

Your Data, Your Rules:

Tailoring application metrics with Micrometer

by Susanne Pieterse



Why custom metrics?

“just use a counter”



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Your friend: Spring Boot Actuator

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-actuator</artifactId>
</dependency>
```

```
management.endpoints.web.exposure.include=metrics
```

Code example: Pastry Shop

github.com/Sus4nne/custommetrics.git

Add a MeterRegistry bean



```
@Configuration  
public class MeterRegistryConfig {  
  
    @Bean  
    public MeterRegistry getMeterRegistry() {  
        return new CompositeMeterRegistry();  
    }  
}
```

Inject the MeterRegistry in your class



```
● ● ●  
@Service  
public class PastryService {  
    public PastryService(CompositeMeterRegistry meterRegistry) {  
    }  
}
```

Counter or gauge?



Place the Counter



```
● ● ●

@Service
public class PastryService {

    private final Counter pastryItemCounter;
    private final Counter pastryOrderCounter;

    public PastryService (CompositeMeterRegistry meterRegistry) {
        pastryItemCounter = meterRegistry.counter("pastry.amount.items");
        pastryOrderCounter = meterRegistry.counter("pastry.amount.orders");
    }

    public String orderPastry(int amount) {
        pastryOrderCounter.increment();
        pastryItemCounter.increment(amount);
        return String.format("Thank you for ordering %s pastries!", amount);
    }
}
```

View your metric in a browser



The screenshot shows a browser window with the URL `localhost:8080/actuator/metrics/pastry.amount.items` in the address bar. The page content is a JSON object:

```
name: "pastry.amount.items"
measurements:
  0:
    statistic: "COUNT"
    value: 28
availableTags: []
```

The JSON object is highlighted with a green box. The value `28` under the `value` key is also highlighted with a green box.



Observe your metrics

[@Susivic](http://susannepieterse.nl)

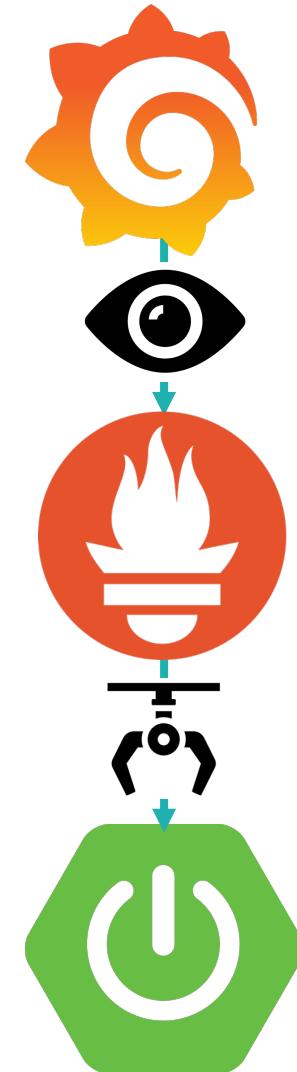
Picture: ESA/J.Mai

Add Prometheus & Grafana

⚠ Metrics are not persistent in Spring Boot

Prometheus: aggregate metrics

Grafana: visualize data in Prometheus



Add Prometheus dependency



```
<dependency>
  <groupId>io.micrometer</groupId>
  <artifactId>micrometer-registry-prometheus</artifactId>
  <scope>runtime</scope>
</dependency>
```

```
management.endpoints.web.exposure.include=metrics,prometheus
```

Connect Grafana to Prometheus



The screenshot shows the 'Add data source' screen in Grafana. On the left, there's a sidebar with 'DATA SOURCES' and a button 'Add your first data source'. The main area has a search bar 'Q. Filter by name or type' and a section for 'Time series databases'. A box highlights the 'Prometheus' option, which is described as an 'Open source time series database & alerting' system. There's also a 'Core' button next to it. A 'Learn more' link is visible on the right.

The screenshot shows the 'Edit data source' screen for 'Prometheus'. It includes fields for 'Name' (set to 'Prometheus'), 'HTTP' settings (with 'Prometheus server URL' set to 'http://prometheus:9090'), and 'Timeout' (set to 'Timeout in seconds'). To the right, there's a sidebar with various links like 'Dev Environments', 'Docker Scout', and 'Learning Center'. A 'Extensions' section lists 'custommetrics' and 'prometheus-1' (with a commit hash 'c8e17049d2c5'). A 'Search' bar is also present.

View your metrics in Grafana dashboard



DASHBOARDS

Create your first dashboard

Learn how in the docs ↗

Start your new dashboard by adding a visualization

Select a data source and then query and visualize your data with charts, stats and tables or create lists, markdowns and other widgets.

+ Add visualization

Select data source

Search data source

Prometheus default

Prometheus

View your metrics in Grafana dashboard



Query 1 Transform 0 Alert 0

Kick start your query Explain

Metric Label filters

Select metric logback_events_total

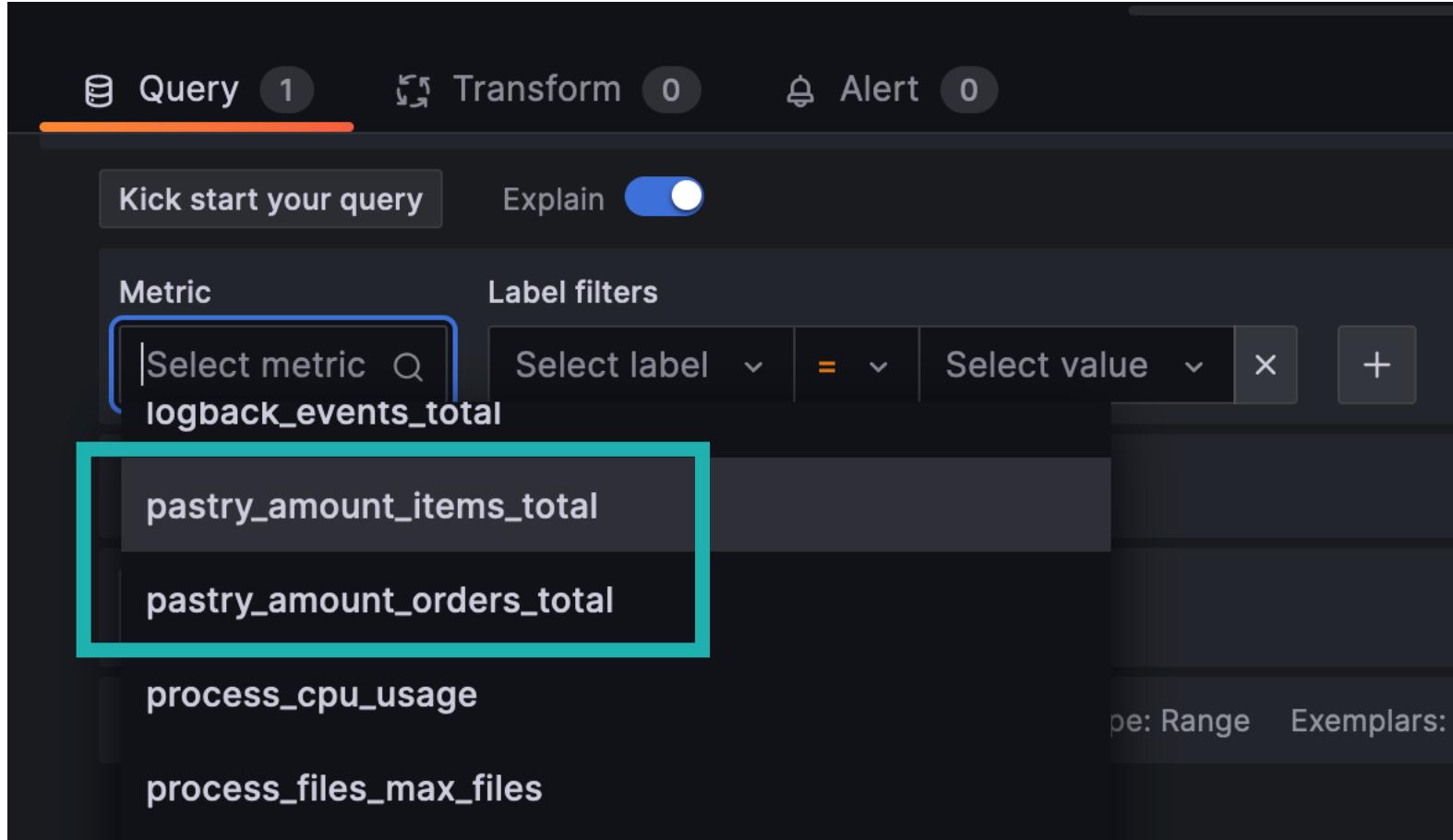
pastry_amount_items_total

pastry_amount_orders_total

process_cpu_usage

process_files_max_files

Time range: Range Exemplars: f



Search for...

Visualizations Suggestions Library panels

Time series
Time based line, area and bar charts

Bar chart
Categorical charts with group support

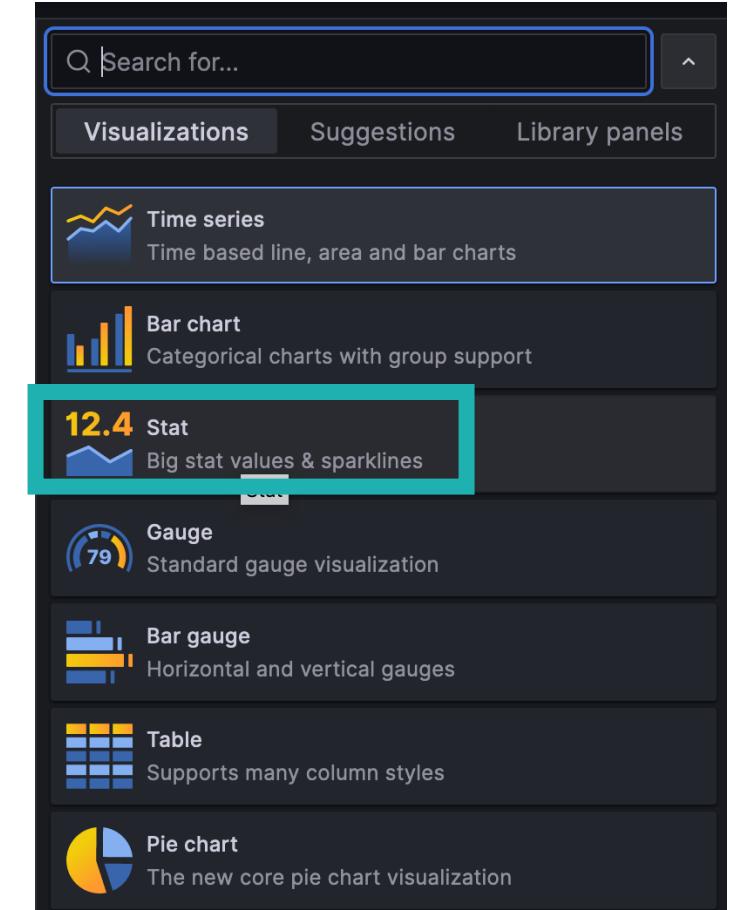
12.4 Stat
Big stat values & sparklines

Gauge
Standard gauge visualization

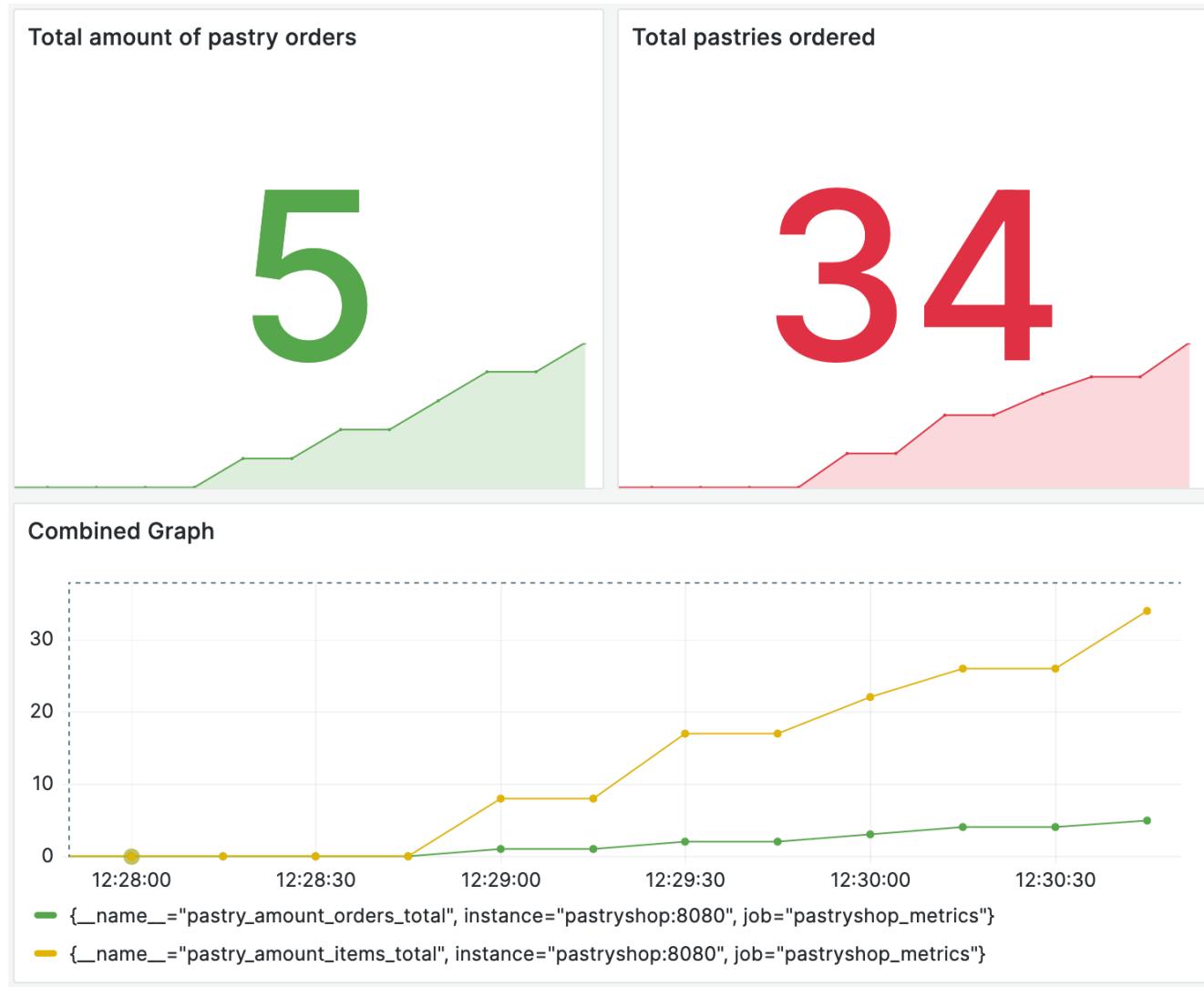
Bar gauge
Horizontal and vertical gauges

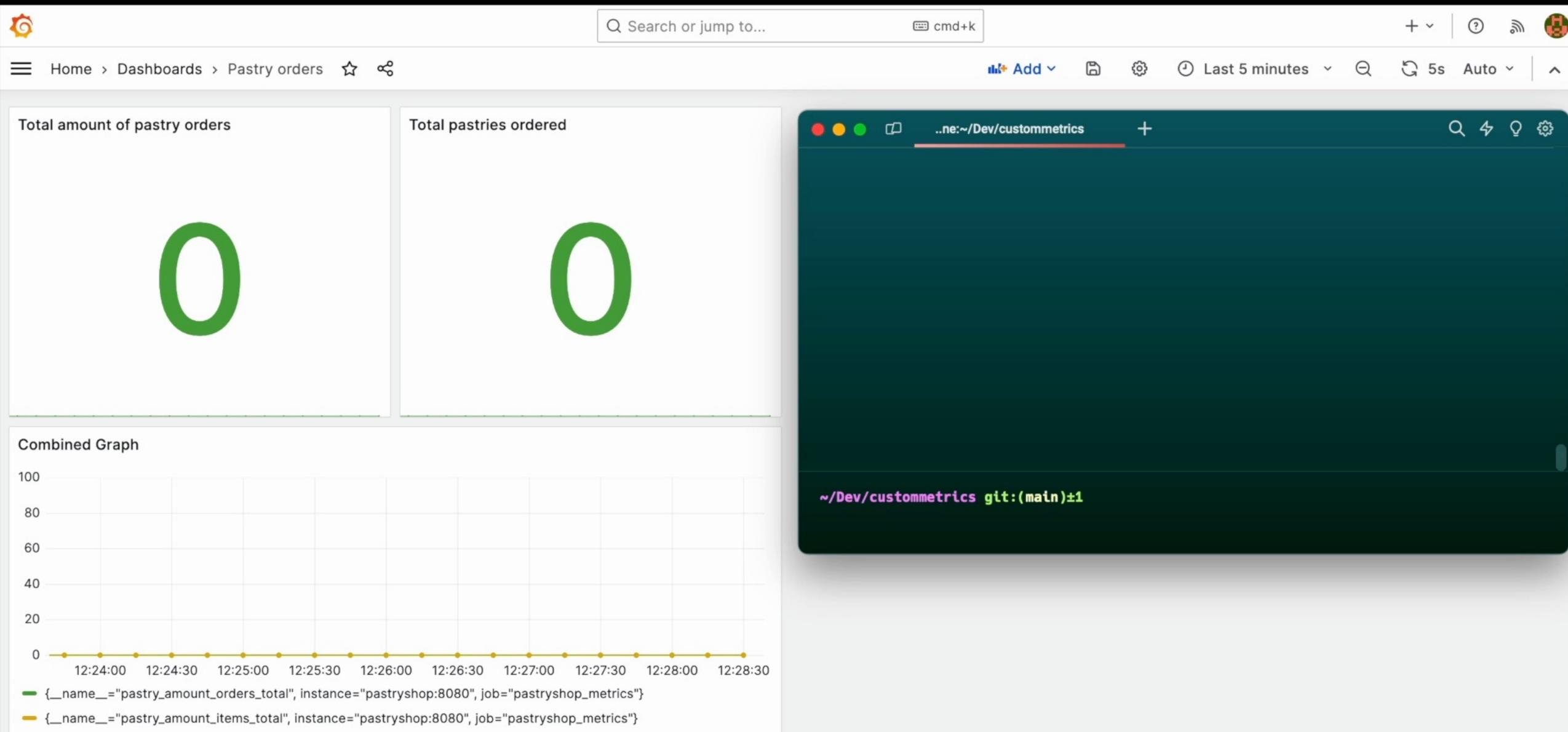
Table
Supports many column styles

Pie chart
The new core pie chart visualization



View your metrics in Grafana dashboard







Make it so!



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github.com/Sus4nne/custommetrics.git