

4-Week GenAI Engineer Execution Plan (Job-Focused)

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Goal

Become **job-ready as a GenAI Engineer (RAG + Agents track)** in 4 weeks by building production-style systems using Python, FastAPI, LangChain, RAG, Agents, and Deployment.

What this plan is NOT

- Not research-focused
- Not theory-heavy
- Not model-training oriented

What this plan IS

- Application-first
- Production-oriented
- Aligned with real hiring expectations (2025–2026)

1 Week 1 — Python & Backend Foundations

Daily Plan

- **Day 1:** Python setup, functions, control flow, CLI program
- **Day 2:** Classes, objects, `__init__`, methods
- **Day 3:** Exception handling, custom exceptions
- **Day 4:** `async/await`, async functions
- **Day 5:** Logging, environment variables, configuration
- **Day 6:** FastAPI basics, request/response models
- **Day 7:** Refactor code, folder structure, README

Projects

1. CLI Task Manager (class-based, file storage)
2. FastAPI Echo Server (`/health`, `/echo`)
3. Config-driven Application using `.env`

2 Week 2 — LangChain & LLM Integration

Daily Plan

- **Day 8:** LLM basics (tokens, temperature, hallucination)
- **Day 9:** Prompt templates and prompt design
- **Day 10:** LangChain basics, chains
- **Day 11:** Tools and tool calling
- **Day 12:** Memory and conversational chains
- **Day 13:** Structured outputs (JSON responses)
- **Day 14:** Integrate LangChain with FastAPI

Projects

4. Prompt Playground (dynamic prompts)
5. LangChain Chatbot with memory
6. Structured Response API (JSON-only output)

3 Week 3 — RAG (Retrieval Augmented Generation)

Daily Plan

- **Day 15:** Embeddings and vector concepts
- **Day 16:** Chunking strategies
- **Day 17:** Vector databases (FAISS / Chroma)
- **Day 18:** Retrieval logic
- **Day 19:** Context-aware answer generation
- **Day 20:** Hallucination control (refusal logic)
- **Day 21:** End-to-end RAG pipeline

Projects

7. PDF Question Answering System
8. Search-Augmented Chatbot
9. Hallucination-Safe AI Assistant

4 Week 4 — Agents & Deployment

Daily Plan

- **Day 22:** Agent concepts and decision flow
- **Day 23:** Tool-using agents
- **Day 24:** Multi-step reasoning agents
- **Day 25:** Docker basics and Dockerfile
- **Day 26:** Docker Compose and service wiring
- **Day 27:** Deployment fundamentals
- **Day 28:** Polish, documentation, demo

Projects

10. Tool-Using AI Agent
11. Agentic RAG System
12. Dockerized GenAI API (production-style)

Outcome After 4 Weeks

- You can build and deploy GenAI applications
- You understand RAG and agents deeply
- You are job-ready for applied GenAI roles

Next Phase (Optional)

Deep ML, fine-tuning, CUDA, and research-level topics can be added after securing a role.