# Student Guide — FP&A Fullstack v3 (Headcount + Goal Seek)

## What’s new

* **Headcount/Roster → Payroll**: Add hires with start dates, FTE, raises, taxes/benefits. Bake to budget to generate monthly Labor/Taxes/Benefits lines.
* **Goal Seek Solver**: Choose a scenario, set **target EBITDA**, and let the solver suggest the % changes to Revenue / COGS / Labor that hit closest to target (optionally apply to the scenario).

## Run

Backend

cd backend

python -m venv .venv && source .venv/bin/activate

pip install -r requirements.txt

uvicorn app:api --reload --port 8000

Frontend

cd frontend

npm install

npm run dev

## Quick start

1. Login as **Analyst** in the Auth bar.
2. Wizard → Create 2027:Base (or any year).
3. Headcount → Upsert one or two employees (e.g., Ops hire in June with a September raise).
4. Click **Bake to Budget** → payroll rows are merged into the scenario.
5. Dashboard → see narrative/variance.
6. Solver → target EBITDA (e.g., 500,000) → **Suggest Levers** or **Apply**.

## Key APIs

* Headcount
  + GET /headcount/list
  + POST /headcount/upsert (Admin/Analyst)
  + POST /headcount/bake\_to\_budget (Admin/Analyst)
* Solver
  + POST /solver/goal\_seek (Admin/Analyst) → returns suggested revenue\_pct, cogs\_pct, labor\_pct

## Tests

Run pytest from /backend:

* test\_v3.py covers headcount upsert/bake and solver basics.

## Stretch ideas

* Roster builder UI with roles/positions and vacancy planning
* Per-hour vs salaried payroll models; overtime rules
* Multi-entity consolidation; intercompany eliminations
* Non-linear solver with constraints (e.g., SciPy) for more precise goal seeking
* Narrative that references headcount changes (“Labor variance +$12k from 2 hires in June with 5% raises in Sep”).

Have fun — this version is purpose-built so teams can focus on **UI polish**, **testing**, and **creative AI** 🚀