CIS 28-061 Homework Problem 3: Fly By Night (FBN) Airlines

Submit the State / Event Diagram for a Seat

Consider carefully all the possible states of a specific seat on a Flight Instance, from the time the Flight Instance is created to (hopefully!) successful arrival of the Flight Instance at its Destination Gate.

This should include the type of Events that can occur to transition the object between states. Additional factors for real airlines should be considered. For FBN:

Reservation Phase

- There are no "multi-hop" flights. All Flight Instances go directly from one airport to another.
- The creation of a Flight Instance 90 days before departure creates all the (empty) seats
- Every Reservation is for a specific seat. There is no "choose seat when you board" option.
- There is no "Confirmation". A Seat is either assigned to a passenger with a reservation, or it is free.
- Reservations can get cancelled. But neither new seat reservations nor cancellations can occur within 24 hours of the Flight Instance's scheduled departure

Plane Assignment Phase

- The Plane for the Flight Instance is selected from 12 to 23 hours prior to its scheduled departure.
- The plane assigned to the Flight Instance could have a broken seat. If there was a Passenger assigned to that seat:
    - If the Flight Instance is not full, he/she gets reassigned to an empty seat
    - Otherwise the Passenger is put at the front of the wait list

Boarding Phase

- The plane arrives and if necessary the seats are cleaned.
- The initial Boarding Process begins. Passengers with reservations board the plane and sit down.
- One or more Passengers may not show up. This will be discovered when initial boarding is complete
    - If there are empty seats, each will be allocated to the next person on the wait list until either all seats are full, or there are no other people on the wait list
- The Boarding process ends when the doors are shut. A seat at this point is either occupied or empty (where any broken seat is considered empty).

Post Boarding

- The plane takes off. The plane lands and taxies to the Gate. The Seat cares about none of this
- The passengers disembark. If it was in use, the seat tells the reservation it has been fulfilled, and is destructed.

Homework Assumptions:

- It is assumed that the same Events and States apply to all Seats (whether coach, upgrade or business) and no matter what additional equipment they have.

- The diagram should be similar to the State / Event diagram to a Section that was reviewed in class.

- The focus should be entirely on the SEAT. Not the passenger, not the plane and not the flight Instance, unless what happens to them affects the state of a seat.

Additional information: Once again, this project can be done solo (1/2 point bonus) or in a team of 2-4 people. The state / event diagram should be relatively neat and the required conventions must be followed:

- **Arrow:** Event [Conditional] / Action

- **Rectangle:** Stable State (can only leave via an Arrow that includes an Event)

- **Ovals:** Transient State (can only leave via an Arrow that does **not** include an Event)