American International University-Bangladesh (AIUB)

Faculty of Science and Technology

Department of Computer Science and Engineering

CSC 4181: Advanced Database Management Systems

Mid Term Project Report

Fall 2022-23

Project Name

MetroTicket

Team

Runtime Terror

Member

Zaid Amin Rawfin

20-42459-1

Section: **C**

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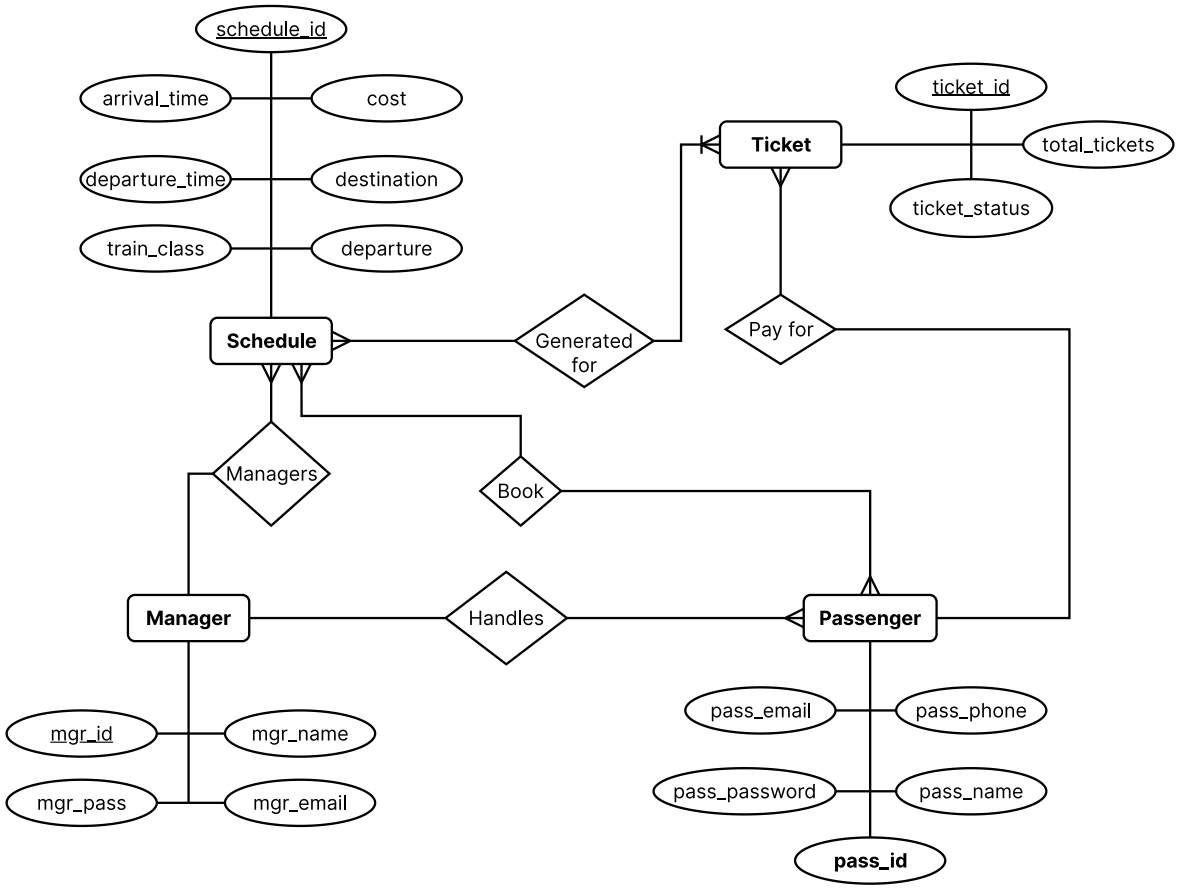
Table of Contents

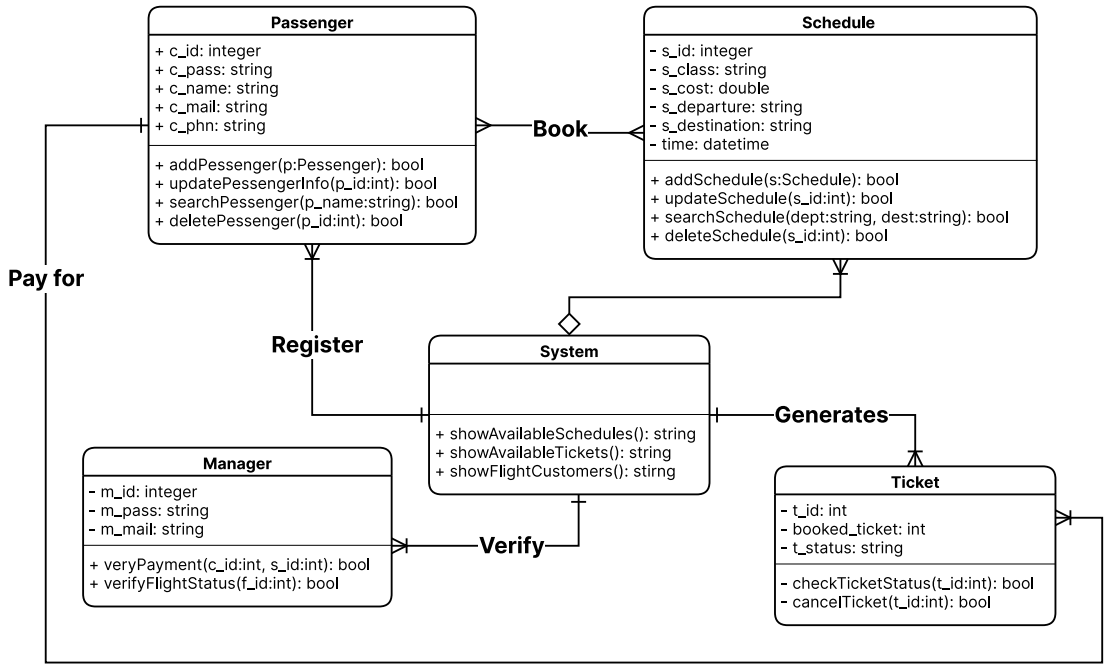
1. System Summary

MetroTicket is an online metro-rail ticket booking system that allows users to book available metro-rail tickets online. Customer login and registration, ticket type selection, online payment, and management of the application's functionalities - are all included in the system. MetroTicket is primarily intended to make it easier for people to book and purchase tickets. It is also user-friendly, allowing people to book tickets and receive them via email with ease.

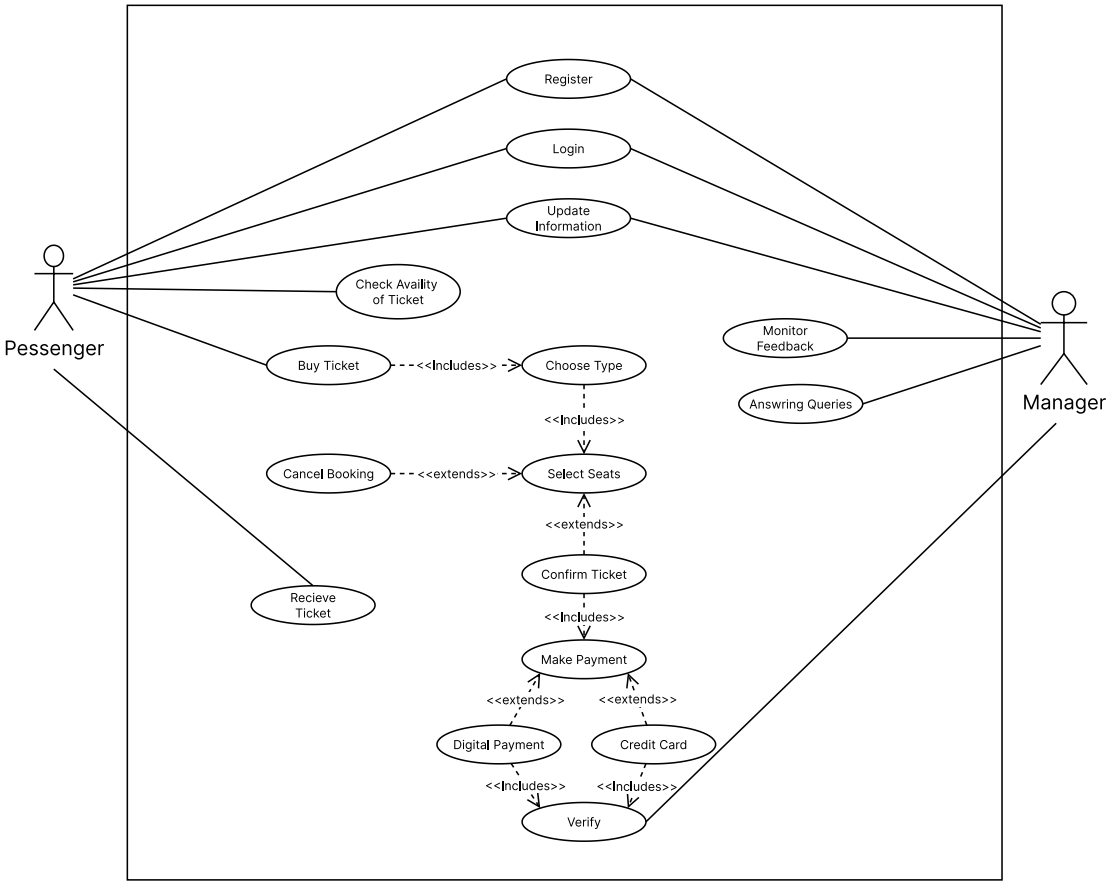
2. Entity Relationship (ER) Diagram



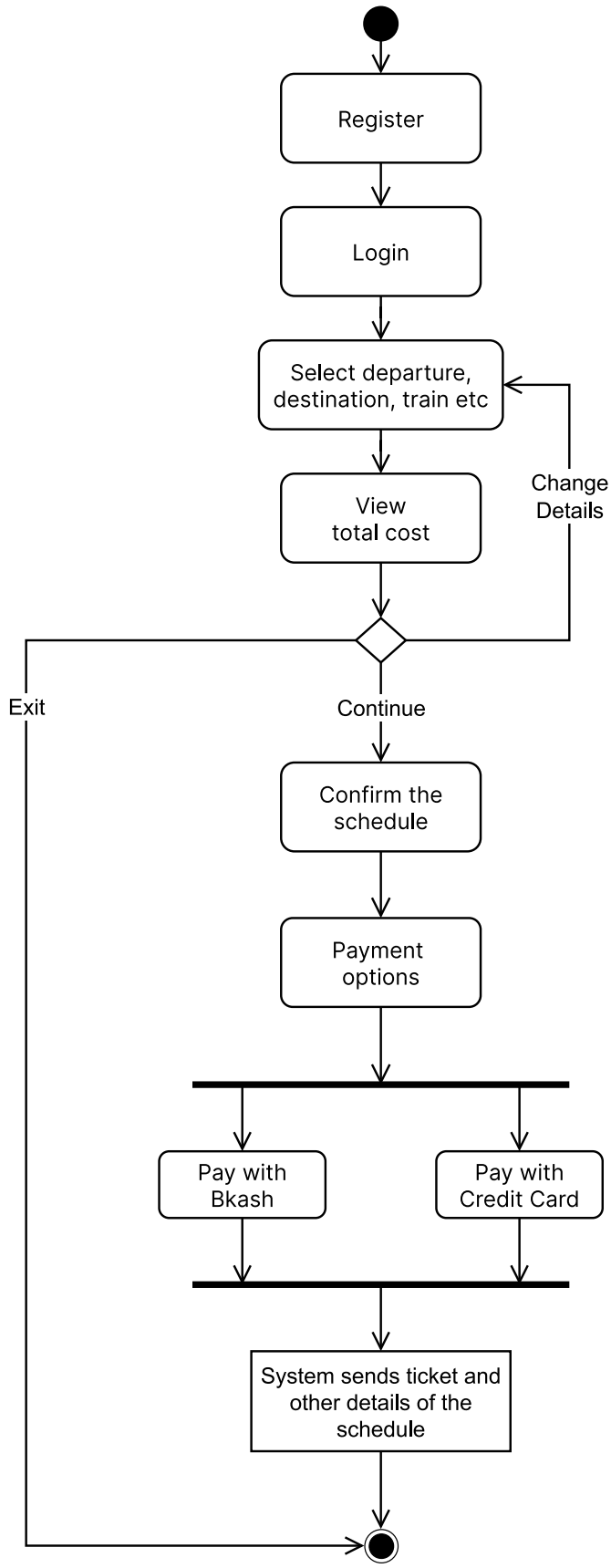
3. Class Diagram



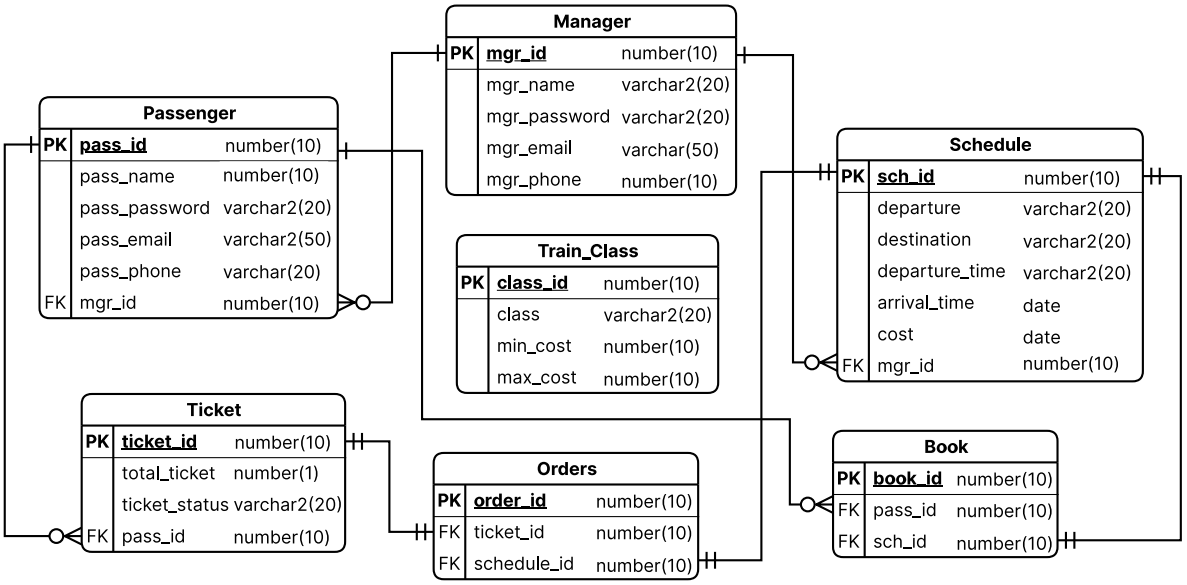
4. Use Case Diagram



5. Activity Diagram



6. Schema Diagram



7. Screenshots of Sample Date

7.1 Creating a new user

Autocommit Display 10

```
CREATE USER "MetroTicket" IDENTIFIED BY "123";

GRANT CONNECT, RESOURCE, UNLIMITED TABLESPACE TO "MetroTicket";

ALTER USER "MetroTicket" DEFAULT TABLESPACE USERS;

ALTER USER "MetroTicket" TEMPORARY TABLESPACE TEMP;
```

Results Explain Describe Saved SQL History

```
User altered.

0.00 seconds
```

7.2 Manager Table

```
CREATE TABLE manager
(
    mgr_id    number(10) PRIMARY KEY,
    mgr_name  varchar2(20),
    mgr_pass  varchar2(20),
    mgr_email varchar2(50),
    mgr_phone varchar2(20)
);

CREATE SEQUENCE mgr_seq START WITH 1;

INSERT INTO manager VALUES (mgr_seq.nextval, 'Raofin', 'raofin123', 'raofin@hotmail.com', '0123649849810');
INSERT INTO manager VALUES (mgr_seq.nextval, 'Mgr2', 'mgr2123', 'mgr2@email.com', '0123649849810');
INSERT INTO manager VALUES (mgr_seq.nextval, 'Mgr3', 'mgr3123', 'mgr3@email.com', '0123649849810');
INSERT INTO manager VALUES (mgr_seq.nextval, 'Mgr4', 'mgr4123', 'mgr4@email.com', '0123649849810');
INSERT INTO manager VALUES (mgr_seq.nextval, 'Mgr5', 'mgr5123', 'mgr5@email.com', '0123649849810');

SELECT * FROM manager;
```

Results Explain Describe Saved SQL History

MGR_ID	MGR_NAME	MGR_PASS	MGR_EMAIL	MGR_PHONE
1	Raofin	raofin123	raofin@hotmail.com	0123649849810
2	Mgr2	mgr2123	mgr2@email.com	0123649849810
3	Mgr3	mgr3123	mgr3@email.com	0123649849810
4	Mgr4	mgr4123	mgr4@email.com	0123649849810
5	Mgr5	mgr5123	mgr5@email.com	0123649849810

5 rows returned in 0.02 seconds CSV Export

7.3 Passenger Table

```
CREATE TABLE passenger
(
    pass_id       number(10) PRIMARY KEY,
    pass_name     varchar2(20),
    pass_password varchar2(20),
    pass_email    varchar2(50),
    pass_phone    varchar2(20),
    mgr_id        number(10),
    FOREIGN KEY (mgr_id) REFERENCES manager (mgr_id)
);

CREATE SEQUENCE pass_seq START WITH 1;

INSERT INTO passenger VALUES (pass_seq.nextval, 'Zaid', 'zaid1986', 'zaid@email.com', '01234567890', 1);
INSERT INTO passenger VALUES (pass_seq.nextval, 'Passenger2', 'passenger2986', 'passenger2@email.com', '01541236140', 3);
INSERT INTO passenger VALUES (pass_seq.nextval, 'Passenger3', 'passenger3986', 'passenger3@email.com', '01234162530', 2);
INSERT INTO passenger VALUES (pass_seq.nextval, 'Passenger4', 'passenger4986', 'passenger4@email.com', '01653416230', 1);
INSERT INTO passenger VALUES (pass_seq.nextval, 'Passenger5', 'passenger5986', 'passenger5@email.com', '01673516360', 3);

SELECT * FROM passenger;
```

Results Explain Describe Saved SQL History

PASS_ID	PASS_NAME	PASS_PASSWORD	PASS_EMAIL	PASS_PHONE	MGR_ID
1	Zaid	zaid1986	zaid@email.com	01234567890	1
2	Passenger2	passenger2986	passenger2@email.com	01541236140	3
3	Passenger3	passenger3986	passenger3@email.com	01234162530	2
4	Passenger4	passenger4986	passenger4@email.com	01653416230	1
5	Passenger5	passenger5986	passenger5@email.com	01673516360	3

5 rows returned in 0.01 seconds CSV Export

7.4 Ticket Table

```
CREATE TABLE ticket
(
    ticket_id     number(10) PRIMARY KEY,
    total_ticket  number(1),
    ticket_status varchar2(10),
    pass_id       number(10),
    FOREIGN KEY (pass_id) REFERENCES passenger (pass_id)
);

CREATE SEQUENCE ticket_seq START WITH 1;

INSERT INTO ticket VALUES (ticket_seq.nextval, 2, 'Booked', 1);
INSERT INTO ticket VALUES (ticket_seq.nextval, 6, 'Available', 3);
INSERT INTO ticket VALUES (ticket_seq.nextval, 5, 'Booked', 2);
INSERT INTO ticket VALUES (ticket_seq.nextval, 2, 'Available', 2);
INSERT INTO ticket VALUES (ticket_seq.nextval, 3, 'Available', 5);

SELECT * FROM ticket;
```

Results Explain Describe Saved SQL History

TICKET_ID	TOTAL_TICKET	TICKET_STATUS	PASS_ID
1	2	Booked	1
2	6	Available	3
3	5	Booked	2
4	2	Available	2
5	3	Available	5

5 rows returned in 0.00 seconds CSV Export

7.5 Schedule table

```
CREATE TABLE schedule
(
    sch_id         number(10) PRIMARY KEY,
    departure      varchar2(20),
    destination    varchar2(20),
    departure_time date,
    arrival_time   date,
    cost       number(10, 2),
    mgr_id         number(10),
    FOREIGN KEY (mgr_id) REFERENCES manager (mgr_id)
);

CREATE SEQUENCE sche_seq START WITH 1;

INSERT INTO schedule VALUES (sche_seq.nextval, 'Dhaka', 'Noakhali', TO_DATE('07-11-22 11:59 a.m.','dd-mm-yy hh:mi a.m.'),
    TO_DATE('07-11-22 11:30 a.m.','dd-mm-yy hh:mi a.m.'), 9600, 2);
INSERT INTO schedule VALUES (sche_seq.nextval, 'Rajshahi', 'Dhaka', TO_DATE('08-11-22 10:59 a.m.','dd-mm-yy hh:mi a.m.'),
    TO_DATE('08-11-22 10:30 a.m.','dd-mm-yy hh:mi a.m.'), 6050, 3);
INSERT INTO schedule VALUES (sche_seq.nextval, 'Chittagong', 'Dhaka', TO_DATE('10-11-22 9:59 a.m.','dd-mm-yy hh:mi a.m.'),
    TO_DATE('10-11-22 9:30 a.m.','dd-mm-yy hh:mi a.m.'), 4538, 3);
INSERT INTO schedule VALUES (sche_seq.nextval, 'Khulna', 'Pabna', TO_DATE('15-11-22 8:59 a.m.','dd-mm-yy hh:mi a.m.'),
    TO_DATE('15-11-22 8:30 a.m.','dd-mm-yy hh:mi a.m.'), 1500, 2);
INSERT INTO schedule VALUES (sche_seq.nextval, 'Noakhali', 'Chittagong', TO_DATE('19-11-22 7:59 a.m.','dd-mm-yy hh:mi a.m.'),
    TO_DATE('09-11-22 7:59 a.m.','dd-mm-yy hh:mi a.m.'), 8601, 5);

SELECT * FROM schedule;
```

Results Explain Describe Saved SQL History

SCH_ID	DEPARTURE	DESTINATION	DEPARTURE_TIME	ARRIVAL_TIME	COST	MGR_ID
1	Dhaka	Noakhali	07-NOV-22	07-NOV-22	9600	2
2	Rajshahi	Dhaka	08-NOV-22	08-NOV-22	6050	3
3	Chittagong	Dhaka	10-NOV-22	10-NOV-22	4538	3
4	Khulna	Pabna	15-NOV-22	15-NOV-22	1500	2
5	Noakhali	Chittagong	19-NOV-22	09-NOV-22	8601	5

5 rows returned in 0.02 seconds CSV Export

7.7 Book Table

```
CREATE TABLE book
(
    book_id number(10) PRIMARY KEY,
    pass_id number(10),
    sch_id  number(10),
    FOREIGN KEY (pass_id) REFERENCES passenger (pass_id),
    FOREIGN KEY (sch_id) REFERENCES schedule (sch_id)
);

CREATE SEQUENCE book_seq START WITH 1;

INSERT INTO book VALUES (book_seq.nextval, 1, 1);
INSERT INTO book VALUES (book_seq.nextval, 2, 1);
INSERT INTO book VALUES (book_seq.nextval, 3, 3);
INSERT INTO book VALUES (book_seq.nextval, 4, 3);
INSERT INTO book VALUES (book_seq.nextval, 5, 2);

SELECT * FROM book;
```

Results Explain Describe Saved SQL History

BOOK_ID	PASS_ID	SCH_ID
1	1	1
2	2	1
3	3	3
4	4	3
5	5	2

5 rows returned in 0.01 seconds CSV Export

7.8 Order Table

```
CREATE TABLE orders
(
    order_id    number(10) PRIMARY KEY,
    ticket_id   number(10),
    sche_id     number(10),
    FOREIGN KEY (ticket_id) REFERENCES ticket (ticket_id),
    FOREIGN KEY (sche_id) REFERENCES schedule (sch_id)
);

CREATE SEQUENCE order_seq START WITH 1;

INSERT INTO orders VALUES (order_seq.nextval, 2, 1);
INSERT INTO orders VALUES (order_seq.nextval, 5, 3);
INSERT INTO orders VALUES (order_seq.nextval, 3, 5);
INSERT INTO orders VALUES (order_seq.nextval, 4, 4);
INSERT INTO orders VALUES (order_seq.nextval, 1, 1);

SELECT * FROM orders;
```

Results Explain Describe Saved SQL History

ORDER_ID	TICKET_ID	SCHE_ID
1	2	1
2	5	3
3	3	5
4	4	4
5	1	1

5 rows returned in 0.01 seconds CSV Export

7.9 Train_Class Table

```
CREATE TABLE train_class
(
    class_id number(10) PRIMARY KEY,
    class    varchar2(20),
    min_cost number(10),
    max_cost number(10)
);

CREATE SEQUENCE train_class_seq START WITH 1;

INSERT INTO train_class VALUES (train_class_seq.nextval, 'First Class', 6001, 9999);
INSERT INTO train_class VALUES (train_class_seq.nextval, 'Second Class', 3001, 6000);
INSERT INTO train_class VALUES (train_class_seq.nextval, 'Third Class', 0, 3000);

SELECT * FROM train_class;
```

Results Explain Describe Saved SQL History

CLASS_ID	CLASS	MIN_COST	MAX_COST
1	First Class	6001	9999
2	Second Class	3001	6000
3	Third Class	0	3000

3 rows returned in 0.01 seconds CSV Export

8. User Interface Connection Codes

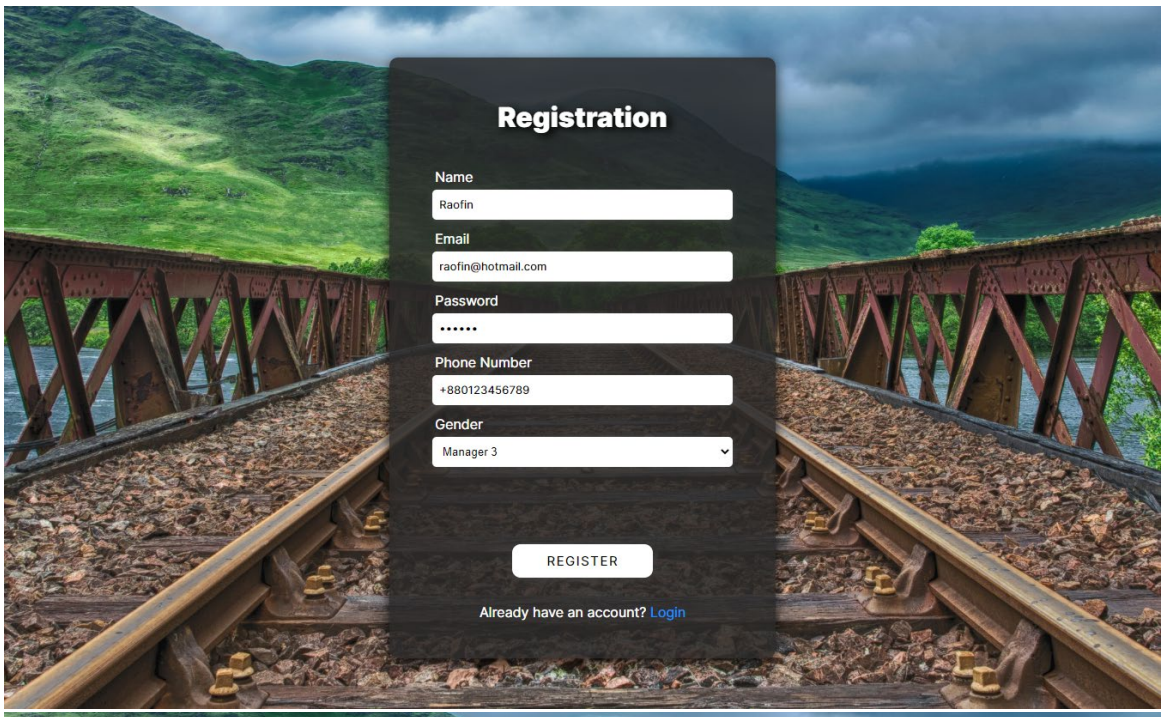
Login-action.php

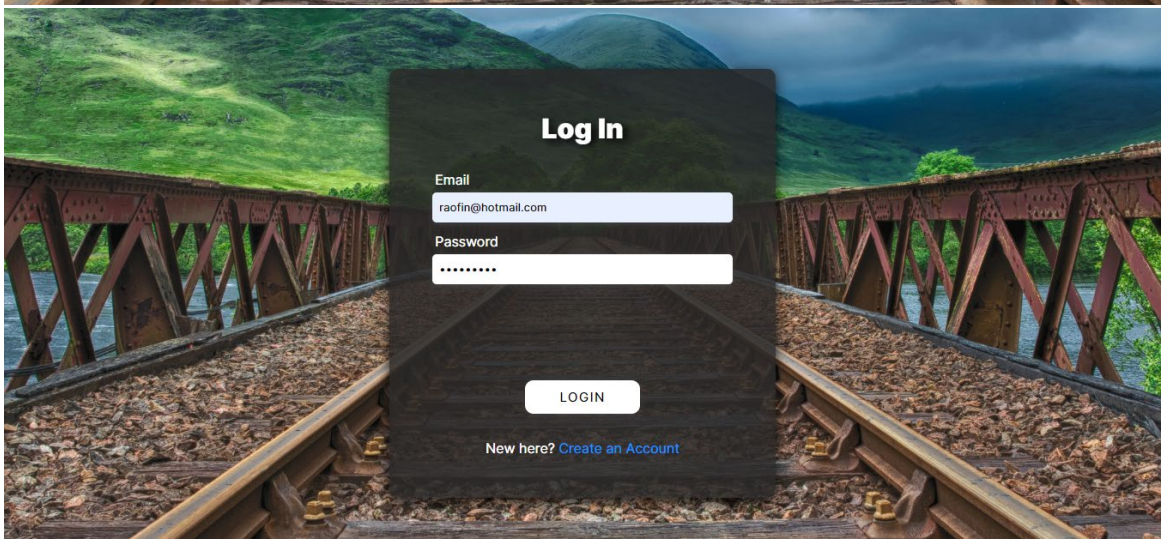
```php
$email = $_POST['email'];
$password = $_POST['password'];

$query = "SELECT * FROM PASSENGER
          WHERE PASS_EMAIL = '" . $email . "'
          AND PASS_PASSWORD = '" . $password . "'";
try {
    $conn = oci_connect('METROTICKET', '123', '//localhost/XE');
    $stid = oci_parse($conn, $query);
    oci_execute($stid);
    $ociResult = oci_fetch($stid);

    if ($ociResult) {
        header("Location: ../view/home.php?login=success");
        die();
    } else {
        header("Location: ../view/login.php?failed");
        die();
    }
} catch (Exception $ex) {
    header("Location: ../view/database-error.php");
    die();
}
```

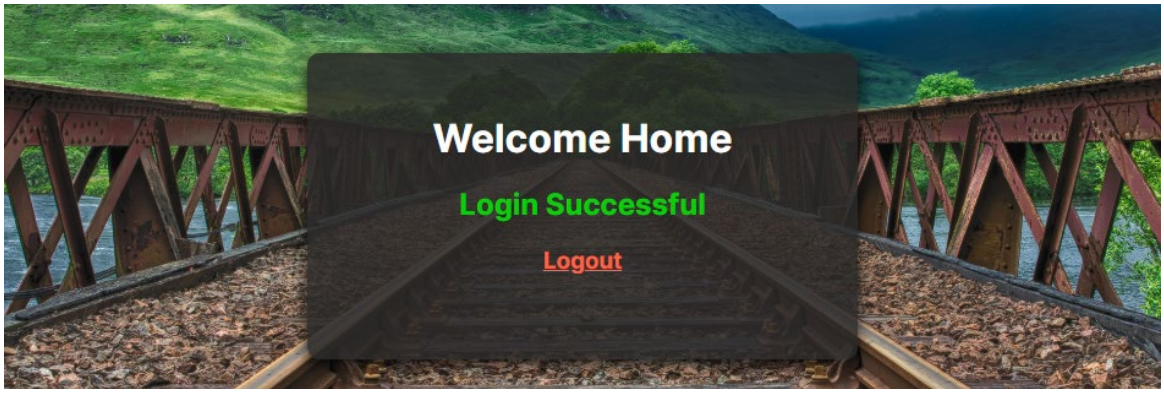
Registration-action.php

```php
$name = $_POST['name'];
$email = $_POST['email'];
$password = $_POST['password'];
$phone = $_POST['phone'];
$managerId = $_POST['manager'];

$query = "INSERT INTO PASSENGER
          VALUES (pass_seq.nextval, '$name', '$password', '$email',
          '$phone', $managerId)";

try {
    $conn = oci_connect('METROTICKET', '123', '//localhost/XE');
    $stid = oci_parse($conn, $query);
    oci_execute($stid);

    header("Location: ../view/register.php?success");
    die();

} catch (Exception $ex) {
    header("Location: ../view/database-error.php");
    die();
}
```

9. User Interface







10. Queries

```
1. Find the train arrival time and total cost of a first-class train
schedule with a destination of Dhaka.
SELECT arrival_time, cost FROM schedule, train_class
WHERE cost BETWEEN min_cost AND max_cost
AND destination = 'Dhaka' AND class = 'First Class';

2. Find the passenger who booked the maximum number of train schedules.
SELECT pass_name FROM passenger
WHERE pass_id IN
  (SELECT p.pass_id FROM passenger p, schedule s, book b
   WHERE p.pass_id = b.pass_id AND b.sch_id = s.sch_id
   GROUP BY p.pass_id HAVING COUNT(p.pass_id) IN
     (SELECT MAX(COUNT(p.pass_id)) FROM passenger p, schedule s, book b
      WHERE p.pass_id = b.pass_id AND b.sch_id = s.sch_id
      GROUP BY p.pass_id));

3. Find the total number of tickets booked for each train schedules.
SELECT schedule.sch_id, SUM(ticket.total_ticket)
FROM schedule, ticket, orders
WHERE ticket.ticket_id = orders.ticket_id
AND orders.sche_id = schedule.sch_id
GROUP BY schedule.sch_id;

4. Find out the passengers who is going to Noakhali and when their train
arrives.
SELECT pass_name, arrival_time FROM passenger c, schedule f, book b
WHERE c.pass_id = b.pass_id AND b.sch_id = f.sch_id
AND destination = 'Noakhali';

5. Find the departure time of the cheapest first-class train schedule.
SELECT * FROM schedule, train_class
WHERE cost BETWEEN min_cost AND max_cost AND cost IN
   (SELECT MIN(cost) FROM schedule, train_class
    WHERE cost BETWEEN min_cost AND max_cost AND class = 'First Class');

6. Find the manager who managed the maximum train schedules.
SELECT * FROM manager WHERE mgr_id IN
   (SELECT m.mgr_id FROM manager m, schedule s WHERE m.mgr_id = s.mgr_id
    GROUP BY m.mgr_id HAVING COUNT(m.mgr_id) IN
        (SELECT MAX(COUNT(m.mgr_id)) FROM manager m, schedule s
         WHERE m.mgr_id = s.mgr_id GROUP BY m.mgr_id));

7. Find departure, destination, and cost of the train schedules for
second and third classes managed by manager 3.
SELECT departure, destination, cost FROM manager, schedule, train_class
WHERE cost BETWEEN min_cost AND max_cost
AND manager.mgr_id = schedule.mgr_id AND manager.mgr_id = 3 AND class IN
   (SELECT class FROM schedule, train_class
    WHERE cost BETWEEN min_cost AND max_cost
    AND class IN ('Second Class', 'Third Class'));
```

```
8. Find the destination with the average cost in second class train
schedules.
SELECT destination, ROUND(AVG(cost)) FROM schedule, train_class
WHERE cost BETWEEN min_cost AND max_cost
GROUP BY destination HAVING AVG(cost) =
   (SELECT MAX(AVG(cost)) FROM schedule, train_class
    WHERE cost BETWEEN min_cost AND max_cost GROUP BY destination);

9. Find the train schedule with maximum cost.
SELECT * FROM schedule
WHERE cost = (SELECT MAX(cost) FROM schedule);

10. Find all train schedule information that has the most tickets booked.
SELECT * FROM schedule WHERE sch_id IN
   (SELECT s.sch_id FROM schedule s, ticket t, orders o
    WHERE t.ticket_id = o.ticket_id AND o.sche_id = s.sch_id
    AND ticket_status = 'Booked'
    GROUP BY s.sch_id HAVING SUM(t.total_ticket) IN
       (SELECT MAX(SUM(t.total_ticket))
        FROM schedule f, ticket t, orders o
        WHERE t.ticket_id = o.ticket_id AND o.sche_id = s.sch_id
        AND ticket_status = 'Booked' GROUP BY s.sch_id));
```