

CS 550 - Project Component 1

Entities used in the ER:

Flights, Trips, Passenger, Login, Employee, Cards, Account, Awards, Employer Incentive Program, Promotions, Exchange Centers.

Brief description of entities, relations & Business rules:

- 0 or more Passengers boards different flights and flights contain trips. The trips entity is a weak entity that is designed to maintain connection points in a complete flight journey and the distance covered in miles are considered as the points allotted for connections.
- Employees can be passengers, 0 or more employees can be passengers, 0 or more passengers can be employees.
- Whenever a passenger takes a flight, the points are added to the passenger account, 0 or more flights have points addition into the passenger account, 0 or more accounts get added with points on taking flights.
- Promotions are applied on each flight journey, 0 or more flights contain promotions, 0 or more promotions are applied on flights.
- Flights also include employee incentive program, 0 or more flights include in employee incentive program, 0 or more employee incentive program are applied on flights.
- Employees can be passengers, 0 or more employees can be passengers, 0 or more passengers can be employees.
- Employees have employee incentive program; this incentive program has X% increase in points listed under employee offer and z% increase in points if a passenger is referenced by an employee. 0 or more employees have employee incentive program, 0 or more employee incentive program are applicable for employees.
- Employees can refer as many passengers as they want to, 0 or more employees can refer passengers, 0 or more passengers can be referred by employees.
- Passengers hold many Fly more card details that includes the card status which maintains the active and lost card list under the Card_Status attribute, 0 or more passengers can have fly more cards, each card can be linked to exactly one passenger.
- Passengers hold passenger account, the mileage points are added to this account whenever a passenger takes a flight, 0 or more passengers hold passenger account, 0 or more passenger accounts are linked to the passengers.
- Passenger have login credentials, 0 or more passengers have login, and login can be linked to exactly one passenger.
- Passengers redeem awards at exchange centers, this process is known as redemption process, since redemption process is maintained in the database (redemption history can be thus retrieved from the database). 0 or more passengers can redeem awards, 0 or more awards can be retrieved by passengers.

- Redemption can be done at exactly one exchange center; 0 or more exchange centers perform redemption process.
- The mileage points can be redeemed exactly from one passenger account, 0 or more passenger account can be by all passengers.

Experience in arriving at the final ER-diagram:

Initially, we started the Project Component-1, determining all the related entities in the Frequent Flyer Program. After figuring out all the entities used, we started working on the attributes for each entity. Then, we built up the relationships, cardinalities and business rules among the entities provided by the instructor. Each member in the team made initial independent drafts. Upon discussions, we implemented new business rules that complete the Frequent Flyer Database System. The initial steps of designing a Database System (establishing relationships between entities) seemed to be tough. Upon refining the drafts from step to step we progressed designing the final ER Diagram.