Generative AI Agents – Task Automation with LLM Reasoning

LAB Assignment on ADK

Assignment 1: Event Processing in Agent Workflows

Build an event-driven agent using Google's ADK that can capture, store, and process events generated during an agent's lifecycle (e.g., user queries, model responses, and tool invocations). Implement a simple mechanism to process the event.

Tasks:

- Initialize a basic ADK agent (e.g., a customer-support assistant).
- Capture ADK Event objects (such as state update with *state_delta*).
- Demonstrate how certain event patterns (e.g., repeated user complaints) can trigger automated follow-up actions.

Deliverable:
A working ADK agent project with event capture and subsequent processing capabilities.

Assignment 2: Structured Output for Decision-Making Agents

Design an ADK agent that produces validated structured outputs (using *Pydantic* and ADK's output_schema) for downstream applications like recommendation systems or helpdesk ticket generation. The goal is to ensure consistent JSON outputs suitable for machine-to-machine communication.

Tasks:

- Define a Pydantic model for structured output (e.g., ProductRecommendation or SupportTicket).
- Configure the ADK agent to return responses conforming to this schema.
- Implement validation and error correction if the model output doesn't match the schema.
- Demonstrate how the structured data can be consumed — for example, display it in a dashboard or store it in a database.

Deliverable:
An ADK-based agent that reliably returns and validates structured JSON outputs for a practical application.