1.

(a) Courses have sections, students take sections and receive grade reports from them, courses have prerequisites of other courses

(b) A view that groups all of the students who took each section together and each of their grades. Useful for a user group of professors to set up grade reports.
A view that groups all sections and courses taught by specific professors. This would be useful for students who are fond of or have heard good things about specific professors.

(c)

- StudentNumber should be unique and not null for each STUDENT row (key constraint and entity integrity constraint)
- CourseNumber should be unique for each COURSE row (key constraint)
- A value of StudentNumber in a GRADE_REPORT record must also exist in the STUDENT table (referential integrity constraint)
- Each Grade in GRADE_REPORT must be in the same domain (string) (domain constraint).

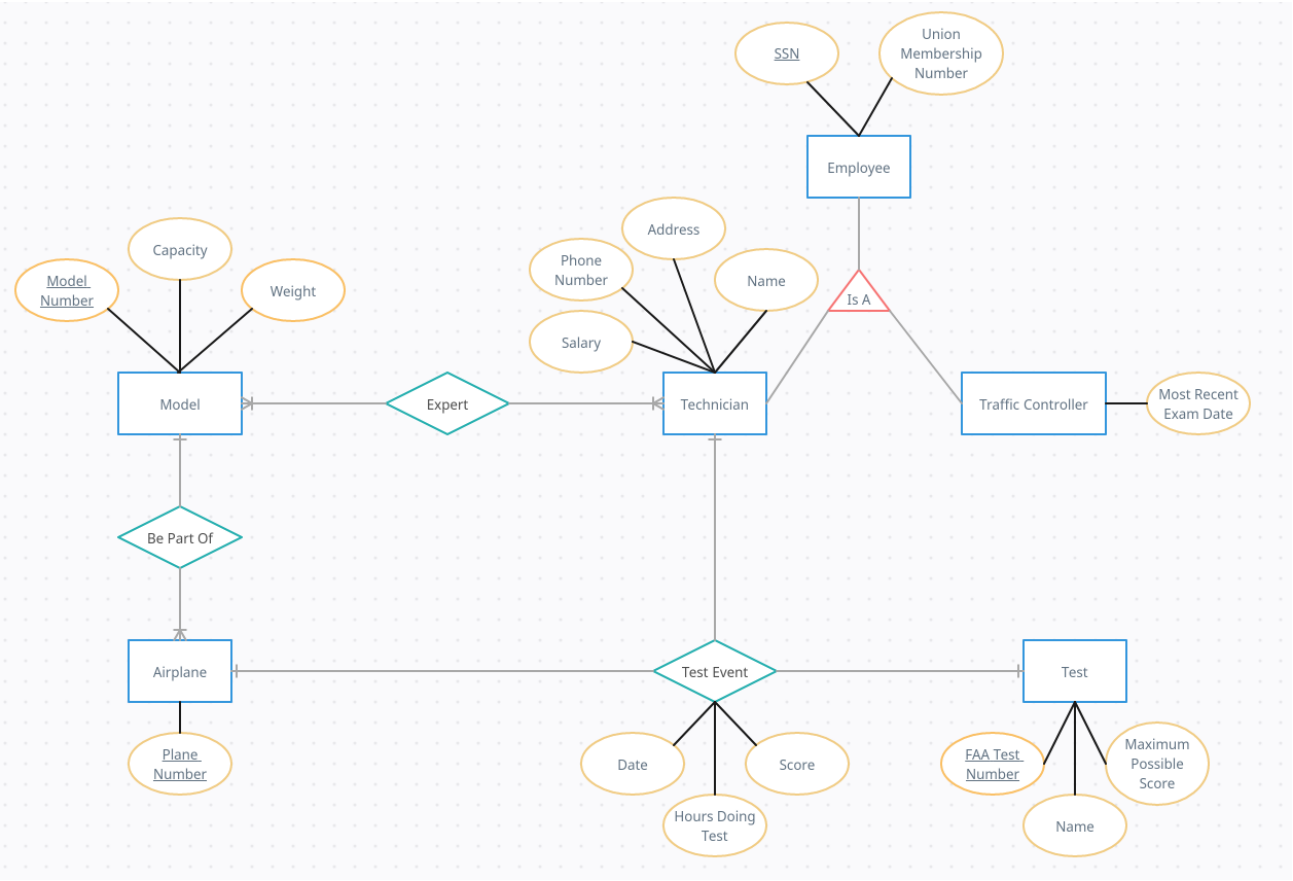
2. (4). The data model plays an important role in representing information about the real world in a database because it represents the data in a database and its relations. It serves as the blueprint for the database design.
(1). The data definition language is also important in representing information in the real world because you use it to describe logical and external schemas.

3.

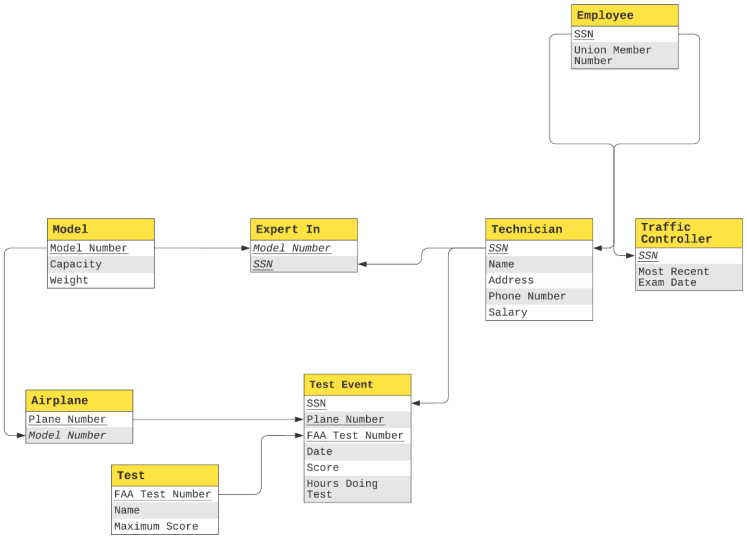
- **Internal Schema**- describes the physical storage structure of the database
- **Conceptual Schema**- hides details of physical storage and concentrates on describing entities, data types, relationships, user operations, and constraints.
- **External Schema**- describes the part of the database that a particular user group is interested in and hides the rest of the database from that user group

Logical independence refers to the ability to change the conceptual schema without affecting the external schema or the application that uses the data. Physical independence refers to the ability to change the internal schema without affecting the conceptual schema or the external schema.

4.


SSN
Union Membership Number
Employee
Address
Capacity
Phone Number
Name
Model Number
Weight
Is A
Salary
Model
Expert
Technician
Traffic Controller
Most Recent Exam Date
Be Part Of
Airplane
Test Event
Test
Plane Number
Date
Score
FAA Test Number
Maximum Possible Score
Hours Doing Test
Name

5.


Employee
SSN
Union Member Number
Model
Model Number
Capacity
Weight
Expert In
Model Number
SSN
Technician
SSN
Name
Address
Phone Number
Salary
Traffic Controller
SSN
Most Recent Exam Date
Airplane
Plane Number
Model Number
Test Event
SSN
Plane Number
FAA Test Number
Date
Score
Hours Doing Test
Test
FAA Test Number
Name
Maximum Score