Backend API Development
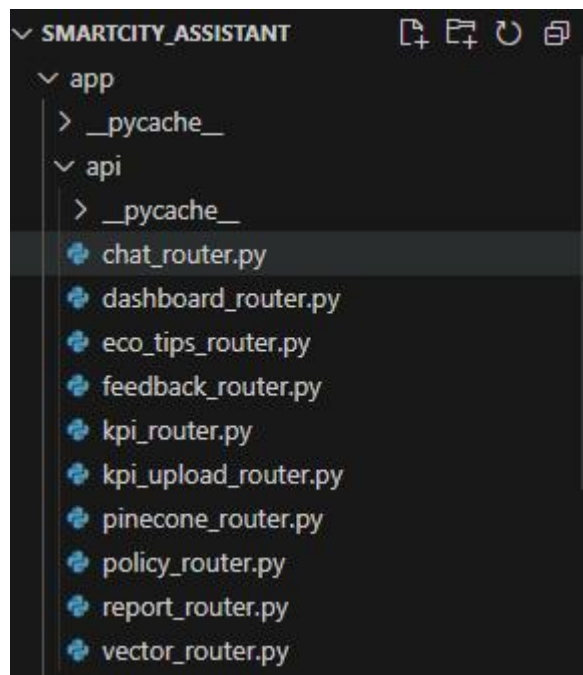
Objective: Build modular RESTful API routes using FastAPI.

Create Routers

Modules created in app/api/:

- chat_router.py
- policy_router.py
- eco_tips_router.py
- feedback_router.py
- report_router.py
- vector_router.py
- kpi_upload_router.py
- dashboard_router.py

Test Routes

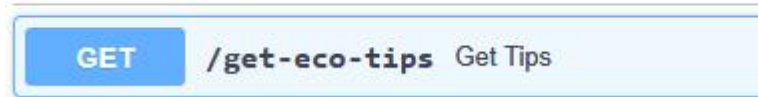Use Swagger UI to validate:

> POST /upload-doc

> GET /search-docs

> GET /get-eco-tips?topic=energy

> POST /submit-feedback

Citizen Tips

GET	/get-eco-tips Get Tips

Streamlit Frontend UI Development

Objective: Design a user-friendly dashboard for real-time interaction.

Page Structure

Sidebar navigation using streamlit-option-menu

Separate pages for: Dashboard, Feedback, Eco Tips, Chat, Policy Search, Anomaly Checker, KPI Forecasting

Build UI Components

> summary_card.py: Stylish KPI boxes

> chat_assistant.py, feedback_form.py: Form input UIs

> eco_tips.py, policy_summarizer.py: Prompt + result blocks

> report_generator.py: PDF report generation

Pinecone Semantic Search Integration:

Objective: Embed uploaded documents and enable semantic policy search.

Document Embedding:

> Use sentence-transformers model (MiniLM) to convert .txt into 384-d vectors.

> Store documents in Pinecone via document_embedder.py

Vector Search

POST `/upload-doc` Upload Doc

GET `/search-docs` Search Docs