# Distributed Systems Challenge

## Pastebin

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# Project description

You all know the requirements (Dockerized, Frontend, Backend, Scheduled Task, Persistence…)

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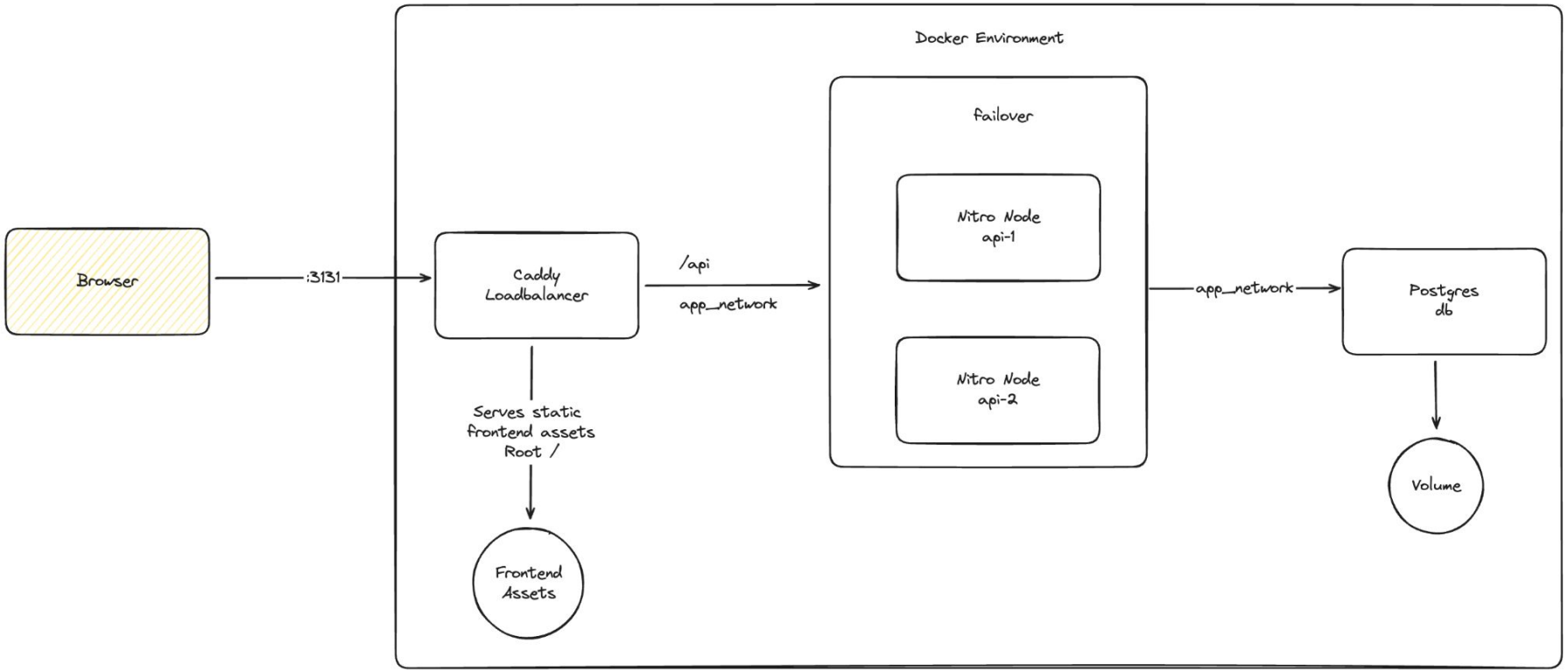
Extremely simple code - focus on distributed infrastructure

React Vite Frontend, Nitro Node.js Backend, Postgres, Caddy

Orchestrated with Docker Compose

# Architecture



# Architecture

Caddy load balancer terminates all incoming connections

The path /api is proxied to the backend instances through the Docker internal network

Everything else is served by the frontend, which is a React app that is compiled into static assets at build time

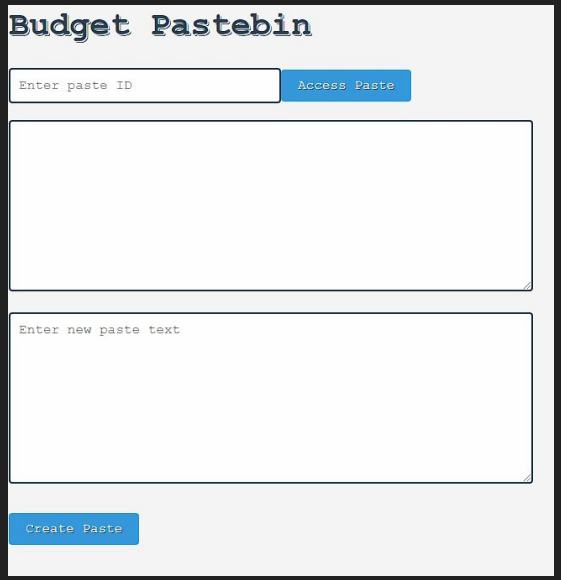
The API is a Nitro Node.js app that is connected to a Postgres database with failover enabled

The Postgres Database has a Volume to persist data

# Frontend

React App served by Caddy

Built using Vite



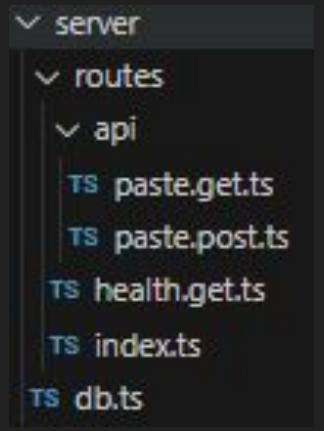

# Backend

Multiple instances

Routed through Caddy

Rest API

Node.js & Nitro



# Load Balancing

Caddy!

All incoming connections go through Caddy

Reverse Proxy, sends /api traffic to backend

    CORS is not an issue

Load Balancing through Round Robin

Health checks every 5s

```
reverse_proxy /api/* api-0:3000 api-1:3000 {

    lb_policy round_robin

    lb_retries 2
    fail_duration 10s

    health_uri /health
    health_interval 5s
    health_timeout 2s
    health_status 2xx
}
```

# Database

Postgres

Database and both backend instances get credentials from .env

Data persisted through Docker volume

Script to create tables on startup (IF NOT EXIST)

```
CREATE TABLE IF NOT EXISTS pastes (
    id SERIAL PRIMARY KEY,
    paste TEXT NOT NULL,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

# Scheduled Task

Cron running in container

Deleting ‘Pastes’ that are older than two days

Writes to log file

```
DELETE FROM pastes WHERE created_at < now() - interval '2 days';
```

# Live Demo