

# Test Mate – C4 Documentation

## 1. System Context

**Test Mate** is a minimal proof-of-concept (MVP) that allows users to automatically generate unit tests for Python code with the help of a Large Language Model (LLM).

- **User** interacts with the system via a web interface.
- The system integrates a frontend, backend, and external LLM API.

## 2. Containers

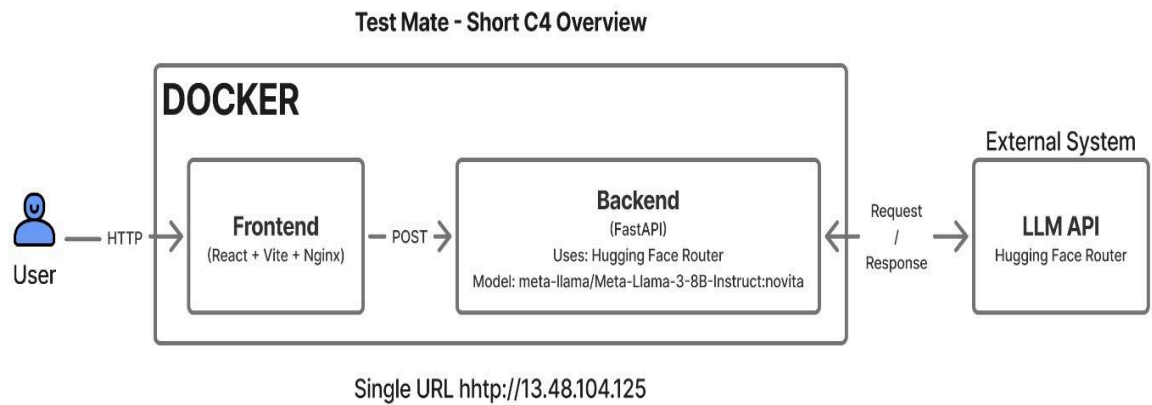
The system is composed of the following containers:

- **Frontend (React + Vite + Nginx)**  
Provides the user interface for pasting code and retrieving generated unit tests.  
Nginx serves as a reverse proxy.
- **Backend (FastAPI)**  
Handles requests from the frontend and communicates with the Hugging Face Router.  
Uses the model **Meta-Llama-3-8B-Instruct:novita** for test generation.
- **LLM API (Hugging Face Router)**  
External service that receives prompts from the backend and returns generated tests.
- **Docker Compose**  
Orchestrates and connects the frontend and backend containers

## 3. Interactions

1. User sends code through the **Frontend** (HTTP).
2. Frontend sends a **POST /generate-test** request to the **Backend**.
3. Backend sends an **LLM request** to the **Hugging Face Router** and receives the response.
4. The generated tests are returned to the user via the frontend.

## 4. Diagram



## 5. Summary

This short C4 documentation provides a high-level overview of the Test Mate system, its main containers, and their interactions. The focus is on illustrating the minimal architecture used to orchestrate frontend, backend, and LLM-based test generation.