Data Insert:

To start our data insertion procedure, we created a foundational dataset using AI-generated data. The efficient populating of sample records was made possible with this early automation. After that, we manually went over and improved these entries to make sure they all complied with the system's established business rules and limitations. To completely correspond with certain factors, like capacity restrictions, unique IDs, and regulatory compliance, further data was provided when needed. Additionally, our UI allows us to insert data easily into our database when needed.

Business Rules and Constraints:

- Flights cannot exceed their maximum capacity

- Each Passenger must have a unique ID
- Each booking must be associated with one passenger and one flight
- Only one passenger with completed check in can be assigned a seat
- Staff can only check in passengers for flights they are assigned to.
- Each passenger must have a unique and not NULL passenger ID
- A passenger can book multiple flights but each separate booking must have a unique booking ID
- Passport numbers will be unique and not NULL
- Valid contact information is required for each passenger
- Booking must be linked to both a valid passenger and a valid flight
- Check-ins must be finalized for each booking XX hours before the flight
- Every flight must have a unique flight ID
- A flight can not be overbooked beyond a plane's capacity
- A flight status can be either on-time, delayed or canceled
- Each plane must have a unique registration number
- A plane can not be assigned to multiple flights that contradict with each other
- A plane must undergo maintenance after a certain amount of flight hours
- If a plane is under maintenance it can not be assigned to a flight
- All data entries must comply with aviation regulations such as FAA standards
- Flight schedules are updated in real time for both passengers and staff
- If cancelation of a flight occurs, passengers are notified and given rebooking/refund option
- Duplicate bookings are not allowed for the same passenger on the same flight
- Each flight must have an assigned crew
- All data changes must be traceable and recorded

Explanation of Business Rules:

• Business rules within this database are obligatory for a plethora of reasons. Primarily, data integrity, maintaining customer information is vital for a successful operation as well as

preventing duplicate or conflicting data. These occupational regulations also ensure the quality management of operations to maintain that they are running efficiently in accordance with FAA regulations. The overall security is benefited with the use of these directives in addition to improving customer and employee experience. The final and most major benefit that these business rules has provided is the ability to analyze data: provide accurate information about passenger trends and maintenance tracking along with helping management with data driven dilemmas.