W3H Analysis for Railways reservation system.
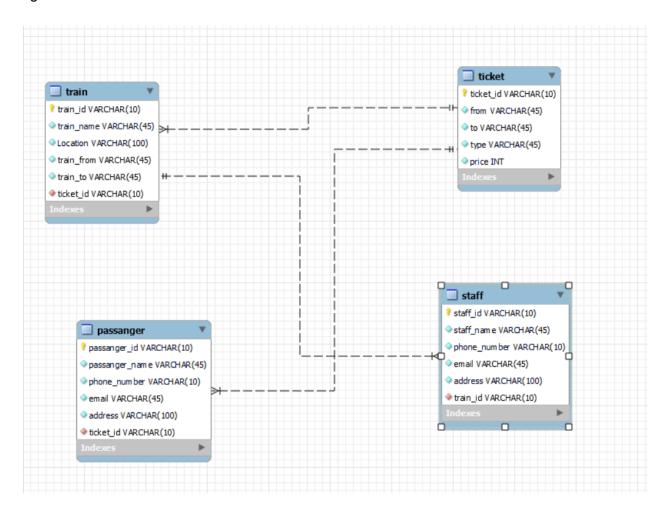
What ?	How ?

1. **What tables need to be implemented?**
    a. Train
    b. Passenger
    c. Staff
    d. Ticket
    e. Location
	1.CRUD operation in Train_tables.
	  ● Method 1: Set Train id as primary key.
	  ● Method 2: Set Train name as primary one.
	  ● Method 3:Set from address as primary key.

2. **What are all the columns needed for the Train table?**
    a. Train id
    b. Train_name
    c. Location
    d. From
    e. To
    f. Ticket_id.
	2.CRUD operation in Passenger Table.
	  ● Method 1:Set Passenger id as primary key.
	  ● Method 2: Set Phone number as primary.
	  ● Method 3: Set ticket id as primary.

3. **What are all the columns needed for the Passenger table?**
    a. Passanger_id
    b. Passanger_name
    c. Phone number
    d. Email
    e. Address
    f. Ticket_id.
	3.CRUD operation in Staff table.
	  ● Method 1:Set Staff id as primary key.
	  ● Method 2: Set Phone number as primary.
	  ● Method 3: Set train id as primary.
	
	4.CRUD operation in Ticket table.
	  ● Method 1:Set Ticketid as primary key.
	  ● Method 2: Set from as primary.
	  ● Method 3: Set type as primary.

4. **What are all the columns needed for the Staff table?**
    a. Staff id
    b. Staff name
    c. Phone number
    d. Email
    e. Address
    f. Train_id
	5.CRUD in the Location table.
	  ● Method 1:Set state as primary key.
	  ● Method 2: Set Location code number as primary.
	  ● Method 3: Set train id as primary.

5. **What are all the columns needed for the Ticket table?**
    a. Ticket_id
    b. From location
    c. To location
    d. Type
    e. Price	

6. **What are all the columns needed for the location table?**
    a. State
    b. Location code
    c. Train_id.	

Why ?	Why NOT ?
1. **Method 1: Set Train id as primary key.** Every train has a separate train ID. It is easy to filter the details based on the requirement.	1. **CRUD operation in Train_tables.** 1.1. There is a possibility of having the same name for different trains. 1.2. N number of trains are having the same Address.
2. **Method 1:Set Passenger id as primary key.** Every Passenger has a separate passenger ID. it is easy to filter the details based on the requirement.	2. **CRUD operation in Passenger Table.** 2.1. Single passenger having multiple numbers to contact makes some difficulties while filtering.
3. **Method 1:Set Staff id as primary key.** Every train has a separate Staff ID. It is easy to filter the details based on the requirement.	3. **CRUD operation in Staff table.** 3.1. Single Staffhaving multiple numbers to contact makes some difficulties while filtering.
4. **Method 1:Set Ticketid as primary key.** Every train has a separate Ticket(PNR number) ID. It is easy to filter the details based on the requirement.	4. **CRUD operation in Ticket table.** 4.1. N number of trains are having the same FROM location. 4.2. Multiple trains are having a type of compatible traveling coaches.
5. **Method 2: Set Location code number as primary.** Every train has a separate Location code ID. It is easy to filter the details based on the requirement.	5. **CRUD in the Location table.** 5.1. Not every person can remember the state Spelling correctly. 5.2. Train ID already setted for the train table to filter the train details.

MYSQL DATABASE STRUCTURE AND DESIGNS.

ERR Diagram:

DATABASE MODELS:

Create a database.
    Create database rms_db;

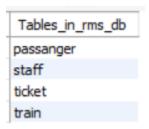List the databases.
    show databases;

Use the database.
    use rms_db:

Creating a tables:

1. CREATE TABLE `rms_db`.`trains` (`train_id` VARCHAR(10) PRIMARY KEY,`train_name` VARCHAR(45) NOT NULL,`Location` VARCHAR(100) NOT NULL,`train_type` VARCHAR(45) NOT NULL,`train_from` VARCHAR(45) NOT NULL,`train_to` VARCHAR(45) NOT NULL, `ticket_id` VARCHAR(10) NOT NULL);

2. CREATE TABLE `rms_db`.`location` (`state` VARCHAR(45) NOT NULL,`STATE_ID` VARCHAR(10) PRIMARY KEY ,`train_id` VARCHAR(10) NOT NULL);

3. CREATE TABLE `rms_db`.`ticket` (`ticket_id` VARCHAR(10) PRIMARY KEY,`from` VARCHAR(45) NOT NULL,`to` VARCHAR(45) NOT NULL,`type` VARCHAR(45) NOT NULL,`price` INT NOT NULL);

4. CREATE TABLE `rms_db`.`staff` (`staff_id` VARCHAR(10) NOT NULL,`staff_name` VARCHAR(45) NOT NULL,`phone_number` VARCHAR(10) NOT NULL,`email` VARCHAR(45) NOT NULL,`address` VARCHAR(100) NOT NULL,`train_id` VARCHAR(10) NOT NULL,PRIMARY KEY (`staff_id`));

5. CREATE TABLE `rms_db`.`passanger` (`passanger_id` VARCHAR(10) NOT NULL,`passanger_name` VARCHAR(45) NOT NULL,`phone_number` VARCHAR(10) NOT NULL,`email` VARCHAR(45) NOT NULL,`address` VARCHAR(100) NOT NULL,`ticket_id` VARCHAR(10) NOT NULL,PRIMARY KEY (`passanger_id`));

Tables_in_rms_db
passanger
staff
ticket
train

description of the tables

- desc location;
- desc passenger;
- desc staff;
- desc trains;
- desc ticket;
- drop table location;

Field	Type	Null	Key	Default	Extra
passanger_id	varchar(10)	NO	PRI	NULL	
passanger_name	varchar(45)	NO		NULL	
phone_number	varchar(10)	NO	UNI	NULL	
email	varchar(45)	NO	UNI	NULL	
address	varchar(100)	NO		NULL	
ticket_id	varchar(10)	NO	UNI	NULL	

Field	Type	Null	Key	Default	Extra
staff_id	varchar(10)	NO	PRI	NULL	
staff_name	varchar(45)	NO		NULL	
phone_number	varchar(10)	NO	UNI	NULL	
email	varchar(45)	NO	UNI	NULL	
address	varchar(100)	NO		NULL	
train_id	varchar(10)	NO	UNI	NULL	

Field	Type	Null	Key	Default	Extra
train_id	varchar(10)	NO	PRI	NULL	
train_name	varchar(45)	NO		NULL	
Location	varchar(100)	NO		NULL	
train_from	varchar(45)	NO		NULL	
train_to	varchar(45)	NO		NULL	
ticket_id	varchar(10)	NO	UNI	NULL	

Field	Type	Null	Key	Default	Extra
ticket_id	varchar(10)	NO	PRI	NULL	
from	varchar(45)	NO		NULL	
to	varchar(45)	NO		NULL	
type	varchar(45)	NO		NULL	
price	int	NO		NULL	

CRUD operation on the tables.

-- adding values in the tables Location
insert into location values ("7896542562","Goa","train78356");

location_id	state	train_id
7896541562	Telungana	train78656
7896541572	Karnataka	train78556
7896541582	Delhi	train78596
7896541592	TamilNadu	train78956
7896542562	Goa	train78356

-- updating the value in the table location
update location set state="Delhi" where location_id="7896541582";

location_id	state	train_id
7896541562	Telungana	train78656
7896541572	Karnataka	train78556
7896541582	Delhi	train78596
7896541592	TamilNadu	train78956

-- delete the value in the table Location.
DELETE FROM location WHERE train_id="train78356";

location_id	state	train_id
7896541562	Telungana	train78656
7896541572	Karnataka	train78556
7896541582	Delhi	train78596
7896541592	TamilNadu	train78956

Read the value in Location table
SELECT * FROM LOCATION

location_id	state	train_id
7896541562	Telungana	train78656
7896541572	Karnataka	train78556
7896541582	Andhra	train78596
7896541592	TamilNadu	train78956

-- adding values in the tables Passenger

insert into passanger
values("TRN3286622","Sathya","6383286622","sathyasiva5901@gmail.com","57,padasalai st, vazhur","7896541230");

insert into passanger
values("TRN3287722","Siva","9363118720","sivaraj01@gmail.com","95,Amman st, chennai","9754682140");

passanger_id	passanger_name	phone_number	email	address	ticket_id
TRN3286622	Sathya	6383286622	sathyasiva5901@gmail.com	57,padasalai st, vazhur	7896541230
TRN3288822	Tamizh	6381486033	tamizheq49@gmail.com	57,padasalai st, Vandhavasi	8608057837
NULL	NULL	NULL	NULL	NULL	NULL

-- updating the value in the table PAssanger
update passanger set email="sivarajvalli@gmail.com" where ticket_id="9754682140";

passanger_id	passanger_name	phone_number	email	address	ticket_id
TRN3286622	Sathya	6383286622	sathyasiva5901@gmail.com	57,padasalai st, vazhur	7896541230
TRN3287722	Siva	9363118720	sivarajvalli@gmail.com	95,Amman st, chennai	9754682140
TRN3288822	Tamizh	6381486033	tamizheq49@gmail.com	57,padasalai st, Vandhavasi	8608057837
NULL	NULL	NULL	NULL	NULL	NULL

-- delete the value in the table Passanger.
DELETE FROM passanger WHERE email="sivarajvalli@gmail.com";

passanger_id	passanger_name	phone_number	email	address	ticket_id
TRN3286622	Sathya	6383286622	sathyasiva5901@gmail.com	57,padasalai st, vazhur	7896541230
TRN3288822	Tamizh	6381486033	tamizheq49@gmail.com	57,padasalai st, Vandhavasi	8608057837
NULL	NULL	NULL	NULL	NULL	NULL

-- READ THE VALUES IN PASSANGER
SELECT * FROM PASSANGER;

passanger_id	passanger_name	phone_number	email	address	ticket_id
TRN3286622	Sathya	6383286622	sathyasiva5901@gmail.com	57,padasalai st, vazhur	7896541230
TRN3288822	Tamizh	6381486033	tamizheq49@gmail.com	57,padasalai st, Vandhavasi	8608057837
NULL	NULL	NULL	NULL	NULL	NULL

-- adding values in the tables Staff

insert into staff values("TRN3642309","John wick","9750046235","johnwick007@gmail.com","95,7th avenue, UK","train78356");

staff_id	staff_name	phone_number	email	address	train_id
TRN3642309	John wick	9750046235	johnwick007@gmail.com	95,7th avenue, UK	train78356

-- updating the value in the table Staff

update staff set phone_number="1442365102" where train_id="train78356";

staff_id	staff_name	phone_number	email	address	train_id
TRN3642309	John wick	1442365102	johnwick007@gmail.com	95,7th avenue, UK	train78356

-- delete the value in the table Staff.

DELETE FROM staff WHERE phone_number="9750046235";

staff_id	staff_name	phone_number	email	address	train_id
NULL	NULL	NULL	NULL	NULL	NULL

-- adding values in the tables Trains

insert into trains values("train78356","Podhigai","Chennai","Express","chennai","Virudhunagar","PNR1234456");

train_id	train_name	Location	train_type	train_from	train_to	ticket_id
train78356	train78356	Chennai	Express	chennai	Virudhunagar	PNR1234456
NULL	NULL	NULL	NULL	NULL	NULL	NULL

-- updating the value in the table Train

update trains set train_name="Guruvayur" where train_id="train78356";

train_id	train_name	Location	train_type	train_from	train_to	ticket_id
train78356	Podhigai	Chennai	Express	chennai	Virudhunagar	PNR1234456

-- delete the value in the table Train.

DELETE FROM trains WHERE train_id="train78356";

train_id	train_name	Location	train_type	train_from	train_to	ticket_id
NULL	NULL	NULL	NULL	NULL	NULL	NULL

MAKE CONNECTION BETWEEN THE TABLES.

- *ALTER TABLE passanger ADD FOREIGN KEY (ticket_id) REFERENCES ticket(ticket_id);*
- *ALTER TABLE train ADD FOREIGN KEY (ticket_id) REFERENCES ticket(ticket_id);*
- *ALTER TABLE staff ADD FOREIGN KEY (train_id) REFERENCES train(train_id);*