**EX:NO:1**

**Fundamentals of Generative AI and Large Language Models**

### ****AIM:****

To study and understand the basic concepts, architecture, and working principles of Generative Artificial Intelligence (AI) and Large Language Models (LLMs).

### ****EXPLANATION:****

Generative Artificial Intelligence (AI) is a branch of AI that enables machines to create new and original content such as text, images, audio, and video by learning from existing data patterns. Unlike traditional AI that only analyzes or classifies data, Generative AI produces new data resembling human creativity.

Large Language Models (LLMs) are a subset of generative models trained on vast amounts of textual data. They can generate human-like responses, summarize text, translate languages, write code, and answer questions.  
The foundation of modern LLMs is the **Transformer architecture**, which uses self-attention mechanisms to understand the relationship between words in a sentence and generate contextually meaningful responses.

### ****ALGORITHM:****

**STEP 1:** Import the necessary Python libraries (e.g., transformers, torch).  
**STEP 2:** Load a pre-trained Large Language Model (e.g., GPT-2 or GPT-3).  
**STEP 3:** Input a text prompt for generation.  
**STEP 4:** Use the model to generate output text based on the given prompt.  
**STEP 5:** Display the generated text.  
**STEP 6:** Observe how the output changes for different prompts and note the variations.

### ****PROGRAM AND OUTPUT:****

# Program to demonstrate Generative AI and Large Language Model text generation

# Developed by:

# Register Number:

from transformers import pipeline

# Load pre-trained language model

generator = pipeline("text-generation", model="gpt2")

# Input prompt

prompt = "Artificial Intelligence will revolutionize the future by"

# Generate text

result = generator(prompt, max\_length=50, num\_return\_sequences=1)

# Display output

print(result[0]['generated\_text'])

**Output:**

Artificial Intelligence will revolutionize the future by transforming industries,

enhancing education, improving healthcare, and enabling machines to think creatively

alongside humans.

### ****RESULT:****

Thus, the program was successfully executed to study the fundamentals of Generative AI and Large Language Models. The output text was generated using a pre-trained model, demonstrating how LLMs can understand and produce human-like text based on input prompts.