

The 10× data student

NanoQuery

text-to-SQL engine

NanoMem

agent memory system

Both follow the same arc:

Foundations

The working system, built in stages
with CA support.

Finish it, and your grade is protected.

to the
other side



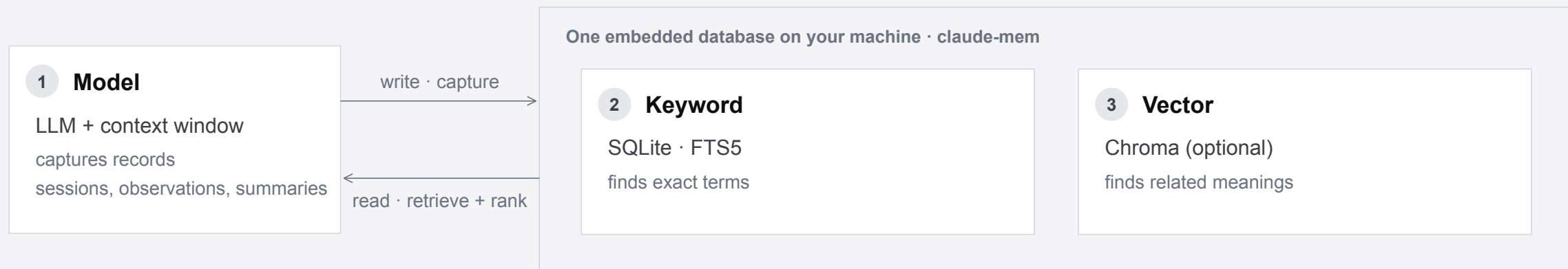
Frontier

Your own work, past the foundation.

Credit for the experiments,
even if the idea doesn't work.

Top 5 in each track earn points.

Local memory: capture, store, retrieve



Retrieved records become context for a later turn; the model still has to use them well.

From a SQLite baseline to your own NanoMem engine

Phase 0: SQLite baseline

Run the supplied prototype



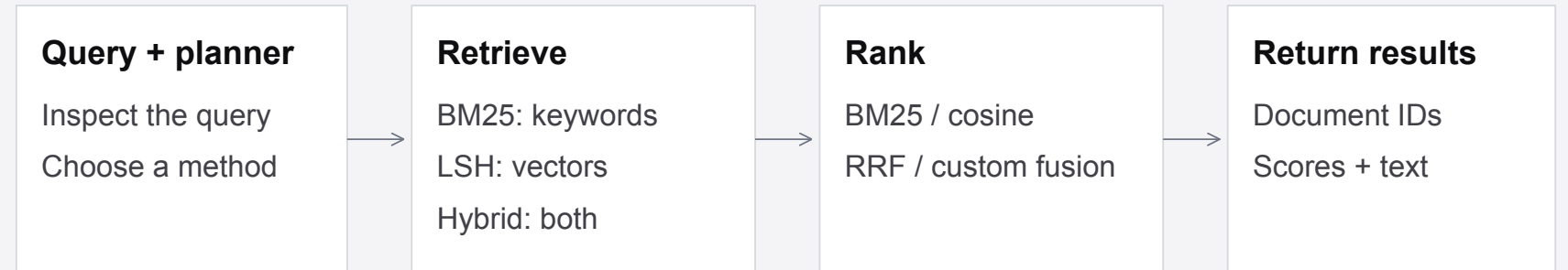
Inspect search results

Record baseline benchmarks

Keep SQLite for comparison

Phases 1–6: Build your own NanoMem

Implement indexes and retrieval, then evaluate your engine

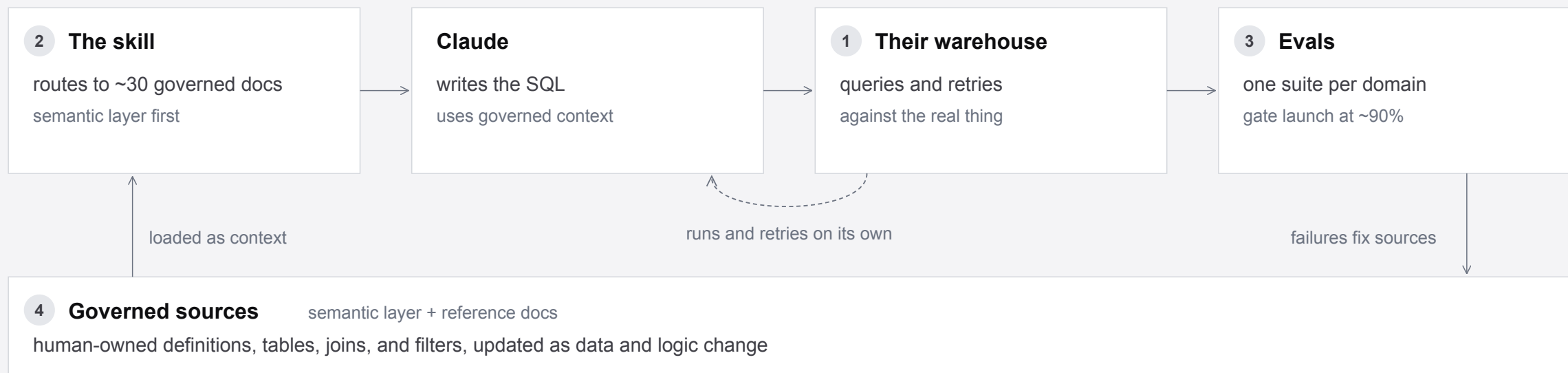


Compare five methods against the SQLite baseline on the same data and queries.

BM25 · LSH · RRF hybrid · Custom fusion · Planner-routed retrieval

Measure recall, MRR@10, latency, and memory; explain your findings.

Anthropic's analytics stack



Without skills, accuracy was **at most 21%**; raw query history moved it **under 1 point**; with skills it rose **above 95%**, and about 99% in some domains.

NanoQuery project roadmap

Phase 0: Proposal · 10 PTS

Tables + documents → keyword join + chart → proposal

Use your Project 1 tables; prepare Wikipedia or custom domain documents with Spark and check their mappings.

After Phase 0: Complete T80, then extend your work

T80: Analyze · +70 PTS

Embed and retrieve passages
Five SQL queries; three charts
Check evidence, costs, and findings

T87: SQL library

Reuse the five analytical queries
Define parameters and domain rules
Test each definition

T93: Ground truth

Choose five new questions
Reuse or combine the library
Write SQL; verify expected results

Phase 0 (10 PTS) + core analysis (70 PTS) = T80 (80 total).

T100: Text-to-SQL experiment

Same five questions, schema, output columns, retrieved IDs, model, and settings.

A: Base context

Question + schema + IDs

Generate + run SQL

Save original SQL
Save results or errors

B: Base + T87 library

Everything in A
Add the saved SQL library

Generate + run SQL

Same execution checks
Save results or errors

Compare with ground truth

Use T93 reference results
Report A: __/5 and B: __/5
Explain errors and differences

Keep reference SQL and expected results out of both prompts.

Start this week

Phase 0: October 30 · No late days

Read the project and run the starter notebook.

Choose your data, partner, and target tier.

Submit a working starting point and a plan.

Most of the work comes after Phase 0.

[NanoMem_project](#)

[NanoQuery_project](#)

Plan ahead

Final: November 20 · 11:59 pm Pacific

5 sections and lots of office hours per week, over the next 5 weeks.

November 18–20: private Ed questions only.

Staff clarifications end November 20 at 6 pm.

One submission per team.

Late days are the minimum of what you and your partner have.

Plan ahead.

[Full late-day_policy.](#)