**📘 Task-03 README**

**📖 Text Generation with Markov Chains**

**🔹 Overview**

This project implements a **Markov Chain-based Text Generator** that can generate new text sequences either at the **word-level** or the **character-level**.  
It builds a statistical model from a given input text and predicts the next word/character based on the probability distribution of the previous ones.

**🔹 Features**

* ✅ Word-level text generation (produces sentences using words)
* ✅ Character-level text generation (produces sequences letter by letter)
* ✅ Configurable n-grams (bigrams, trigrams, etc.)
* ✅ Randomized output → generates unique text every time
* ✅ Simple and modular design

**🔹 Requirements**

* Python 3.x
* No external libraries required (uses only built-in libraries: random, re, collections)

**🔹 How to Run**

1. Copy the script file (markov\_text\_generator.py).
2. Run the script in Python:
3. python markov\_text\_generator.py
4. Example usage inside the script:
5. # Word-level Markov Chain
6. word\_gen = MarkovChainTextGenerator(mode="word", n=2)
7. word\_gen.train(sample\_text)
8. print(word\_gen.generate(length=30))
9. # Character-level Markov Chain
10. char\_gen = MarkovChainTextGenerator(mode="char", n=3)
11. char\_gen.train(sample\_text)
12. print(char\_gen.generate(length=200))

**🔹 Example Output**

**Word-level Example:**

artificial intelligence is the future of technology machine learning and deep learning are subsets of ai markov chains are used for text generation

**Character-level Example:**

artificial intellignce is th futue of tecnoogy. marov cains ae usd fr tet genration in natur lague procssing...

**🔹 Applications**

* 🤖 Chatbots – generate conversational text
* ✍️ Creative writing – assist in poetry, stories, lyrics
* 💬 Auto-suggestions – predict next words in typing
* 📚 NLP research – foundational concept in language modeling

**🔹 File Structure**

📂 Markov-Text-Generator

├── markov\_text\_generator.py # main code

├── README.pdf # project description

└── Report.pdf # detailed explanation (task report)

**🔹 Author**

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