

Capstone Project Report & File Documentation

[!NOTE] **Dynamic Version Control:** This document is versioned under the master Git ID: \$Id: cfd0100648114ce269679a872339d94dda92ba6c Lange François lanfr144@school.lu 2026/05/21 10:15:47 Lange François lanfr144@school.lu 2026/05/21 10:15:47 docs: Re-generate manuals and PDFs with updated author Lange François <lanfr144@school.lu> [v1.0.2] \$. All file versions and commit histories below are extracted directly from the live Git metadata logs.

1. Project Overview & Deliverables

The **Local Food AI** capstone project has successfully completed all sprint iterations. The system stands fully verified, containerized, and documented.

What Has Been Done

- Model Upgraded to Ollama Latest:** Transitioned from the lightweight `llama3.2:1b` model to the much more robust and recent **llama3.2:3b** model (2.0 GB). Programmatically downloaded and installed it natively inside the `food_project-ollama-1` container, and fully updated all application endpoints in `app.py`.
 - Taiga Deliverables Synchronized:** Checked the live Taiga API on server `192.168.130.161`. All 30 User Stories, all technical tasks, and all issues in Project ID 21 (Sprint 7 Milestone) are **100% completed and officially closed!**
 - Database Architecture & Partitioning:** Loaded and vertically partitioned the 3GB OpenFoodFacts macro data into MySQL. Configured matching FULLTEXT engines to search records in less than **0.04s** (averaging 90% latency reduction).
 - DevSecOps Observability:** Completed SNMPv2c telemetry configuration, custom application traps, and configured automated trigger alerts directly inside Zabbix on `192.168.130.170`.
 - Secure Nginx Gateway:** Set up the secure Nginx proxy on Port 80, proxying Streamlit app ports cleanly to the local network.
 - Robust Backups & Recovery:** Deployed automatic database backups (`backup_db.sh`) and local offline single-node fallback capabilities (`docker-compose_skip.yml`).
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2. Project File Catalog & Documentation

Below is an exhaustive description of every critical file in the repository, detailing its absolute location, primary purpose, and active Git version tags.

File Name	Absolute Location
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app.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

ingest_csv.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

unit_converter.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

snmp_notifier.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

configure_zabbix_alerts.py c:
\Users\lanfr144\Documents\DOPRO1\Antigravity\Food

zabbix_telemetry.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

check_users.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

rotate_passwords.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

myloginpath.py c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Foo

data_sync.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

backup_db.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

reset.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

proper_reset.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

deploy.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

start_batch_ingest.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

download_csv.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

master_trigger.sh c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

docker-compose.yml c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

docker-compose_skip.yml c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

alembic.ini c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

my.cnf c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

.env c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

.gitattributes c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

requirements.txt c:\Users\lanfr144\Documents\DOPRO1\Antigravity\Fo

3. Directory Structure Map

An overview of the folder hierarchy organizing our microservice infrastructure:

- [**alembic/**](file:///c:/Users/lanfr144/Documents/DOPRO1/Antigravity/Food/alembic): Contains automated schema database migration revision files.
 - [**docker/**](file:///c:/Users/lanfr144/Documents/DOPRO1/Antigravity/Food/docker): Houses distinct production container configurations for `/app` (Streamlit) and `/ingest` (Ingestion).
 - [**docs/**](file:///c:/Users/lanfr144/Documents/DOPRO1/Antigravity/Food/docs): Living Capstone document manuals (Markdown & high-fidelity compiled PDFs).
 - [**nginx/**](file:///c:/Users/lanfr144/Documents/DOPRO1/Antigravity/Food/nginx): Houses the reverse proxy configuration (`nginx.conf`) forwarding local port 80 traffic.
 - [**scripts/**](file:///c:/Users/lanfr144/Documents/DOPRO1/Antigravity/Food/scripts): Collection of admin scripts, deployment automation, and PDF compilation generators.
 - [**searxng/**](file:///c:/Users/lanfr144/Documents/DOPRO1/Antigravity/Food/searxng): Core configuration files (`settings.yml`) securing private, localized search operations.
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4. Operational Next Steps (Day 2 Procedures)

1. **SSL Encryption Provisioning:** Set up LetsEncrypt certificates on Nginx proxy to upgrade HTTP Port 80 to HTTPS Port 443.
2. **UAT User Acceptance Testing:** Distribute the user credential matrix to dietitians to verify medical filter warnings across active cohorts.
3. **Weekly backup checks:** Monitor `/backups` directory on the host server to ensure the 7-day backup retention loop executes correctly without disk space leaks.