Getting Started with Minitab Solution Center

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1. Introduction to Solution Center workflows

Use the Minitab Solution Center for all your data analytics projects.

The Minitab Solution Center provides the following workflows.

Analytics: Analyze your data in Minitab Statistical Software

After quick preview of your data via the data center or the dashboards, you may notice relationships in variables and trends that you need to further investigate.
Use Minitab Statistical Software to apply modern data analysis techniques for the exploration and modeling of your data.

Brainstorm: Brainstorm creative solutions

The brainstorm tool contains many ways to map out and identify relevant elements of your processes or projects, regardless if they are simple or complex.
Use AI to help generate ideas to improve your brainstorming capabilities.

Data Prep: Clean and prepare your data for analysis

From the Minitab Data Center, you can preview your data and perform necessary data prep steps. You can select from many basic steps to apply to the entire data set or separate columns.
You can save you can save your data prep steps in a data center file to apply to other data sets.

Dashboard: Create and share customized dashboards

Use Minitab Dashboards to monitor and analyze critical metrics through interactive charts, graphs, and other visualizations.

Learn about this guide

Use this tutorial to learn about the most commonly used features and tasks in the Minitab Solution Center.

What's next

Let's get started!

Go to Data set description on page 4 to learn about the example used throughout this tutorial.

2. Data set description

Scenario: A compliance team is concerned about fraud detection accuracy as well as the key drivers that cause fraudulence in the automotive industry.

Download data: Insurance Fraud Data

Worksheet column	Description
claim_number	The claim identifier
age_of_driver	Age of the driver
gender	Gender of the driver: M or F
marital_status	Marriage status of the driver: 0 or 1
safety_rating	Safety rating: 2 - 100
annual_income	Annual income of the driver
high_education	Education status of the driver: 0 or 1
address_change	Address change status of the driver: 0 or 1
property_status	Does the driver own or rent
zip_code	ZIP code
claim_date	The date the claim was made
claim_day_of_week	The day of the week the claim was made
accident_site	The location of the accident: highway, local, parking lot
past_num_of_claims	Total number of previous claims
witness_present	Was a witness present: 0 or 1
liab_prct	The liability percentage: 0 - 100
channel	How claim was initiated: broker, phone, online
police_report	Was a police report filed: 0 or 1
age_of_vehicle	Age, in years, of the vehicle: 0 -14
vehicle_category	The type of vehicle: compact, large, medium
vehicle_price	The price of the vehicle
vehicle_color	The color of the vehicle
total_claim	Total claim amount in dollars
injury_claim	Injury claim amount in dollars
policy deductible	The amount in dollars of the policy deductible
annual premium	The annual policy premium
days open	Number of days claim is open
form defects	Number of errors on form: 0 to 13
fraud reported	Whether fraud was reported: Y or N

What's next

Learn how to prep your data in the Minitab Data Center.

Go to Example of prepping data on page 6.

3. Example of prepping data

Data prep steps

In this example, a compliance team is concerned about fraud detection accuracy in the automotive industry; however, the data need prep before analysis can begin. Follow these steps to prepare *insurance_fraud_data.csv* for further analysis. To make these modifications, select the column and open **Data Prep Options** to access the column cleanup options.

1. Open Insurance Fraud Data in the Minitab Data Center.
2. For claim_number, change the data type from numeric to text.
3. For claim_number, prepend # to the column values.
4. For age_of_driver, filter to only include drivers that are less than or equal to 100 years old.
5. In gender, change *M* to *male* and *F* to *female*.
6. For annual_income, filter to only include drivers that make more than 1.
7. For address_change, change the data type from numeric to text.
8. In address_change, change *1* to *yes* and *0* to *no*.
9. For zip code, change the data type from numeric to text.
10. Use **Advanced Sort** to sort by fraud, injury claim, and ZIP code.

Export data prep steps

After you apply all the prep steps, save the steps to use for future data sets with the same columns. To save the steps, export them as a .mdcs file.

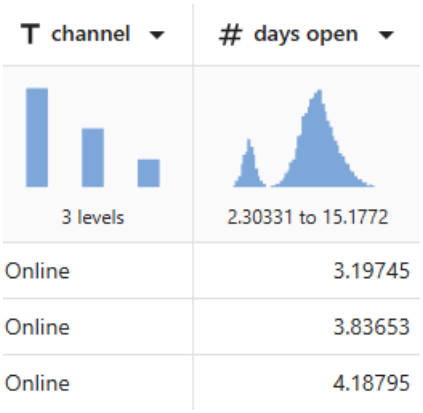
1. In the Steps pane, select **Export Steps** from the dropdown menu.
2. The file is saved to your downloads folder or other save location and uses the same name as your data file. Change the name accordingly.

Import data prep steps

To apply the steps to a new data file, import them as a .mdcs file. Select **Import Steps** from the dropdown menu in the **Steps** pane.

Explore data summaries

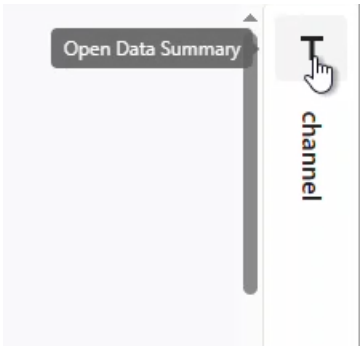
Each column has a summary that shows the shape of the data, the range of the data, and an icon that represents the data type.



channel	days open
3 levels	2.30331 to 15.1772
Online	3.19745
Online	3.83653
Online	4.18795

A quick look at the column graphical summaries show that **channel** has 3 levels and **days open** shows a bimodal distribution.

Open the **Data Summary** to get more information on the summary statistics on these columns.



channel

Name	**channel**
Data Type	**Text**
Rows	**11989**
Distinct Values	**3**

Distinct Values

Value	Frequency
Broker	6361
Phone	3839
Online	1789

The data summary for **channel** shows the frequency for each of the 3 levels.

What's next

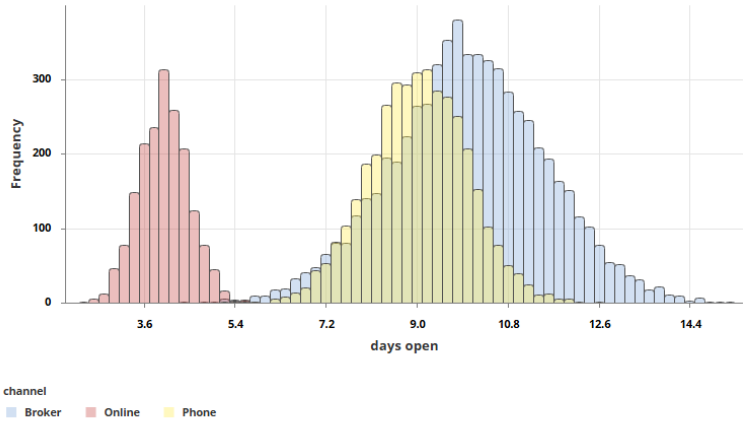
Because the data for **days open** indicate two distributions, the insurance company wants to look at this further. Go to Example of analyzing data on page 8.

4. Example of analyzing data

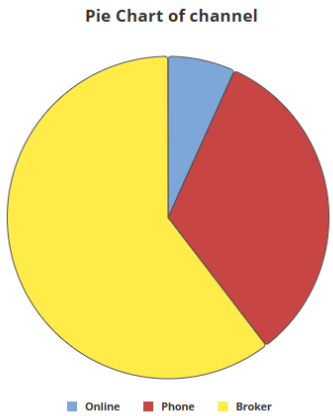
Use the Graph Builder to visualize your data

This example uses the prepped data set from the Example of prepping data on page 6. Complete the following steps to explore data with the Graph Builder.

1. From Minitab Solution Center Data Prep, select **Open in** > **New Minitab Project**.
2. Choose **Graph** > **Graph Builder**.
3. In **Continuous variables**, select *days open*.
4. In **Gallery**, use the gallery scroll bar to visualize the data in different graph types. For this example, we create a histogram and a pie chart.
5. Select **Create**.



This histogram shows the three distinct distributions by channel.

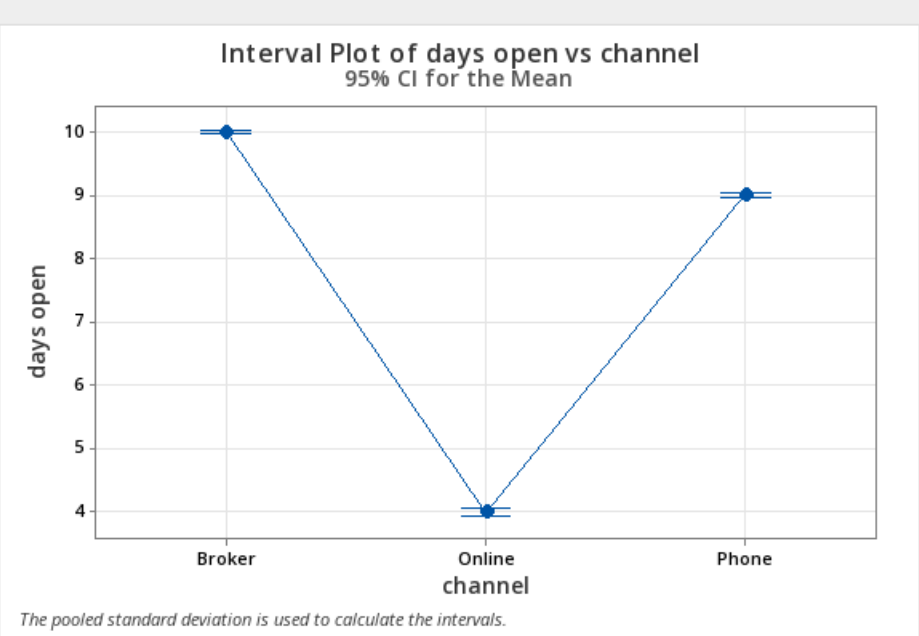


This pie chart shows the percentages of the three channel types.

Use One-Way ANOVA to determine differences

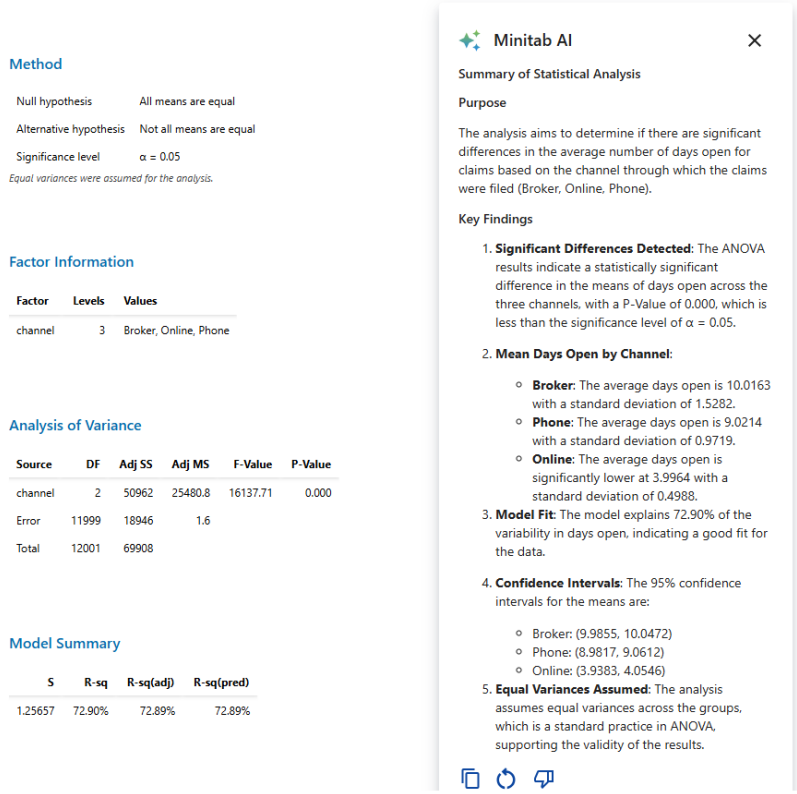
From the graphical visualizations, there appears to be a difference in the amount of time it takes to close a claim that depends on the channel. To statistically test this difference, the insurance company performs a one-way ANOVA test.

1. Choose **Stat** > **ANOVA** > **One-Way**.
2. From the dropdown, select **Response data are in one column for all factor levels**.
3. In **Response**, enter *days open*.
4. In **Factor**, enter *channel*.
5. Click **OK**.



Generate AI interpretation of results

Use Minitab AI to evaluate your results. Simply select the Minitab AI button , and your tables are transformed into clear, easy-to-understand natural language summaries. Minitab does not use or save any user input or AI-generated output.



Method

Null hypothesis	All means are equal
Alternative hypothesis	Not all means are equal
Significance level	α = 0.05

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
channel	3	Broker, Online, Phone

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
channel	2	50962	25480.8	16137.71	0.000
Error	11999	18946	1.6		
Total	12001	69908			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.25657	72.90%	72.89%	72.89%

Minitab AI

Summary of Statistical Analysis

Purpose

The analysis aims to determine if there are significant differences in the average number of days open for claims based on the channel through which the claims were filed (Broker, Online, Phone).

Key Findings

1. **Significant Differences Detected**: The ANOVA results indicate a statistically significant difference in the means of days open across the three channels, with a P-Value of 0.000, which is less than the significance level of α = 0.05.
2. **Mean Days Open by Channel**:
   - **Broker**: The average days open is 10.0163 with a standard deviation of 1.5282.
   - **Phone**: The average days open is 9.0214 with a standard deviation of 0.9719.
   - **Online**: The average days open is significantly lower at 3.9964 with a standard deviation of 0.4988.
3. **Model Fit**: The model explains 72.90% of the variability in days open, indicating a good fit for the data.
4. **Confidence Intervals**: The 95% confidence intervals for the means are:
   - Broker: (9.9855, 10.0472)
   - Phone: (8.9817, 9.0612)
   - Online: (3.9383, 4.0546)
5. **Equal Variances Assumed**: The analysis assumes equal variances across the groups, which is a standard practice in ANOVA, supporting the validity of the results.

Important: AI technology may make mistakes, it is the user's responsibility to ensure the output is accurate, appropriate, and meets your organization's standards, expectations, and requirements.

What's next

Because there is a significant difference between channels, the team wants to explore how to open more claims online versus through a broker or over the phone. Go to Example of brainstorming ideas on page 11.

5. Example of brainstorming ideas

Choose your brainstorm tool

All brainstorming tools encourage creative thinking for identifying new ideas and solving problems. The Minitab Brainstorm tool offers several different ways to organize your ideas.

- Fishbone (Cause and Effect)
- Man Machine Materials
- CT Tree
- Mind Map
- Idea Map
- 4S
- 8P

Generate a brainstorm list

In a fishbone, an idea map, CT tree, or mind map, you can quickly generate a brainstorm list by typing items in the task pane, or by importing variables from other tools in your project.

You can also use Minitab AI to generate ideas. To generate more precise results, enter a custom prompt. Minitab does not use or save any user input or AI-generated output.

Important: AI technology may make mistakes, it is the user's responsibility to ensure the output is accurate, appropriate, and meets your organization's standards, expectations, and requirements.

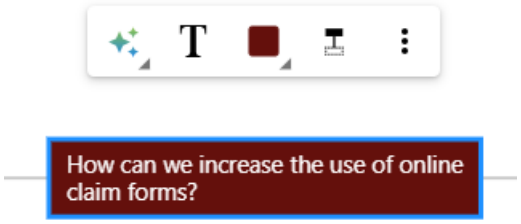
Use AI to generate affinities for an idea map

In this example, a quality improvement team would like to brainstorm ideas to increase the proportion of online claim requests. Currently, claims are accepted over the phone and online and it is faster and more accurate to submit online claim requests. The team decides to quickly generate brainstorm ideas using Minitab AI.

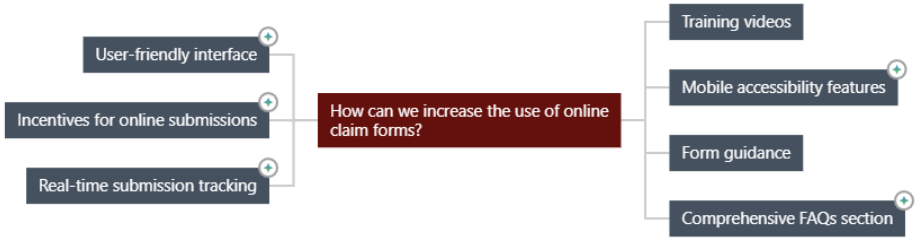
1. From Minitab Solution Center Home, select **Brainstorm**.
2. Select **Idea Map**.

3. In Central Question, replace the text with *How can we increase the use of online claim forms?*

4. Select the central question of the idea map to access the context menu. Then open **AI Options**.



5. Select **AI Custom Prompt** and enter the question you want to generate ideas for. For example, *How can we increase the use of online claim forms?*
6. Select **Generate**.
7. Review the results, then drag the new nodes to arrange the diagram as needed. You can rename nodes or add and delete nodes to customize your idea map.

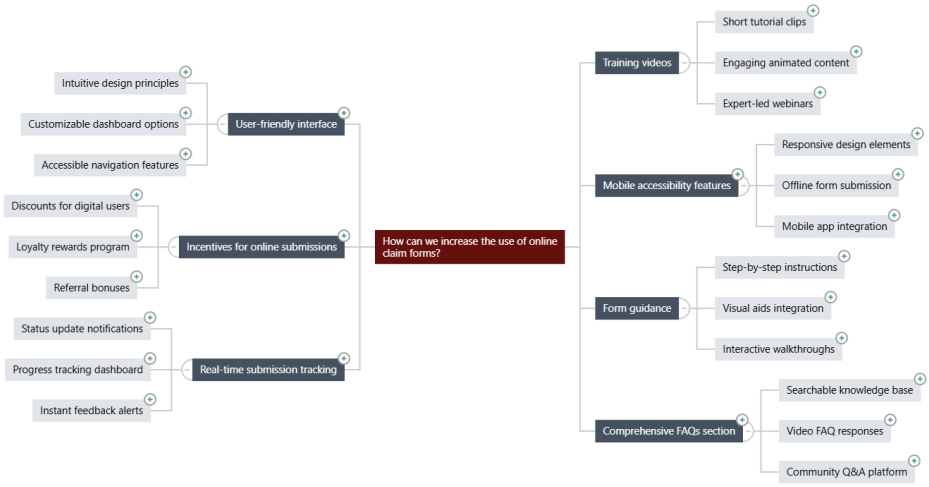


All nodes that were generated by Minitab AI have a symbol on them. Nodes that were added or modified by the user do not have the symbol.

Use AI to generate ideas for each affinity

In this example, we use AI to generate ideas for each affinity.

1. Select each node (affinity) to add ideas to. Then open **AI Options**.
2. Select **AI Quick Generate**.
3. Review the results, then drag the new nodes to arrange the diagram as needed. You can rename nodes or add and delete nodes to customize your idea map.



Customize the appearance of your brainstorm

Minitab Brainstorm offers countless ways to customize your brainstorm diagrams. Complete the following steps to customize the AI generated idea map from the previous section.

1. Open the **Idea Map** options on the right side of the canvas.
2. Select **Title** and enter a title such as *Online Claim Form Ideas*.
3. Brainstorm, change the type to **Mind Map**.
4. In Density, select **Compact**.
5. Right-click a node and select **Priority** to assign priorities to various affinities and ideas.

There are many other ways to format your maps to communicate improvement ideas.

What's next

Use the dashboard to visualize important metrics.

Go to Example of creating a dashboard on page 15.

6. Example of creating a dashboard

Create assets for your dashboard

This example uses the prepped data set from the Example of prepping data on page 6. Complete the following steps to create a dashboard that you can quickly monitor key metrics.

Follow these steps to create a **U Chart**.

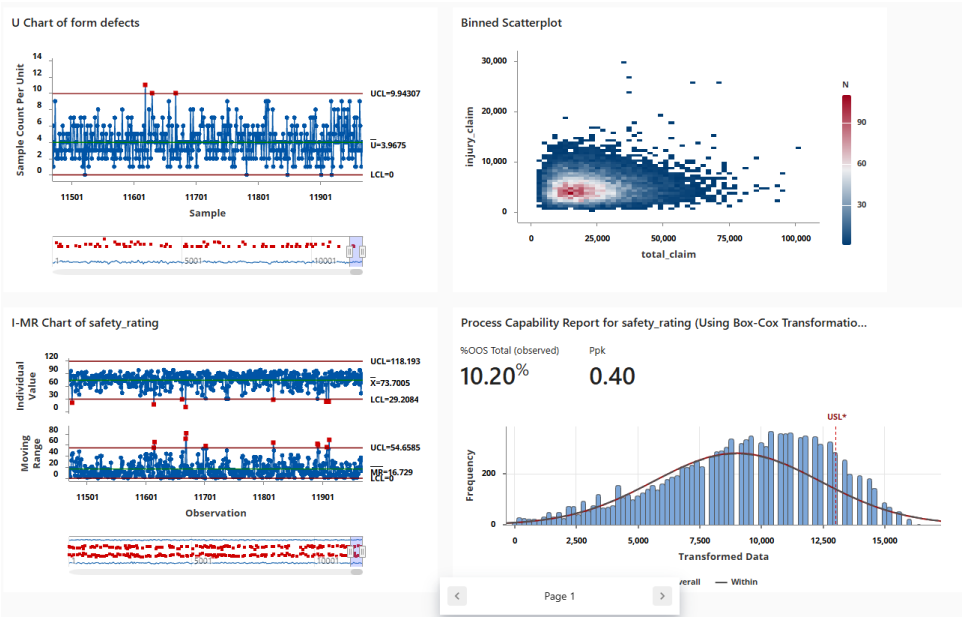
1. From Minitab Solution Center Data Prep, select **Open in** > **New Dashboard**.
2. From the left pane, open **Assets**.
3. Under **Process Quality**, select **U Chart**.
4. Open the data set that contains the data for the asset.
5. In **Variable**, enter *form defects*.
6. In **Subgroup size**, enter *1*.
7. Select **OK**.

Follow these steps to create a **Nonnormal Capability**.

1. Under **Process Quality**, select **Normal Capability**.
2. Open the data set that contains the data for the asset.
3. In **Data column**, enter *safety_rating*.
4. In **Subgroup size**, enter *1*.
5. In **Upper spec**, enter *90*.
6. Select **Transform**. Select **Box-Cox transformation**.
7. Select **OK** in each dialog.

Rearrange assets

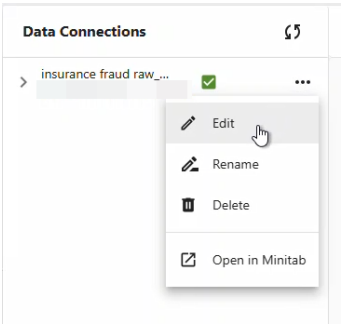
You can arrange the assets on the dashboard canvas to find the best way to display your visualizations. Your dashboard can include multiple pages.



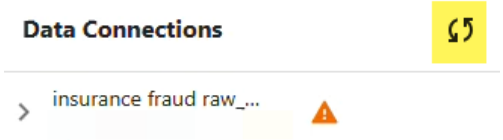
Sync data after a new data prep step

In the previous step, we created a dashboard to monitor key metrics. The improvement team decided that some of the safety ratings may be incorrect, so they want to apply a filter to remove safety ratings that are less than 25.

1. From the **Data Connections** pane, select **Edit** to add the data prep step in the Data Center.



2. Select the *safety_rating* column and open **Data Prep Options**.
3. Select **Filter Rows** and enter *safety_rating, greater than or equal to, 25*, then select **OK**.
4. To sync the data connection, do one of the following:
   - From the Data Center, use the dropdown menu to save changes or discard changes to resync the data connection.
   - Select the **Refresh** icon to update the data from the Dashboard.



Minitab® Our mission is to help people discover valuable insights in their data.

Minitab helps companies and institutions to spot trends, solve problems and discover valuable insights in data by delivering a comprehensive and best-in-class suite of data analysis and process improvement tools. Combined with unparalleled ease-of-use, Minitab makes it simpler than ever to get deep insights from data. Plus, a team of highly trained data analytic experts ensure that users get the most out of their analysis, enabling them to make better, faster and more accurate decisions.

For nearly 50 years, Minitab has helped organizations drive cost containment, enhance quality, boost customer satisfaction and increase effectiveness. Thousands of businesses and institutions worldwide use our products to uncover flaws in their processes and improve them. Unlock the value of your data with Minitab.

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