

## Lesson 01 Demo 02

### Synthetic Data Generation Using GenAI

**Objective:** To create a synthetic dataset through prompt engineering using GenAI

**Tools required:** Gemini or ChatGPT

**Prerequisites:** None

#### Steps to be followed:

1. Select a Use Case
2. Analyze Features
3. Create a Prompt
4. Use a GenAI Tool to Generate Output

#### Step 1: Select a Use Case

- 1.1 Choose customer demographics as the use case to generate a synthetic dataset

#### Step 2: Analyze Features

- 2.1 Include attributes such as age, gender, location, income level, occupation, and additional variables related to purchasing behavior or interests
- 2.2 Consider including the following common features:
  - Age
  - Gender
  - Location (for example: city, state, country)
  - Income level
  - Occupation
  - Education level
  - Marital status
  - Number of children
  - Housing type (for example: own, rent)
  - Ethnicity
  - Interests or hobbies

Step 3: Create a Prompt

3.1 Design a prompt that effectively supports the use case and generates the synthetic dataset


Prompt:

Generate a synthetic dataset for customer demographics, including the following features: age, gender, location, income level, occupation, education level, marital status, number of children, housing type, ethnicity, and interests or hobbies. The dataset should resemble a diverse population with realistic distributions for each feature. Ensure that the generated dataset is representative and suitable for analysis.

Step 4: Use a GenAI Tool to Generate Output

4.1 Use a GenAI tool such as ChatGPT or Gemini to generate a synthetic dataset

Generated Data:

**ChatGPT**  
Here's another example of a synthetic dataset for customer demographics, with a fresh set of generated values:

Age	Gender	Location	Income Level	Occupation	Education Level	Marital Status	Number of Children	Housing Type
19	Non-Binary	City	High	Self-Employed	High School Graduate	Married	0	Condo
53	Female	City	Medium	Retired	Graduate Degree	Single	3	Apartment
58	Female	City	High	Retired	Bachelor's Degree	Widowed	3	Apartment