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ITCS – 3160

Homework #8

ER Diagram description

1. Entity descriptions:

* There are 8 Entities: **AIRPORT, FLIGHT\_LEG, AIRPLANE\_TYPE, FLIGHT, AIRPLANE, LEG\_INSTANCE, FARE and SEAT.**
* The **AIRPORT** entity has 4 attributes: Airport\_code (which is also a key attribute), City, State and Name.
* The **FLIGHT\_LEG** is a weak entity because it is dependent on the **FLIGHT** entity for its existence by the **LEGS** relationship. It has 1 attribute: Leg\_no (which is a partial key).
* The **AIRPLANE\_TYPE** entity has 3 attributes: Company, Type\_name (which is a key attribute) and Max\_seats.
* The **FLIGHT** entity has 3 attributes: Number (which is a key attribute), Airline and Weekdays.
* The **AIRPLANE** entity has 2 attributes: Airplane\_id (which is a key attribute) and Total\_no\_of\_seats.
* The **LEG\_INSTANCE** is a weak entity because it is dependent on the **FLIGHT\_LEG** entity for its existence through the **INSTANCE\_OF** relationship. It has 2 attributes: No\_of\_avail\_seats and Date (which is a partial key).
* The **FARE** entity is a weak entity because it is dependent on the **FLIGHT** entity through the **FARES** relationship. It has 3 attributes: Restrictions, Amount, Code (which is a partial key).
* The **SEAT** entity is a weak entity because it is dependent on the **LEG\_INSTANCE** entity to exist through the **RESERVATION** relationship. It has 1 attribute: Seat\_no (which is a partial key).

1. Relationship Descriptions:

There are 11 relationships: **DEPARTURE\_AIRPORT, ARRIVAL\_AIRPORT, CAN\_LAND, LEGS, INSTANCE\_OF, TYPE, DEPARTS, ARRIVES, FARES, ASSIGNED, RESERVATION**

**DEPARTURE\_AIRPORT** is a relationship between **AIRPORT** and **FLIGHT\_LEG**. A flight can only leave one airport and a flight leg and many flight legs can land at one airport. (1, N) (partial, total) Attribute(s): Scheduled\_dep\_time is the attribute that contains the time the flight departs

**ARRIVAL\_AIRPORT** is a relationship between **AIRPORT** and **FLIGHT\_LEG**. Many flight legs can arrive at the arrival airport, one airport can be an arrival airport. (1, N) (partial, total) Attribute(s): Scheduled\_arr\_time is the time the scheduled flight arrives.

**CAN\_LAND** is a relationship between **AIRPORT** and **AIRPLANE\_TYPE**. Many airplane types can land at the airport and many airports can have many airplane types. (M, N) (partial, partial)

**LEGS** is a relationship between **FLIGHT\_LEG** and **FLIGHT**. One flight can have many flight legs, a flight leg can only be one flight. (N, 1) (total, partial)

**INSTANCE\_OF** is a relationship between **FLIGHT\_LEG** and **LEG\_INSTANCE**. Many leg instances can be a flight leg, and only one flight leg can be a leg instance. (1, N) (partial, total)

**TYPE** is a relationship between **AIRPLANCE\_TYPE** and **AIRPLANE**. An airplane can only be one type of airplane, and an airplane has to be at least one type of airplane. Many airplanes can be of one type of airplane. (1, N) (partial, total)

**DEPARTS** is a relationship between **AIRPORT** and **LEG\_INSTANCE**. Many leg instances can depart for one airport, and one airport can have many leg departures. (1, N) (partial, partial) Attribute(s): Dep\_time is the time the flight departs from the airport.

**ARRIVES** is a relationship between **AIRPORT** and **LEG\_INSTANCE**. Many leg instances can arrive at one airport and a leg instance can only arrive at one airport. (1, N) (partial, partial) Attribute(s): Arr\_time is the attribute for the time the flight will arrive.

**FARES** is a relationship between **FARE** and **FLIGHT**. Many fares can be related to one flight and a flight can have many different fare prices. (N, 1) (total, partial)

**ASSIGNED** is a relationship between **AIRPLANE** and **LEG\_INSTANCE**. One airplane can be assigned many leg instances and many leg instances can be assigned to one airplane. (1, N) (partial, total)

**RESERVATION** is a relationship between **SEAT** and **LEG\_INSTANCE**. Many seats can be reserved for one leg instance and one leg instance can reserve many seats. (N, 1) (total, partial) Attribute(s): Customer\_name and Cphone are attributes for the **RESERVATION** relationship, these attributes store the customer’s name and their cell phone number, and this corresponds with the reservation.