Railway Station System

TA: Hesham Fathy

TEAM ID: 5

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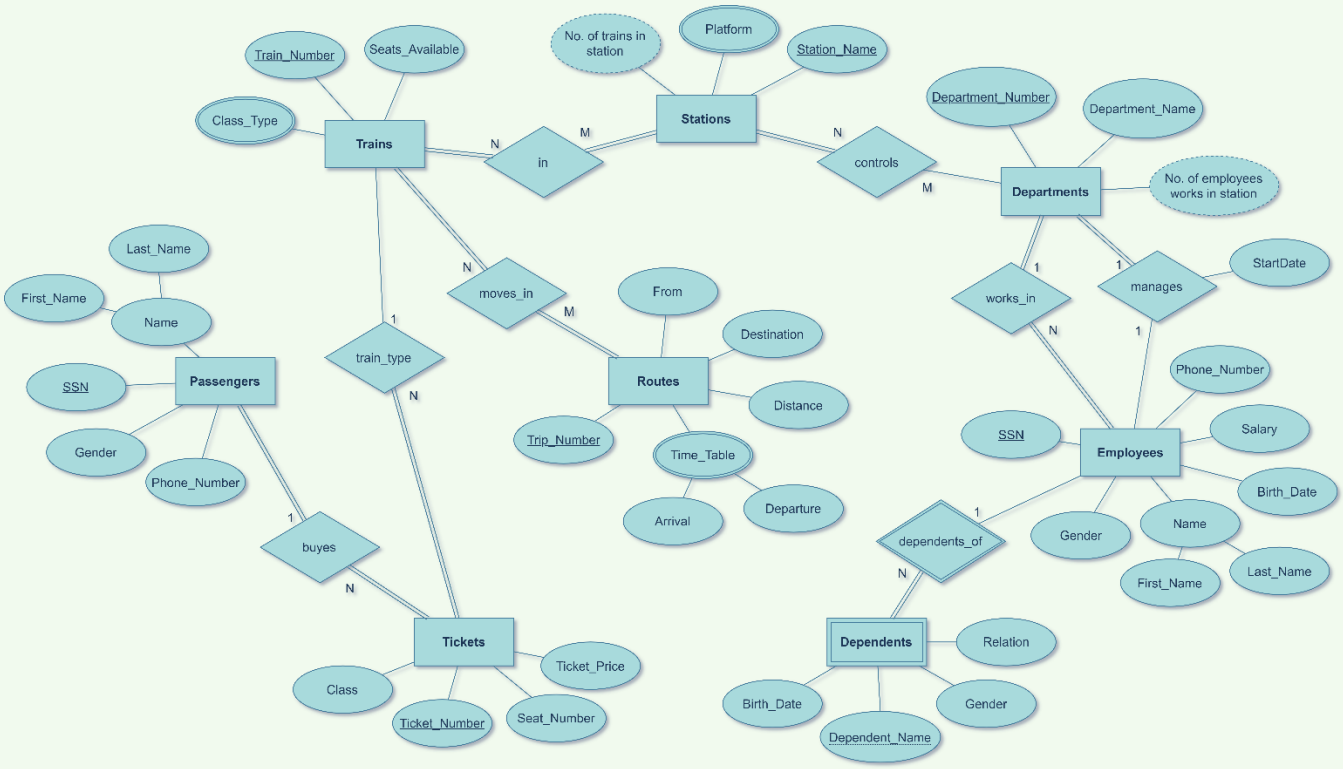
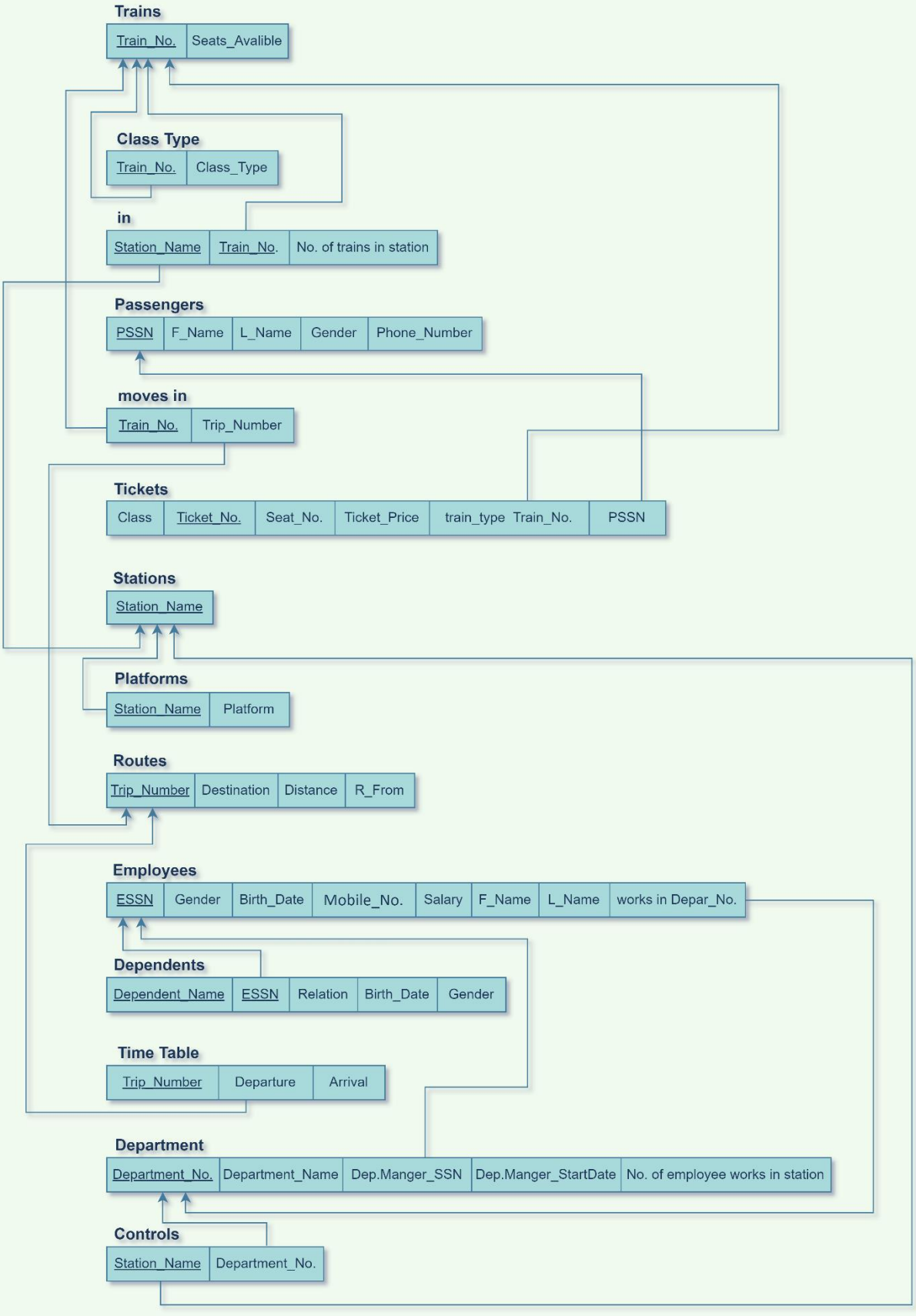
Department: AI

ERD:


Train_Number
Seats_Available
Class_Type
Trains
N
in
M
No. of trains in station
Platform
Station_Name
Stations
N
controls
M
Department_Number
Department_Name
Departments
No. of employees works in station
Last_Name
First_Name
Name
SSN
Passengers
Gender
Phone_Number
1
buyes
N
N
moves_in
M
From
Destination
Routes
Distance
Trip_Number
Time_Table
Arrival
Departure
1
train_type
N
Tickets
Class
Ticket_Number
Seat_Number
Ticket_Price
1
works_in
N
1
manages
StartDate
SSN
Employees
Phone_Number
Salary
Birth_Date
Gender
Name
First_Name
Last_Name
1
dependents_of
N
Dependents
Relation
Birth_Date
Dependent_Name
Gender

Schema:


Trains
Train_No.
Seats_Avalible
Class Type
Train_No.
Class_Type
in
Station_Name
Train_No.
No. of trains in station
Passengers
PSSN
F_Name
L_Name
Gender
Phone_Number
moves in
Train_No.
Trip_Number
Tickets
Class
Ticket_No.
Seat_No.
Ticket_Price
train_type
Train_No.
PSSN
Stations
Station_Name
Platforms
Station_Name
Platform
Routes
Trip_Number
Destination
Distance
R_From
Employees
ESSN
Gender
Birth_Date
Mobile_No.
Salary
F_Name
L_Name
works in Depar_No.
Dependents
Dependent_Name
ESSN
Relation
Birth_Date
Gender
Time Table
Trip_Number
Departure
Arrival
Department
Department_No.
Department_Name
Dep.Manger_SSN
Dep.Manger_StartDate
No. of employee works in station
Controls
Station_Name
Department_No.

Description:

The Railway Station System is a database that covers all the data related together and the relationships between them which consists of 8 Entities and their attributes:

- **Passengers**
  - SSN (PK)
  - Name (CM)
    - First Name
    - Last Name
  - Phone Number
  - Gender
- **Tickets**
  - Ticket Number (PK)
  - Class
  - Seat Number
  - Ticket Price
- **Stations**
  - Station Name (PK)
  - Platform
  - No. of trains in station (DRV)
- **Trains**
  - Train Number (PK)
  - Seats Available
  - Class Type
- **Department**
  - Department Name (PK)
  - Department Number (PK)
  - No. of employee works in station (DRV)
- **Employees**
  - SSN (PK)
  - Salary
  - Birth Date
  - Name (CM)
    - First Name
    - Last Name
  - Gender
  - Phone Number
- **Routes**
  - Trip Number (PK)
  - From
  - Destination
  - Train Number
  - Time Table (CM)
    - Departure
    - Arrival
  - Distance
- **Dependents** (Weak Entity)
  - Dependent Name (PK)
  - Birth Date
  - Gender
  - Relation

The relationships between them are:

(buys):

- It is a relationship between the Passenger and the Ticket.
- It is a double line from both passenger and ticket, because every ticket should have a passenger and every passenger should have a ticket.
- It is (1:N) degree from the Passenger, because each passenger can buy more than 1 ticket and every ticket belongs to one passenger only.

(in):

- It is a relationship between the Train and the Station.
- It is a double line from both train and station, because every station should have at least one train and every train belongs to one or more station.
- It is (N:M) degree, because each train can stop in multiple station and every station can have more than one train.

(moves in):

- It is a relationship between the Train and the Routes.
- It is a double line from both routes and train, because each train must move in a route and the route must have a train moving on it.
- It is (N:M) degree, because each train can move is multiple routes and each route can have multiple train.

(controls):

- It is a relationship between the Department and the Station.
- It is a double line from the station, because each station must have department to control it and single line, because not all stations must have all the departments.
- It is (N:M) degree, because each department can work in multiple stations and each station can have multiple departments.

(train_type):

- It is a relationship between the Ticket and the Train.
- It is a double line from the ticket, because each ticket belongs to a train and it is a single line from the train, because the train can move empty and do not have ticket.
- It is (1:N) degree from the train, because every train can have more than one ticket and every ticket belongs to one train.

(dependent_of):

- It is a relationship between the Employee and the Dependent.
- It is a double line from the dependent, because every dependent should belong to an employee and it is a single line from the employee, because the employee may not have any dependent.
- It is (1:N) degree from the employee, because each employee can have multiple dependents but each dependent must belong to one employee.

(manages):

- It is a relationship between the Department and the Employee.
- It is a double line from the department, because each department have a manger and it is a single line, because not all the employee are mangers to a department.
- It is (1:1) degree, because each department have one manger and each employee manger manages one department, also we can get his (StartDate) by the ESSN.

(works in):

- It is a relationship between the Department and the Employee.
- It is a double line from both department and employee, because each department must have one or more employee and each employee must work in one department.
- It is (1:N) degree from the department, because each department can have many employee but each employee works in one department only.

It has other Multi Valued Attributes:

Class type: Each train have different classes which determine the price of the ticket.

Platform: Determine where the train will stop at the station.

Time table: Determine when and where the train will arrive and departure.