Week 1 Assignment: Understanding AI Agents

Part 1: Reflection Questions

Answer the following questions based on the concepts covered in the lecture:

1. **Foundational Understanding**
   How would you explain the difference between traditional AI systems and AI agents to someone with limited technical background?

Your Answer Here:

2. **Professional Application**
   Think about your organization or industry. What specific tasks could benefit from AI agents? What would an implementation look like for one of these tasks?

Your Answer Here:

3. **Architecture Analysis**
   The virtual assistance example we discussed in the lecture employs a specific multi-agent architecture. What type of architecture is it, and why is this approach effective for this application?

Your Answer Here:

4. **Components Analysis**
   Choose one cognitive component of AI agents (Perception, Reasoning, Action, or Feedback & Learning) and explain how it manifests in a real-world AI application of your choice.

Your Answer Here:

Part 2: Case Evaluation - When to Use Agentic Systems

For each of the following scenarios, evaluate whether an agentic AI system would be appropriate. Explain your reasoning by discussing the benefits and drawbacks of using an agent versus a non-agentic solution.

1. **Simple Data Lookup**: A system that retrieves specific information from a structured database in response to direct queries (e.g., "What is the price of Product X?")

Your Answer Here:

2. **Basic Calculator**: A tool that performs straightforward mathematical operations like addition and multiplication

Your Answer Here:

3. **Travel Planning Assistant**: A system that needs to coordinate flights, accommodations, transportation, and activities based on user preferences, budget constraints, and real-time availability

Your Answer Here:

4. **Research Synthesis**: A system that searches across multiple sources, extracts relevant information, evaluates credibility, and compiles findings into a cohesive report

Your Answer Here:

5. **Smart Home Coordinator**: A system that manages multiple connected devices, anticipates user needs based on patterns, and proactively adjusts settings accordingly

Your Answer Here:

6. **Email Management**: A system that sorts incoming emails and drafts responses

Your Answer Here:

7. **Medical Symptom Assessment**: A system designed to evaluate described symptoms and provide health information

Your Answer Here:

8. **Financial Investment Advisor**: A system providing investment recommendations based on market conditions and user goals

Your Answer Here:

Part 3: Repository Analysis

Review the codebase at https://github.com/readytensor/rt-repo-assessment. Based on the definition of agentic AI systems we've covered in the lecture, would you classify this solution as agentic? Why or why not? Support your analysis with specific examples from the codebase that either align with or deviate from the key characteristics of AI agents we've discussed.

Your Answer Here:

Part 4: Future of Work Analysis

Based on what you have understood about agentic AI in Week 1, do you think the following job titles will be eliminated in the next 10 years due to agentic AI? Explain your reasoning for each:

- Software Engineer
- Data Analyst
- Data Scientist
- ML Engineer
- AI Engineer
- Data Engineer
- ML-Ops Engineer

Your Answer Here:

Part 5: Choosing the Right Architecture for an Automated Peer Review System

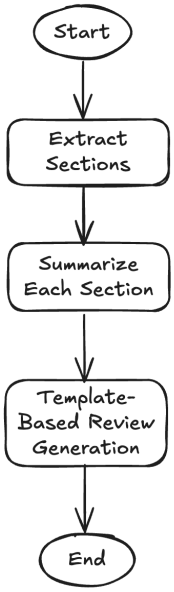
Background:

Imagine you are tasked with building a system to automatically review academic papers for a journal submission platform. The system should read the paper, identify strengths and weaknesses, and generate a structured review.

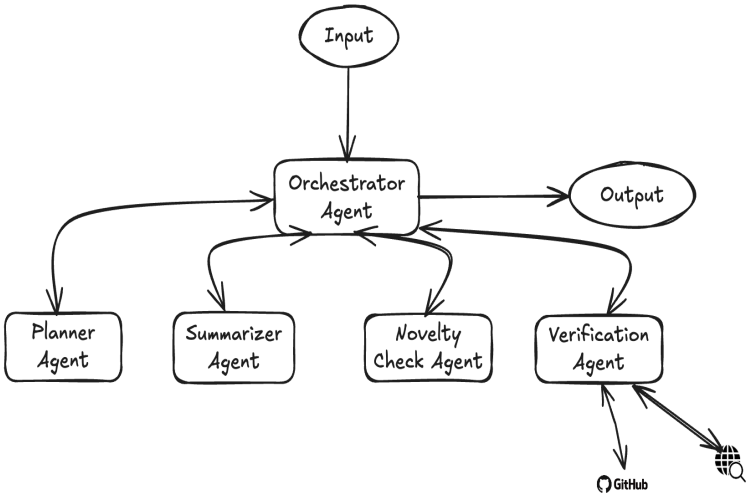
Exercise:

Below are two different architectural designs for this system:

WORKFLOW ARCHITECTURE



AGENTIC ARCHITECTURE



- One is a non-agentic workflow,
- One is a multi-agent system,

Your task:

- Carefully study the two architectures.
- Based on what you learned about Workflows vs. Agents, choose the architecture you think will perform best for this task.
- There is no right or wrong answer - we want you to think strategically about tradeoffs like flexibility, transparency, cost, complexity, and reliability.
- You can also propose another architecture that you think would be best for this case study.

In 2–8 sentences, explain why you made your choice. To better help you answer this question, refer to this article: Building effective agents

Your Answer Here: