

Format for the Weekly Progress Report

Name of the Student 1	Dev Pandya
Roll Number of Student 1	22BCP409
Name of the Student 2 (if any)	Kavya Patel
Roll Number of Student 2 (if any)	22BCP406
Project Title	Smart Energy Consumption Monitoring and Prediction Using Big Data
Name of the Supervisor (Mentor) at PDEU	Dr. Samir Patel
Week Number	Week 7
<p>Progress made in Week 7:</p> <p>Scalable DB Schema: Designed an efficient relational database (DB) with composite keys (State Code + Timestamp) to handle high-frequency time-series data for all Indian states.</p> <p>Gross Load Focus: Schema prioritizes features for pure consumption (Gross Load) forecasting, including lagged load and critical weather drivers (like temperature change), ensuring high model accuracy.</p> <p>Kafka Streaming Pipeline: Established a Kafka channel for high-velocity data movement, ensuring a decoupled, real-time data delivery stream from the producer to the consumer application.</p> <p>Consumer-Driven Persistence: A dedicated Consumer application performs Upsert operations to efficiently store the structured data records back into the relational database, maintaining a persistent, near real-time historical store.</p> <p>All-India Scale: The architecture successfully supports multi-dimensional scale-up to independently manage and process load data for every distinct State/UT in India.</p>	

Dev Pandya

Kavya Patel

Dr. Samir Patel

**Name & Signature of
Student 1**

**Name & Signature of
Student 2**

**Name & Signature of
Supervisor (Mentor)**