

**NAME: MAHAM AZAM**

**ROLLNO: BSAI-4A-005**

**SUBJECT: PAI-LAB**

**TASK: 11**

**Describe the Difference between**

**1: Lang Chain**

Lang chain is a powerful Python framework designed to help developers build applications using Large Language Models. It acts as a bridge between LLMs and external tools, such as APIs, databases, or file systems. Lang Chain enables developers to create intelligent applications like Chabot’s, document search systems, or agents that can interact with different sources of information.

**2: RAG**

RAG is a method where an AI model first searches for useful information like from documents or a database and then uses that information to give a better answer. This helps the model answer more accurately, even if it doesn't know the answer by itself.

**3: LLMs (Large Language Models)**

LLMs are advanced AI models trained on vast amounts of text data to understand and generate human-like language. These models, like GPT-4 or BERT, can perform a wide range of natural language tasks, including text generation, summarization, translation, and question answering. It form the foundation of modern conversational AI and generative tools.

**4: FAISS (Facebook AI Similarity Search)**

FAISS is an open-source library developed by Facebook AI for efficient similarity search of vectors in high-dimensional space. It is commonly used to find the most similar items for example documents, images, texts by comparing their vector representations, making it a key component in vector search and retrieval systems.

**5: A Vector**

A Vector in the context of AI and machine learning, is a numerical representation of data, such as a word, sentence, or image. These vectors capture the semantic meaning of the data, allowing models to perform operations like similarity comparison. For example, similar texts will have vectors that are close to each other in vector space.

**6: A Vector Database**

A Vector Database is a specialized database that stores and manages vectors for fast and accurate similarity search. It is essential for implementing systems like RAG, where you need to find the most relevant documents based on a user’s query. Examples of Vector DBs include Pinecone, FAISS-based solutions etc.

**7: Generative AI**

Generative AI refers to a class of artificial intelligence that can create new content, such as text, images, music, or code. Unlike traditional AI that analyzes or classifies data, generative AI produces original outputs based on patterns it has learned. Tools like Chat GPT and DALL·E are examples of generative AI that generate responses or images from text prompts.

**8: GANs (Generative Adversarial Networks)**

GANs are a type of AI where two parts work against each other one tries to make fake things like fake pictures, and the other tries to catch the fake. They keep improving until the fake things look very real. These are used to make realistic images or videos.