Thursday, November 7, 2024

Project Report Phase 2

ICS 321 – sec 01

Abdullah Almajed ~ 202167470

Mohammed Hejazi ~ 202182750

Mohammed Busaleh ~ 202158210

CONSTRAINTS AS SCHEMA

Legend: D = domain constraint ,K = key constraint,
EI = Entity Integrity, RefI = Referential Integrity Constraint,
NN = Not Null constraint.

- Train

TrainID	Arabic name	English name
K, EI, D(Alphanumeric e.g. HHR100)	NN, D(Arabic letters)	NN, D(English letters)

- Schedule

TrainID	time	seqNumber
RefI	K, EI, D(time)	D(int)

- Station

StName	ArName
K, EI, D(English letters)	NN, D(Arabic letters)

- Reservation

ResID	Trip	UserId	….
K, EI, D(Numeric)	NN, RefI	RefI, NN	…

….	luggage	Class	Status
…	NN, D(int)	NN, D(custom)	NN, D(custom)

- waitingList

TrainID	ResID	Status	time	ExpDate	Waiting-Posotion
RefI, K, EI	RefI, K, EI	NN, D(varchar)	K, EI, D(time)	NN, D(numeric)	D(int)

- Payment

PaymentID	Status	Amount
K, EI, D(Numeric)	NN, D(varchar)	NN, D(numeric)

- User

Id	Email	Role	Name
K, EI, D(Varchar)	NN, D(Varchar)	NN, D(text)	NN, D(text)

- Staff

StaffId	UserName	StaffName
K, EI, D(Numeric)	NN, D(varchar)	NN, D(varchar)

- RegPassenger

UserId	PassengerName	IdDoc
K, EI, D(Numeric)	NN, D(text)	D(varchar)

- Dependent

DepId	Relationship	PassengerName	PassengerId
K, EI, D(Numeric)	NN, D(custom)	NN, D(varchar)	RefI, NN

- Miles

UserId	Class	miles
K, EI, RefI	D(custom)	NN, D(numeric)

- Trip

TripID	From	To	TrainId	Time	....
K, EI, D(Numeric)	NN, RefI	RefI, NN	RefI, NN	NN, D(time)	…

....	Price	Miles
…	D(numeric)	D(numeric)

- Seat

SeatID	isReserved	Class	TripID	....
K, EI, D(int)	NN, D(bool)	NN, D(custom)	RefI, NN	…

....	ResId	SeatLocation
…	RefI	D(text)

CONSTRAINTS AS BULLET POINTS

- Trains must be identifiable by a unique ID
- Trains must have names in both Arabic and English.
- Train schedules should include arrival times at each station on the route
- A passenger can only book seats for available trains by specifying details like reservation number, train, date, origin, destination, coach, seat number, and passenger name.
- Luggage details must also be provided, and an ID document is required for verification.
- Dependent/Family Member details are maintained for each passenger.
- A 25% discount applies to each dependent when traveling together.
- A loyalty system is in place, offering discounts based on miles traveled. Loyalty tiers include:
    - Green: 5% discount after 10K miles
    - Silver: 10% discount after 50K miles
    - Gold: 25% discount after 100K miles

- A payment gateway must be available for ticket transactions.

- A VAT of 15% must be applied on top of payments.

- A waiting list must be managed for passengers when seats are unavailable, with temporary reservations that can be finalized before a set date.

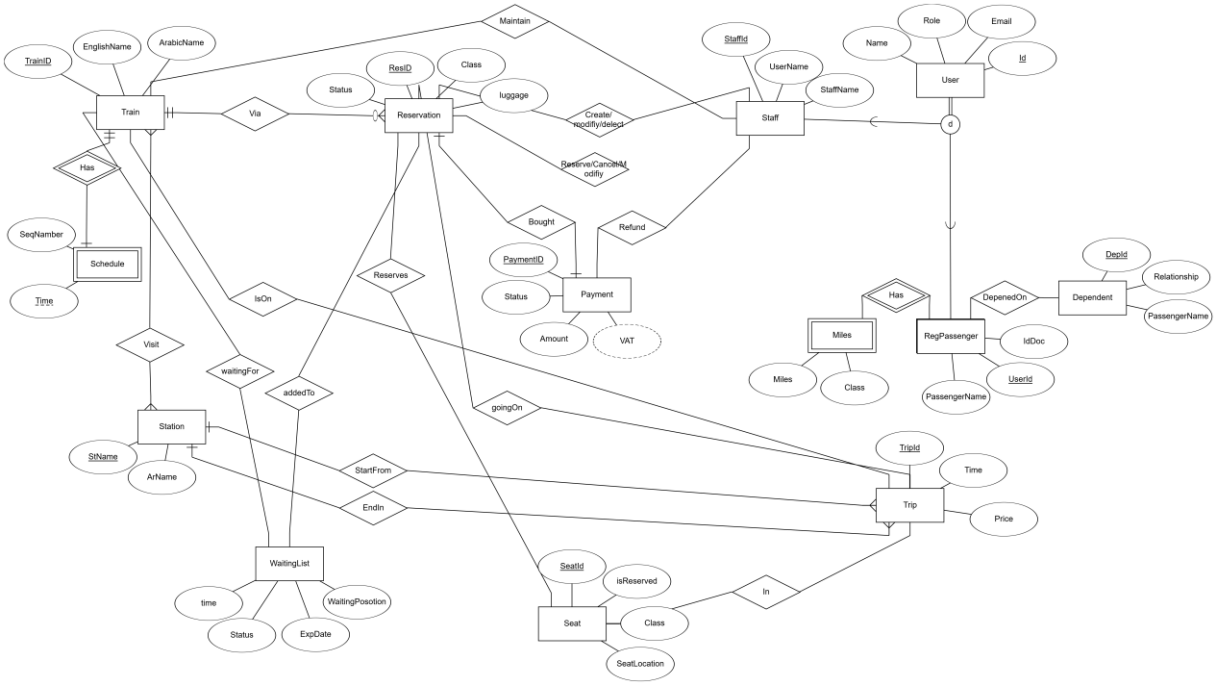
- Reservations canceled/expired after payment incur a 15% charge.

- The system should support the retrieval of passenger summaries for any train, waiting lists for specific trains on a given day, and train lists for a particular day.

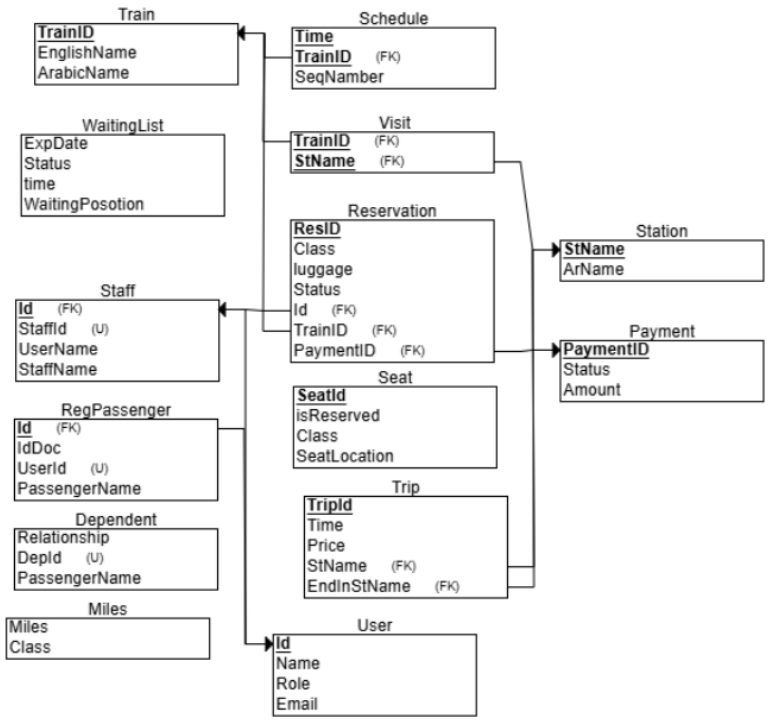
Assumptions:

- Each Train runs only once.
- There is only one track between each two stations.
- There is no cap on the luggage weight.

EER DIAGRAM



MAPPING



Tools

- **DB design**: ERDplus
- **Front end**: Flutter framework
- **Backend**: Supabase platform
- **Resources**: Flutter documentation, Supabase documentation, set of icons and images

ISSUES

- Unclear requirements in phase 1 that became ambiguous in phase 2, resolved by repeatedly reviewing and analyzing the requirements.
- Challenges in understanding or implementing specific features, addressed through team brainstorming and collaboration.

BOUNS FEATURES

- Localization: the application supports Arabic and English languages
- Compatibility: The application can run as a mobile application or as a website in the browser
- Average load factor
- Passenger's miles report
- List of dependents travelling on a given date on all trains

Suggestions

The project was heavily front-end focused, with most of our effort dedicated to UI/UX rather than back-end logic and queries. This emphasis seems beyond the course's intended scope.

Thursday, November 7, 2024

Name	**Almajed**	**Hejazi**	**Busaleh**
Task	Frontend	Frontend	Backend, report

Files:

EER & Relational Schema:

https://drive.google.com/drive/folders/14YP2VL3pH5t7wOMQTVKMgnbEopmk4iLw?usp=sharing

Flutter project:

https://github.com/boFawzi/database-project.git