DATA MANAGEMENT AND APPLICATIONS
ASSIGNMENT-1: RELATION DATABASE SYSTEM
(Group #5)

Submitted By,

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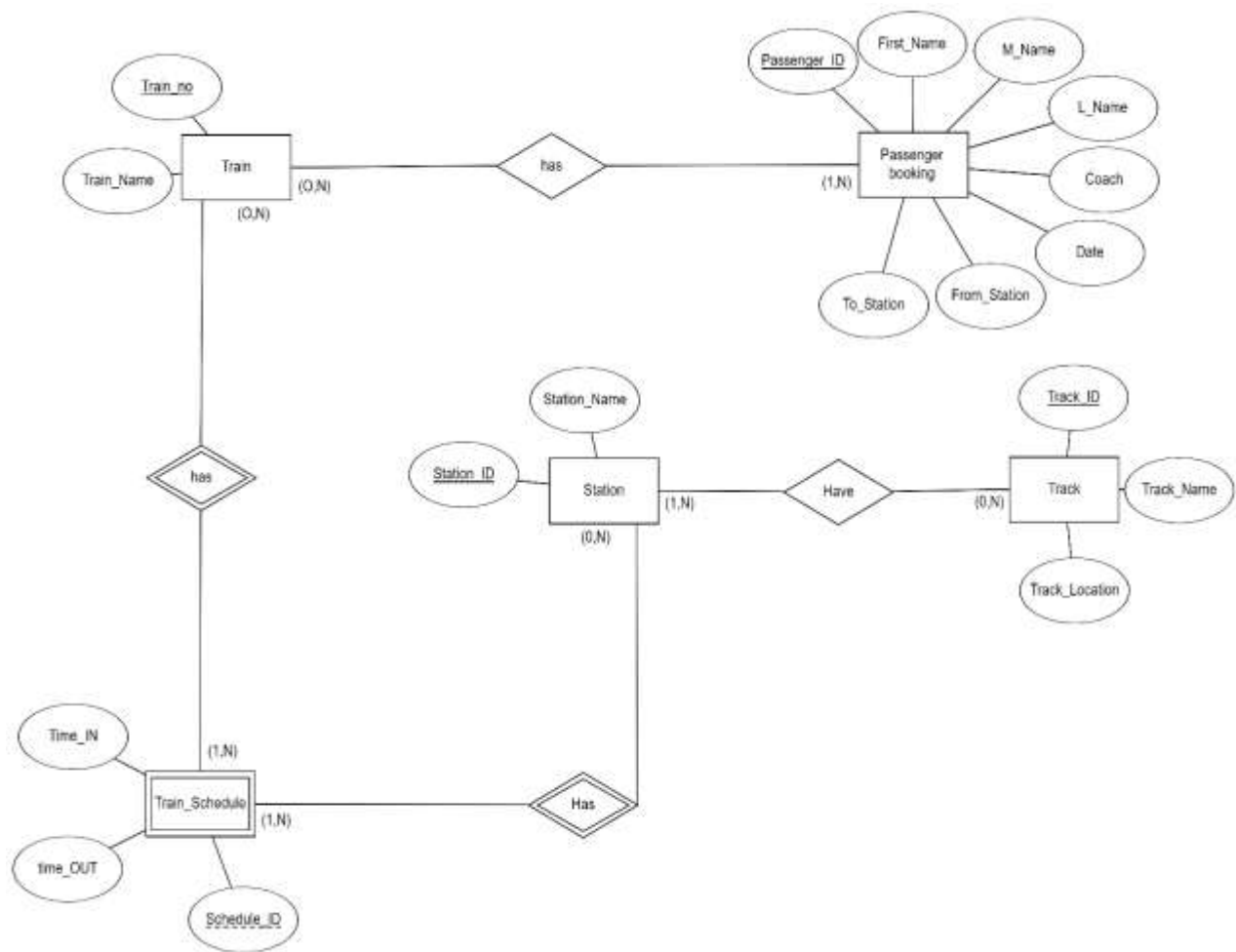
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OBJECTIVE:

The aim of this submission is the creation of a relational database for a Railway system. The purpose here is to design and develop a system which contains all the details of the trains and their schedule, stations and the passengers boarding it. The details of the trains include its name, number, source and destination stations and routes. The passenger booking gives details such as the booked train name, from and to station, coach number, seat number and the passenger name. The database further gives details of tracks, train schedules, duration of time between two different stations. Hence it provides comprehensive detail to a railway company to run the trains effectively and efficiently.
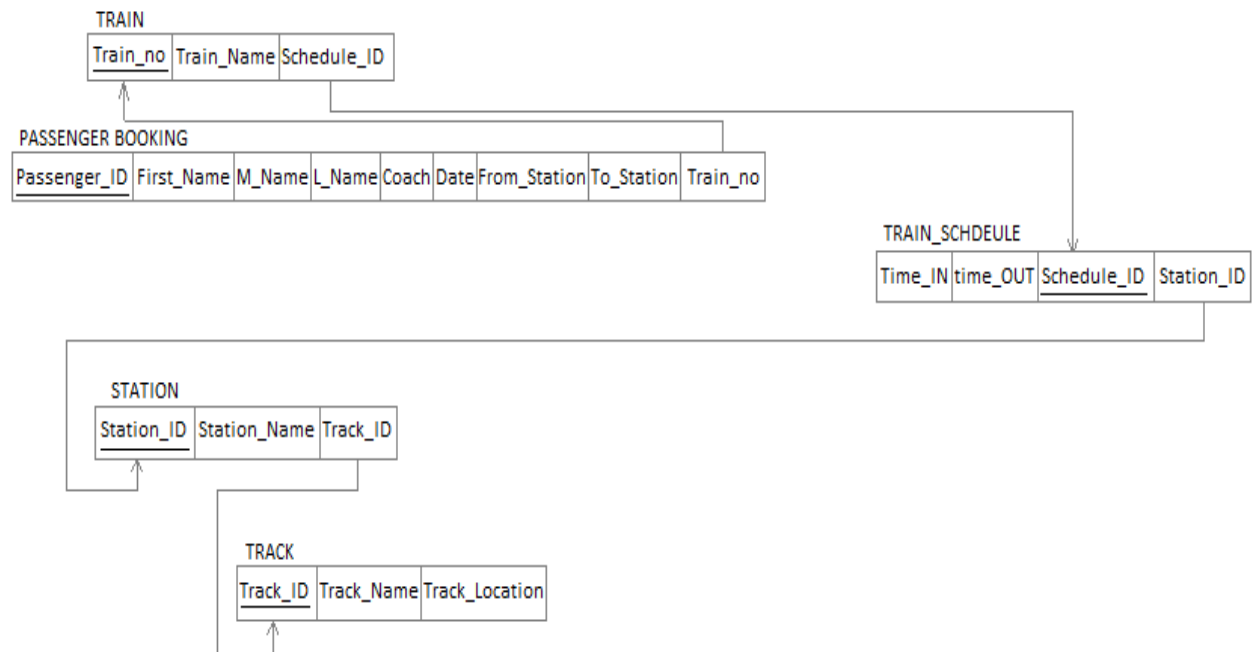
OVERVIEW OF THE TABLES:

ENTITES	ATTRIBUTES
TRAIN	TRAIN_NO, TRAIN_NAME
STATION	STATION_ID, STATION_NAME
TRAIN_SCHEDULE	TRAIN_ID, STATION_ID, TIME_IN, TIME_OUT
PASSENGER_BOOKING	Passenger_ID, TRAIN_ID, FIRST_NAME, M_NAME, L_NAME, DATE, FROM_STATION, TO_STATION, SEAT, COACH
TRACK	Track_ID, Track_Name, Track_Location

ER DIAGRAM:

RELATIONAL MODEL:

TRAIN

Train_no	Train_Name	Schedule_ID

PASSENGER BOOKING

Passenger_ID	First_Name	M_Name	L_Name	Coach	Date	From_Station	To_Station	Train_no

TRAIN_SCHDEULE

Time_IN	time_OUT	Schedule_ID	Station_ID

STATION

Station_ID	Station_Name	Track_ID

TRACK

Track_ID	Track_Name	Track_Location

The above Relational Model is in 3rd normal form. All attributes depend on nothing but the primary key. Hence there are no partial or transitive dependencies.
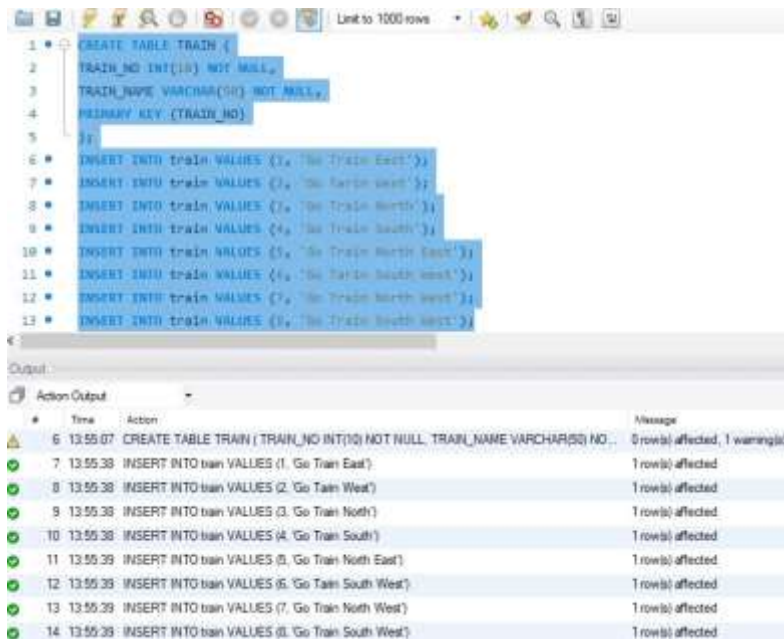
Create script for all tables:

Create Script For All
Tables.sql

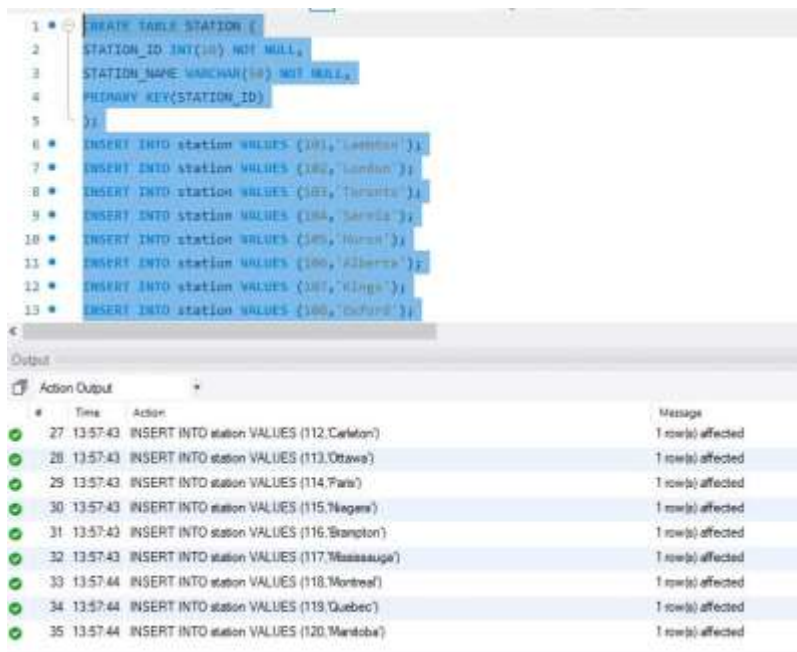Insert script for all tables:

Insert Script For All
Tables.sql

SCREENSHOTS OF CREATED SCRIPTS AND THEIR OUTPUTS:

#	Time	Action	Message
⚠	6 13:55:07	CREATE TABLE TRAIN (TRAIN_NO INT(10) NOT NULL, TRAIN_NAME VARCHAR(50) NO...	0 row(s) affected, 1 warning(s)
●	7 13:55:38	INSERT INTO train VALUES (1, 'Go Train East')	1 row(s) affected
●	8 13:55:38	INSERT INTO train VALUES (2, 'Go Tain West')	1 row(s) affected
●	9 13:55:38	INSERT INTO train VALUES (3, 'Go Train North')	1 row(s) affected
●	10 13:55:38	INSERT INTO train VALUES (4, 'Go Train South')	1 row(s) affected
●	11 13:55:39	INSERT INTO train VALUES (5, 'Go Train North East')	1 row(s) affected
●	12 13:55:39	INSERT INTO train VALUES (6, 'Go Tain South West')	1 row(s) affected
●	13 13:55:39	INSERT INTO train VALUES (7, 'Go Train North West')	1 row(s) affected
●	14 13:55:39	INSERT INTO train VALUES (8, 'Go Train South West')	1 row(s) affected

#	Time	Action	Message
●	27 13:57:43	INSERT INTO station VALUES (112,'Carleton')	1 row(s) affected
●	28 13:57:43	INSERT INTO station VALUES (113,'Ottawa')	1 row(s) affected
●	29 13:57:43	INSERT INTO station VALUES (114,'Paris')	1 row(s) affected
●	30 13:57:43	INSERT INTO station VALUES (115,'Niagara')	1 row(s) affected
●	31 13:57:43	INSERT INTO station VALUES (116,'Brampton')	1 row(s) affected
●	32 13:57:43	INSERT INTO station VALUES (117,'Mississauga')	1 row(s) affected
●	33 13:57:44	INSERT INTO station VALUES (118,'Montreal')	1 row(s) affected
●	34 13:57:44	INSERT INTO station VALUES (119,'Quebec')	1 row(s) affected
●	35 13:57:44	INSERT INTO station VALUES (120,'Manitoba')	1 row(s) affected

```sql
1  •  CREATE TABLE TRAIN_SCHEDULE (
2        TRAIN_ID INT(10) NOT NULL REFERENCES TRAIN(TRAIN_ID),
3        STATION_ID INT(10) NOT NULL REFERENCES STATION(STATION_ID),
4        IN_TIME TIME NOT NULL,
5        OUT_TIME TIME NOT NULL,
6        SEQUENCE INT(4),
7        PRIMARY KEY(TRAIN_ID,STATION_ID)
8     );
9  •  INSERT INTO train_schedule VALUES (1,'101', '16:20', '16:25', 201);
10 •  INSERT INTO train_schedule VALUES (2,'102', '17:20', '17:25', 202);
11 •  INSERT INTO train_schedule VALUES (3,'103', '18:20', '18:25', 203);
12 •  INSERT INTO train_schedule VALUES (4,'104', '19:20', '19:25', 204);
13 •  INSERT INTO train_schedule VALUES (5,'105', '20:20', '20:25', 205);
```

Output

Action Output

#	Time	Action	Message
⚠ 36	13:58:49	CREATE TABLE TRAIN_SCHEDULE (TRAIN_ID INT(10) NOT NULL REFERENCES TRAIN(...	0 row(s) affected, 3 wa...
✓ 37	13:59:04	INSERT INTO train_schedule VALUES (1,'101', '16:20', '16:25', 201)	1 row(s) affected
✓ 38	13:59:05	INSERT INTO train_schedule VALUES (2,'102', '17:20', '17:25', 202)	1 row(s) affected
✓ 39	13:59:05	INSERT INTO train_schedule VALUES (3,'103', '18:20', '18:25', 203)	1 row(s) affected
✓ 40	13:59:06	INSERT INTO train_schedule VALUES (4,'104', '19:20', '19:25', 204)	1 row(s) affected
✓ 41	13:59:06	INSERT INTO train_schedule VALUES (5,'105', '20:20', '20:25', 205)	1 row(s) affected
✓ 42	13:59:06	INSERT INTO train_schedule VALUES (6,'106', '21:20', '21:25', 206)	1 row(s) affected
✓ 43	13:59:06	INSERT INTO train_schedule VALUES (7,'107', '1:20', '1:25', 207)	1 row(s) affected
✓ 44	13:59:07	INSERT INTO train_schedule VALUES (8,'108', '4:20', '4:25', 208)	1 row(s) affected

```sql
1  •  CREATE TABLE PASSENGER_BOOKING(
2        PASSENGER_ID INT UNSIGNED NOT NULL AUTO_INCREMENT,
3        TRAIN_ID INT(10) NOT NULL REFERENCES TRAIN(TRAIN_ID),
4        PASSANGER_NAME VARCHAR(50) NOT NULL,
5        BOOKING_DATE timestamp default now(),
6        FROM_STATION INT(10) NOT NULL,
7        TO_STATION INT(10) NOT NULL,
8        SEAT INT(5) NOT NULL,
9        COACH VARCHAR(2) NOT NULL,
10       PRIMARY KEY(PASSENGER_ID)
11    );
12 •  INSERT INTO passenger_booking VALUES (1001, '1', 'Mandeep Singh', '2019-05-11', 100, 101, 35, 4);
13 •  INSERT INTO passenger_booking VALUES (1002, '1', 'Navneet Kaur', '2019-05-11', 107, 102, 65, 6);
```

Output

Action Output

#	Time	Action	Message
✓ 47	14:00:09	INSERT INTO passenger_booking VALUES (1002,'1', 'Navneet Kaur', '2019-05-11', 107, 102, ...	1 row(s) affected
✓ 48	14:00:09	INSERT INTO passenger_booking VALUES (1003,'2', 'Nav Kaur', '2019-03-11', 106, 101, 7, 2)	1 row(s) affected
✓ 49	14:00:09	INSERT INTO passenger_booking VALUES (1004,'3', 'Vansi', '2019-07-11', 108, 107, 36, 11)	1 row(s) affected
✓ 50	14:00:09	INSERT INTO passenger_booking VALUES (1005,'1', 'Akakriksha', '2019-06-11', 110, 101, 44...	1 row(s) affected
✓ 51	14:00:09	INSERT INTO passenger_booking VALUES (1006,'2', 'Sahil', '2019-11-08', 108, 110, 3, 12)	1 row(s) affected
✓ 52	14:00:09	INSERT INTO passenger_booking VALUES (1007,'7', 'Rahul', '2019-11-01', 109, 118, 5, 5)	1 row(s) affected
✓ 53	14:00:10	INSERT INTO passenger_booking VALUES (1008,'1', 'Veer', '2019-10-10', 110, 103, 15, 6)	1 row(s) affected
✓ 54	14:00:10	INSERT INTO passenger_booking VALUES (1009,'8', 'Tonny', '2019-11-05', 108, 116, 17, 10)	1 row(s) affected
✓ 55	14:00:10	INSERT INTO passenger_booking VALUES (1010,'1', 'Sachin', '2019-10-30', 109, 113, 23, 1)	1 row(s) affected

```
1  •  ⊖  CREATE TABLE TRACK(
2          TRACK_ID INT(10) NOT NULL,
3          TRACK_NAME VARCHAR(50) NOT NULL,
4          TRACK_LOCATION VARCHAR(50) NOT NULL,
5          PRIMARY KEY(TRACK_ID)
6          );
7  •      INSERT INTO track VALUES (1001,'East Track', 'East');
8  •      INSERT INTO track VALUES (1002,'West Track', 'West');
9  •      INSERT INTO track VALUES (1003,'North Track', 'North');
10 •      INSERT INTO track VALUES (1004,'South Track', 'South');
11 •      INSERT INTO track VALUES (1005,'North East Track', 'North East');
12 •      INSERT INTO track VALUES (1006,'North West Track', 'North West');
13 •      INSERT INTO track VALUES (1007,'South East Track', 'South East');
```

Output

Action Output   ▼

	#	Time	Action	Message
⚠	56	14:00:46	CREATE TABLE TRACK(TRACK_ID INT(10) NOT NULL, TRACK_NAME VARCHAR(50) NO...	0 row(s) affected, 1 warning(s) 1
✓	57	14:01:01	INSERT INTO track VALUES (1001,'East Track', 'East')	1 row(s) affected
✓	58	14:01:01	INSERT INTO track VALUES (1002,'West Track', 'West')	1 row(s) affected
✓	59	14:01:02	INSERT INTO track VALUES (1003,'North Track', 'North')	1 row(s) affected
✓	60	14:01:02	INSERT INTO track VALUES (1004,'South Track', 'South')	1 row(s) affected
✓	61	14:01:02	INSERT INTO track VALUES (1005,'North East Track', 'North East')	1 row(s) affected
✓	62	14:01:02	INSERT INTO track VALUES (1006,'North West Track', 'North West')	1 row(s) affected
✓	63	14:01:02	INSERT INTO track VALUES (1007,'South East Track', 'South East')	1 row(s) affected
✓	64	14:01:03	INSERT INTO track VALUES (1008,'South West Track', 'South West')	1 row(s) affected