AI-Driven Development:
Marks: 10 | Deadline: 48 hours
Class Slot:FRIDAY-6:00 PM to 9:00 pm
INSTRUCTOR:SIR HAMZAH SYED

UNDERSTANDING MCP SERVER-A MODERN AI ARCHITECT VIEW:

1:What Exactly are MCP Server?
MCP(Model Context Protocol) servers are speciallzed components that act as a middleware layer between an AI model (like Gemini) and the real world.
An Mcp server exposes a sot of capabilities(tools)that an AI model can safely use,such as:

File sysytem acess
External API
Local functions or scripts
Secure systenm operations
Services like Github,Firebase,SQL databases,etc.
Just attach an MCP module and the module immediately gains access to.
Filesystem operations
External API
database
automation scripts
Cloud services

THE PROBLEM:

Gemini CLI cannot create full agents by itself.
It doesn't have strong agent-building support.
So creating complete agents directly inside Gemini CLI becomes frustrating and.

The Solution — Context7:

There is a platform called Context7.
Link: https://context7.com
What Context7 Provides
Context7 is one complete MCP server.
It is not a collection of MCP servers — it is one MCP server that exposes powerful
tools and documentation.
It includes:

- Documentation for Python
- Documentation for OpenAgents SDK
- Documentation for Supabase
- Documentation for FastAPI
- Documentation for all modern frameworks.

WHY THIS IS PERFECT:

Because when you ask Gemini CLI to build an agent using the OpenAgents SDK:

- It will not produce errors
- It will follow the correct documentation
- It will understand the updated workflow
- Students don't have to keep checking new docs
- The whole system stays fresh and compatible

This solves the frustration of Gemini CLI not knowing how to build agents.

TASK 4-CONNECTING CONTEXT 7 MCP SERVER TO GEMINI CLI:

For today's task, you will connect the Context7 MCP server to your Gemini CLI.

You can find the full step-by-step instructions here:

Guide Link:

https://www.notion.so/Personalization-Chatbot-with-Chainlit-2b2644e5197680728
913dc57ee7df803

This guide explains:

- How to add the MCP server of Context7 with Gemini CLI

(Connect the MCP Server first before proceeding to a practical task!)

(We did not rewrite those steps here. Students will follow that link.)

PRACTICAL TASK-BUILD THE STUDY NOTES SUMMARIZER AND QUIZ GENERATOR AGENT:

After Context7 is connected, you will create an agent using:

- OpenAgents SDK
- Streamlit (recommended for UI, but HTML/CSS is allowed your choice)
- PyPDF (for PDF text extraction)
- Gemini CLI
- Context7 MCP (tool provider)

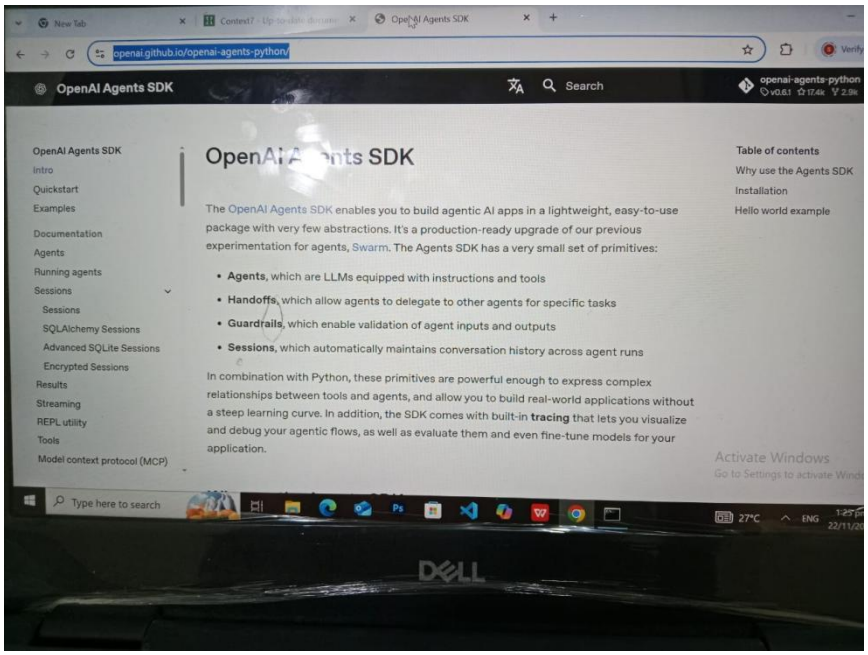
What the Agent Will Do

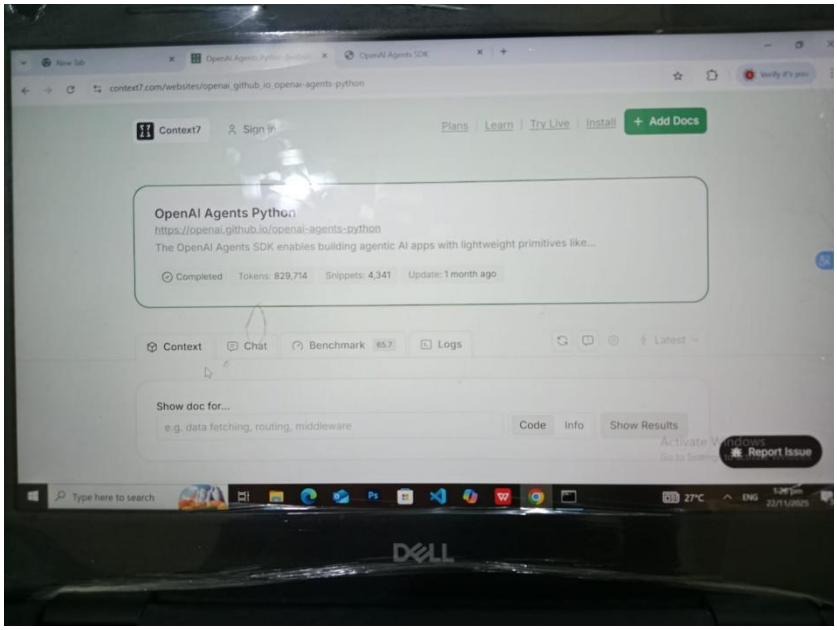
A. PDF Summarizer

- User uploads a PDF.

● Text is extracted using PyPDF.
● Agent generates a clean, meaningful summary.
● Summary can appear in any UI style students choose (card, block, container, etc.).
B. Quiz Generator
● After summarization, the user can click Create Quiz.
● The agent reads the original PDF (not the summary).
● It generates:
○ MCQs
○ Or mixed-style quizzes

SCREEN SHOT AFTER MCP CONNECT WITH GEMINI CLI AND STREMLIT PROJECT:PDF STUDY ASSISTANT:




context7.com/websites/openai_github_io_openai-agents-python
Context7
Sign In
Plans | Learn | Try Live | Install
+ Add Docs
OpenAI Agents Python
https://openai.github.io/openai-agents-python
The OpenAI Agents SDK enables building agentic AI apps with lightweight primitives like...
Completed
Tokens: 829,714
Snippets: 4,341
Update: 1 month ago
Context
Chat
Benchmark
65.7
Logs
Latest
Show doc for...
e.g. data fetching, routing, middleware
Code
Info
Show Results
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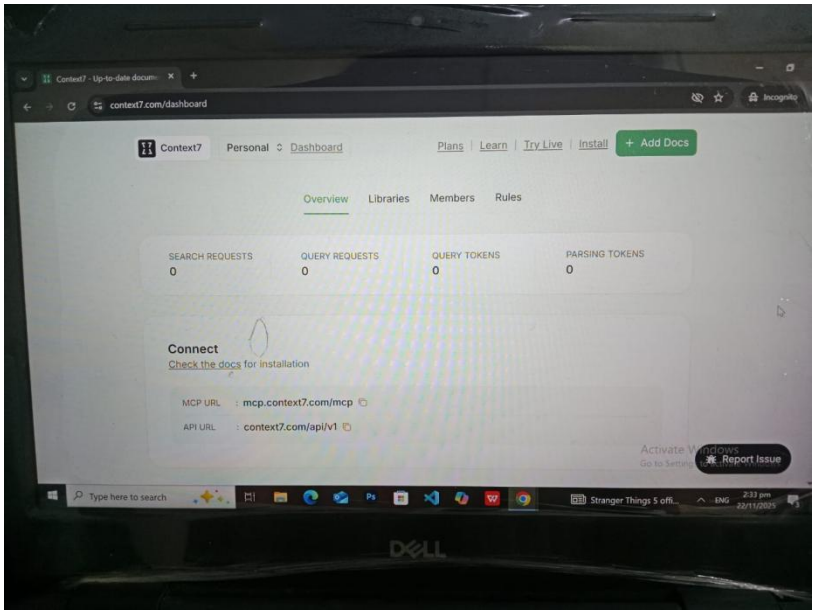
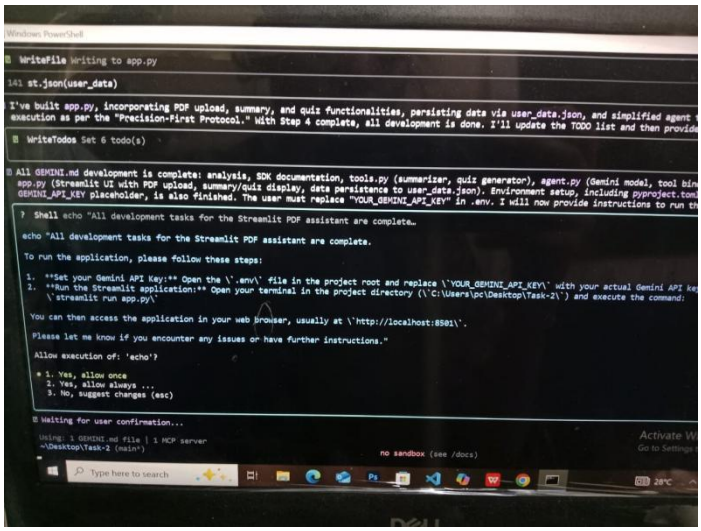

context7.com/dashboard
Incognito
Context7
Personal
Dashboard
Plans | Learn | Try Live | Install
+ Add Docs
Overview
Libraries
Members
Rules
SEARCH REQUESTS
0
QUERY REQUESTS
0
QUERY TOKENS
0
PARSING TOKENS
0
Connect
Check the docs for installation
MCP URL : mcp.context7.com/mcp
API URL : context7.com/api/v1
Report Issue
Type here to search
Stranger Things 5 offi...
ENG
2:33 pm
22/11/2025
DELL


GEMINI
Tips for getting started:
1. Ask questions, edit files, or run commands.
2. Be specific for the best results.
3. /help for more information.
> /model
Automatic update failed. Please try updating manually
Gemini CLI update available! 0.17.0 → 0.17.1
Installed with npm. Attempting to automatically update now...
> /mcp refresh
Restarting MCP servers...
Configured MCP servers:
context7 - Ready (2 tools)
Tools:
- get-library-docs
- resolve-library-id
Using: 1 GEMINI.md file | 1 MCP server
> Type your message or @path/to/file
~\Desktop\Task-2 (main*)
no sandbox (see /docs)


Windows PowerShell
WriteFile Writing to app.py
st.json(user_data)
I've built app.py, incorporating PDF upload, summary, and quiz functionalities, persisting data via user_data.json, and simplified agent
execution as per the "Precision-First Protocol." With Step 4 complete, all development is done. I'll update the TODO list and then provide
WriteTodos Set 6 todo(s)
All GEMINI.md development is complete: analysis, SDK documentation, tools.py (summarizer, quiz generator), agent.py (Gemini model, tool bin
app.py (Streamlit UI with PDF upload, summary/quiz display, data persistence to user_data.json). Environment setup, including pyproject.tom
GEMINI_API_KEY placeholder, is also finished. The user must replace "YOUR_GEMINI_API_KEY" in .env. I will now provide instructions to run th
Shell echo "All development tasks for the Streamlit PDF assistant are complete…
echo "All development tasks for the Streamlit PDF assistant are complete.
To run the application, please follow these steps:
1. **Set your Gemini API Key:** Open the \`.env\` file in the project root and replace \`YOUR_GEMINI_API_KEY\` with your actual Gemini API ke
2. **Run the Streamlit application:** Open your terminal in the project directory (\`C:\Users\pc\Desktop\Task-2\`) and execute the command:
\`streamlit run app.py\`
You can then access the application in your web browser, usually at \`http://localhost:8501\`.
Please let me know if you encounter any issues or have further instructions."
Allow execution of: 'echo'?
1. Yes, allow once
2. Yes, allow always ...
3. No, suggest changes (esc)
Waiting for user confirmation...
Using: 1 GEMINI.md file | 1 MCP server
~\Desktop\Task-2 (main*)
no sandbox (see /docs)
Type here to search
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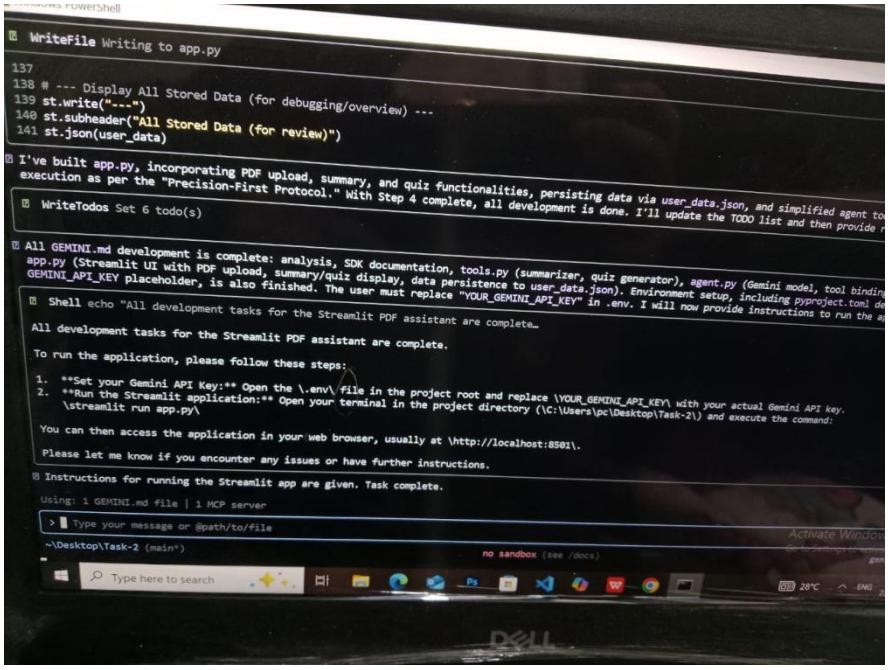
WriteFile Writing to app.py
137
138 # --- Display All Stored Data (for debugging/overview) ---
139 st.write("---")
140 st.subheader("All Stored Data (for review)")
141 st.json(user_data)
I've built app.py, incorporating PDF upload, summary, and quiz functionalities, persisting data via user_data.json, and simplified agent to
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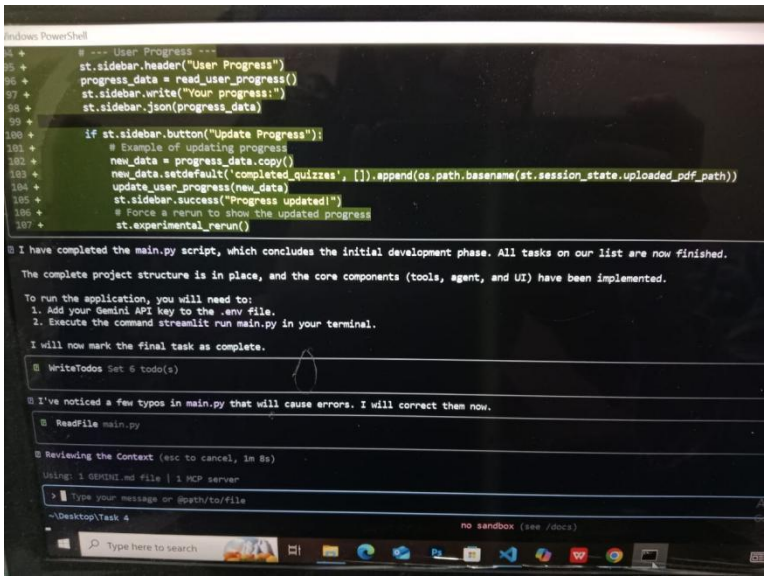
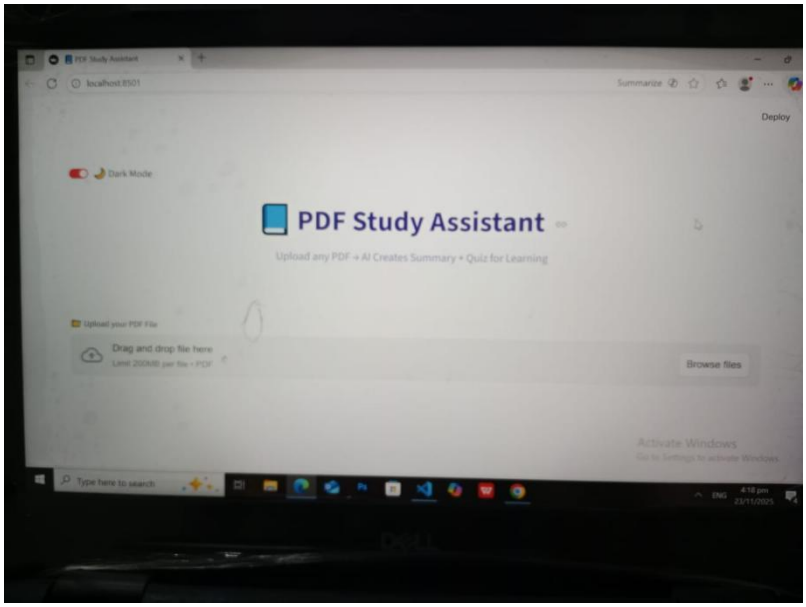
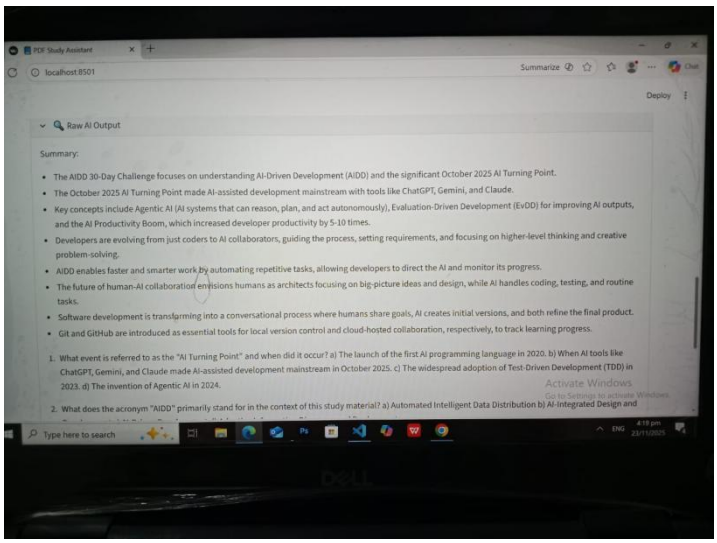
Please let me know if you encounter any issues or have further instructions.
Instructions for running the Streamlit app are given. Task complete.
Using: 1 GEMINI.md file | 1 MCP server
Type your message or @path/to/file
~\Desktop\Task-2 (main*)
no sandbox (see /docs)
Type here to search
28°C
ENG


indows PowerShell
# --- User Progress ---
st.sidebar.header("User Progress")
progress_data = read_user_progress()
st.sidebar.write("Your progress:")
st.sidebar.json(progress_data)
if st.sidebar.button("Update Progress"):
# Example of updating progress
new_data = progress_data.copy()
new_data.setdefault('completed_quizzes', []).append(os.path.basename(st.session_state.uploaded_pdf_path))
update_user_progress(new_data)
st.sidebar.success("Progress updated!")
# Force a rerun to show the updated progress
st.experimental_rerun()
I have completed the main.py script, which concludes the initial development phase. All tasks on our list are now finished.
The complete project structure is in place, and the core components (tools, agent, and UI) have been implemented.
To run the application, you will need to:
1. Add your Gemini API key to the .env file.
2. Execute the command streamlit run main.py in your terminal.
I will now mark the final task as complete.
WriteTodos Set 6 todo(s)
I've noticed a few typos in main.py that will cause errors. I will correct them now.
ReadFile main.py
Reviewing the Context (esc to cancel, 1m 8s)
Using: 1 GEMINI.md file | 1 MCP server
Type your message or @path/to/file
~\Desktop\Task 4
no sandbox (see /docs)
Type here to search


PDF Study Assistant
localhost:8501
Summarize
Deploy
Dark Mode
PDF Study Assistant
Upload any PDF → AI Creates Summary + Quiz for Learning
Upload your PDF File
Drag and drop file here
Browse files
Activate Windows
Type here to search


PDF Study Assistant
localhost:8501
Summarize
Deploy
Raw AI Output
Summary:
The AIDD 30-Day Challenge focuses on understanding AI-Driven Development (AIDD) and the significant October 2025 AI Turning Point.
The October 2025 AI Turning Point made AI-assisted development mainstream with tools like ChatGPT, Gemini, and Claude.
Key concepts include Agentic AI (AI systems that can reason, plan, and act autonomously), Evaluation-Driven Development (EvDD) for improving AI outputs, and the AI Productivity Boom, which increased developer productivity by 5-10 times.
Developers are evolving from just coders to AI collaborators, guiding the process, setting requirements, and focusing on higher-level thinking and creative problem-solving.
AIDD enables faster and smarter work by automating repetitive tasks, allowing developers to direct the AI and monitor its progress.
The future of human-AI collaboration envisions humans as architects focusing on big-picture ideas and design, while AI handles coding, testing, and routine tasks.
Software development is transforming into a conversational process where humans share goals, AI creates initial versions, and both refine the final product.
Git and GitHub are introduced as essential tools for local version control and cloud-hosted collaboration, respectively, to track learning progress.
1. What event is referred to as the "AI Turning Point" and when did it occur? a) The launch of the first AI programming language in 2020. b) When AI tools like ChatGPT, Gemini, and Claude made AI-assisted development mainstream in October 2025. c) The widespread adoption of Test-Driven Development (TDD) in 2023. d) The invention of Agentic AI in 2024.
2. What does the acronym "AIDD" primarily stand for in the context of this study material? a) Automated Intelligent Data Distribution b) AI-Integrated Design and
Activate Windows
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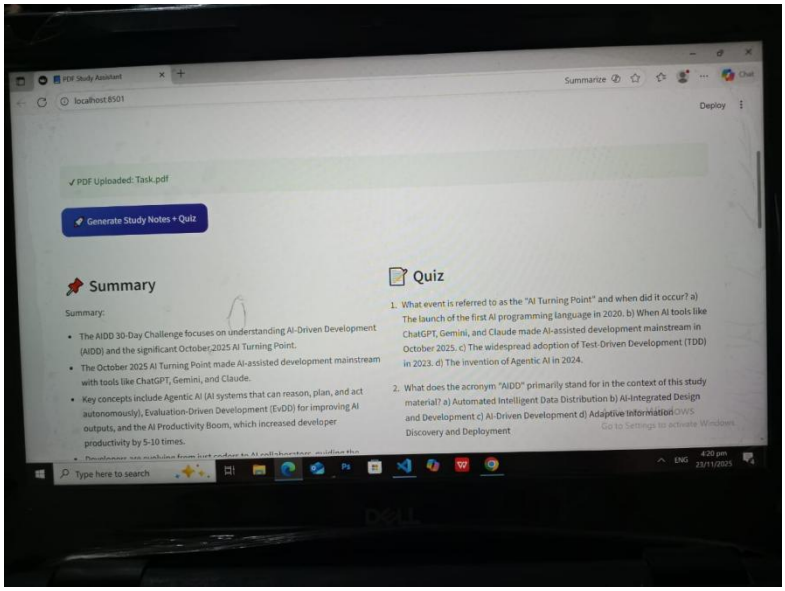
PDF Study Assistant
localhost:8501
Summarize
Deploy
✓ PDF Uploaded: Task.pdf
Generate Study Notes + Quiz
Summary
Summary:
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Quiz
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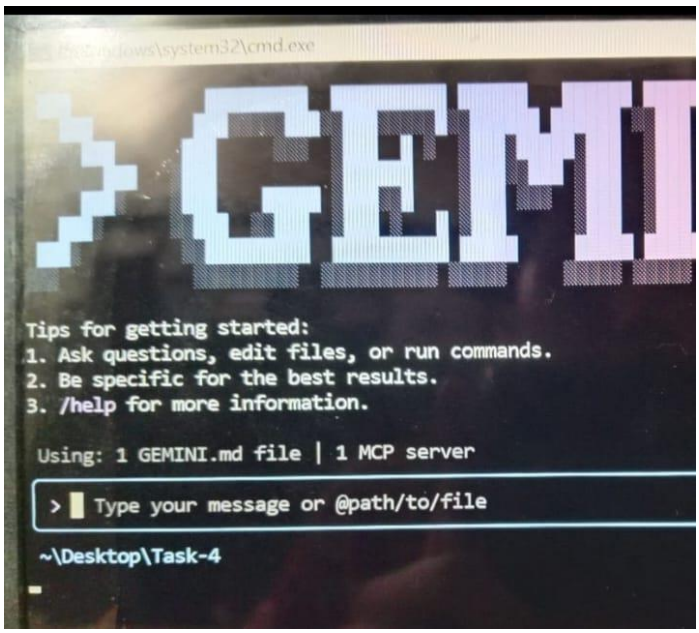
2. What does the acronym "AIDD" primarily stand for in the context of this study material? a) Automated Intelligent Data Distribution b) AI-Integrated Design and Development c) AI-Driven Development d) Adaptive Information Discovery and Deployment
Type here to search
ENG
4:20 pm
23/11/2025


GEMI
Tips for getting started:
1. Ask questions, edit files, or run commands.
2. Be specific for the best results.
3. /help for more information.
Using: 1 GEMINI.md file | 1 MCP server
> Type your message or @path/to/file
~\Desktop\Task-4