Railway Database Management System

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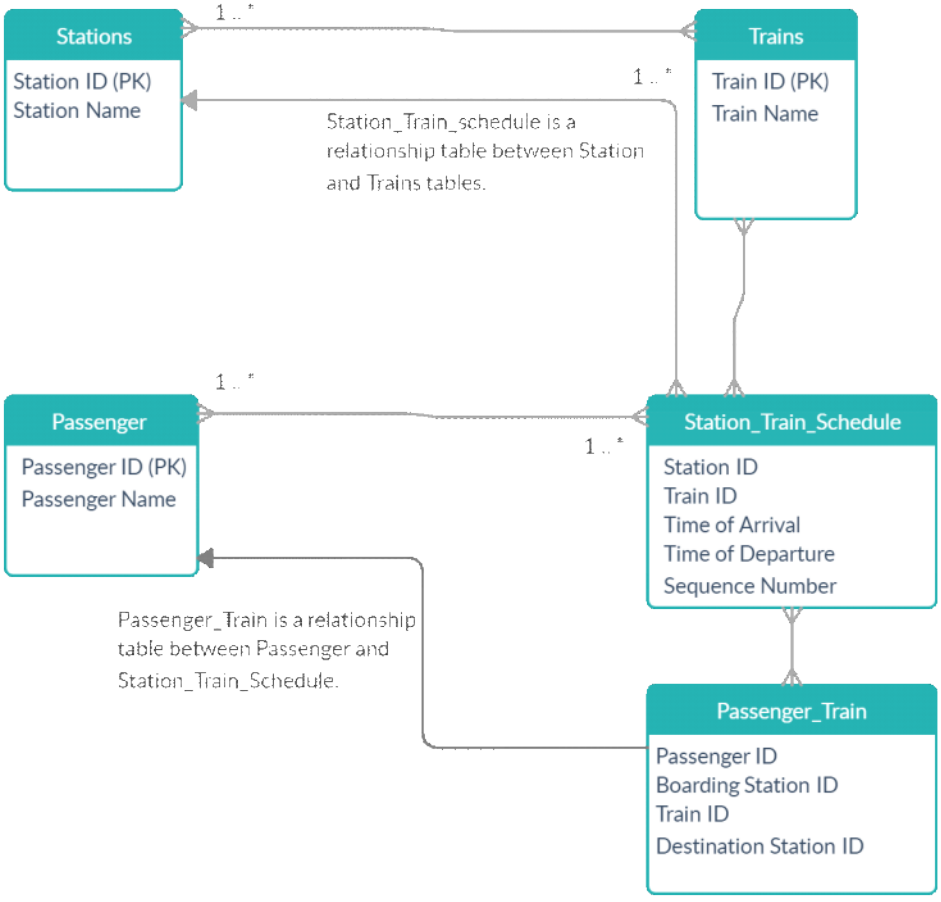
Brief Description of Project :
I have designed a Railway Database Management System , which caters the administrator and a passenger.
Administrator is provided with a functionality to add a station or add a train. In order to add a train, he needs to
provide the train schedule in a *.csv* format that would contain stations , time of arrival and departure from
each station, along with their sequence number.
Passenger is provided with a functionality to register himself as an user by providing his ID and Name .Or, book
a train ticket by providing the departure and arrival station. System will display the time of arrival and departure
in this case and ask for confirmation from the passenger again.
I will perform a data integrity and validation check on all types of user inputs and then commit it to the database
based on the sanity results (which would involve checking for duplication and format sanitization of the schedule) .

Choice of SQL vs NoSQL : (Model Choice : SQL)
1 . My choice of Database System is table-based (as we will see ahead) which makes it simpler to understand and implement . It also makes the infrastructure scalable to add more features. SQL is very renowned for a relational database system as mine.
2 . On the downside, designing a hierarchal database system would make things faster. But it would complicate the design a lot for our use-case. NoSQL is known for hierarchal database systems and since a relational database management system is our choice , SQL would be a way to go ahead.
3 . On a high-load (which is expected for a Railway Server) , SQL Databases are best fit owing to the stability and integrity it provides while No-SQL is not much stable as compared to that of SQL.

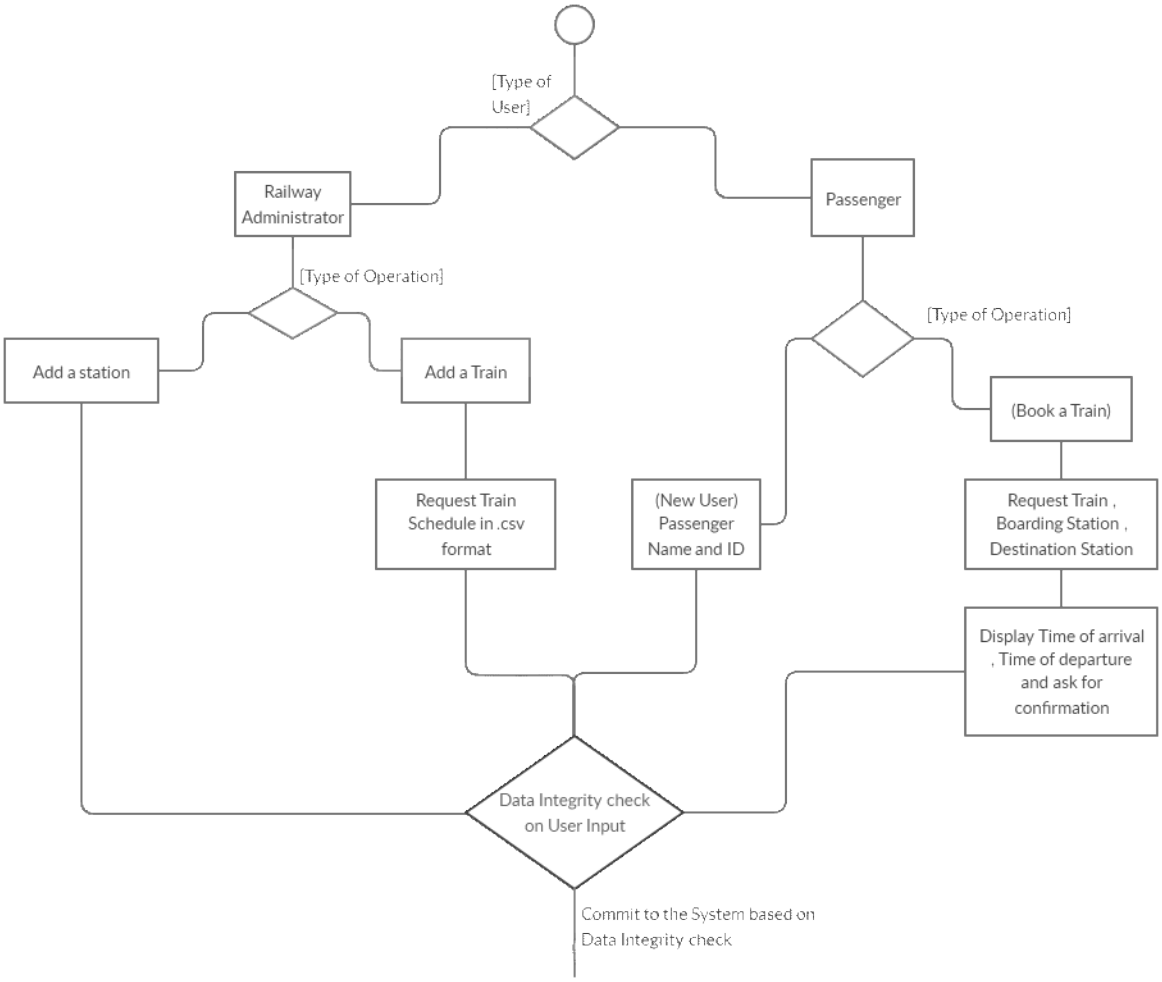
Technical Description :
Host : Python
SQL : MySQL Community Workbench
I intend to develop a command-line application in **Python** that would give user an interface to interact with the database management system. In this process I may use in-built libraries (like mysql-connector) in Python to connect and run SQL queries on the server.
I would eventually use the MySQL workbench to design the database management system and test my queries on that system in a standalone manner.

Why does this project or this data domain interest you?
My Father works for Indian Railways in City of Mumbai , India and he used to keep on telling me very interesting stories about the working of Indian Railways and the complex system which is involved in managing the Rail network. It used to be very exciting and made me curious about the design of the brains behind it. Now , I have a good understanding of the database system and I wish to put an end to my childhood curiosity by designing a basic model of a database system of a rail network.

Conceptual Design:



Activity Diagram:


[Type of User]
Railway Administrator
Passenger
[Type of Operation]
[Type of Operation]
Add a station
Add a Train
(Book a Train)
Request Train Schedule in .csv format
(New User) Passenger Name and ID
Request Train , Boarding Station , Destination Station
Display Time of arrival , Time of departure and ask for confirmation
Data Integrity check on User Input
Commit to the System based on Data Integrity check