

**Name** Iqbal Singh   **Project** Mechanic Management System

# Requirements Document: Shift Key Mechanic Scheduler

## 1. Introduction & Rationale

- **Subject:** Shift-Key Mechanic Scheduler.
- **Introduction:** A full-stack Node.js application designed to manage automotive service appointments (oil changes, tire swaps) and shop resources.
- **Rationale:** To provide a 24/7 digital booking interface for customers while giving shop admins a high-level tool to manage staff (employees) and physical workspace (bays) efficiently.

## 2. Content Evaluation

### a. Navigation

- **Customer:** Home, My Garage, Book Appointment, Service History, Profile, Logout.
- **Admin:** Dashboard (Schedule), Service Management, Employee List, Bay Management, Analytics, Logout.

## b. Layout (Wireframes)

The wireframe shows a mobile application interface. At the top is a header bar with the text "Stitch - Design with AI". Below the header is a large white area containing a circular profile icon with a person's head and shoulders. Underneath the icon is the heading "Our Legacy of Excellence" in bold black font, followed by a subtitle: "Precision automotive care driven by a passion for performance and reliability." To the right of the subtitle is a three-line menu icon. At the bottom of this section is a horizontal line.

**Our Story**

**1980 The First Garage**  
Founded by Marcus Shift in a small downtown garage with just one lift and a toolbox.

**2010 Expansion & Tech**  
Adopted digital diagnostic systems and grew to a team of 10 certified master technicians.

**Today Shift-Key Mechanics**  
Now the region's leading specialized facility for both vintage classics and modern electric vehicles.

**Why Choose Us**

**Easy Booking**  
Schedule your service in just a few clicks through our mobile app or website.

**Expert Mechanics**  
Our team consists of ASE-certified professionals with decades of combined experience.

**Quality Service**  
We use only premium parts and state-of-the-art tools for every single maintenance task.

 Shift-Key Mechanics

Admin User [Logout](#)

-  Schedule
-  Services
-  Employees
-  Bays



## Welcome to Shift-Key Mechanics

Admin Dashboard



### Schedule

Manage appointments



### Services

View services offered



### Employees

Manage mechanics



### Bays

View service bays

[Switch to Customer View](#)

 Shift-Key Mechanics

Admin User [Logout](#)

-  Schedule
-  Services
-  Employees
-  Bays

### Today's Schedule

Wednesday, January 28, 2026



Time	Customer Name	Vehicle	Service Type	Status	Employee	Bay	Actions
09:00 AM	John Customer	2020 Honda Civic - ABC 1234	Oil Change	In Progress	Mike Johnson	Bay 2	<a href="#">Allocate</a>
11:30 AM	Jane Smith	2019 Toyota Camry - XYZ 5678	Tire Swap	Pending	Not Assigned	Not Assigned	<a href="#">Allocate</a>
02:00 PM	Bob Williams	2021 Ford F-150 - DEF 9012	Brake Check	Completed	Sarah Williams	Bay 1	<a href="#">Allocate</a>

 Shift-Key Mechanics

Admin User [Logout](#)

- [Schedule](#)
- [Services](#)
- [Employees](#)
- [Bays](#)

## Services Offered



Oil Change  
30 minutes



Tire Swap  
45 minutes



Brake Check  
60 minutes

 Shift-Key Mechanics [Book Now](#) [My Garage](#) John Customer [Logout](#)

## My Garage

[+ Add New Vehicle](#)



2021 Ford F-150  
DEF 9012

[!\[\]\(62d4d3494d4340f830d2a84926a2cbde\_img.jpg\)](#) [!\[\]\(f352fb86fd942855f49bb0ef3403ffdf\_img.jpg\)](#)

 Shift-Key Mechanics

[Book Now](#) [My Garage](#)

John Customer [Logout](#)



## Welcome to Shift-Key Mechanics

Professional automotive care and maintenance

[Book Appointment](#) [My Garage](#)



### Easy Booking

Schedule your service in just a few clicks



### Expert Mechanics

Certified professionals you can trust



### Quality Service

Top-notch care for your vehicle

 Shift-Key Mechanics

[Book Now](#) [My Garage](#)

John Customer [Logout](#)

### Book an Appointment



Vehicle      Service      Date      Time

#### Select Service



### Oil Change

30 minutes



### Tire Swap

45 minutes



### Brake Check

60 minutes

[Back](#) [Next](#)

b

The screenshot shows the 'Book an Appointment' process at step 3: 'Date'. A progress bar at the top indicates four steps: Vehicle (1), Service (2), Date (3), and Time (4). Below the progress bar, the heading 'Choose Date' is displayed. A calendar for January 2026 is shown, with the 29th highlighted in pink. Navigation buttons 'Back' and 'Next' are present below the calendar.

The screenshot shows the 'Book an Appointment' process at step 4: 'Time'. The progress bar at the top is identical to the previous screenshot. Below it, the heading 'Available Time Slots' is displayed. A grid of time slots is shown in a 5x4 grid:

09:00 AM	09:30 AM	10:00 AM	10:30 AM
11:00 AM	11:30 AM	12:00 PM	12:30 PM
01:00 PM	01:30 PM	02:00 PM	02:30 PM
03:00 PM	03:30 PM	04:00 PM	04:30 PM
05:00 PM			

Below the grid, there are 'Back' and 'Confirm Appointment' buttons. The 'Confirm Appointment' button is green with a checkmark icon.

### 3. Functionality (User Stories + Estimates)

#### Must Have User Stories

Customer

1. **Register/Login (~7h)**: Create a secure account to protect vehicle and booking data..
2. **Service Selection (~8h)**: Select a specific service and browse available date/time slots.
3. **Confirm Booking (~3h)**: Finalize an appointment and view a confirmation summary.

#### **Admin**

5. **Admin Login (~3h)**: Secure entry for shop management staff.
6. **Service Catalog (~8h)**: Add/Edit/Delete shop services, including pricing and estimated duration.

**Total Must Have:** ~41h

#### **Should Have User Stories**

##### **Admin**

9. **Bay Assignment (~4h)**: Assign a specific service bay (e.g., Bay 1, Lift 2) to a booking.
10. **Customer Directory (~5h)**: Search and filter customers by license plate or phone number.

##### **Customer**

11. **Cancel Appointment (~5h)**: Allow users to cancel their bookings directly from the history tab.
12. **Automated Emails (~4h)**: Send confirmation alerts via Nodemailer when a mechanic is assigned.

**Total Should Have:** ~23h

#### **Nice to Have User Stories**

13. **Service Reminders (~6h)**: Automated suggestions for maintenance based on service history.
14. **Manage Garage (~6h)**: Add, Edit, or Delete personal vehicle records (Make, Model, Year, VIN)
15. **Employee Allocation (~5h)**: Assign a specific mechanic to an appointment for workload management.

**Total Nice to Have:** ~17h

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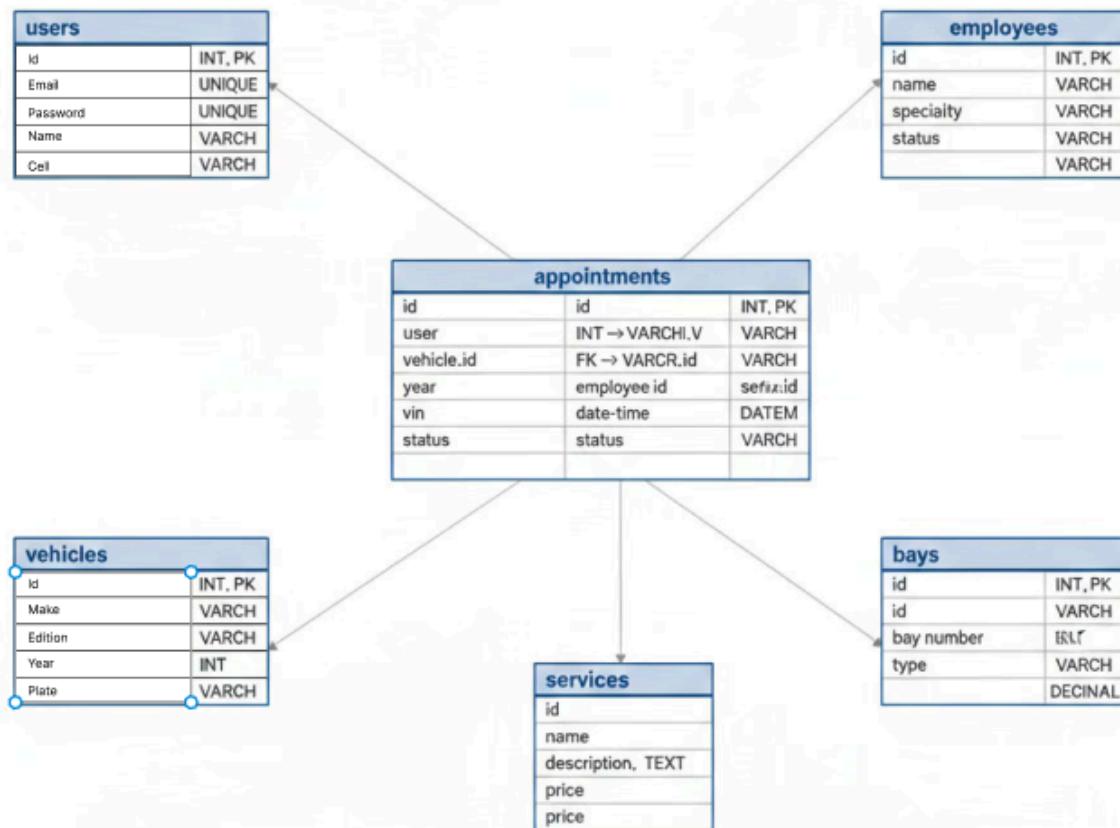
## 4. Technical Specifications

- **Backend:** Node.js with Express.js.
- **Database:** MySQL
- **Frontend:** HTML5, CSS3, JavaScript (Bootstrap 5 for mobile responsiveness).
- **APIs:** Nodemailer for transactional emails.

## 5. Data Design

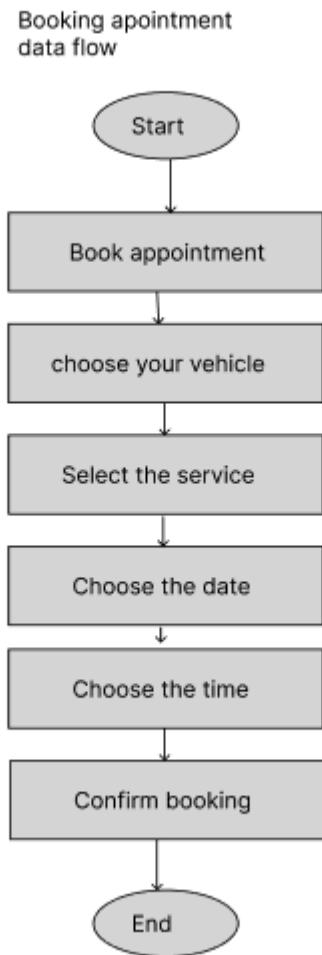
### a. Database Schema

#### Database Schema Diagram

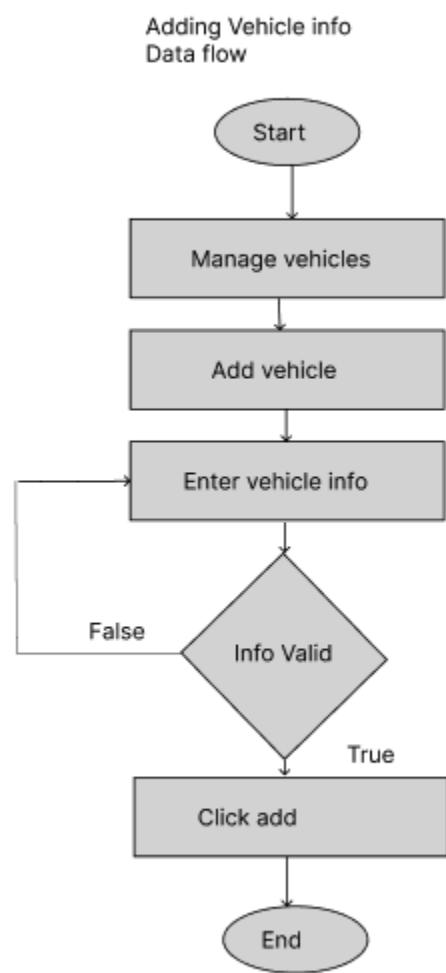


## b. Data Flow

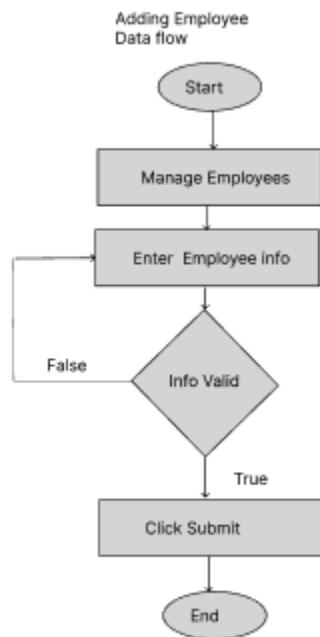
Data flow diagram#1



## Data flow diagram#2



### Data flow diagram#3



## 6. Development Specifications

- **Accessibility:** WCAG 2.1 compliance (proper aria-labels, high contrast).
- **Responsiveness:** Mobile-first design using Bootstrap grid.
- **Folder Structure:** Standard Express structure (/routes, /models, /controllers, /views).

## **7. Schedule (Timeline)**

*[https://docs.google.com/spreadsheets/d/1\\_nzWeO3IN2BeN3u0T4DckNusYviLgN5BEDkxB9HSWS8/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1_nzWeO3IN2BeN3u0T4DckNusYviLgN5BEDkxB9HSWS8/edit?usp=sharing)*

## **8. Conclusion**

The Shift-Key Mechanic Scheduler is a robust management tool that demonstrates complex database relationships and asynchronous Node.js logic. By including employee and bay management, the application provides a professional-grade solution that meets the high-level requirements of the capstone project.