Lab Environment (master)
.settings
.create
.CREATE
.customers.csv
.describe
.FleetMaintenanceRecords.csv
.HRandIS-Employees.csv
.MajorLabActivity4.csv
.mysqlsampledatabase.sql
.orders.csv
.quit
.README.md
.rma.csv
.use
.USE
FleetMaintenance... Terminal x
AZ 20
SC 14
LA 14
FL 13
TX 11
KS 11
UT 10
TN 10
CO 10
AR 10
ND 9
NE 9
SD 9
MT 8
AL 8
CA 8
NM 7
ID 7
WY 7
WA 6
OR 5
NV 5
NC 5
MS 5
KY 5
GA 5
49 rows in set (0.00 sec)

mysql> select Repair, count(*) as ReplacementCount
-> from PartsMaintenance
-> where Reason like '%corrosion%' or Reason like '%rust%'
-> group by Repair
-> order by ReplacementCount desc;
+-----+-----+
| Repair | ReplacementCount |
+-----+-----+
| Wheel Arch | 55 |
| Fender replacement | 54 |
| Rocker Panel | 53 |
| Brake line replacement | 52 |
| Struts | 51 |
| Cab corner panel | 49 |
| Shocks | 47 |
| Fule tank | 46 |
+-----+-----+
8 rows in set (0.00 sec)

mysql> select Repair, Reason, count(*) as ReplacementCount
-> from PartsMaintenance
-> where Reason like '%corrosion%' or Reason like '%rust%'
-> group by Repair, Reason
-> order by ReplacementCount desc;
+-----+-----+-----+
| Repair | Reason | ReplacementCount |
+-----+-----+-----+
| Wheel Arch | Rust | 55 |
| Fender replacement | Rust | 54 |
| Rocker Panel | Rust | 53 |
| Brake line replacement | Corrosion | 52 |
| Struts | Rust | 51 |
| Cab corner panel | Rust | 49 |
| Shocks | Rust | 47 |
| Fule tank | Corrosion | 46 |
+-----+-----+-----+
8 rows in set (0.00 sec)

mysql>

```

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

- The parts being replaced most often are tire repairs, tire replacements, and windshield replacements.

The screenshot shows a Coder IDE interface. On the left is a Filetree for a project named 'DAD-220 SQL Lab Environment'. The main area contains a terminal window with a MySQL prompt. The first query returns an empty set. The second query returns a table with two columns: 'Repair' and 'Reason'.

```
mysql> select * from PartsMaintenance where Repair;
Empty set, 805 warnings (0.01 sec)

mysql> select Repair, Reason
-> from PartsMaintenance;
```

Repair	Reason
Battery replacement	Dead battery
Dent Repair Left Fender	Collision
Battery replacement	Dead battery
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Battery replacement	Dead battery
Windshield replacement	Crack
Dent Repair Rear	Collision
Windshield replacement	Crack
Tire repair	Flat- repairable
Windshield replacement	Crack
Battery replacement	Dead battery
Dent Repair Left Fender	Collision
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Tire replacement	Flat- hole not repairable
Tire replacement	Flat- hole not repairable
Tire replacement	Flat- hole not repairable
Battery replacement	Dead battery
Tire repair	Flat- repairable
Tire repair	Flat- repairable
Windshield replacement	Crack
Tire repair	Flat- repairable
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Battery replacement	Dead battery
Tire repair	Flat- repairable
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Dent Repair Left Fender	Collision
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Tire repair	Flat- repairable
Tire replacement	Flat- hole not repairable
Tire repair	Flat- repairable
Windshield replacement	Crack
Windshield replacement	Crack
Fender replacement	Rust
Windshield replacement	Crack
Dent Repair Left Fender	Collision
Wheel Arch	Rust
Dent Repair Rear	Collision
Dent Repair Left Fender	Collision
Windshield replacement	Crack
Windshield replacement	Crack
Battery replacement	Dead battery
Tire replacement	Flat- hole not repairable
Windshield replacement	Crack
Windshield replacement	Crack
Battery replacement	Dead battery
Tire repair	Flat- repairable
Tire repair	Flat- repairable
Dent Repair Left Fender	Collision
Windshield replacement	Crack
Brake line replacement	Corrosion
Fule tank	Hole
Wheel Arch	Rust

- **Write a brief summary of your analysis** that takes the information from step one and presents it in a way that nontechnical stakeholders can understand. Write your response in paragraph form.
- **After delving into the fleet maintenance records, there are some interesting trends that are worth noting.** Across the different U.S. regions, the Midwest is facing the most part failures and replacements, closely followed by the Northeast. In my research, I found that tire replacements and windshield replacements are the top

reasons for part replacements. It appears to me that the majority of problems could be avoided with better maintenance planning, and allocating more staff and resources to the more impacted regions of the country, which could save time and money.

- **Outline the approach** that you took to conduct the analysis.
  - What queries did you use to identify trends or themes in the data?
  - One of the queries I used helped me figure out which parts are getting replaced the most often. Another one grouped the data by the reasons for these replacements, so I could see the reason in which stuff was breaking down. Also, I utilized queries to analyze which regions had the most maintenance needs. These queries helped me in uncovering patterns and trends with the dataset, facilitating a deeper understanding of maintenance requirements and guiding a more proactive process for stakeholders.
  - 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?
  - Using queries is beneficial because it helped me understand what is happening in the fleet maintenance records in a more efficient way. By analyzing the data, I was able to identify which parts are causing the most trouble and the reason for why they are failing. This information is valuable because it allows the stakeholders to make more informed decisions about maintenance schedules and resource allocation. By using queries, the fleet is able to keep running smoothly, which reduces unforeseen problems and saves time and money.
- **Explain how the functions in the analysis tool (MySQL)** allowed you to organize the data and retrieve records quickly.
- **By using MySQL functions**, it allowed me to have efficient organization and retrieval of data. These functions provided a structured approach to querying databases, enabling me to specify exactly what information I needed. The structured querying process helps to quickly locate relevant data without having to sift through unnecessary information, which saves times and productivity. Overall, the MySQL functions streamline the data analysis process by allowing for fast retrieval of records through the use of queries.