Data Stream Model with Lambda & Kappa Architecture (Handwritten Style)

Data Stream Model - Data comes continuously like a river. - Data is processed immediately (real-time). - Examples: live traffic, bank alerts, sensor data. Parts of Data Stream Model 1) Data Source → sensors, mobiles, apps 2) Buffer → holds data for a moment 3) Stream Processor → processes fast 4) Queries → continuous commands like count, avg 5) Temp Storage → keep recent data 6) Output → dashboard / alert Diagram: Data Source -> Buffer -> Stream Processor -> Output ↓ Temporary Storage Lambda Architecture (two layers) - Batch layer → old data (accurate) - Speed layer → live data (fast) - Serving layer → combine both results Diagram: Batch Layer -----| ↓ Serving Layer → Final Output ↑ Speed Layer -----| Kappa Architecture (one layer) - Only live streaming data - No batch layer, simple & fast Diagram: Data → Stream Layer → Output ↓ Storage Difference Lambda = old + live data (2 layers) Kappa = only live data (1 layer)