Eugene Borts
Applied Database 2
Assignment 1

Airline Flight Tracking
Custom Data Dictionary

Airline: Airline information consisting of Airline ID and airline name.

	Column Name	Data Type	Allow Nulls
🔑	id	int	☐
	name	nvarchar(100)	☑

Flight: Flight information consisting of Flight ID, flight number, departure airport, arrival airport, and foreign keys AirlineID and TrackerID.

	Column Name	Data Type	Allow Nulls
🔑	id	int	☐
	AirlineID	int	☑
	flightnumber	int	☑
	departairport	nvarchar(100)	☑
	arriveairport	nvarchar(100)	☑
	TrackerID	int	☑

Tracker: Flight tracking information consisting of Tracker ID, flight date, departure time, arrival time, flight duration, flight status, terminal, and foreign key FlightID.

	Column Name	Data Type	Allow Nulls
🔑	id	int	☐
	FlightID	int	☑
	flightdate	int	☑
	departtime	int	☑
	arrivetime	int	☑
	duration	int	☑
	flightstatus	nvarchar(50)	☑
	terminal	nchar(10)	☑

Customer: Customer information consisting of customer ID and customer name.

	Column Name	Data Type	Allow Nulls
🔑	id	int	☐
	name	nvarchar(200)	☑

Passenger: Passenger information consisting of Passenger ID, seat, ticket, and foreign keys CustomerID and FlightID.

Column Name	Data Type	Allow Nulls
🔑 id	int	☐
CustomerID	int	☑
FlightID	int	☑
seat	nchar(10)	☑
ticket	nchar(20)	☑

Note:

I realized I made some mistakes in selecting the data types, especially regarding things like the flightdate field in the Tracker table. When I attempted to change the data type, I was given an error and told that I must drop the table and recreate it to change the data type. When I attempted to delete the table, I received another error stating that it could not be deleted. I believe this error occurred due to dependency issues with the keys and I decided against deleting every table over this mistake.

Relationships

Airline 1:n Flight – An airline can have many flights, but each flight must be assigned to a single airline.

Flight 1:1 Tracker – Once a row is entered into the flight table, there can only be one Tracker table created for it using the FlightID, and the TrackerID is then assigned as a foreign key in the Flight table. This is a one-to-one relationship since each flight can have only one Tracker and each Tracker can have only one Flight.

Customer 1:n Passenger - Flight 1:n Passenger – A customer does not become a passenger and is not assigned to any flight until his or her unique CustomerID is entered into the Passenger table along with the FlightID for that specific flight. One customer can be a passenger on multiple flights, and a customer can purchase multiple seats on a single flight.

Customer n:n Flight – A customer can have multiple Passenger entries for a flight and is assigned multiple Passenger ID's for the same flight if the customer buys multiple seats/tickets for that flight. By using a unique Passenger ID for every ticket purchased, Customer and Flight have a many-to-many relationship with the capacity to have multiple flights per customer and multiple seats purchased by one customer for the same flight. An example of this is shown in the screenshot at the bottom of the document, in which Passenger ID's 1 and 22 both belong to

Customer ID 1 for the same flight, while Customer ID's 17 and 15 have purchased seats on multiple different flights.

Entity 1	Relationship	Entity 2
Airline	1:n	Flight
Flight	1:1	Tracker
Customer	1:n	Passenger
Flight	1:n	Passenger
Customer	n:n	Flight

Database Diagram
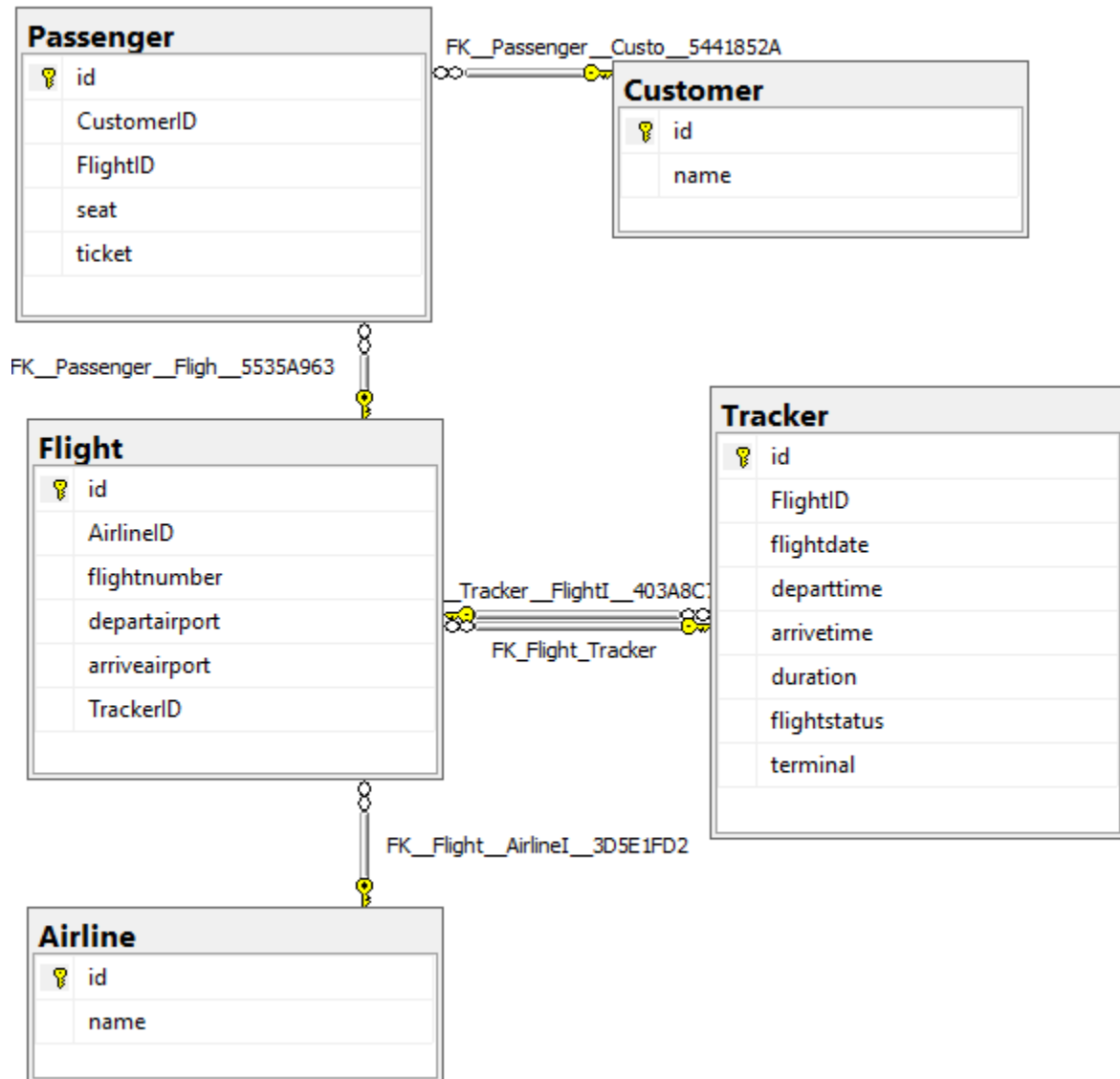
SQL Code

This assignment was completed using a combination of SQL code and the SQL Server Management GUI.

Table Creation

```sql
CREATE TABLE Airline (
    id int primary key identity(1,1),
    name nvarchar(100)
    )

CREATE TABLE Flight (
    id int primary key identity(1,1),
    AirlineID int foreign key references Airline(id)
    flightnumber int,
    departairport nvarchar(100),
    arriveairport nvarchar(100),
    )

CREATE TABLE Tracker (
    id int primary key identity(1,1),
    FlightID int foreign key references Flight(id)
    Flightdate int,
    Departtime int,
    Arrivetime int,
    Duration int,
    Flightstatus nvarchar(50)
    )
```

Once the Tracker table was created, I then went back to the Flight table and added a relationship using the GUI to insert the second foreign key, TrackerID from Tracker(id).

```sql
CREATE TABLE Customer (
    id int primary key identity(1,1),
    name nvarchar(200)
    )


CREATE TABLE Passenger (
    id int primary key identity(1,1),
    CustomerID int foreign key references Customer(id),
    FlightID int foreign key references Flight(id),
    seat nchar(10),
    ticket nchar(20),
    )

CREATE TABLE Seat (
    id int primary key identity(1,1),
    PassengerID int foreign key references Passenger(id),
    name nvarchar(200)
    )
```

Row Insertion

```sql
INSERT INTO Airline (id, name) VALUES ('American Airlines'), ('Delta'), ('Jet Blue')


INSERT INTO Flight (AirlineID, flightnumber, departairport, arriveairport) VALUES
(3, 2351, 'DAB - Daytona Beach Intl, Daytona Beach, FL', 'JFK - John F. Kennedy Intl,
NYC, NY'),
(1, 7223, 'JAX - Jacksonville Intl, Jacksonville, FL', 'JFK - John F. Kennedy Intl, NYC,
NY'),
(2, 5110, 'MCO - Orlando Intl, Orlando, FL', 'LGA - LaGuardia Airport, NYC, NY')


INSERT INTO Tracker (FlightID, flightdate, departtime, arrivetime, duration,
flightstatus, terminal) VALUES
(2, 012119, 1500, 1800, 300, 'Delayed', 'C5'),
(1, 012719, 0800, 1040, 240, 'On-time', 'A3'),
(3, 020319, 1200, 1450, 250, 'On-time', 'B7')



INSERT INTO Customer VALUES ('Robert Jordan'), ('Henry Kissinger'), ('John Rico'),
 ('Robert Heinlein'), ('Isaac Asimov'), ('Isaac Arthur'), ('Stephen King'), ('Stephen
Hawking'),
 ('William Golding'), ('Thomas Cromwell'), ('George Patton'), ('Mike Patton'), ('Betty
Page'),
 ('Norma Jean'), ('Alice Walker'), ('Bettany Hughes'), ('Mary Beard'), ('Sam Harris'),
('Mary Shelley')



INSERT INTO Passenger VALUES (1, 2, '1A', '1st Class - 29351A'), (2, 2, '14C', 'Coach -
35132C'),
(3, 2, '3D', 'Business - 23155B'), (4, 2, '4F', 'Business - 41433B'), (5, 2, '11B',
'Coach - 51233C'),
(6, 1, '1A', '1st Class - 12351A'), (7, 1, '1B', '1st Class - 12455A'), (8, 1, '17A',
'Coach - 35134C'),
(9, 1, '9B', 'Business - 35143B'), (9, 3, '6A', 'Business - 35564B'), (10, 1, '20C',
'Coach - 42443C'),
(11, 3, '4E', '1st Class - 31344A'), (12, 3, '9D', 'Business - 13441B'), (13, 3, '16A',
'Coach - 45143C'),
(14, 3, '16B', 'Coach - 42331C'), (15, 3, '2B', '1st Class - 13415A'), (15, 2, '2B', '1st
Class - 13234A'),
(16, 1, '3D', '1st Class - 32123A'), (17, 1, '2A', '1st Class - 34412A'), (17, 2, '7C',
'Business - 23314B'),
(18, 2, '11A', 'Coach - 54342C')
```

Screenshots of Individual Tables

Airline

	id	name
1	1	American Airlines
2	2	Delta
3	3	Jet Blue

Customer

	id	name
1	1	Robert Jordan
2	2	Henry Kissinger
3	3	John Rico
4	4	Robert Heinlein
5	5	Isaac Asimov
6	6	Isaac Arthur
7	7	Stephen King
8	8	Stephen Hawking
9	9	William Golding
10	10	Thomas Cromwell
11	11	George Patton
12	12	Mike Patton
13	13	Betty Page
14	14	Norma Jean
15	15	Alice Walker
16	16	Bettany Hughes
17	17	Mary Beard
18	18	Sam Harris
19	19	Mary Shelley

Flight

	id	AirlineID	flightnumber	departairport	arriveairport	TrackerID
1	1	3	2351	DAB - Daytona Beach Intl, Daytona Beach, FL	JFK - John F. Kennedy Intl, NYC, NY	2
2	2	1	7223	JAX - Jacksonville Intl, Jacksonville, FL	JFK - John F. Kennedy Intl, NYC, NY	1
3	3	2	5110	MCO - Orlando Intl, Orlando, FL	LGA - LaGuardia Airport, NYC, NY	3

Tracker

	id	FlightID	flightdate	departtime	arrivetime	duration	flightstatus	terminal
1	1	2	12119	1500	1800	300	Delayed	C5
2	2	1	12719	800	1040	240	On-time	A3
3	3	3	20319	1200	1450	250	On-time	B7

Passenger

	id	CustomerID	FlightID	seat	ticket
1	1	1	2	1A	1st Class - 29351A
2	2	2	2	14C	Coach - 35132C
3	3	3	2	3D	Business - 23155B
4	4	4	2	4F	Business - 41433B
5	5	5	2	11B	Coach - 51233C
6	6	6	1	1A	1st Class - 12351A
7	7	7	1	1B	1st Class - 12455A
8	8	8	1	17A	Coach - 35134C
9	9	9	1	9B	Business - 35143B
10	10	9	3	6A	Business - 35564B
11	11	10	1	20C	Coach - 42443C
12	12	11	3	4E	1st Class - 31344A
13	13	12	3	9D	Business - 13441B
14	14	13	3	16A	Coach - 45143C
15	15	14	3	16B	Coach - 42331C
16	16	15	3	2B	1st Class - 13415A
17	17	15	2	2B	1st Class - 13234A
18	18	16	1	3D	1st Class - 32123A
19	19	17	1	2A	1st Class - 34412A
20	20	17	2	7C	Business - 23314B
21	21	18	2	11A	Coach - 54342C
22	22	1	2	1C	1st Class - 16351A