AI-Driven Development — 30-Day Challenge (Task 4)

Marks: 10

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1. **What Are MCP Servers?**
   MCP (Model Context Protocol) servers work like a bridge between an AI model and the tools it needs. They allow the model to safely use features such as: • File reading/writing • Calling APIs • Accessing local functions • Connecting to external services (GitHub, Firebase, Supabase, etc.) Simple meaning: Gemini CLI normally only responds with text. MCP servers give it capabilities, so the model can actually perform actions instead of just talking.

2. **Why MCP Servers Are Useful?**
   MCP servers make the whole system more powerful and easier to use because: • Expandable: Tools can be added instantly without extra backend code. • Standardized: Same format works across different platforms. • Modular: Projects become cleaner and easier to maintain. • Beginner-friendly: Students only need to connect to an MCP server, not build everything from scratch.
3. **The Problem With Gemini CLI Gemini CLI cannot build complete agents by itself because:**

   • It doesn't support advanced agent features • It struggles with complex tool usage • It lacks updated SDK knowledge • It cannot maintain state This makes full agent creation difficult and frustrating.

4. **The Solution — Context7**

   Context7 is a complete MCP server that provides updated documentation for: • Python • OpenAgents SDK • Supabase • FastAPI • Other modern frameworks The best part: It auto-updates. So whenever OpenAgents SDK changes, Context7 updates automatically, and Gemini follows the new version. Why this solves the problem: • No SDK errors • No outdated instructions • No confusion • Smooth agent building Context7 removes all limitations of Gemini CLI.

5. **Connecting Context7 MCP Server to Gemini CLI**

   Before working on the agent, the Context7 MCP server must be added to Gemini CLI. Steps (as theory in file):

1. Install Gemini CLI

2. Open the file: C:\Users\YourName.gemini\settings.json

3. Add this MCP entry:

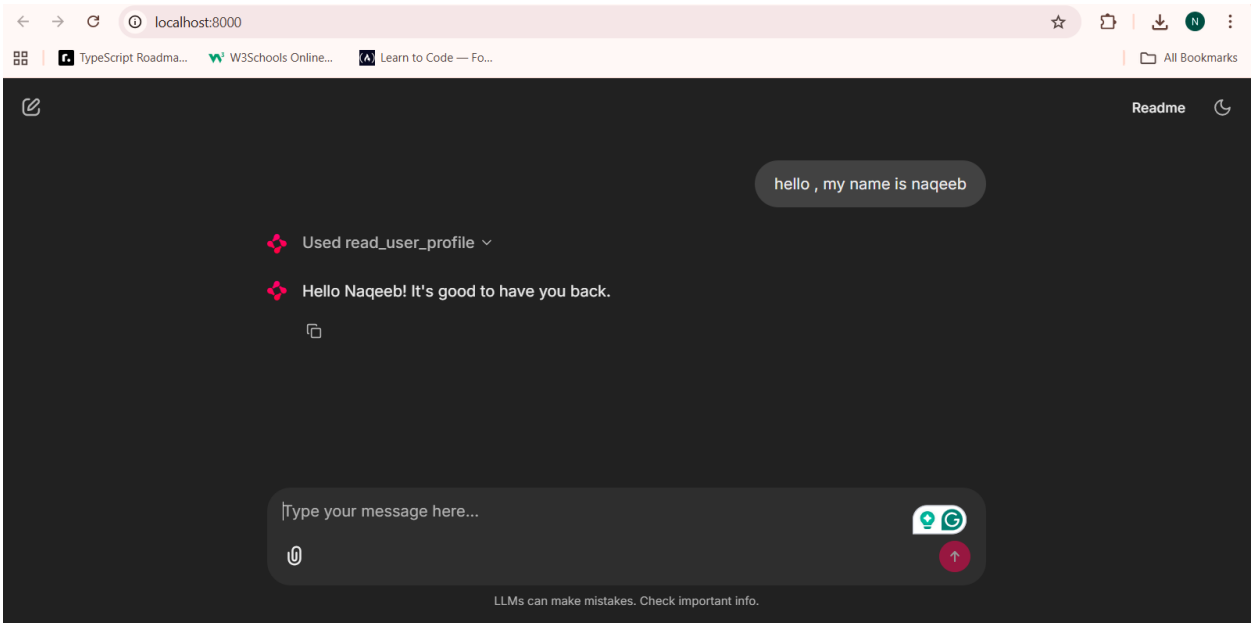
    {

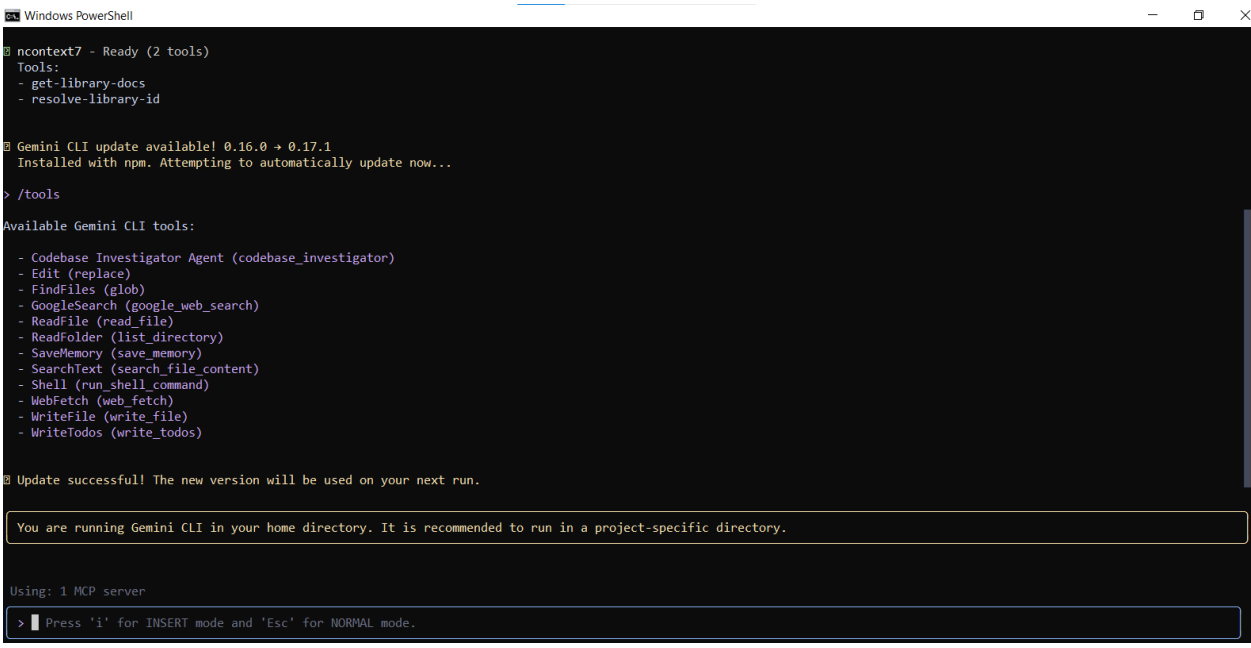
    "mcpServers": { "context7": { "command": "npx", "args": ["context7-cli", "start"] } } }

4. Restart the terminal

5. Run: gemini list tools

6. Tools from Context7 should appear Required Guide Link: https://www.notion.so/Personalization-Chatbot-with-Chainlit2b2644e5197680728913dc57ee7df803





6. **Practical Work** — Study Notes Summarizer & Quiz Generator Agent This agent was created using: • OpenAgents SDK • Streamlit (for UI) • PyPDF (for PDF text extraction) • OpenRouter (model provider) • Gemini CLI (for screenshot prompt) • Context7 MCP server A. Summary Feature • User uploads a PDF • Text is

extracted with PyPDF • Summary agent generates clean, exam-focused notes • Output displayed neatly inside Streamlit B. Quiz Feature • Reads original PDF text • Generates 5 MCQs (A–D) • Generates 5 short questions • Perfect exam structure • Shown directly inside Streamlit

This fulfills all requirements of Task 4.