Database Systems (CSC-270)

Sky Vault: Database Project Proposal

Project Title: Sky Vault

A secure and expansive weather database.
Objective: To monitor and archive solar storms, space weather, and planetary electromagnetic disruptions through a centralized and normalized database system.

Database Tables and Structure

Table: Monitoring_Stations

Attribute	Description / Key
station_id	Primary Key
location	latitude/longitude
altitude	
status	active/maintenance/offline

Table: Sensors

Attribute	Description / Key
sensor_id	Primary Key
station_id	Foreign Key → Monitoring_Stations
type	magnetometer/spectrometer/etc.
last_calibration_date	

Table: Solar_Events

Attribute	Description / Key
event_id	Primary Key
type	solar flare/CME/solar wind
intensity	G1-G5 scale
detection_time	

Table: Magnetic_Readings

Attribute	Description / Key
reading_id	Primary Key
sensor_id	Foreign Key → Sensors(sensor_id)
timestamp	
disturbance_level	nT

Table: Satellite_Alerts

Attribute	Description / Key
alert_id	Primary Key
satellite_name	GOES/DSCOVR
event_id	Foreign Key → Solar_Events(event_id)
risk_level	

Table: Ground_Impacts

Attribute	Description / Key
impact_id	Primary Key
location	
event_id	Foreign Key → Solar_Events(event_id)
effects	power grid/radio/GPS disruption

Table: Response_Protocols

Attribute	Description / Key
protocol_id	Primary Key
trigger_condition	
action	e.g., reroute aircraft
priority_level	

Table: Historical_Geostorms

Attribute	Description / Key
storm_id	Primary Key
year	e.g., 1859 Carrington Event
estimated_strength	
damage_cost	

Table: Equipment

Attribute	Description / Key
equipment_id	Primary Key
station_id	Foreign Key → Monitoring_Stations
type	backup generator/antenna
condition	

Table: Personnel

Attribute	Description / Key
person_id	Primary Key
name	
role	meteorologist/engineer
station_id	Foreign Key → Monitoring_Stations(station_id)