

## Lumira Project — Simple Explanation for New Developers

### 1. gigachat\_api.py — Communication Layer

- Handles all interactions with GigaChat API.
- `get_access_token()`: retrieves OAuth token.
- `chat_with_gigachat()`: sends simple text queries.
- `chat_with_gigachat_messages()`: supports full chat message format.
- Used by all agents.

### 2. agents/ — Intelligent Behavior Modules

#### 2.1 tutor.py — Tutor Agent

- Explains concepts in simple language.
- Considers user knowledge level.
- Maintains `tutor_history` for context.

#### 2.2 examiner.py — Exam Generator

- Creates 5-question tests.
- Returns questions, options, correct answers, test topic (JSON).

#### 2.3 analyser.py — Test Checker

- Compares user answers with correct ones.
- Understands formats: '1a 2b 3c', 'abcde', etc.
- Produces a score, percentage, and detailed report.
- Results stored in memory.

#### 2.4 problem\_solver.py — Step-by-Step Explainer

- Breaks a topic into 3 steps.
- Asks: "Do you understand? (yes/no)"
- If no → re-explains current step in simpler words.
- If yes → moves to next step.
- Tracks state: active session, steps, current step.

#### 2.5 moderator.py — Router / Decision-Maker

- Determines which agent should respond.
- Returns two numbers:
  - 1) agent ID (1–4),
  - 2) whether to change topic (0/1).
- Uses rules and examples to classify user messages.

### 3. utils/format\_exam.py — Formatting Helper

- Converts JSON exam into readable text.
- Extracts question list and answer key for analyser.

### 4. main.py — Central Controller

- Loads access token.
- Runs main input loop.
- Sends messages to moderator.
- Calls the correct agent based on moderator response.
- Stores global state:
  - `last_topic`
  - `current_test`
  - `results` (test history)
  - `tutor_history`
  - `problem_solver` session info
- Includes commands:

'progress' — shows test history and averages

'exit' — quits

### 5. System Workflow

- User message →
- Moderator selects agent →
- Agent processes message →

- Output returned →
- Memory updated if needed.

This document helps new developers understand the architecture and logic of the Lumira project.