SSN COLLEGE OF ENGINEERING

AFFILIATED TO ANNA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UCS1404 - DATABASE MANAGEMENT SYSTEM

MINI PROJECT

TITLE - RAILWAY MANAGEMENT SYSTEM

PROJECT MEMBERS

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PROBLEM STATEMENT:

The project is about creating the database about Railway Management System which facilitates the passengers to enquire about availability of trains on the basis of source and destination of trains, booking and cancellation of tickets and etc.,

SPECIFICATIONS:

1. **Train scheduling**

   This system able to schedule and manage the arrival and departure times of trains, considering factors such as stations, capacity.

2. **Ticketing**

   This system provides fare calculation of tickets with respect to distance and number of passengers.

3. **Passenger Information**

   This system provides real-time information to passengers regarding train schedules and status.

4. **Resource Management**

   This system allocates resources like trains and seats efficiently to optimize operations and minimize conflicts.

ASSUMPTIONS:

1. **Data Integration**

   This system assumes the existence of various sources, such as train schedules, ticketing systems, and record maintenance to provide comprehensive view of operations.

2. **User Roles and Permissions**

   This system assumes the existence of different user roles, such as administrators existing users and new users with appropriate access permissions and restrictions.

3. **Compliance and Regulations**

   This system assumes compliance with applicable railway regulations and data protections.

4. **Scalability**

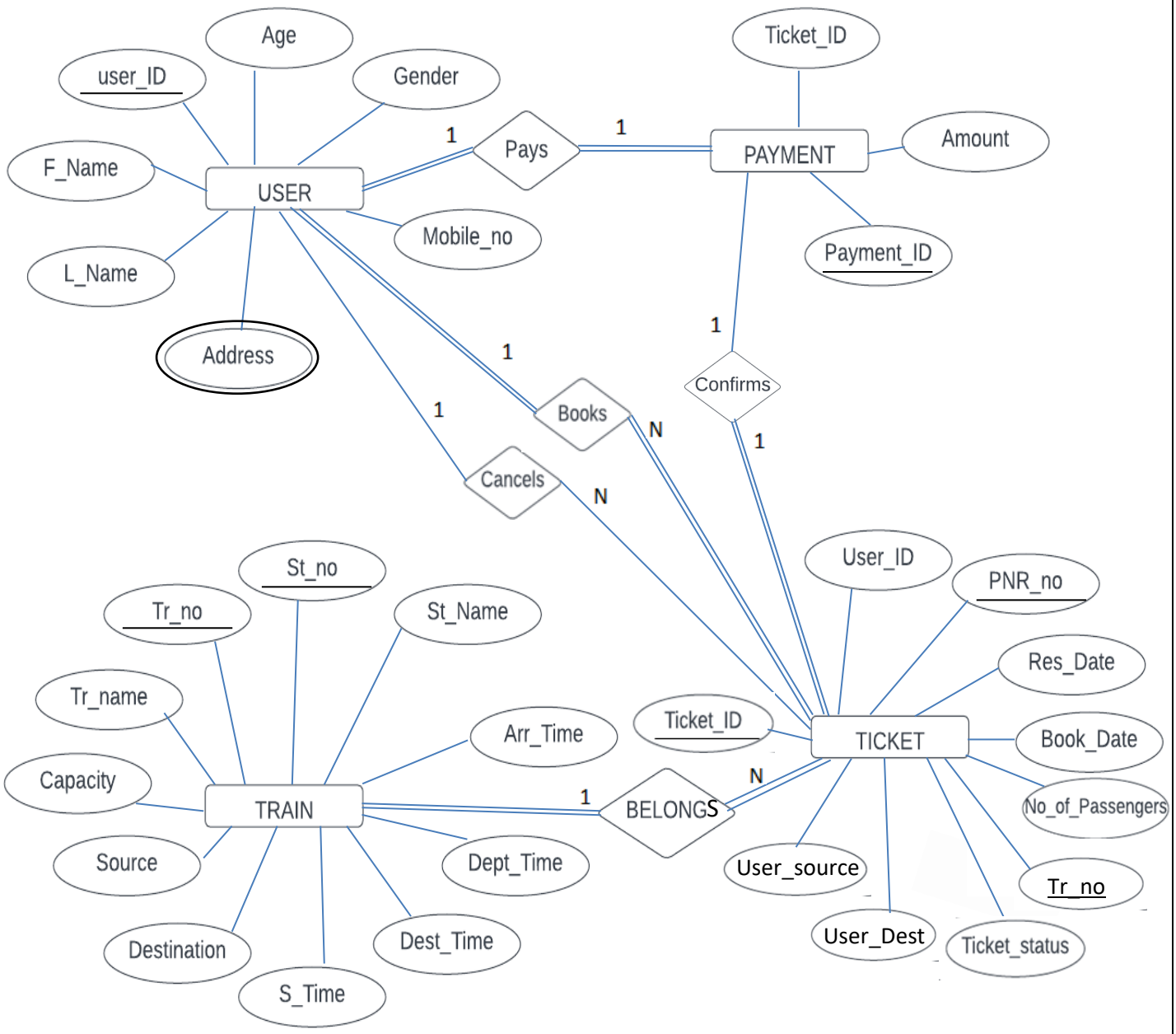
   This system assumes the ability to handle growing number of trains and passengers.

These specifications and assumptions served as a starting point for designing this railway management system.

ENTITIES AND RESPECTIVE ATTRIBUTES:

ENTITIES	ATTRIBUTES	Data Type
USER	User_ID F_Name L_Name Age Gender Address Mobile_No	Varchar2 Varchar2 Varchar2 Number Varchar2 Varchar2 Number
TRAIN	Train_No Train_Name Capacity Source Destination Source_Time Dest_Time Station_No Station_Name Arrival_Time Dept_Time	Varchar2 Varchar2 Number Varchar2 Varchar2 Varchar2 Varchar2 Number Varchar2 Varchar2 Varchar2
TICKET	Ticket_ID No_of_Passengers User_ID PNR_No Train_No Ticket_status Reserve_Date Book_Date User_Source User_Dest	Varchar2 INT Varchar2 Varchar2 Varchar2 Varchar2 Date Date Varchar2 Varchar2
PAYMENT	Payment_ID Ticket_ID Amount	Varchar2 Varchar2 INT

ER – DIAGRAM:


Age
user_ID
Gender
F_Name
USER
L_Name
Address
Mobile_no
1
Pays
1
Ticket_ID
PAYMENT
Amount
Payment_ID
1
Confirms
1
1
Books
N
1
Cancels
N
User_ID
PNR_no
Res_Date
Book_Date
No_of_Passengers
Tr_no
Ticket_status
User_Dest
User_source
Ticket_ID
TICKET
N
1
BELONGS
St_no
Tr_no
St_Name
Tr_name
Arr_Time
Capacity
TRAIN
Source
Destination
S_Time
Dept_Time
Dest_Time

1:N Relationship

For every regular binary 1:N relationship type **R,** identify the relation **S** that represent the participating entity type at the N-side of the relationship type.

The primary key of the relation in 1 side entity is included as the foreign key in N side entity.

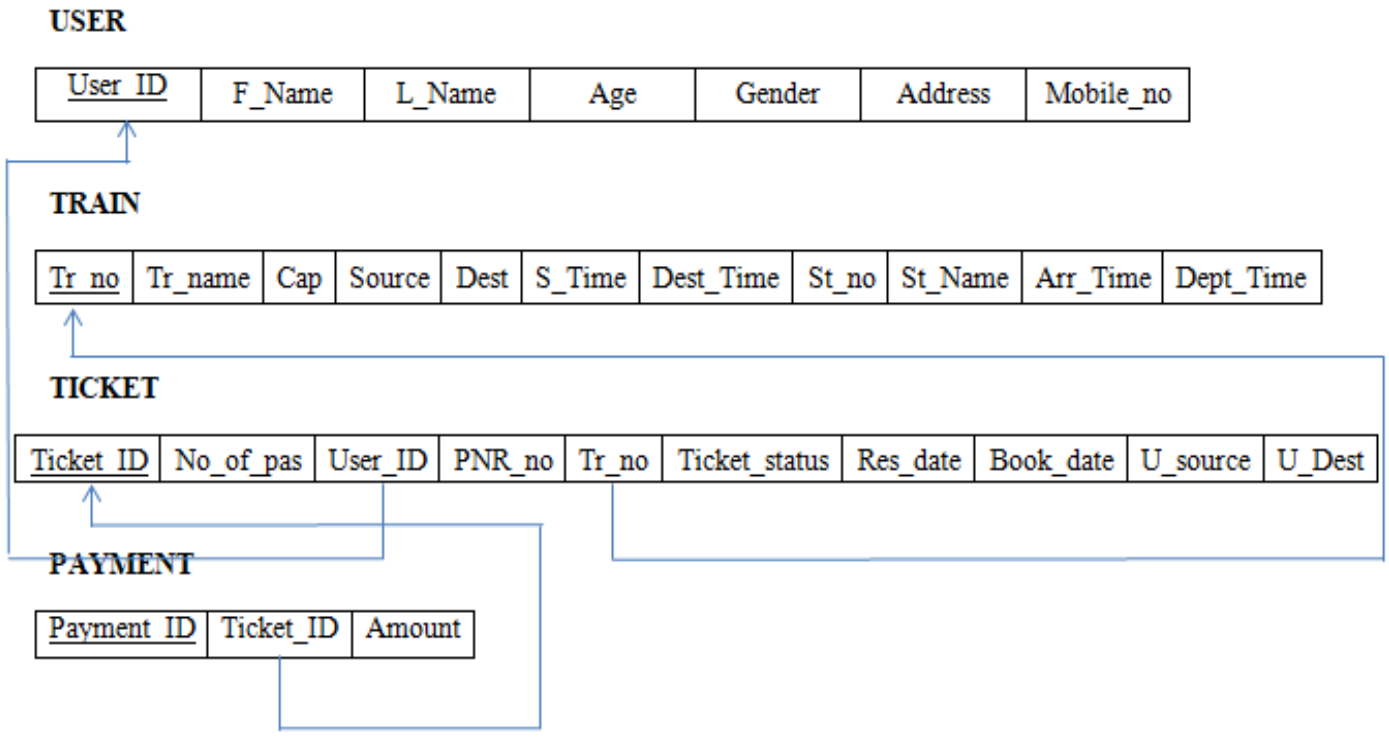
- **Books (**Between User (Total Participation) and Ticket (Total Participation)**))**
- **Cancels (**Between User (Partial Participation) and Ticket (Partial Participation)**)**
- **Belongs (**Between Train (Total Participation) and Ticket (Total Participation))

1:1 Relationship

A one-to-one (1:1) relationship in an Entity Relationship Diagram (ERD) is a type of association between two entities, where each instance of one entity corresponds to exactly one instance of the other entity, and vice versa.

- **Confirms (**Between User (Total Participation) and Payment (Partial Participation)**)**
- **Pays (**Between Payment (Total Participation) and Ticket (Total Participation)**)**

ER to RELATIONAL MODEL:



FUNCTIONAL DEPENDENCIES (FDs) BEFORE NORMALIZATION:

USER

User_ID ⟶ F_Name

User_ID ⟶ L_Name

User_ID ⟶ Age

User_ID ⟶ Gender

User_ID ⟶ Address

User_ID ⟶ Mobile_no

User_ID, Address ⟶ Mobile_no

TRAIN

Tr_no ⟶ Tr_name

Tr_no ⟶ Capacity

Tr_no ⟶ Source

Tr_no ⟶ Dest

Tr_no ⟶ S_Time

Tr_no ⟶ Dest_Time

Tr_no ⟶ St_no

St_no ⟶ St_name

St_no ⟶ Arr_Time

St_no ⟶ Dept_Time

TICKET

Ticket_ID ⟶ No_of_passengers

Ticket_ID ⟶ User_ID

Ticket_ID ⟶ PNR_No

{Tr_no, Ticket_ID} ⟶ PNR_No

Ticket_ID ⟶ Tr_no

Ticket_ID ⟶ Ticket_Status

{PNR_No, Tr_no} ⟶ Ticket_Status

Ticket_ID → Res_Date

Ticket_ID → Book_Date

Ticket_ID → U_Source

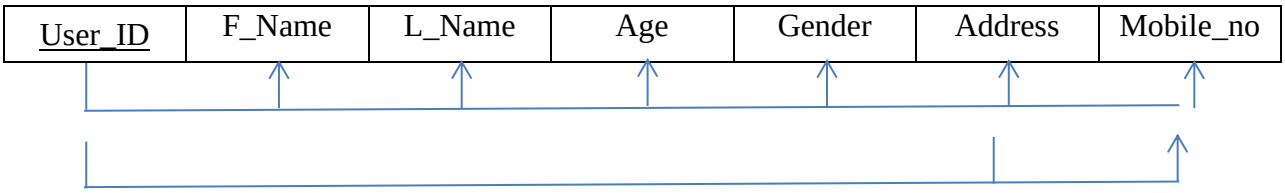
Ticket_ID → U_Dest

PAYMENT

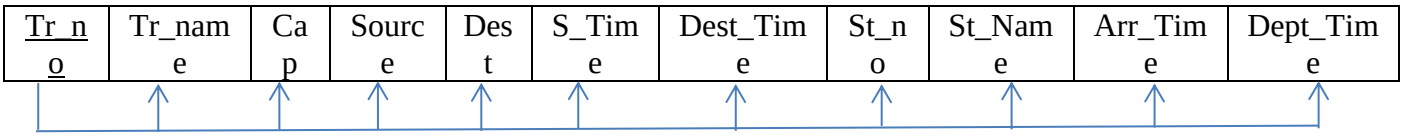
Payment_ID → Ticket_ID

Payment_ID → Amount

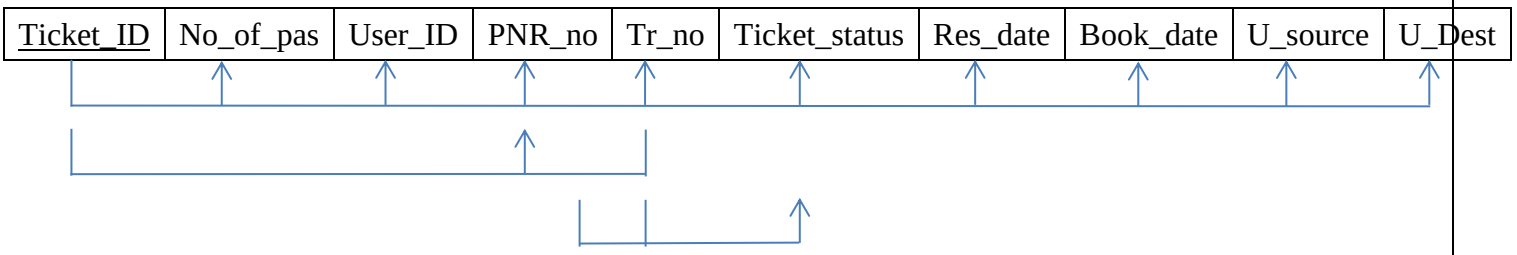
USERS



TRAIN



TICKET



PAYMENT