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TASK 1:

Entity Type: Defines a collection of entities that have the same attributes. example: Student and Instructor in above table attributes such as Name,ID,address are same.

Entity Set: Collection of entities at a current state with a particular entity type. All instances of Student entity type. ex: {Carly, Jim,John} of Student

Entity: Entity is an independent object or thing of a miniworld.
Example:

Carly	UTA109	S peacon st	CSE

From Student table

Student

Name	Id	Address	Dept
Carly	UTA109	S peacon st	CSE
Jim	UTA110	Davis Dr	Maths
John	UTA111	Cooper St	Physics

TASK 2:

The entity types that do not have key attributes of their own are called weak entity types. Entity of weak entity are connected to entity of other entity types and they obtain attributes from supporting entity and together with their attribute form a key attribute.

TASK 3:

{} -> multiple valued attribute(phone number)
() -> composite (first name, last name)

{college_education(college_name,start_date,end_date,
{degrees_earned(degree_name,degree_month,degree_year),
{transcript(course_name,semester,grade,year)}})}

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TASK4:

Database represent AIRPORT SYSTEMS, with unique Airport_Code, Name of Airport, City, and State where Airport is located.
A FLIGHT which has unique Number, information of Airline it belong to and Weekdays it travels.
The AIRPORT has details of which AIRPLANE_TYPE can land in that particular AIRPORT.
AIRPLANE is assigned to LEG_INSTANCE.
Each FLIGHT has FLIGHT_LEG which determines the Flight is nonstop and a flight can have multiple FLIGHT_LEG.
Since a FLIGHT has multiple FLIGHT_LEG, DEPARTURE_AIRPORT and ARRIVAL_AIRPORT are connected to FLIGHT_LEG
A FLIGHT_LEG has LEG_INSTANCE which also provide information as the DEPARTURE and ARRIVAL of FLIGHT to particular AIRPORT is known.
Additionally, LEG_INSTANCE has information of available seats and date.
The SEAT reservation of a customer is tracked by LEG_INSTANCE
Finally AIRPLANE_TYPE with unique Airplane_id and total number of seats is assigned to LEG_INSTANCE.

Relationship with constraints.

1. CAN_LAND, is M:N relation between AIRPORT and AIRPLANE. Both participation is partial
2. TYPE, is 1:N relation between AIRPLANE_TYPE and AIRPLANE.AIRPLANE has total participation and AIRPLANE_TYPE is partial participation
3. DEPARTURE_AIRPORT, is 1:N relation between AIRPORT and FLIGHT_LEG. Airport has partial participation and FLIGHT_LEG is total participation
4. ARRIVAL_ARIPORT is 1:N relation b/w AIRPORT and FLIGHT. Airport has partial participation and FLIGHT_LEG is total participation
5. DEPARTS is 1:N, relation b/w AIRPORT and LEG_INSTSANCE. Both partial participation
6. ARRIVES is 1:N relation b/w AIRPORT and LEG_INSTSANCE. Both partial participation

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7. ASSIGNED is 1:N relation b/w AIRPLANE and LEG_INSTANCE. AIRPLANE is partial participation LEG_INSTSNCE is total participation
8. RESERVATION is N:1 ,relation b/wLEG_INSTANCE and SEAT with weak realationship and LEG_ISNTANCE is partial participant and SEAT is total participation. A weak relation.
9. INSTANCE_OF is 1:N relation b/w FLIGHT_LEG and LEG_INSTANCE. FLIGHT_LEG is partial participant and LEG_INSTANCE is weak entity with total participant.
10. LEGS is 1:N relation b/w FLIGHT_LEG and FLIGHT.FLIGHT_LEG is weak entity with total participation and FLIGHT is partial
11. FARES is 1:N relation b/w FLIGHT and FARE. FARE is weak entity with total participation and FLIGHT is partial participation.

In above relationships indicated in red font represent Identifying relationship.

TASK5:

- Croom, DaysTime, Sem, Year
- Sem, Year, Id, DaysTime