Project Documentation

1. Introduction

Project Title: Sustainable Smart City Assistant Using IBM Granite LLM

Team Members:
• Sanjay R
• Rasool Khan R
• Wilson J
• Shanmuganathan N

2. Objectives

• To explore how IBM Granite LLM can be used for sustainable smart city solutions.
• To understand integration of AI with urban planning.
• To develop a smart assistant model for eco-friendly decision making.
• To analyze potential outcomes in traffic, energy, and waste management.

3. Tools and Technologies Used

• IBM Granite LLM – AI model for advanced decision-making.
• Google Colab – Cloud-based Python coding environment.
• Python 3 – Programming language.
• Hugging Face Transformers – For model implementation.
• IoT Sensor Data – For real-time smart city insights.

4. Methodology

1. Define the scope of sustainable smart city applications.
2. Install necessary libraries in Google Colab using pip commands.
3. Import IBM Granite LLM via Hugging Face or API integration.
4. Prepare sample urban datasets (traffic, energy, pollution).
5. Run simulations and queries through the model.
6. Analyze model outputs for real-world sustainability insights.
7. Document results and compare with traditional planning methods.

5. Results

• The IBM Granite model was successfully tested in Google Colab.
• Simulations provided insights into traffic reduction and air quality improvement.
• Model outputs showed how renewable energy integration reduces long-term costs.
• The assistant demonstrated step-by-step teaching ability for city planning tasks.

6. Conclusion

This project demonstrated the potential of IBM Granite LLM in building a sustainable smart city assistant. The model can process urban data, run simulations, and provide practical eco-friendly solutions. It also acts as an instructor, helping planners understand sustainable strategies in a clear

and interactive way.

7. Future Work

• Expand to real-time IoT sensor integration for live data analysis.
• Apply the assistant to larger datasets from multiple cities.
• Build a web or mobile application for public access.
• Collaborate with government bodies for smart policy implementation.