1. Traffic Simulation Software

- For modeling and analyzing traffic patterns.
- Examples: **VISSIM, Aimsun, SUMO.**

2. Real-Time Data Processing

- Software must handle real-time data from sensors, GPS, and cameras.
- Requires **stream processing tools** (e.g., Apache Kafka, Spark Streaming).

3. Database Management System (DBMS)

- To store and manage traffic data.
- Examples: **MySQL, PostgreSQL, MongoDB.**

4. Machine Learning & AI Frameworks

- To predict traffic and optimize flow.
- Examples: **TensorFlow, Scikit-learn, PyTorch.**

5. Geographic Information System (GIS)

- For mapping and route planning.
- Examples: **ArcGIS, QGIS, Google Maps API.**

6. Traffic Signal Control Interface

- Software to communicate with traffic lights and control systems.
- Must support **adaptive signal control** standards.

7. User Interface (UI) Dashboard

- For traffic managers to monitor and control systems.
- Built with **web or desktop UI frameworks** (e.g., React, Angular).

8. Network Communication Software

- For Vehicle-to-Infrastructure (V2I) communication.

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- For Vehicle-to-Infrastructure (V2I) communication.
- Uses **DSRC**, **C-V2X**, or **5G** protocols.

9. Security and Access Control

- Protects traffic data and system controls.
- Includes **authentication, encryption, and user roles.**

10. Integration APIs

- To connect with other systems like weather services, emergency services, or public transport.