**LLM (Limited Knowledge Model)**

**1. Definition:**

- Large Language Models (LLMs) have limited domain-specific knowledge (e.g., factory workers).

- They rely on external inputs (prompts) to generate outputs.

**2. Use in Programming:**

- Define \*parameters\* and \*functions\* in languages like Python to integrate LLM capabilities into your programs.

**Software Architecture Layers**

**1. Frontend Layer (User Interface)**

- The visible part of the application where users interact.

**2. Middle Layer (Programming Interface)**

- Acts as a bridge between frontend and backend.

- Utilizes APIs (Application Programming Interfaces) to exchange data.

**3. Backend Layer (Database Management)**

- Handles storage and management of data.

- Types of databases:

- SQL-based Databases (structured):

- MySQL

- PostgreSQL

- Oracle

- NoSQL Databases (unstructured):

- MongoDB

- Graph Query Language (GQL) like Neo4j

- Cloud-Native Databases:

- Kafka

- Docker

- Backend supports storage for all types of data.

**ChatGPT and Its Interface**

**1.Interface:**

- ChatGPT does not have a graphical user interface (GUI).

- It operates through a CUI (Convenient User Interface), where tasks follow a step-by-step process based on prompts.

**2. Sequential Nature:**

- Each task is executed step-by-step, depending on the given inputs.

**Artificial Intelligence (AI) Concepts**

**1. What is an Agent?**

- An \*agent\* is an entity that can perceive its environment and act autonomously to achieve specific goals.

**2. Turing Test**

- A test to measure a machine's ability to exhibit human-like intelligence.

**Levels of Artificial Intelligence**

**1. Level 1: Chatbot (Basic)**

- Example: ChatGPT

- Capable of reasoning and engaging in conversation.

**2. Level 2: Reasoner (O1)**

- Performs logical reasoning using techniques like \*Chain of Thought\*.

**3. Level 3: Agentic AI (Autonomous)**

- Goal: To achieve \*autonomy\* by 2025.

- Characteristics:

- Understands tasks and completes them without external guidance.

- Operates in \*virtual\* and \*physical environments\* to achieve goals independently.

**Current Status:**

- Today, we guide AI through prompts.

- In the future, it will take initiative to complete tasks on its own.

**Agent Functionality**

**1.Purpose of an Agent:**

- An agent listens to commands, analyzes the environment, and takes necessary steps to complete tasks.

**2. Use of LLMs:**

- Agents rely on LLMs for processing and solving problems.

- They use data from LLMs, APIs, or search engines like Google to find solutions.

**Key Technologies in AI Development**

***Graph Databases:***

- Example: Neo4j for handling complex relationships in data.

***Kafka Databases:***

- For real-time data processing in cloud environments.

***APIs and Docker:***

- For seamless integration and deployment of AI systems.