Final Project– Database Design

1. TrafficEvents

Column	Data Type	Description
EventID	BIGINT	Primary Key, Auto-increment
Timestamp	DATETIME2(7)	Event time in UTC
LocationID	NVARCHAR(10)	e.g., LOC001
LocationName	NVARCHAR(50)	e.g., Tahrir Square
Latitude	DECIMAL(9,6)	GPS coordinate
Longitude	DECIMAL(9,6)	GPS coordinate
VehicleCount	INT	Number of vehicles
AverageSpeedKMH	DECIMAL(5,2)	Speed in km/h
DominantVehicleType	NVARCHAR(20)	e.g., Car, Taxi
WeatherCondition	NVARCHAR(20)	e.g., Clear, Heavy Rain
TrafficIncident	NVARCHAR(30)	e.g., None, Major Accident
CongestionPercentage	DECIMAL(5,2)	% of capacity
IsRushHour	BIT	1 = Yes
RushFactor	DECIMAL(3,2)	0.4, 1.0, 1.4, 1.5

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2. Anomalies

Column	Data Type	Description
AnomalyID	BIGINT	Primary Key, Auto-increment
EventID	BIGINT	FK → TrafficEvents.EventID
AnomalyType	NVARCHAR(30)	e.g., high$_c$*ongestion*
Severity	NVARCHAR(15)	critical, high, warning
Value	DECIMAL(6,2)	e.g., 125.5
Incident	NVARCHAR(30)	e.g., Major Accident (if applicable)
DetectedAt	DATETIME2(7)	Detection time

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3. Locations

Column	Data Type	Description
LocationID	NVARCHAR(10)	Primary Key
LocationName	NVARCHAR(50)	
Latitude	DECIMAL(9,6)	
Longitude	DECIMAL(9,6)	
MaxCapacity	INT	Max vehicles

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4. WeatherReference

Column	Data Type	Description
WeatherCondition	NVARCHAR(20)	Primary Key
SpeedImpactFactor	DECIMAL(4,3)	0.550–1.000

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5. IncidentReference

Column	Data Type	Description
IncidentType	NVARCHAR(30)	Primary Key
SpeedImpactFactor	DECIMAL(4,3)	0.450–1.000