**1. CREATING A DATABASE USING SQL:**

**Step 1: Create the Database**

CREATE DATABASE BusReservationSystem;

USE BusReservationSystem;

**Step 2: Create Tables**

1. Buses Table:

CREATE TABLE Buses (

BusID INT PRIMARY KEY AUTO\_INCREMENT,

BusNumber VARCHAR(20) NOT NULL,

BusType VARCHAR(20),

TotalSeats INT,

AvailableSeats INT

);

2. Routes Table:

CREATE TABLE Routes (

RouteID INT PRIMARY KEY AUTO\_INCREMENT,

StartLocation VARCHAR(50) NOT NULL,

EndLocation VARCHAR(50) NOT NULL,

DepartureTime TIME,

ArrivalTime TIME,

BusID INT,

FOREIGN KEY (BusID) REFERENCES Buses(BusID)

);

3. Reservations Table:

CREATE TABLE Reservations (

ReservationID INT PRIMARY KEY AUTO\_INCREMENT,

PassengerName VARCHAR(50) NOT NULL,

PassengerContact VARCHAR(15),

RouteID INT,

SeatsBooked INT,

ReservationDate DATE,

FOREIGN KEY (RouteID) REFERENCES Routes(RouteID)

);

**Step 3: Insert Sample Data**

1. Insert Buses:

INSERT INTO Buses (BusNumber, BusType, TotalSeats, AvailableSeats)

VALUES (&#39;BUS123&#39;, &#39;AC&#39;, 40, 40),

(&#39;BUS456&#39;, &#39;Non-AC&#39;, 50, 50);

2. Insert Routes:

INSERT INTO Routes (StartLocation, EndLocation, DepartureTime, ArrivalTime,

BusID)

VALUES (&#39;City A&#39;, &#39;City B&#39;, &#39;08:00:00&#39;, &#39;12:00:00&#39;, 1),

(&#39;City C&#39;, &#39;City D&#39;, &#39;14:00:00&#39;, &#39;18:00:00&#39;, 2);

**Step 4: Reservation Queries**

1. Book a Ticket: Reduce AvailableSeats in Buses table and add a new reservation

record.

START TRANSACTION;

-- Check seat availability

SELECT AvailableSeats FROM Buses WHERE BusID = 1;

-- Assuming 3 seats are being booked

UPDATE Buses SET AvailableSeats = AvailableSeats - 3 WHERE BusID = 1;

-- Add reservation record

INSERT INTO Reservations (PassengerName, PassengerContact, RouteID,

SeatsBooked, ReservationDate)

VALUES (&#39;John Doe&#39;, &#39;1234567890&#39;, 1, 3, CURDATE());

COMMIT;

2. View All Reservations:

SELECT R.ReservationID, R.PassengerName, R.SeatsBooked, R.ReservationDate,

Ro.StartLocation, Ro.EndLocation

FROM Reservations R

JOIN Routes Ro ON R.RouteID = Ro.RouteID;

3. Cancel a Reservation: Free up seats in Buses and delete the reservation record.

START TRANSACTION;

-- Find the number of seats booked and BusID from RouteID

SELECT SeatsBooked, RouteID INTO @SeatsBooked, @RouteID

FROM Reservations

WHERE ReservationID = 1;

-- Find the BusID associated with the Route

SELECT BusID INTO @BusID

FROM Routes

WHERE RouteID = @RouteID;

-- Update the AvailableSeats in Buses table

UPDATE Buses SET AvailableSeats = AvailableSeats + @SeatsBooked WHERE BusID

= @BusID;

-- Delete the reservation

DELETE FROM Reservations WHERE ReservationID = 1;

COMMIT;

**Step 5: Sample Queries for Bus and Route Info**

1. List All Buses:

SELECT \* FROM Buses;

2. List All Routes:

SELECT R.RouteID, R.StartLocation, R.EndLocation, R.DepartureTime,

R.ArrivalTime, B.BusNumber, B.BusType

FROM Routes R

JOIN Buses B ON R.BusID = B.BusID;

**2. DATABASE CONNECTION (DB.PHP):**

**Create a db.php file to connect PHP to the MySQL database:**

php

<?php

$servername = "localhost";

$username = "root";

$password = "";

$database = "BusReservationSystem";

$conn = new mysqli($servername, $username, $password, $database);

if ($conn->connect\_error) {

die("Connection failed: " . $conn->connect\_error);

}

?>

**3. Frontend HTML and CSS:**

**index.html - Home Page to View and Book Routes:**

html

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Bus Reservation System</title>

<link rel="stylesheet" href="styles.css">

</head>

<body>

<h1>Welcome to the Bus Reservation System</h1>

<!-- View Routes Section -->

<section>

<h2>Available Routes</h2>

<form action="view\_routes.php" method="GET">

<button type="submit">View Routes</button>

</form>

</section>

<!-- Reserve a Seat Section -->

<section>

<h2>Make a Reservation</h2>

<form action="reserve.php" method="POST">

<label for="route\_id">Route ID:</label>

<input type="number" id="route\_id" name="route\_id" required>

<label for="passenger\_name">Name:</label>

<input type="text" id="passenger\_name" name="passenger\_name" required>

<label for="contact">Contact:</label>

<input type="text" id="contact" name="contact" required>

<label for="seats">Seats to Book:</label>

<input type="number" id="seats" name="seats" required>

<button type="submit">Reserve</button>

</form>

</section>

<!-- Cancel Reservation Section -->

<section>

<h2>Cancel Reservation</h2>

<form action="cancel\_reservation.php" method="POST">

<label for="reservation\_id">Reservation ID:</label>

<input type="number" id="reservation\_id" name="reservation\_id" required>

<button type="submit">Cancel Reservation</button>

</form>

</section>

</body>

</html>

**styles.css - Basic Styling**

css

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body {

font-family: Arial, sans-serif;

text-align: center;

}

section {

margin: 20px;

}

input, button {

padding: 8px;

margin: 10px 0;

}

**4. Backend PHP Scripts:**

**view\_routes.php - Display Available Routes:**

php

Copy code

<?php

include 'db.php';

$sql = "SELECT \* FROM Routes";

$result = $conn->query($sql);

if ($result->num\_rows > 0) {

echo "<h2>Available Routes</h2>";

while ($row = $result->fetch\_assoc()) {

echo "Route ID: " . $row["RouteID"] . " - From " . $row["StartLocation"] . " to " . $row["EndLocation"] .

" - Departure: " . $row["DepartureTime"] . " - Arrival: " . $row["ArrivalTime"] . "<br>";

}

} else {

echo "No routes available.";

}

$conn->close();

?>

<a href="index.html">Back to Home</a>

**reserve.php - Reserve a Seat**

php

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<?php

include 'db.php';

$route\_id = $\_POST['route\_id'];

$passenger\_name = $\_POST['passenger\_name'];

$contact = $\_POST['contact'];

$seats = $\_POST['seats'];

// Check seat availability

$seat\_check = $conn->query("SELECT AvailableSeats FROM Buses WHERE BusID = (SELECT BusID FROM Routes WHERE RouteID = $route\_id)");

$available\_seats = $seat\_check->fetch\_assoc()['AvailableSeats'];

if ($available\_seats >= $seats) {

// Reduce seat count in Buses table

$conn->query("UPDATE Buses SET AvailableSeats = AvailableSeats - $seats WHERE BusID = (SELECT BusID FROM Routes WHERE RouteID = $route\_id)");

// Add reservation record

$sql = "INSERT INTO Reservations (PassengerName, PassengerContact, RouteID, SeatsBooked, ReservationDate)

VALUES ('$passenger\_name', '$contact', $route\_id, $seats, CURDATE())";

if ($conn->query($sql) === TRUE) {

echo "Reservation successful!";

} else {

echo "Error: " . $conn->error;

}

} else {

echo "Not enough available seats.";

}

$conn->close();

?>

<a href="index.html">Back to Home</a>

**cancel\_reservation.php - Cancel a Reservation**

php

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<?php

include 'db.php';

$reservation\_id = $\_POST['reservation\_id'];

// Fetch route and seat details

$reservation = $conn->query("SELECT SeatsBooked, RouteID FROM Reservations WHERE ReservationID = $reservation\_id");

$reservation\_data = $reservation->fetch\_assoc();

if ($reservation\_data) {

$seats\_to\_free = $reservation\_data['SeatsBooked'];

$route\_id = $reservation\_data['RouteID'];

// Free seats in Buses table

$conn->query("UPDATE Buses SET AvailableSeats = AvailableSeats + $seats\_to\_free WHERE BusID = (SELECT BusID FROM Routes WHERE RouteID = $route\_id)");

// Delete reservation record

$conn->query("DELETE FROM Reservations WHERE ReservationID = $reservation\_id");

echo "Reservation canceled successfully.";

} else {

echo "Reservation ID not found.";

}

$conn->close();

?>

<a href="index.html">Back to Home</a>

**Summary:**

1. **index.html** - Main front end with forms to view routes, book, and cancel reservations.
2. **db.php** - Connects to the MySQL database.
3. **view\_routes.php** - Lists all routes.
4. **reserve.php** - Handles seat booking and reservation.
5. **cancel\_reservation.php** - Allows for reservation cancellation.