

GO Tracker – Project Documentation

1) Overview

??? Student performance dashboard aggregating coding progress across LeetCode, CodeChef, Codeforces, GitHub, and Codolio.

??? Stack: React 18 + Vite + Tailwind + Shadcn/ui (frontend), Node.js + Express + MongoDB + JWT (backend), Python scrapers (requests/BeautifulSoup/Selenium, plus platform APIs).

??? Roles: Student, Staff, Admin/Owner with tailored dashboards.

2) Key Features

??? Multi-platform stats (ratings, problems solved, contests, repos, streaks, badges).

??? Real-time/automated scraping with retries, rate limits, and logging.

??? Weekly analytics: heatmaps, charts, comparisons.

??? Resume links and project repositories per student.

??? Admin monitoring: logs, system health, manual scrape triggers.

3) Architecture (text diagram)

Platforms (APIs + Web) → Python Scrapers → MongoDB

MongoDB ↔ Express API (Node) → React Frontend

Scheduler → Scrapers (staggered jobs)

4) Quick Start (local)

1) Prereqs: Node 18+, Python 3.8+, MongoDB 5+, Chrome.

2) Backend

- `cd backend && npm install`

- Copy `.env.example` to `.env` and fill values (`PORT=5000`, `MONGO_URI=...`, `JWT_SECRET=...`, `FRONTEND_URL=http://localhost:5173`).

- `npm run dev`

3) Frontend

- From repo root: `npm install`

- Create `.env` with `VITE_API_URL=http://localhost:5000/api`

- `npm run dev`

4) Scraper

- `cd scraper && pip install -r requirements.txt`

- For Selenium, ensure Chrome + ChromeDriver (or webdriver-manager).

5) Access

- Frontend: <http://localhost:5173>

- API health: <http://localhost:5000/health>

5) Running Scrapers

??? All students: `python scrape_all_students.py`

??? Per platform: `python platform_scrapers.py`

??? Codolio (Selenium): `python scrape_codolio.py`

??? GitHub streaks: `python fetch_streaks_batch.py`

??? Schedule (example cron): `0 2 * * * cd /path/to/scraper && python scrape_all_students.py`

6) Deployment Notes

??? Set production `.env` (API, Mongo, JWT, CORS).

??? Optionally use `docker-compose up -d` from repo root.

??? Backend Dockerfile example already present (Node 18 alpine).

??? Ensure `FRONTEND_URL` and `VITE_API_URL` point to production domains.

7) API (high level)

??? `GET /api/students` – list students
??? `GET /api/students/:id` – student detail
??? `GET /api/admin/dashboard` – overview metrics
??? `GET /api/admin/logs` – scraper logs
??? `GET /api/admin/stats` – system stats
??? `POST /api/scrape/:platform` – trigger scrape (if enabled)

8) Credentials (sample defaults; adjust in your env)

??? Student: name or roll as username; password = roll (see `LOGIN_CREDENTIALS.md` for full list)
??? Staff: `staff@college.edu / staff123`
??? Admin: `admin@college.edu / admin123` or owner credentials in README

9) Troubleshooting Cheatsheet

??? Mongo down: start service (`mongod` or OS service).
??? Ports busy: free 5000/5173 (use `npx kill-port`).
??? CORS errors: match `FRONTEND_URL` with running frontend URL.
??? Selenium issues: update Chrome + ChromeDriver (`pip install --upgrade webdriver-manager`).
??? Missing deps: reinstall `npm install` and `pip install -r requirements.txt`.

10) Suggested Screenshots / Images

??? `docs/images/login.png` – Login page (role selection).
??? `docs/images/student-dashboard.png` – Student dashboard overview.
??? `docs/images/admin-dashboard.png` – Admin dashboard cards + logs.
??? `docs/images/platform-cards.png` – LeetCode/CodeChef/Codeforces/GitHub/Codolio cards.
??? `docs/images/charts.png` – Weekly progress line + pie comparisons.
??? `docs/images/heatmap.png` – Contributions/contest heatmap.
??? `docs/images/architecture.png` – System architecture diagram (frontend/api/scraper/db).

11) How to Embed Images (after you add them)

![Student Dashboard](docs/images/student-dashboard.png)
![Admin Dashboard](docs/images/admin-dashboard.png)
![Architecture](docs/images/architecture.png)

12) Repo Structure (short)

backend/ # Express API, Mongo models/routes
src/ # React app (components, pages, services)
scraper/ # Python scrapers + scheduler
public/ # Static assets
docs/images/ # Put your screenshots here (create folder)

13) Notes for Reviewers

??? Data shown is live-scraped; ensure environment variables and tokens (GitHub) are configured.
??? Scheduler staggered to respect platform rate limits.
??? Heatmaps/charts rely on scraped history; run a full scrape for fresh visuals.