RAILWAY RESERVATION DATABASE

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Overview:

This simple reservation application acts an interface between the railways and the user. This application provides two modes, the Admin mode, which is used to add train details to the train database and User mode where the user can sign up to create new user to the user database, book tickets or cancel them if necessary. They will be generated fare from the system.

ER Model of the database:

This ER Model of database consists of 3 entities: **train, express and user.**

Train has attributes pertaining to a train which don't change like train_no, express_no, first_class_seats, first_class_ticket_price, second_class_seats, second_class_ticket_price.

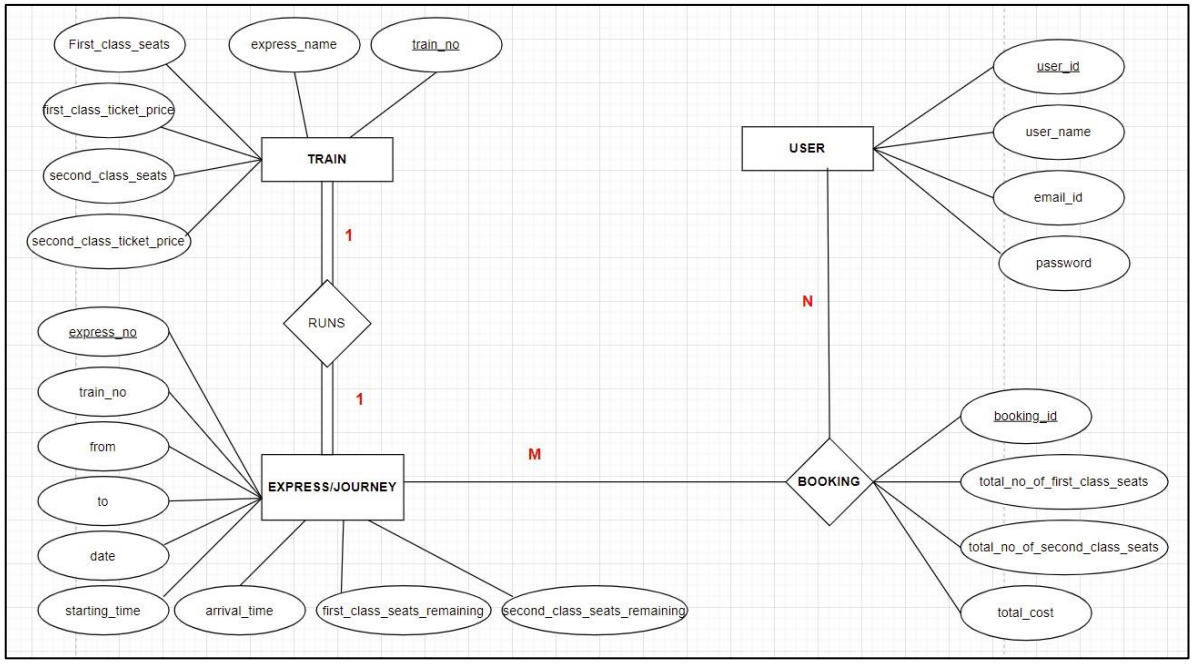
Express has attributes pertaining to a particular express like express_no, train_no, from, to, date, starting_time, arrival_time and some attributes which can be changed when tickets are booked and cancelled by the user like first_class_seats_remaining and second_class_seats_remaining.

User has attributes pertaining to a user like id, name, etc.

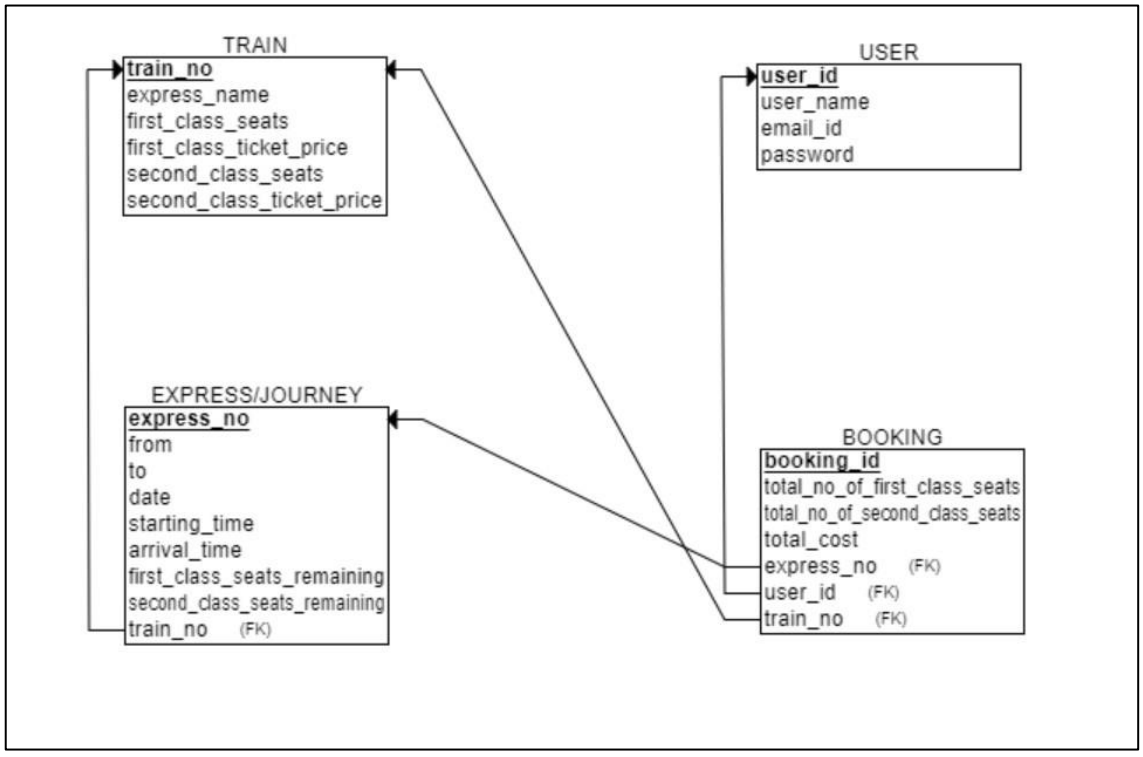
Relationship between Entities:

The relationship between train and express is one-one since a particular train no corresponds to an express and vice versa. The relationship between express and user is many-many since an express can be booked by many users and a single user can book tickets in many expresses. The relationship set between user and express consists of attributes like booking_id, total_no_of_first_class_seats, total_no_of_second_class_seats and total_cost.

ER diagram for the database:



Converting ER Model to Relational Model:



From the ER diagram, the entities with respective keys have been found out:

- Train – train_no (Primary key)
- Express – express_no (Primary key)
- User – user_id (Primary key)
- Express – train_no (Foreign key)
- Booking – booking_id (Primary Key)
- Booking – express_no (Foreign key)
- Booking – train_no (Foreign key)
- Booking – user_id (Foreign key)

Relational Schemas from Entities are Train, Express, User.
Relational Schema from relationship sets is Booking

CREATING RELATIONS:

```
SQL> CREATE TABLE TRAIN
  2  (TRAIN_NO VARCHAR(15) PRIMARY KEY,
  3  EXPRESS_NAME VARCHAR(15),
  4  FIRST_CLASS_SEATS NUMBER,
  5  SECOND_CLASS_SEATS NUMBER,
  6  FIRST_CLASS_TICKET_PRICE NUMBER,
  7  SECOND_CLASS_TICKET_PRICE NUMBER);

Table created.

SQL> CREATE TABLE EXPRESS
  2  (EXPRESS_NO NUMBER PRIMARY KEY,
  3  TRAIN_NO VARCHAR(15),
  4  FROMM VARCHAR(15),
  5  TOO VARCHAR(15),
  6  STARTING_TIME TIMESTAMP,
  7  ARRIVAL_TIME TIMESTAMP,
  8  FIRST_CLASS_SEATS_REMAINING NUMBER,
  9  SECOND_CLASS_SEATS_REMAINING NUMBER,
 10  FOREIGN KEY (TRAIN_NO) REFERENCES TRAIN(TRAIN_NO)
 11  );

Table created.
```

```
SQL> CREATE TABLE USER_DETAILS
  2  (USER_ID VARCHAR(15) PRIMARY KEY,
  3  USERNAME VARCHAR(15),
  4  EMAIL_ID VARCHAR(15),
  5  PASSWORD VARCHAR(15)
  6  );

Table created.


SQL> CREATE TABLE BOOKING
  2  (BOOKING_ID VARCHAR(15) PRIMARY KEY,
  3  EXPRESS_NO NUMBER,
  4  USER_ID VARCHAR(15),
  5  TRAIN_NO VARCHAR(15),
  6  TOTAL_NO_OF_FRIST_CLASS_SEATS NUMBER,
  7  TOTAL_NO_OF_SECOND_CLASS_SEATS NUMBER,
  8  TOTAL_COST NUMBER,
  9  FOREIGN KEY(EXPRESS_NO) REFERENCES EXPRESS(EXPRESS_NO),
 10  FOREIGN KEY(USER_ID) REFERENCES USER_DETAILS(USER_ID),
 11  FOREIGN KEY (TRAIN_NO) REFERENCES TRAIN(TRAIN_NO)
 12  );

Table created.
```