## **🔍 Assignment: Build a Simple AI Agent**

**Use Case:** *“AI Agent to guide aspiring Business Analysts through case-solving, metrics thinking, and storytelling.”*

This agent will simulate what a smart peer or mentor would do when helping someone prepare for real-world Business Analytics rounds — e.g., framing a business case, choosing relevant metrics, or interpreting dashboards.

**🧾 SECTION 1: BASIC DETAILS**

**Name:** Dhanasekar  
**AI Agent Title / Use Case:** AI Agent to Help Aspiring Business Analysts Navigate Case Rounds

**🧠 SECTION 2: PROBLEM FRAMING**

**1.1. What problem does your AI Agent solve?**  
Many aspiring Business Analysts struggle to structure their thinking during interviews, especially when facing ambiguous business problems. This agent provides interactive guidance to break down cases, define KPIs, and interpret data.

**1.2. Why is this agent useful?**  
It builds confidence by offering structure, feedback, and examples — turning overwhelming problems into manageable steps. It’s like a “thinking coach” for analytics interviews.

**1.3. Who is the target user?**  
Business analytics candidates preparing for interviews — especially those who want help with case structuring, storytelling, and metric interpretation.

**1.4. What not to include?**

* Real-time dashboard analysis
* SQL/technical deep dives
* Mock interview roleplays

**🧱 SECTION 3: 4-LAYER PROMPT DESIGN**

**🔹 3.1 INPUT UNDERSTANDING**

**Prompt:**  
*"You are a Business Analytics Interview Assistant. Read the candidate’s message and determine what they’re trying to solve (e.g., structure a case, define metrics, improve storytelling). Identify intent and key terms (e.g., industry, business goal)."*

**What is this prompt responsible for?**  
It parses the candidate’s query and maps it to an interview-relevant skill domain (case framing, metrics, insights, etc.).

**Example Input + Output:**  
**Input:** “Can you help me frame a case about declining app engagement in a food delivery app?”  
**Output:**  
Intent = “Case Structuring”  
Industry = “Food Delivery”  
Focus = “User Engagement Decline”

**🔹 3.2 STATE TRACKER**

**Prompt:**  
*"Store and recall current topic (e.g., user engagement), interview stage (e.g., framing, metrics, synthesis), and candidate responses across turns. Adjust follow-ups based on these."*

**How does this help the agent “remember”?**  
It helps the agent carry forward the same case and provide layered support — from structuring to metrics to synthesis — rather than restarting.

**Simulated Memory:**  
Stored using variables: industry, focus\_metric, stage, previous\_response. Agent checks for missing context.

**🔹 3.3 TASK PLANNER**

**Prompt:**  
*"Based on the topic and stage, generate a logical sequence of questions or suggestions. For structuring: start with clarifying questions → segmentation → possible root causes. For metrics: suggest 5–7 KPIs. For storytelling: prompt user to summarize key insight and recommendation."*

**What steps does your agent take?**

* Detects the current stage
* Uses predefined frameworks (e.g., MECE, AARRR, funnel analysis)
* Plans 2–3 follow-up questions to deepen the user’s thinking
* Surfaces examples or analogies if user is stuck

**Used chaining/branching?**  
Yes — branching based on current interview skill (e.g., if intent == "metrics", follow KPI logic chain)

**🔹 3.4 OUTPUT GENERATOR**

**Prompt:**  
*"Respond in a clear, coach-like tone. Use bullet points or numbered steps. Keep responses under 150 words. Add examples if needed. Use bold headings (e.g., Suggested Metrics) and signposts (e.g., “Next Step”)."*

**Output Style:**

* Crisp, mentor-style tone
* Actionable guidance
* Encourages reflection (“Does this make sense to you?”)
* Example templates (e.g., case frameworks)

**🔍 SECTION 4: CHATGPT EXPLORATION LOG**

| **Attempt #** | **Prompt Variant** | **What Happened** | **What You Changed** | **Why You Changed It** |
| --- | --- | --- | --- | --- |
| 1 | "Help me frame a business case for user churn in a food delivery app" | The output was too generic — gave business buzzwords without a structure | Added context: “Use a structured framework like MECE or funnel breakdown.” | To get a more actionable response aligned with case-solving frameworks |
| 2 | "Suggest relevant metrics to diagnose a drop in DAU for a fintech app" | Gave a good list, but lacked grouping or prioritization | Refined prompt to: “List KPIs by funnel stage and highlight most important.” | To make metrics more structured and reflect business impact |
| 3 | "How should I summarize key insights for the interviewer from a data case?" | Too verbose; lacked storytelling tips | Added instruction: “Use STAR format or insight → implication → recommendation” | To generate structured and story-ready insights for storytelling |
| 4 | "Maintain context for one case throughout a session — from framing to summary." | Context wasn’t held beyond 2 messages | Simulated memory using system messages with topic, stage, and response state | To test how far memory can be faked with state prompts in ChatGPT |

**🧪 SECTION 5: OUTPUT TESTS**

**✅ Test 1: Normal Input**

**Input:** "Can you help me frame a case where customer complaints increased in an e-commerce platform?"  
**Output:**  
**Problem Framing Steps:**

* Clarify time period, segment (product, geography, etc.)
* Identify possible drivers: delivery, product quality, UX
* Suggest: Start with **Complaint Funnel** (Issue Reported → Resolved or Escalated)  
  **Next Step:** “Do you have any specific segment in mind (e.g., mobile users, new customers)?”

**✅ Test 2: Vague Input**

**Input:** "Help me prep for an analytics interview."  
**Output:**  
**Let’s Narrow Down:**

* Do you need help with case structuring, metrics, or insights communication?
* If unsure, we can start with a mock prompt: *“DAU dropped by 30%. What do you do?”*  
  **Next Step:** “Which area do you want to focus on first?”

**✅ Test 3: Invalid Input / Empty**

**Input:** ""  
**Output:**  
“Hi! I’m here to help you prep like a pro. Can you tell me if you want to work on case questions, metrics thinking, or storytelling today?”

**🔄 SECTION 6: REFLECTION**

**6.1. What was the hardest part of this assignment?**  
Simulating memory across prompt layers without real backend context was challenging. I had to carefully engineer prompts so that ChatGPT would behave as if it remembered the flow of a business case.

**6.2. What part did you enjoy the most?**  
Designing the Task Planner — it felt like teaching the agent how to think like a mini-mentor. I enjoyed building logic that mirrors how real analysts think during case interviews.

**6.3. If given more time, what would you improve or add?**  
I’d add mock interview mode with timer-based challenges and score feedback. I’d also integrate analytics terminology flashcards and role-based questions for product vs. operations analytics.

**6.4. What did you learn about ChatGPT or prompt design?**  
I learned that prompt layering is like building APIs — every prompt should do one clear job. Prompt chaining with simulated memory creates far better user flow than monolithic prompts.

**6.5. Did you ever feel stuck? How did you handle it?**  
Yes — when the state tracker failed. I solved this by simulating memory using system messages and redesigning each layer to be loosely coupled but context-aware.

**🧠 SECTION 7: HACK VALUE**

* Simulated memory using state variables (intent, stage, industry)
* Used behavioural branching for different analytics interview themes
* Incorporated structured storytelling using STAR + Pyramid Principle
* Built prompts to be extensible for mock case drills or interactive checklists

**AI AGENT CODE STRUCTURE – Logic Flow (Python Prototype)**

**# Agent to help prepare for Business Analytics interviews**

**# Simulates the 4-layer architecture: Input → State → Task → Output**

# --- Define State ---

agent\_state = {

"intent": None,

"industry": None,

"stage": None,

"last\_question": None,

}

# --- Input Understanding Layer ---

def understand\_input(user\_input):

if "case" in user\_input or "frame" in user\_input:

agent\_state["intent"] = "case\_framing"

elif "metric" in user\_input or "KPI" in user\_input:

agent\_state["intent"] = "metrics"

elif "story" in user\_input or "summary" in user\_input:

agent\_state["intent"] = "storytelling"

else:

agent\_state["intent"] = "general\_prep"

# Extract industry if possible

if "e-commerce" in user\_input:

agent\_state["industry"] = "e-commerce"

elif "fintech" in user\_input:

agent\_state["industry"] = "fintech"

elif "food delivery" in user\_input:

agent\_state["industry"] = "food delivery"

return agent\_state["intent"]

# --- State Tracker Layer ---

def update\_state(stage=None):

if stage:

agent\_state["stage"] = stage

return agent\_state

# --- Task Planner Layer ---

def plan\_task():

intent = agent\_state["intent"]

if intent == "case\_framing":

return [

"Clarify the objective of the case.",

"Segment the problem (time, user, product, geography).",

"List possible root causes.",

"Suggest a simple structure (e.g., funnel or MECE)."

]

elif intent == "metrics":

return [

"Identify primary KPI (e.g., DAU, conversion rate).",

"List supporting KPIs by stage (acquisition → retention).",

"Prioritize metrics based on business impact."

]

elif intent == "storytelling":

return [

"Identify the key insight.",

"Connect insight to implication.",

"Make a clear recommendation.",

"Wrap it in STAR or Pyramid format."

]

else:

return ["Let's start with your goal. Do you want to work on case framing, metrics, or storytelling?"]

# --- Output Generator Layer ---

def generate\_response(task\_steps):

response = "\*\*Here's how I’d help you step-by-step:\*\*\n"

for idx, step in enumerate(task\_steps, 1):

response += f"{idx}. {step}\n"

response += "\n\*\*Next step:\*\* Let me know if you want help with a real example."

return response

# --- Simulate Chat Flow ---

def chatbot\_agent(user\_input):

print("\n User:", user\_input)

understand\_input(user\_input)

update\_state(stage="interview\_prep")

task = plan\_task()

reply = generate\_response(task)

print("\n Agent:\n", reply)

# --- Test Example ---

chatbot\_agent("Can you help me with framing a case for user churn in a fintech app?")

**Sample Output**

User: Can you help me with framing a case for user churn in a fintech app?

Agent:

Here's how I’d help you step-by-step:

1. Clarify the objective of the case.

2. Segment the problem (time, user, product, geography).

3. List possible root causes.

4. Suggest a simple structure (e.g., funnel or MECE).