

# Requirements Document: Shift Key Mechanic Scheduler

## 1. Introduction & Rationale

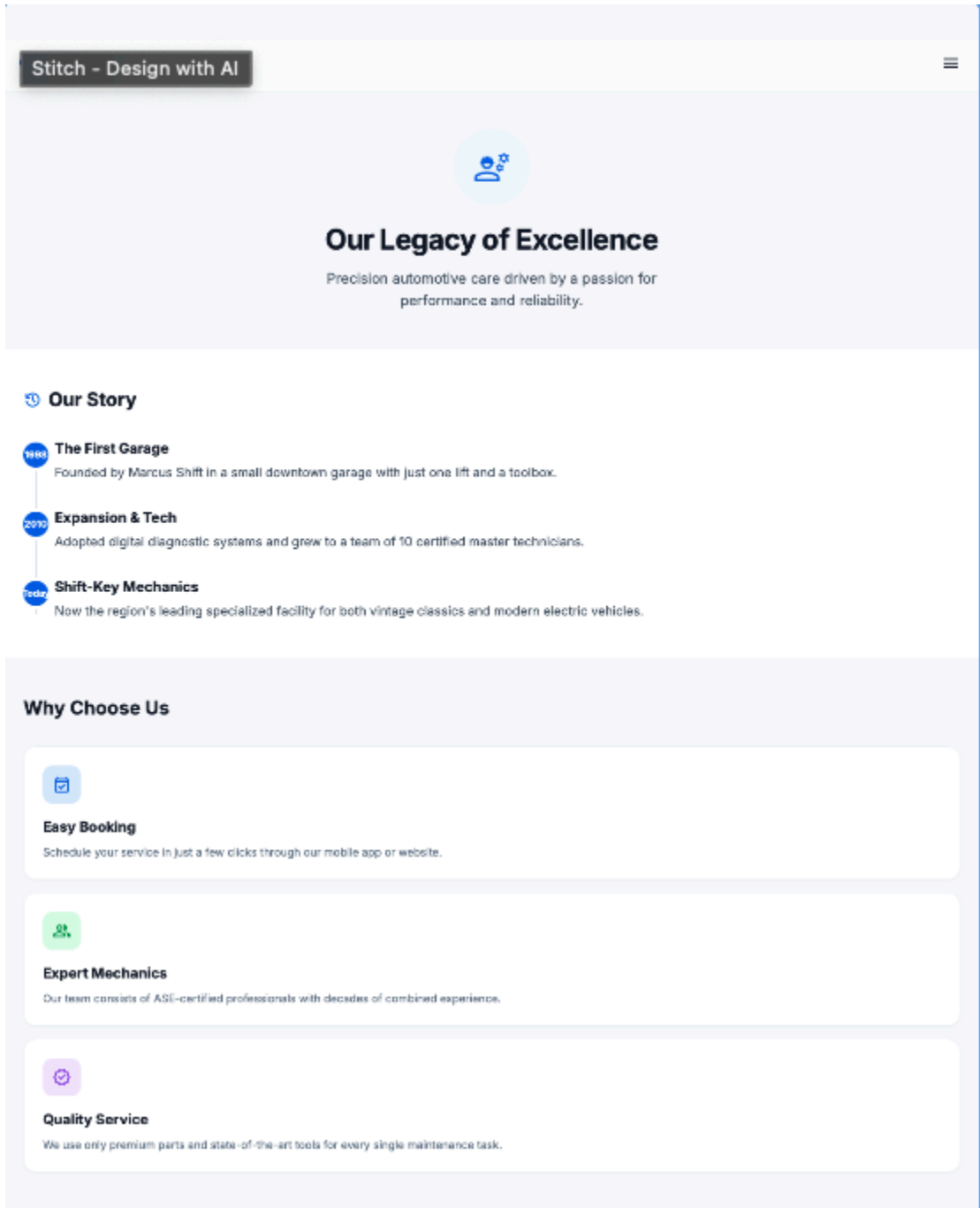
- **Subject:** Shift-Key Mechanic Scheduler.
- **Introduction:** A full-stack Node.js application designed to manage automotive service appointments (oil changes, tire swaps) and shop resources.
- **Rationale:** To provide a 24/7 digital booking interface for customers while giving shop admins a high-level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



Shift-Key Mechanics

Admin UserLogout

Schedule

Services

Employees

Bays

Schedule

Manage appointments

Services

View services offered

Employees

Manage mechanics

Bays

View service bays

Switch to Customer View

Shift-Key Mechanics

Admin UserLogout

Schedule

Services

Employees


Bays

Today's Schedule

Wednesday, January 28, 2026

Search by license plate or customer name...

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	Allocate
11:30 AM	Jane Smith	2019 Toyota Camry - XYZ 5678	Tire Swap	Pending	Not Assigned	Not Assigned	Allocate
02:00 PM	Bob Williams	2021 Ford F-150 - DEF 9012	Brake Check	Completed	Sarah Williams	Bay 1	Allocate

 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 NowMy Garage


John CustomerLogout

My Garage

+ Add New Vehicle




2021 Ford F-150  
DEF 9012

 Shift-Key Mechanics

Book NowMy Garage


John CustomerLogout



Welcome to Shift-Key Mechanics


Professional automotive care and maintenance

Book AppointmentMy 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 NowMy Garage

John CustomerLogout

Book an Appointment

1


2

3

4


VehicleServiceDateTime

Select Service




Oil Change

30 minutes



Tire Swap

45 minutes



Brake Check

60 minutes

BackNext

b

The screenshot shows the 'Book an Appointment' form at Shift-Key Mechanics. The progress bar indicates four steps: 1. Vehicle, 2. Service, 3. Date (current), and 4. Time. The 'Choose Date' section features a calendar for January 2026. The date 28th is selected. At the bottom, there are 'Back' and 'Next' buttons.

Shift-Key Mechanics **Book Now** My Garage John Customer **Logout**

### Book an Appointment

1 2 3 4  
Vehicle Service Date Time

Choose Date

< January 2026 >

Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Back Next

The screenshot shows the 'Book an Appointment' form at Shift-Key Mechanics. The progress bar indicates four steps: 1. Vehicle, 2. Service, 3. Date, and 4. Time (current). The 'Available Time Slots' section displays a grid of time slots. The 12:30 PM slot is selected. At the bottom, there are 'Back' and 'Confirm Appointment' buttons.

Shift-Key Mechanics **Book Now** My Garage John Customer **Logout**

### Book an Appointment

1 2 3 4  
Vehicle Service Date Time

Available Time Slots

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			

Back Confirm Appointment

### 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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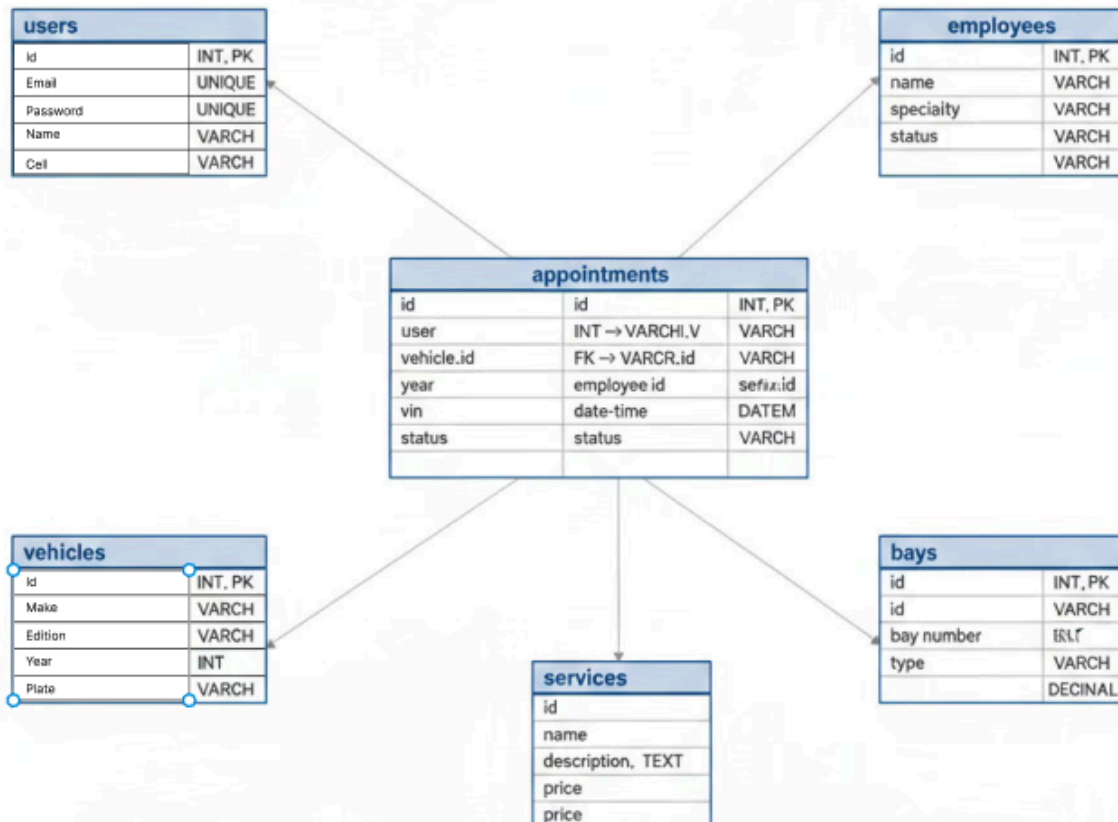
## 4. Technical Specifications

- **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

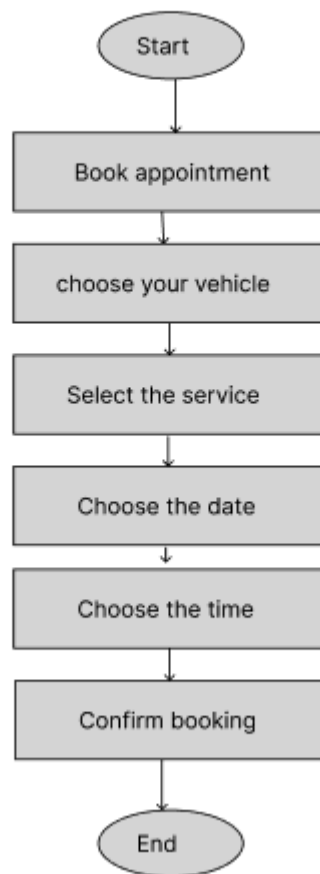




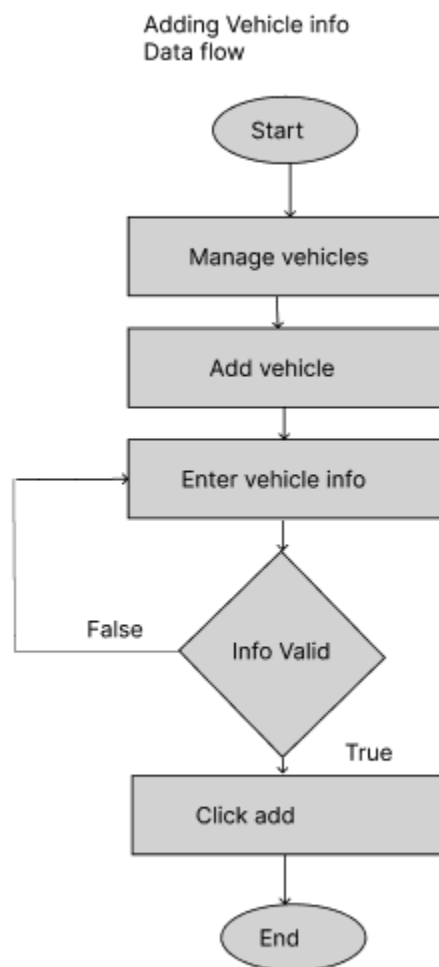
## b. Data Flow

### Data flow diagram#1

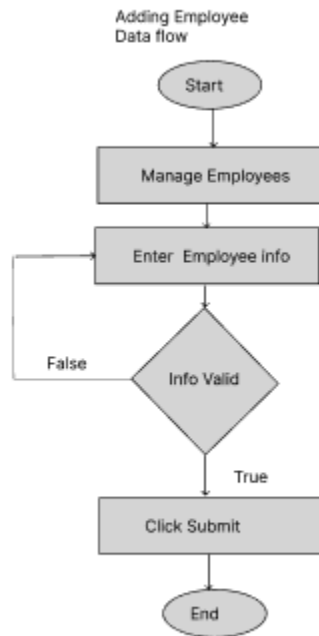
Booking apointment  
data flow



## 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).
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## 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.