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**Class**: BS AI (4A)

**Roll no**: su92-bsaim-f23-047

**Task**: 11

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**Question NO:01**

**Describe the Difference between:**

1. Lang-Chain

2. RAG

3. LLMs

4. FAISS

5. Vector

6. VectorDB

7. Generative AI

8. GANs

ANSWERS:

**Lang Chain:**

Lang Chain is a **framework** designed to help developers build applications powered by **large language models (LLMs)**. It allows easy chaining of multiple components like prompts, LLMs, vector stores, and APIs to create complex workflows.  
 **Use case:** Question answering, chatbots, document analysis, agents.

**RAG (Retrieval-Augmented Generation)**

RAG is a method that **combines retrieval of external documents with generation using LLMs**.

* It retrieves relevant data (from a knowledge base or database) based on a query.
* Then it passes this data to an LLM to generate a more informed and accurate response.
* **Example:** A chatbot that searches company documents before answering questions.

**LLMs (Large Language Models)**

LLMs are **AI models trained on large amounts of text data** to understand and generate human-like language.  
Examples include **GPT-4**, **Claude**, and **LLaMA**.  
**Capabilities:** Text generation, summarization, translation, coding, etc.

**FAISS (Facebook AI Similarity Search)**

FAISS is an open-source **library developed by Facebook** for **efficient similarity search** on large sets of vectors.

* It's commonly used in vector databases to perform fast **nearest neighbor searches**.  
  **Use case:** Finding similar documents, images, or embeddings.

**Vector**

A **vector** is a numeric representation of data — especially **text** or **images**.

* For text, a vector captures the **semantic meaning** of a word/sentence.  
  **Example:** The sentence "I love pizza" can be converted to a 768-dimensional vector using an embedding model.

**VectorDB (Vector Database)**

A VectorDB is a database that **stores and searches vectors** efficiently.

* It supports similarity search to find items that are “close” in meaning.  
  Popular VectorDBs: **Pinecone, FAISS, Weaviate, Milvus**.  
  **Use case:** Searching similar documents for RAG.

**Generative AI**

Generative AI refers to models that can **generate new content** such as text, images, audio, or video.

* It’s a broader term that includes tools like ChatGPT, Midjourney, DALL·E, etc.  
  **Example:** Creating a realistic photo from text.

**GANs (Generative Adversarial Networks)**

GANs are a specific type of **generative model** where two networks — a **generator** and a **discriminator** — compete.

* The generator creates fake data, and the discriminator tries to detect fakes.
* This process improves the realism of the generated content.  
  **Use case:** Generating realistic faces, artwork, or fake images.