

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

**Marks: 10**

**Name: Khawaja Naqeeb Uddin**

**Instructor: Sir Hamzah Syed**

### **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- No outdated instructions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:

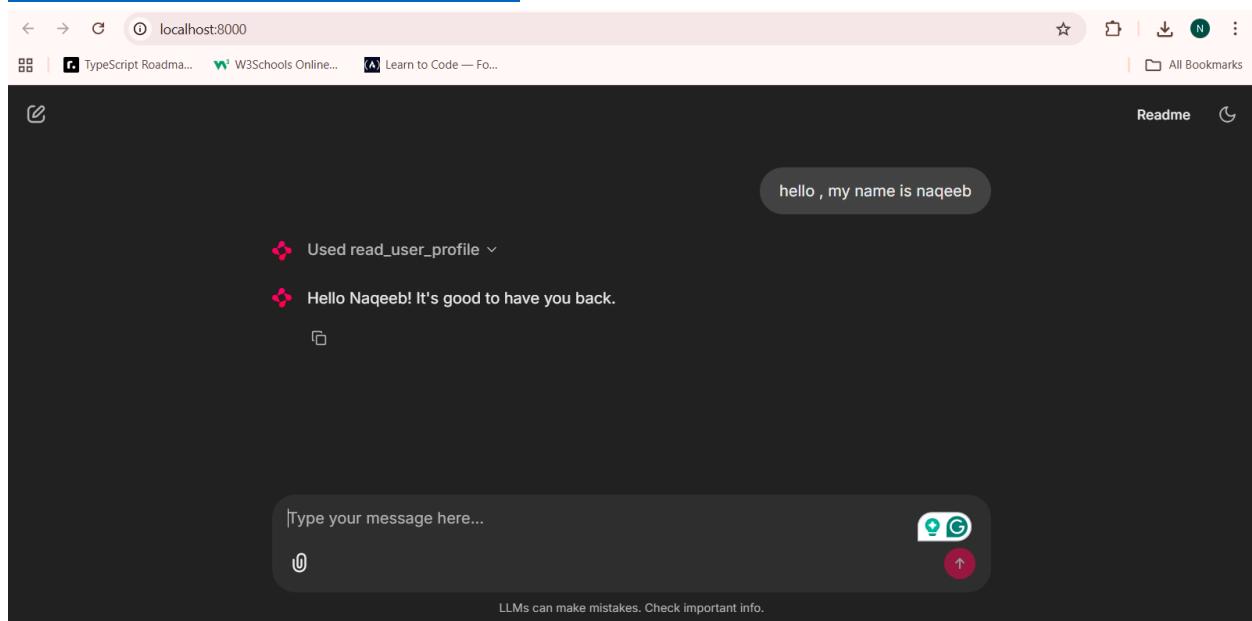
```
{  
  "mcpServers": { "context7": { "command": "npx", "args": ["context7-cli",  
    "start"] } } }
```

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-Chainlit  
2b2644e5197680728913dc57ee7df803](https://www.notion.so/Personalization-Chatbot-with-Chainlit)

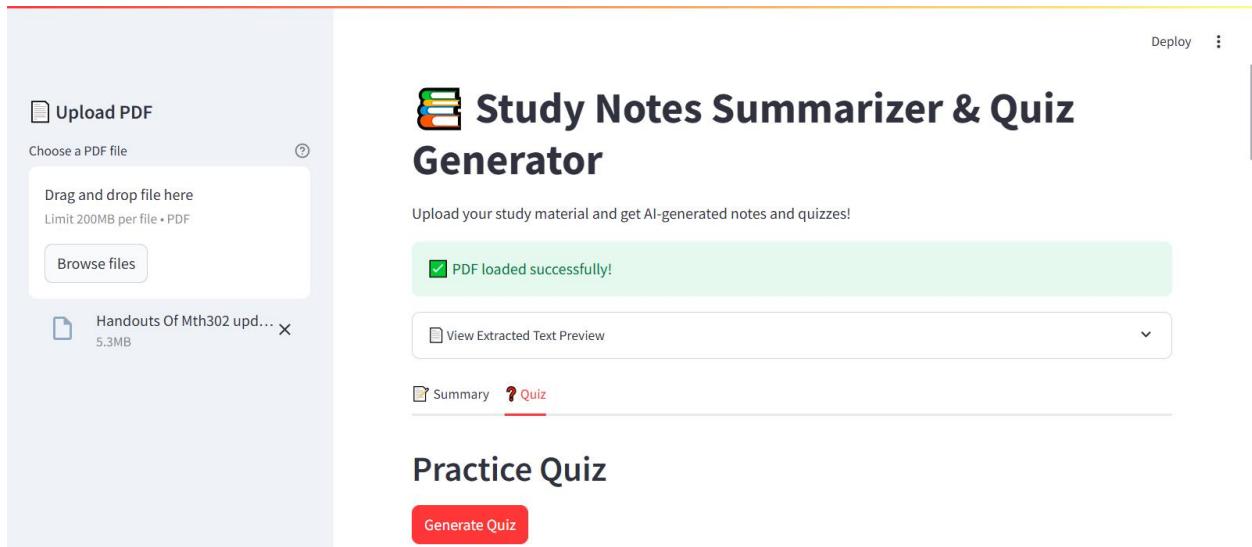


```
Windows PowerShell  
ncontext7 - Ready (2 tools)  
Tools:  
- get-library-docs  
- resolve-library-id  
  
Gemini CLI update available! 0.16.0 → 0.17.1  
Installed with npm. Attempting to automatically update now...  
> /tools  
Available Gemini CLI tools:  
- Codebase Investigator Agent (codebase_investigator)  
- Edit (replace)  
- FindFiles (glob)  
- GoogleSearch (google_web_search)  
- Readfile (read_file)  
- ReadFolder (list_directory)  
- SaveMemory (save_memory)  
- SearchText (search_file_content)  
- Shell (run_shell_command)  
- WebFetch (web_fetch)  
- WriteFile (write_file)  
- WriteTodos (write.todos)  
  
Update successful! The new version will be used on your next run.  
  
You are running Gemini CLI in your home directory. It is recommended to run in a project-specific directory.  
  
Using: 1 MCP server  
> █ Press 'i' for INSERT mode and 'Esc' for NORMAL mode.
```

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
- 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.

## Here is my work's screen short:



**Upload PDF**

Choose a PDF file

Drag and drop file here  
Limit 200MB per file • PDF

Browse files

Handouts Of Mth302 upd... X  
5.3MB

✓ PDF loaded successfully!

Upload your study material and get AI-generated notes and quizzes!

View Extracted Text Preview ▼

Summary Quiz

## Study Notes Summary

Generate Summary

### Your Study Notes:

Business Mathematics & Statistics Study Notes

.....

**Upload PDF**

Choose a PDF file

Drag and drop file here  
Limit 200MB per file • PDF

Browse files

Handouts Of Mth302 upd... X  
5.3MB

✓ MULTIPLE CHOICE QUESTIONS

Deploy ⋮

## Practice Quiz

Generate Quiz

### Your Quiz:

.....

Q1. What is the primary objective of the "Business Mathematics and Statistics" course?  
 A) To provide a mathematical basis for business decisions B) To develop statistical skills for data analysis C) To apply algebraic skills to everyday business problems D) To stress logical reasoning and problem-solving skills ✓ Correct Answer: A) To provide a mathematical basis for business decisions

Q2. Who is the instructor of the course?  
 A) Dr. Fikri B) Dr. Zahir Fikri C) Dr. Fikri's PhD advisor D) The Royal Institute of Technology ✓ Correct Answer: B) Dr. Zahir Fikri

Q3. What is the title of Dr. Fikri's PhD thesis?  
 .....  
 skills to everyday business problems

Deploy ⋮

.....

Q1. What is the primary focus of the course "Business Mathematics and Statistics"? Please provide a brief explanation.  
 (Answer should be approximately 2-3 sentences)

Q2. What are the eight instructional modules that are covered in the course? Please list the module titles.  
 (Answer should be approximately 2-3 sentences)

Q3. What is the main purpose of the instructor's resume at the beginning of the course? Please explain.  
 (Answer should be approximately 2-3 sentences)

Q4. What is the expected outcome of successful completion of the course, as stated in the course objectives? Please explain.  
 (Answer should be approximately 2-3 sentences)