AI Workflow & Prompt Engineering (LLM + Automation Tools)

Background

We are building the AI-powered assessment module for teenagers' psychological development. The AI should analyze questionnaire responses from both teenager and parent, and generate a reliable, insightful, and **actionable report**.

Task

Please design the **AI analysis workflow** using **Prompt Engineering, Context Engineering, and Workflow Automation Tools** (e.g., n8n, Make, Dify, Langflow, LangChain).

Functional Requirements

1. AI Analysis Pipeline

- Inputs: Questionnaire responses (teenager + parent), user metadata.
- Steps:
    - **Preprocessing**: Structure responses for AI input.
    - **Prompt Engineering**: Define system prompts & user prompts.
    - **Analysis Generation**: Call LLM for psychological insights.
    - **Scoring**: Confidence level, reasoning depth, and breadth.
    - **Report Structuring**: Multi-perspective analysis + parenting guidance.

2. Context Engineering

- Ensure **role-awareness** (Teenager vs Parent).
- Maintain **structured context** across prompts.
- Enable **multi-turn reasoning** (step-by-step before producing final analysis).

3. Workflow Automation

- Use workflow orchestration (n8n / Make / Dify / Langflow / LangChain) to:
    - Handle multi-step analysis.
    - Store results in a database.
    - Trigger visualization generation (charts, graphs).
    - Send report (e.g., via email notification).

Bonus Questions (for AI candidates)

- How would you **scale the AI pipeline** to accommodate new metrics or replace AI models easily?
- How do you measure and ensure **confidence level, depth, and breadth** in AI-generated reports?
- How would you transform raw AI analysis into **practical parenting recommendations** (e.g., actionable communication strategies)?
- How do you prevent **hallucinations** and maintain trustworthiness in AI outputs?

Key Evaluation Criteria

1. **Prompt & Context Engineering** (clarity, robustness, and adaptability).
2. **Workflow Design** (use of automation/orchestration tools).
3. **Scalability & Extensibility** (easy integration of new models or analysis metrics).
4. **Reliability & Accuracy** (report quality & trustworthiness).
5. **User Value** (making AI insights actionable and meaningful).

Deadline:
Please submit your assignment through GitHub within 72 hours of receiving this.