etl 2 pART 4: Visualizing with grafana

Table of Contents

[Overview 2](#_Toc183780210)

[Diagram 2](#_Toc183780211)

[1. Connect MySQL database to Grafana 2](#_Toc183780212)

[2. Products selling below sell price 4](#_Toc183780213)

[3. Products selling above selling price 7](#_Toc183780214)

[4. Best performing regional office 8](#_Toc183780215)

# Overview

The data required to meet the business requirements has been cleaned and moved to the SQL database for user interaction. It is time to answer the business requirements by using visualizations in Grafana.

As a reminder, below is what the business requirements that need to be answered:

* Which products are selling below selling price?
* Which products are selling above selling price?
* Which regional office is performing the best?

# Diagram

A computer and a cloud of information

Description automatically generated with medium confidence

# 1. Connect MySQL database to Grafana

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| Description: Before visualizations can occur, the connection must be set up between Grafana and the database so the data can be pulled from the table where the transformed data sits. |
| 1. In the Linux terminal run the following command:  systemctl start grafana-server    2. Open a web browser and login to Grafana by searching with the following:  http://<IP of local machine>:3000  3. Create a dashboard by clicking the ‘+’ in the top right and selecting New dashboard    4. Click Add Visualization    5. Towards the bottom you’ll find Data source.    In Add data source, MySQL will be selected    Fill out the details needed to make the connection  Host URL = <IP where MySQL is located>:3306  Username = <username that has access to the database>  Password = <password for the user to access the database>    You’ll see a successful login like below |

# 2. Products selling below sell price

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| Description: With the connection from Grafana to the MySQL database established, it’s time to see what visualization can answer the business requirement of: Which products sell below sell price? |
| 1. The first panel to be created for the dashboard will look like the following. In this view, click Add query to begin querying through the data:    A box will present itself with two options of searching the data: Builder (GUI form of query construction) and Code (allows analyst to query via SQL code).    As a preference, the Code option will be used. Run the following SQL query to pull a count of times a product sold below selling price:    Click Run query and the results will be displayed above the query box:    The data has been aggregated, so now it needs a title and to be added to the dashboard. In the right panel, give a title in the title box. After that, click Apply in the top right to add the panel to the dashboard.    Now the panel can be seen in the dashboard: |

# 3. Products selling above selling price

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| Description: Finding products that sold above selling price will be simple. All that needs to be done is to repeat the same steps in Step 2 above with a slight adjustment of the SQL query. |
| 1. Copy the SQL query executed in the previous step, and change the part of the query where ‘WHERE gain\_loss < 0’ is written. To retrieve what sold above selling price, the inverse must be queried. Run the following SQL query:    2. Give the panel a title and add it to the dashboard.    Here the products can be compared to see how many times products sold below or above its selling price. Based off the data presented, the only product that sold above selling price more times than it did below was the GTX Plus Pro. This could be an indicator that this is the best product being sold. |

# 4. Best performing regional office

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| Description: Two of the three business requirements have been answered and only one more remains: Which regional office is performing the best? This can be discovered by seeing which regional office produced the highest gain from sales. |
| 1. Add another visualization and running the following SQL query:    The results are the following:    Based on the results above, it can be seen that although each office lost money, the best regional office was the East. However, tables have already been added to the dashboard. Adding a visual such as a bar graph can enhance perspective.  2. In the top right, click and Visualizations dropdown and select Bar chart    The following chart displays:    3. Add more visual detail to the values by changing the color scheme of each value.  Click Bar chart    Select Horizontal under Orientation    In Color by field, select the sales value    Select Standard options    Select the Red-Yellow-Green (by value) under Color scheme    The following visual is a result. Apply it to the dashboard    4. Below is the final dashboard |