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📐 TRAMECALC Metalanguage — Specification

The TRAMECALC Metalanguage is a lightweight, text-based language designed for structured engineering calculations. It integrates user input, symbolic/numeric computation (via Octave), and high-quality mathematical rendering using Maxima and MathJax.

🧩 General Concept

A TRAMECALC file defines:

Input parameters

Mathematical expressions

Execution logic (via Octave)

Structured report output (HTML)

The language is interpreted within an Octave environment, where all variables become globally accessible.

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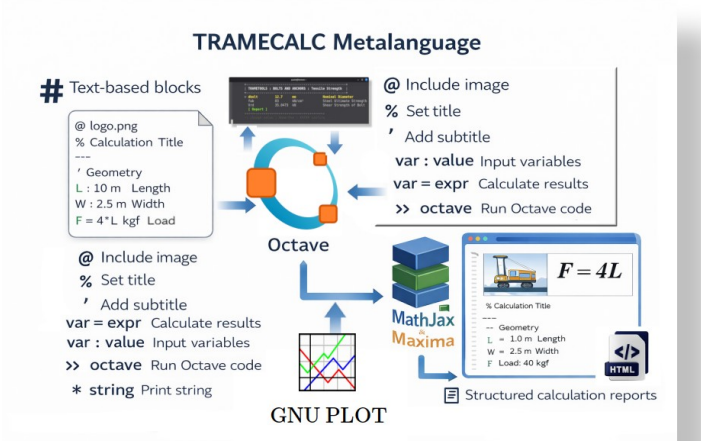

📝 Syntax Overview

💬 Comments (Hashbang style)

```
# This is a comment
```
Used for documentation and ignored during execution.

🖼️ Image Inclusion

```
@ logo.png
```
Displays an image located in the calculation folder within the HTML report.

🏷️ Title

```
% Title of the calculation
```
Defines the main title of the report.

➖ Horizontal Line

```
---
```

Inserts a horizontal separator in the HTML report.

🔹 **Subtitle**

```
' Subtitle
```
Adds a subsection title, following the logical sequence of the calculation.

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🔢 Variable Definitions

✔️ Input Variable

```
var : value unit description
```

Defines an initial value for a variable
The user will be prompted (via TUI) to confirm or modify this value at runtime

Example:

```
L : 5 m Beam length
```

✔️ Calculated Variable

```
var : expression unit descriptio
```

Evaluates a mathematical expression
Stores the result in var
The expression is rendered in the HTML report using Maxima + MathJax

Example:

```
A = b*h cm2 Cross-sectional area
```

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⚙️ HTML Integration

✔️ Inline Execution

<> < HTML code >

Executes inline HTML code.

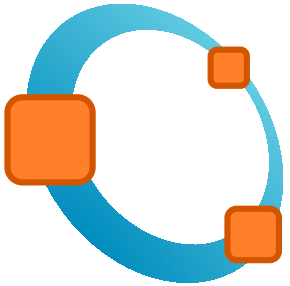
Your code is written in the HTML report.

Example:

<> <img src=”https://site.com/myimage.png”>

⚙️ Octave Integration

✔️ Inline Execution



>> (octave_command)

Executes inline Octave code.

Runs inside the same session.

All variables are global.

Can define functions, intermediate values, etc.

Example:

>> I = b*h^3/12;

🧵 String Output

✔️ Print String Variable

* string_variable

Outputs the content of a string variable into the HTML report.

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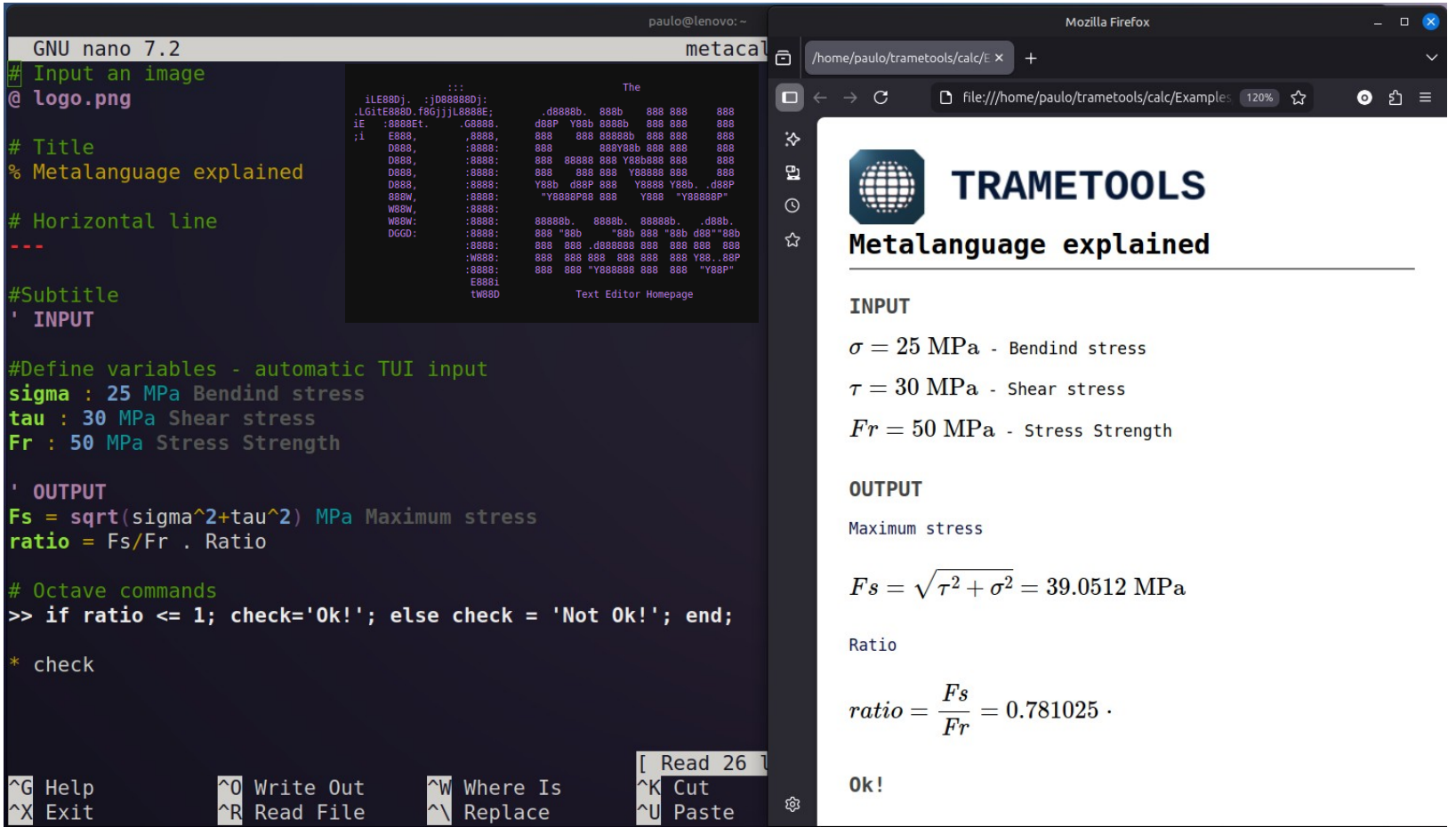
Editing the calc file on the Nano editor.



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🔄 Execution Model

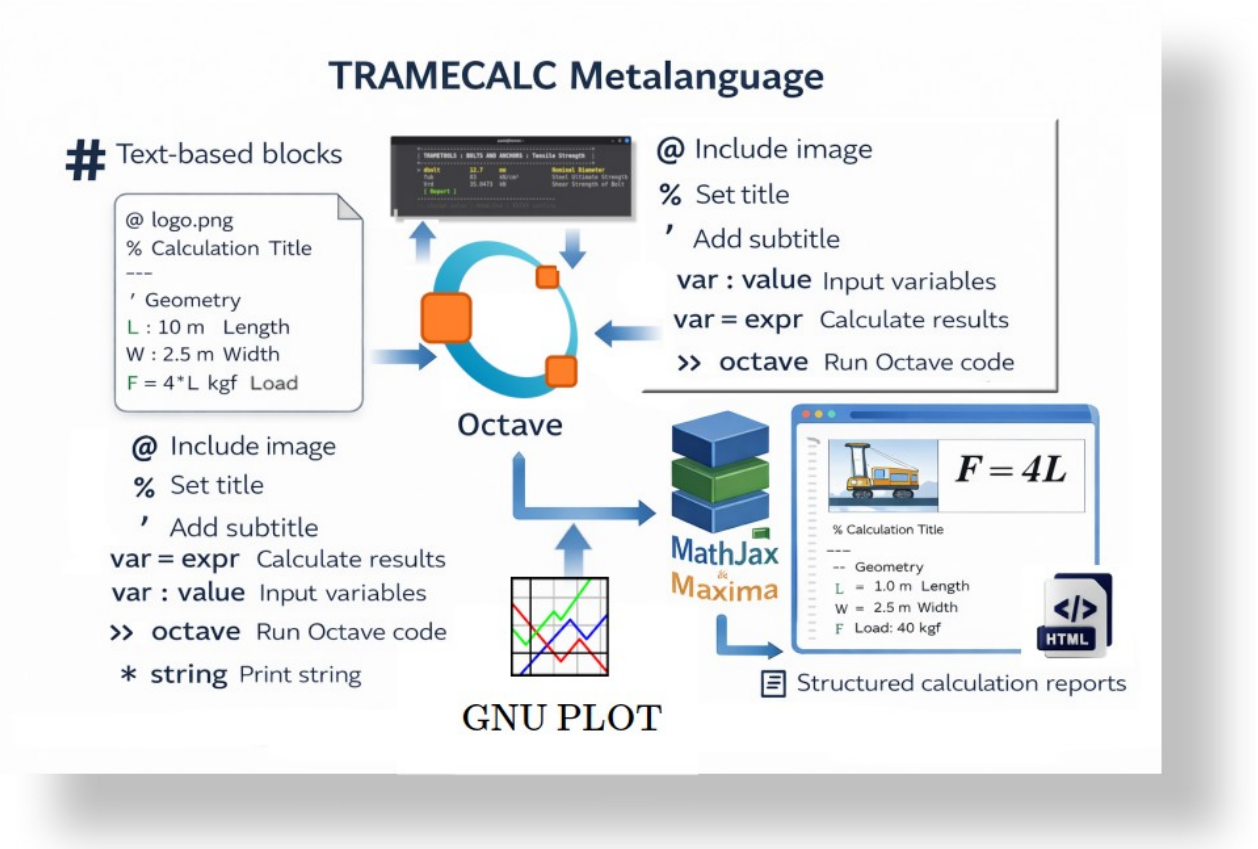
The file is parsed sequentially

Variables are defined or computed

Octave executes embedded commands

Expressions are processed via Maxima

Final output is rendered in HTML using MathJax for equations and GNUPlot for graphics.



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Thank You !