🌟 Lecture 05 – Build Your Own Cursor AI

🔷 1️⃣ Project Overview

Goal:
Ek AI agent banaye jo **user command se automatic website generate** kar sake

Example Commands:

- "Course selling website banao"
- "Calculator website banado"

Inspiration:
Cursor aur similar AI tools jo code generate karte hain

🔷 2️⃣ Core Concept – AI Agent Architecture

🔶 Components

1. 💻 **User Input / Console:** User apni requirement type karega
2. 🧠 **LLM Model (GPT, Gemini, etc.):** Commands sochkar generate karega
3. ⚙️ **Tool / Function:** Commands ko execute karega, website create karega

🔶 Working Flow

```
User Input → LLM Model → Commands Generate → Tool Execute → Website Built!
```

🔷 3️⃣ Why Traditional Approach Fail Hoti Hai?

🔶 Old Approach ❌

```
// Pre-built folders

calculator/ (all code)

course-website/ (all code)

weather-app/ (all code)
```

Problem: Limited templates → har command cover nahi ho sakti

🔶 New Smart Approach ✅

```
// LLM generates commands dynamically

LLM → Commands Generate → Tool Execute
```

Advantage: Unlimited flexibility, koi bhi user command execute ho sakta hai

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🔷 4 Step-by-Step Execution Example

🔶 Calculator Website

1. `mkdir calculator` ✅
2. `touch calculator/index.html` ✅
3. `touch calculator/style.css` ✅
4. `touch calculator/script.js` ✅
5. Files me code insert karo ✅

🔶 Live Demo

- **Course Website:** Single command → Complete website 🚀
- **Calculator:** Fully functional with HTML, CSS, JS ➕➖

🔷 5 Technical Implementation

🔶 Command Executor Tool

```
import { exec } from 'child_process';

import { promisify } from 'util';


const executeCommand = async (command) => {

  try {

    const { stdout, stderr } = await promisify(exec)(command);
```

```
    if (stderr) return { error: stderr };
    return { success: stdout || 'Task executed completely' };
  } catch (error) {
    return { error: error.message };
  }
};
```

🔶 Tool Declaration for LLM

```
const executeDeclaration = {
  name: "execute_command",
  description: "Execute terminal commands: create folder, file, edit, delete",
  parameters: {
    type: "object",
    properties: {
      command: {
        type: "string",
        description: "Example: 'mkdir calculator' or 'touch calculator/index.html'"
      }
    }
  }
};
```

🔷 6 System Configuration – LLM Instructions

🔶 Instructions to LLM

```
"You are a website builder expert.
Available tool: execute_command
```

```
Flow:

1. Create folder

2. Create index.html

3. Create style.css

4. Create script.js

5. Write code in HTML, CSS, JS


Provide terminal commands ONE BY ONE."
```

🔶 OS Compatibility

```
import os from 'os';

const platform = os.platform(); // Mac, Windows, Linux
```

💡 7️⃣ Important Tips & Tricks

🔶 Command Execution Best Practices

- ✅ **Promises:** Wait for one command to finish before next
- ✅ **Error Handling:** Check `stderr` for errors
- ✅ **OS Specific Commands:** Mac / Windows / Linux

🔶 File Writing Techniques

- ❌ Avoid `echo` for multi-line content
- ✅ Use `cat << EOF`
    - Mac/Linux: `cat > file.txt << EOF [content] EOF`
    - Windows PowerShell: Different syntax

🚀 8 Live Demo Results

🔶 Course Website

- Command: `"Create course selling website"`
- Result: Complete course website 🎓

🔶 Calculator Website

- Command: `"Create calculator website"`
- Result: Fully functional calculator 🧮

⚠️ 9 Common Challenges & Solutions

🔶 Issues

- OS Compatibility: Mac vs Windows commands differ
- Multi-line code: Echo command fails
- Dependency errors: Node modules

🔶 Solutions

- Clear OS instructions
- Use `cat EOF` for files
- Proper error handling

📚 10 Powerful Summary

🌟 Key Learnings

- 🤖 **AI Agent Magic:** LLM thinks, tool executes
- 🛠️ **Command Executor:** Run any terminal command
- 📝 **System Instructions:** Step-by-step guidance crucial
- 🚀 **Step Execution:** One command at a time
- 💡 **Real Projects:** Course website & calculator successfully built

🔥 Final Achievement

```
Input: "Create calculator website"

Output: 🎉 Fully Working Calculator! 🎉
```

🧠 Next Level Challenge

- Browser-based preview
- UI showing live commands

🎯 **Final Thought:**
"Ek simple command executor se hum koi bhi website automatically bana sakte hain. Yehi power hai AI agents ki!" 🚀