Garage Management System

Prepared By –

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Abstract :

This Garage Management System project enables the user to keep track of all the activities of a garage. It is a web-based application which helps the user to Manage the stocks available in the garage, check for repair estimates, delivery etc. It maintains vehicle service history and mechanic shop time. It also manages the inventory of the vehicle parts. It shall maintain the database of all the vehicles that are serviced and shall be able to send service notification to customers based on the service dates. Garage Management System has secured access to admin. The admin shall be able to keep track of different users like supervisor, receptionist, principal etc. It is a smart web UI which could assist the garage owners to keep track of all the events in the garage. The garage management system provides service to customers on the basis of service requirement. The main purpose of this project is to reduce the manual work. This application is capable of assigning engineers for their respected work

Introduction :

- The Garage Management System enables the user to keep track of all the activities of a garage.
- It is a web-based application which helps the user to manage the stocks available in the garage, check for repair estimates, delivery etc.
- The admin shall give access for specific modules for the other users.
- The supervisor shall be able to check for the inventory of vehicle spares in the garage. He shall be able to check for the vehicles that are serviced currently and the ones which has to be notified for services. It also manages the inventory of the vehicle parts.
- The user also shall be able to note the mechanic shop time hours. The system will also allow the payment for the repair or service done. The system also can check for the vehicle spares that are sold from the garage.

Problem Definition:

The garage is for different types of four wheelers. The advanced booking/appointment is done on phone. On the day of appointment as soon as a customer arrives, a job card is created to not all the problems, requirement for the vehicle. An engineer is assigned based on availability to service a vehicle. On completion of the repair/maintenance/service the engineer prepares a report based on which a bill is created. The payment is accepted in cash against the bill.

Requirements :

- PC with 64 bit OS, 8GB RAM, Web Browsers such as Chrome or Firefox
- To ensure continuous supply of parts of vehicles.
- To maintain systematic record of users.
- To update availability of engineers constantly.

Tools & Technologies Used :

- Software Configuration
  - Operating System : Windows 10
  - Environment : Visual Studio NET 2005 4.6
  - Frontend : CSS, HTML, Javascript, JSON, JQuery
  - Backend : MySQL, PHP
- Tools Used :
  - XAMPP
  - MySQL Workbench
  - VS Code

Database Schema :

- Customer (Customer_ID, F_Name, L_Name, Contact_no, Location, Gender, Comment)

- Vehicle (V_ID, V_Date, Model_No, Vname, VProblem, Noplate, Customer_ID)

- Payment (Payment_ID, Payment_Name, Amount_paid, Pay_Date, Mode_of_payment, Received_by, Customer_ID)

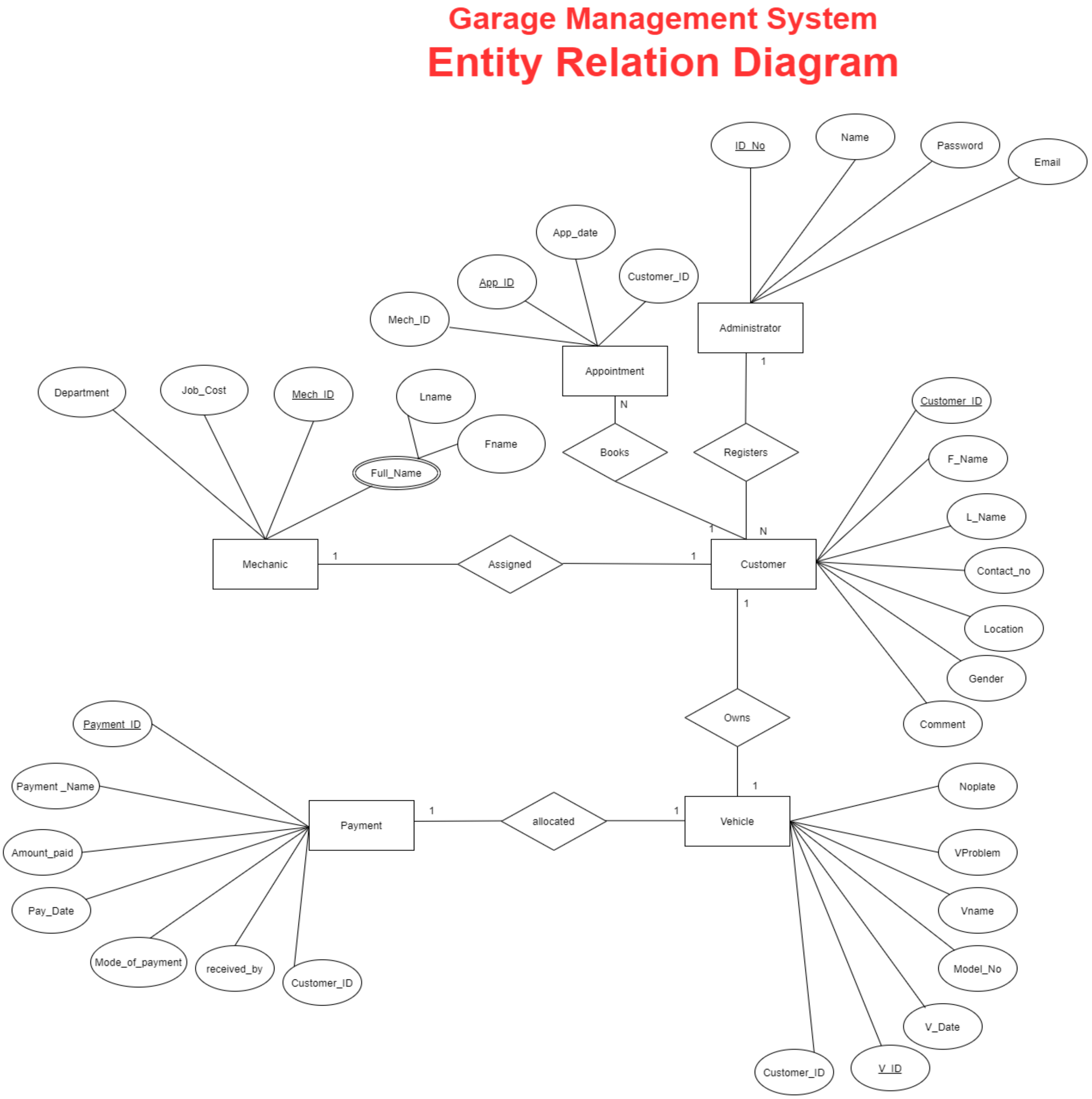
- Mechanic (Mech_ID, Department, Job_Cost, Lname, Fname)

- Appointment (App_ID, Customer_ID, Mech_ID, App_date)

- Administrator (ID_No, Name, Password, Email)

- Usedparts (book_ID, parts)

Database Design (ER Diagram) :

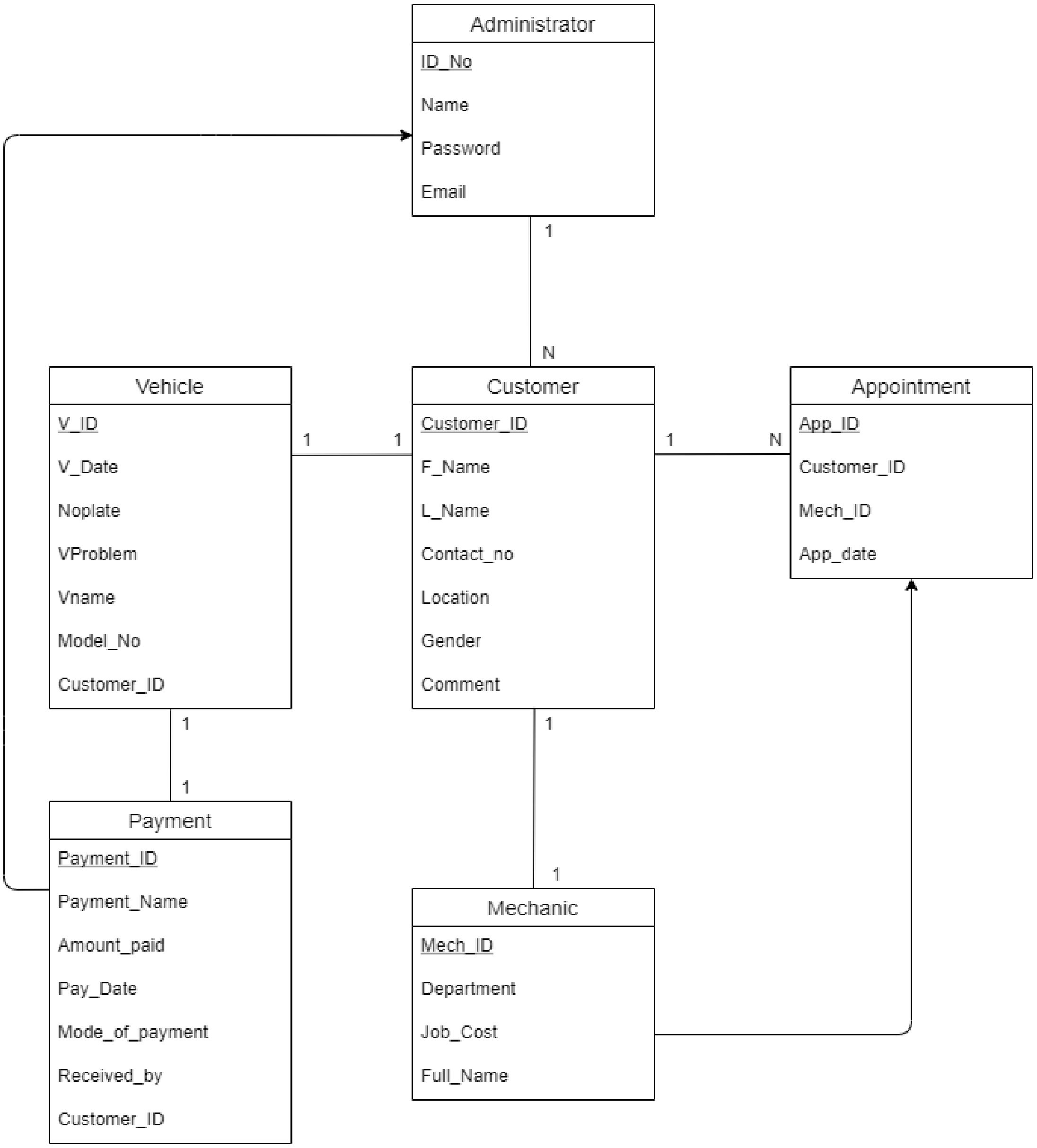


Garage Management System

Entity Relation Diagram

Relational Database Design :

Relational Database Design using Schema Diagram



Database Normalization till 3NF :

Customer (Customer_ID, F_Name, L_Name, Contact_no, Location, Gender, Comment)
Its in 1 NF since the atomicity is one. Its also in second NF since there is no partial dependency and also in 3 NF since there is no transitive dependency.
Hence, its in 3 NF.

Vehicle (V_ID, V_Date, Model_No, Vname, VProblem, Noplate, Customer_ID)
Composite key: V_ID+ Customer_ID
Table is in 3NF since all attribute depend on primary key V_ID and foreign key Customer_ID.

Payment (Payment_ID, Payment_Name, Amount_paid, Pay_Date, Mode_of_payment, Received_by, Customer_ID)
Composite key: Payment_ID+ Customer_ID
Table is in 3NF since all attribute depend on primary key Payment_ID and foreign key Customer_ID.

Mechanic (Mech_ID, Department, Job_Cost, Lname, Fname)
Its in 3 NF since all attributes only depend on Mech_ID which is primary key.

Appointment (App_ID, Customer_ID, Mech_ID, App_date)
Composite key: App_ID+ Customer_ID+Mech_ID
Table is in 3 NF since all attribute depend on primary key App_ID, Customer_ID, Mech_ID CET,SCET, MITWPU.

Administrator (ID_No, Name, Password, Email)
Its in 3 NF since all attributes only depend on ID_No which is primary key.

SQL Queries used :

create table administrator(ID int(30) primary key auto_increment, Name char(30), Email varchar(30), Password varchar(30));

create table customer(ID int(10) primary key auto_increment ,full_name char(30), email varchar(30), password varchar(30), Phone_no bigint(30) check(Phone_no>0), address varchar(50), gender char(10));

create table mechanic(ID int(10) primary key auto_increment, full_name char(30), Email varchar(30), Password varchar(30), Phone_no bigint(30) check(Phone_no>0), Department char(30), work_status char(10));
create table not_appointed(cname char(50), bookid varchar(20), m_name char(20),bdate date);

```
create table appointment(full_name char(30), model_name char(30), vehicle_no varchar(30), phone bigint(30), address varchar(50), date date, mech_assign char(5), gbid varchar(30) primary key);

Create table done_assign (bookid varchar(30) primary key, mechname char(30));

Create table usedparts (bookid varchar(30), parts varchar(100));
```

Triggers and PLSQL Procedure/functions(cursor)

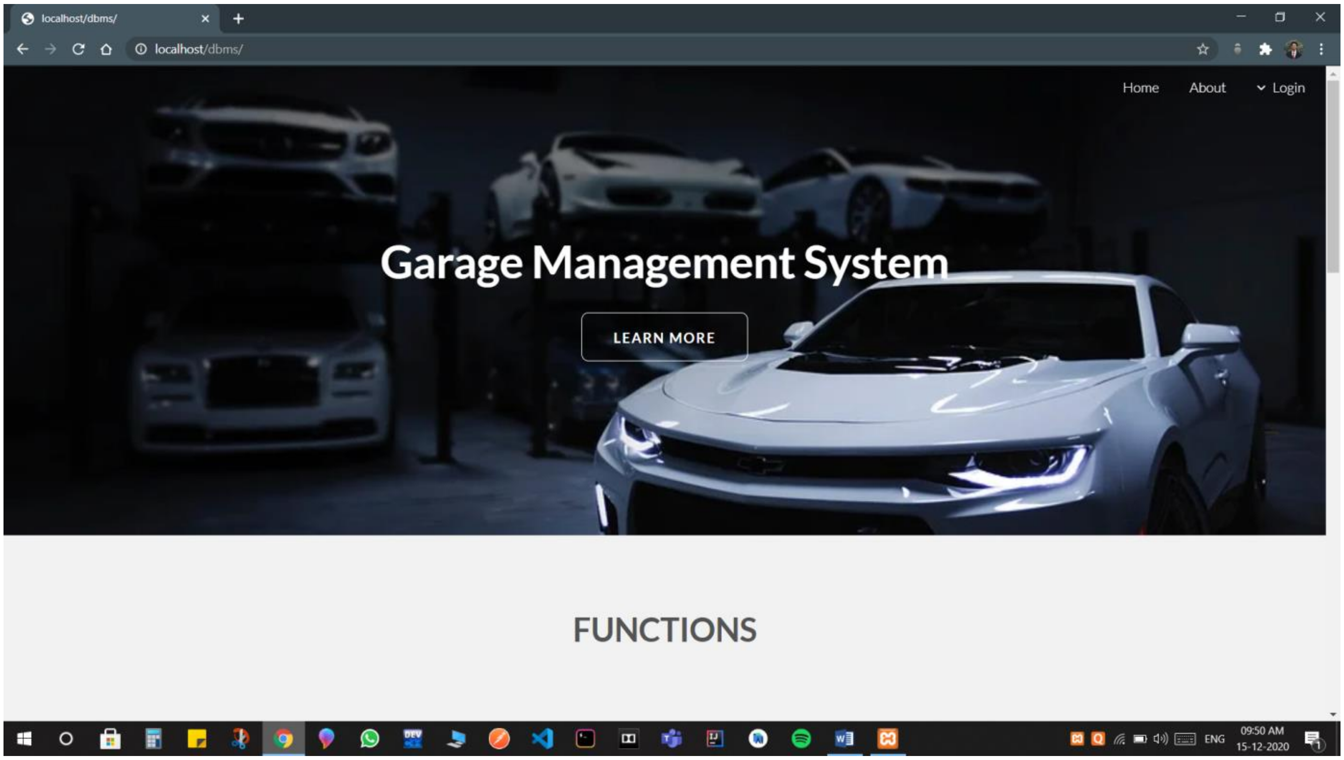
DML COMMANDS USED UNDER TRIGGER AND CURSOR :

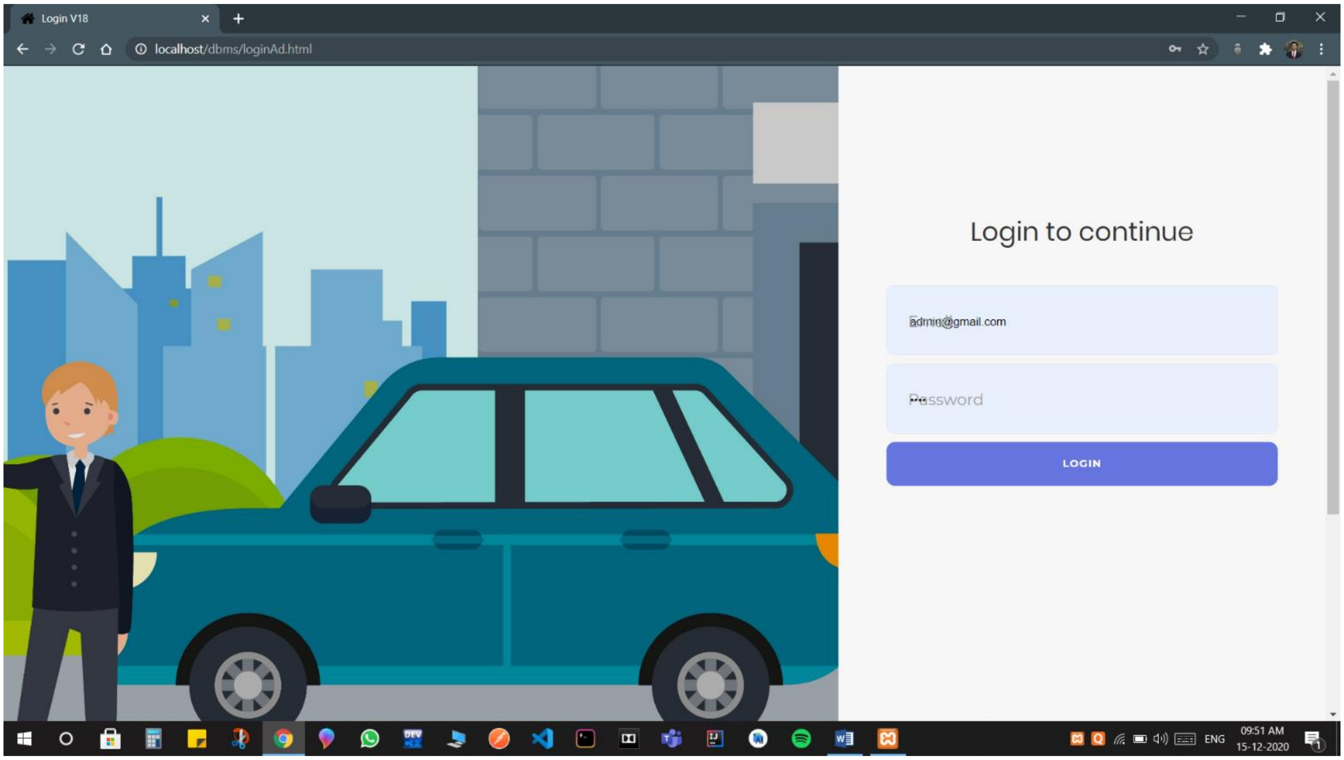
```
BEGIN
DECLARE cname, m_name char(30);
 DECLARE bookid varchar(30);
 DECLARE bdate date;
 DECLARE exit_loop BOOLEAN DEFAULT FALSE;
 DECLARE c1 CURSOR FOR SELECT full_name, model_name, date, gbid FROM appointment WHERE mech_assign = 'N';
 DECLARE CONTINUE HANDLER FOR not found SET exit_loop = TRUE;
 TRUNCATE TABLE not_appointed;
 OPEN c1;
 book_loop:LOOP
 FETCH FROM c1 INTO cname, m_name, bdate, bookid;
 IF exit_loop THEN
 LEAVE book_loop;
 END IF;
 SELECT cname, m_name, bdate, bookid;
 INSERT INTO not_appointed VALUES (cname, bookid, m_name, bdate);
 END LOOP book_loop;
 CLOSE c1;
END
```

On table done_assign UPDATE mechanic SET work_status = 'busy' WHERE full_name = NEW.mechname

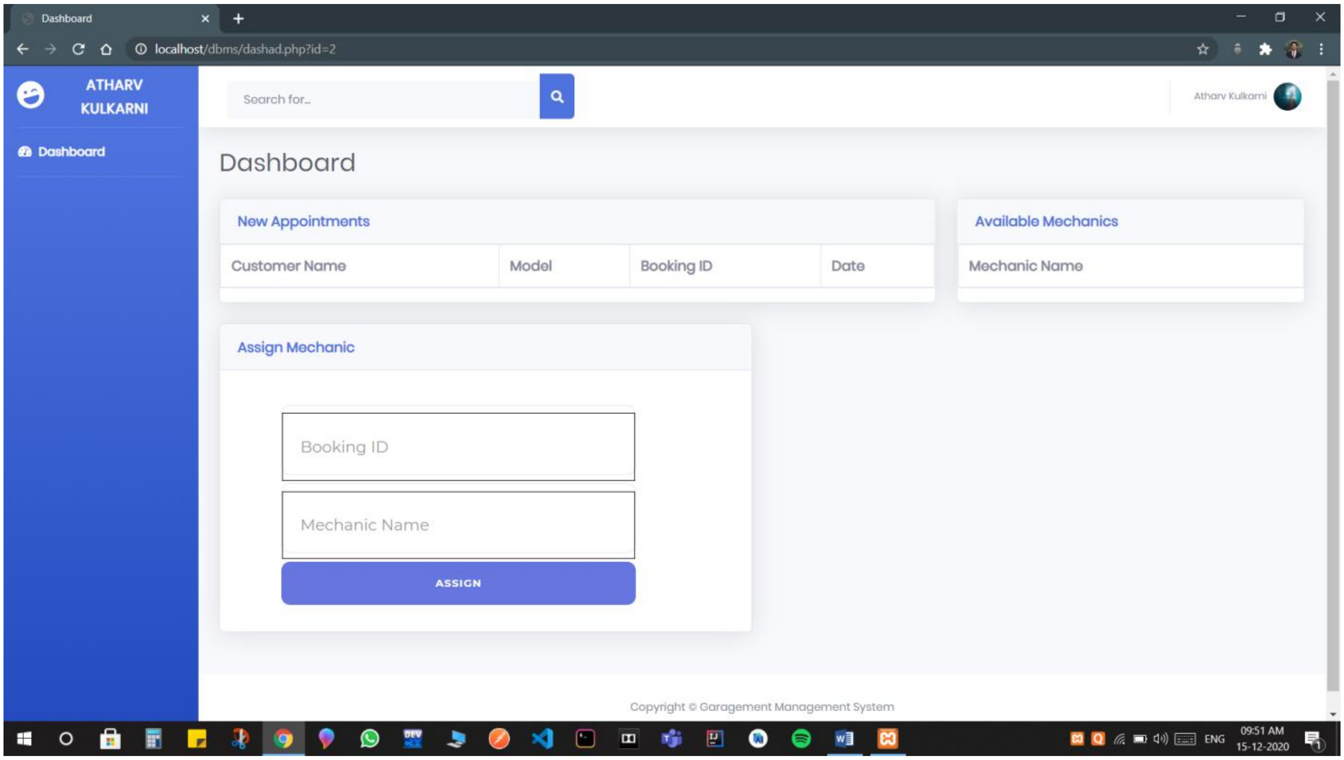
On table not_appointed UPDATE appointment SET mech_assign = 'Y' WHERE full_name = cname

Graphical User Interface :





admin@gmail.com



Dashboard

localhost/dbms/dashad.php?id=2

ATHARV KULKARNI

Dashboard

Search for...

Atharv Kulkarni

Dashboard

New Appointments

Customer Name	Model	Booking ID	Date

Available Mechanics

Mechanic Name

Assign Mechanic

Booking ID

Mechanic Name

ASSIGN

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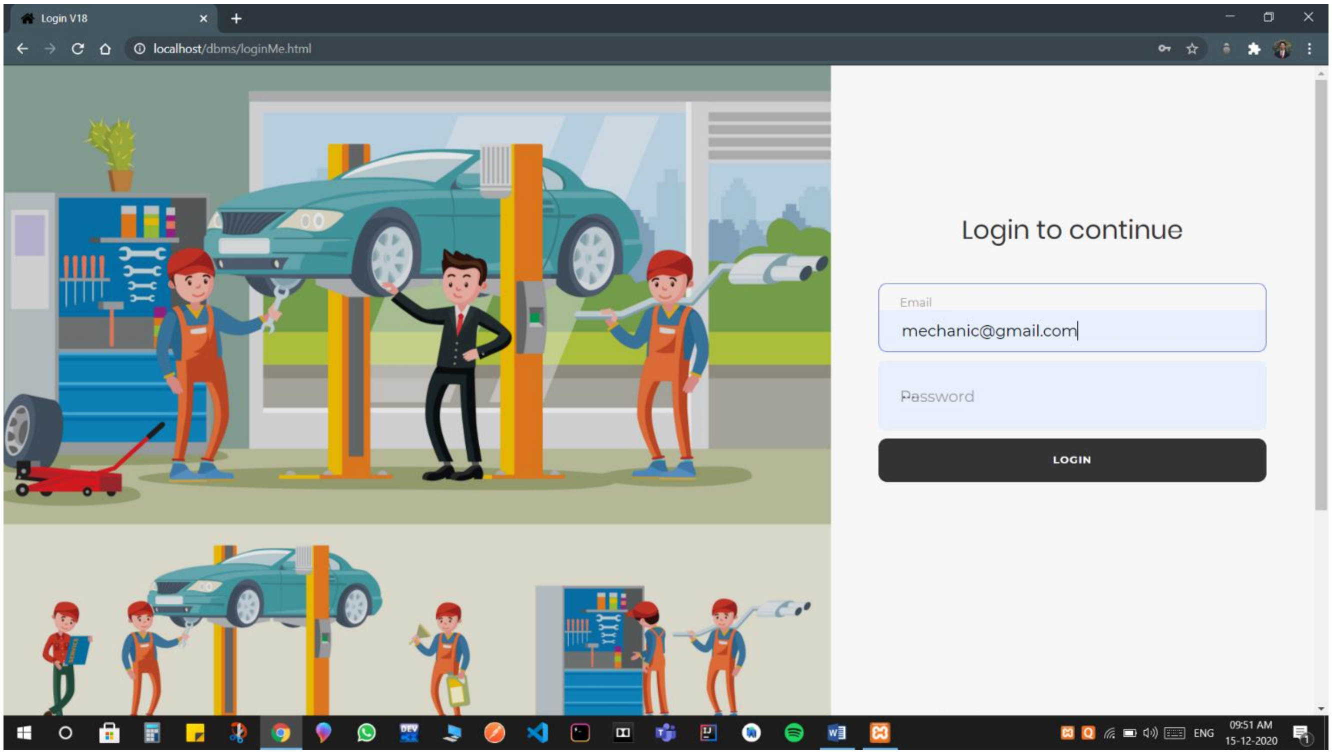

Login V18

localhost/dbms/loginMe.html

Login to continue

Email: mechanic@gmail.com

Password

LOGIN

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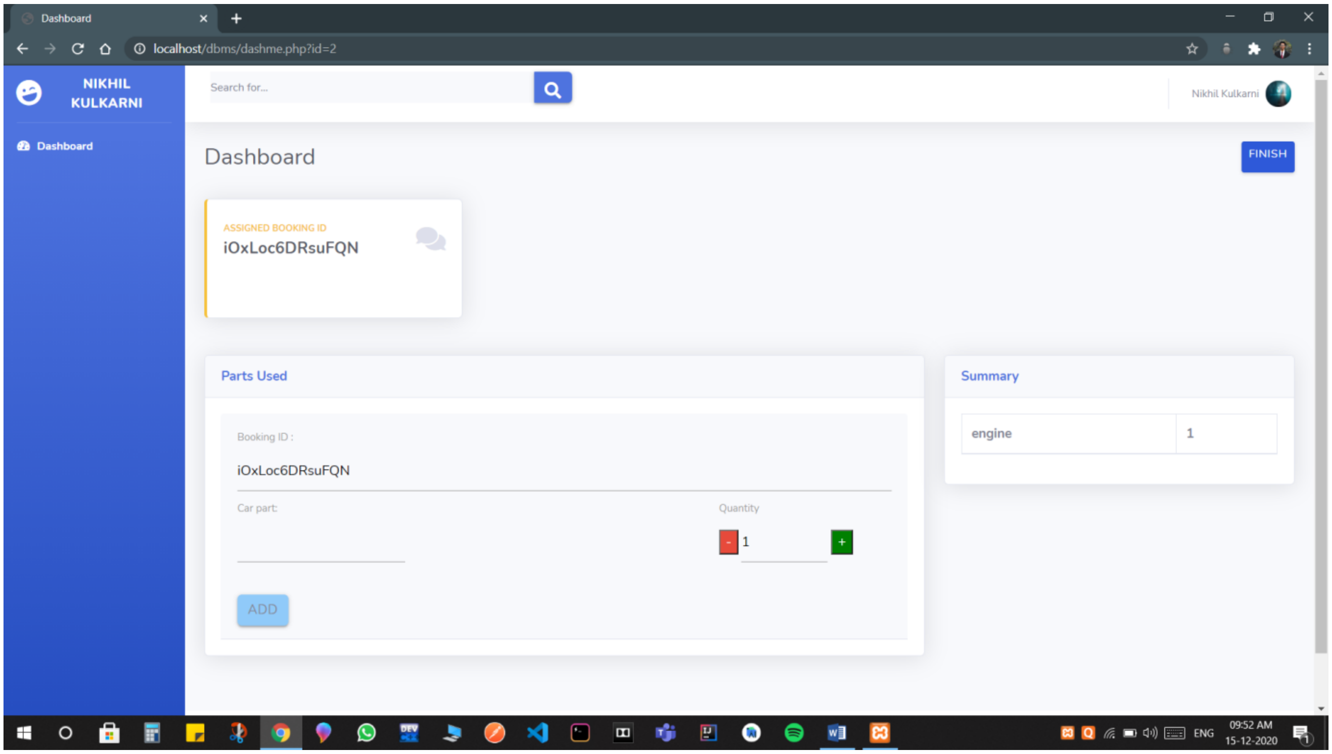


Dashboard

ASSIGNED BOOKING ID
iOxLoc6DRsuFQN

Parts Used

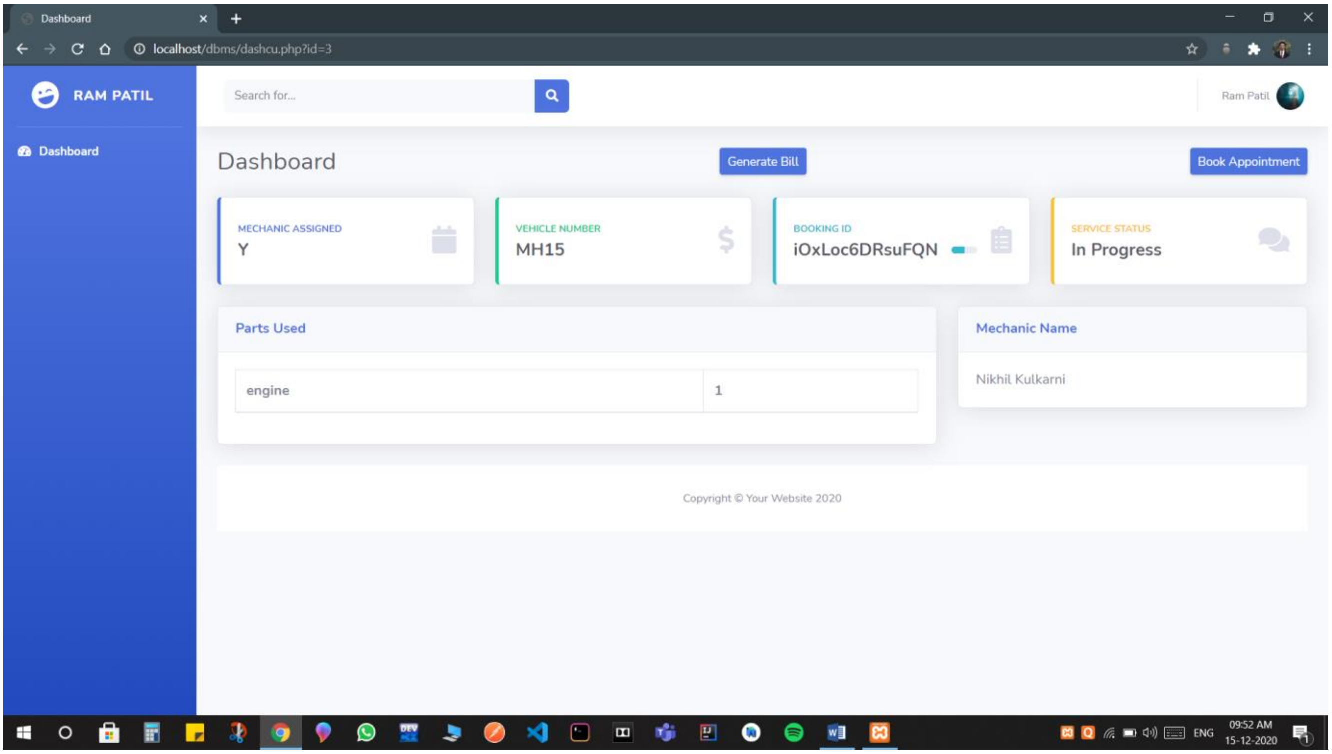
Booking ID :
iOxLoc6DRsuFQN

Car part:

Quantity
1

Summary

engine	1



Dashboard

MECHANIC ASSIGNED
Y

VEHICLE NUMBER
MH15

BOOKING ID
iOxLoc6DRsuFQN

SERVICE STATUS
In Progress

Parts Used

engine	1

Mechanic Name

Nikhil Kulkarni

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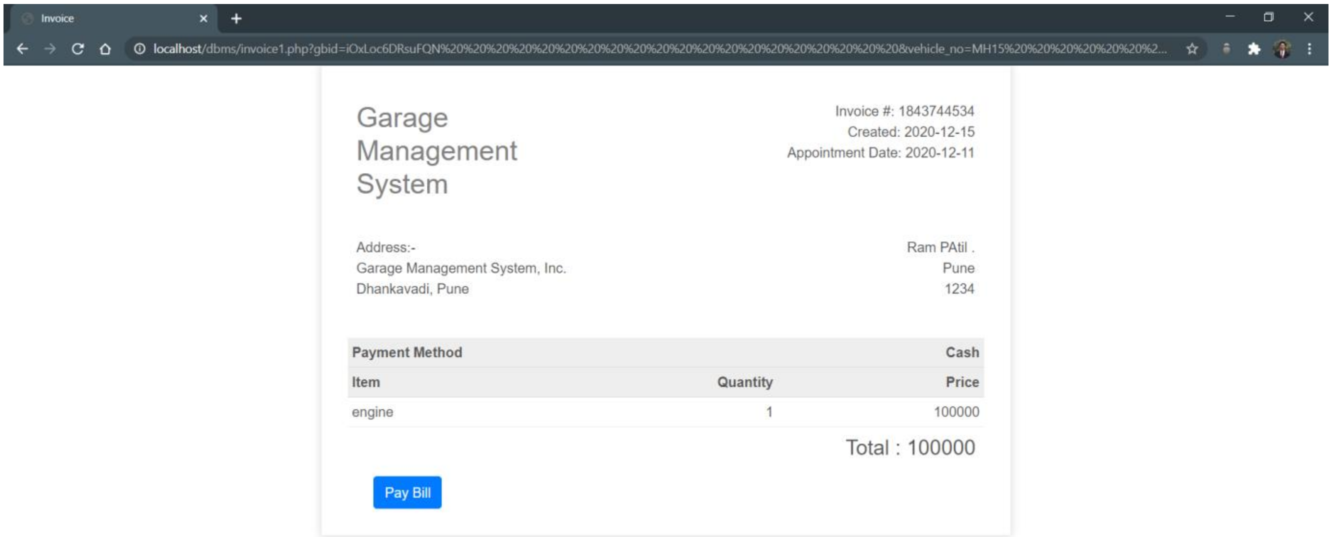

Invoice
localhost/dbms/invoice1.php?gbid=iOxLoc6DRsuFQN%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20%208&vehicle_no=MH15%20%20%20%20%20%2...

Garage
Management
System

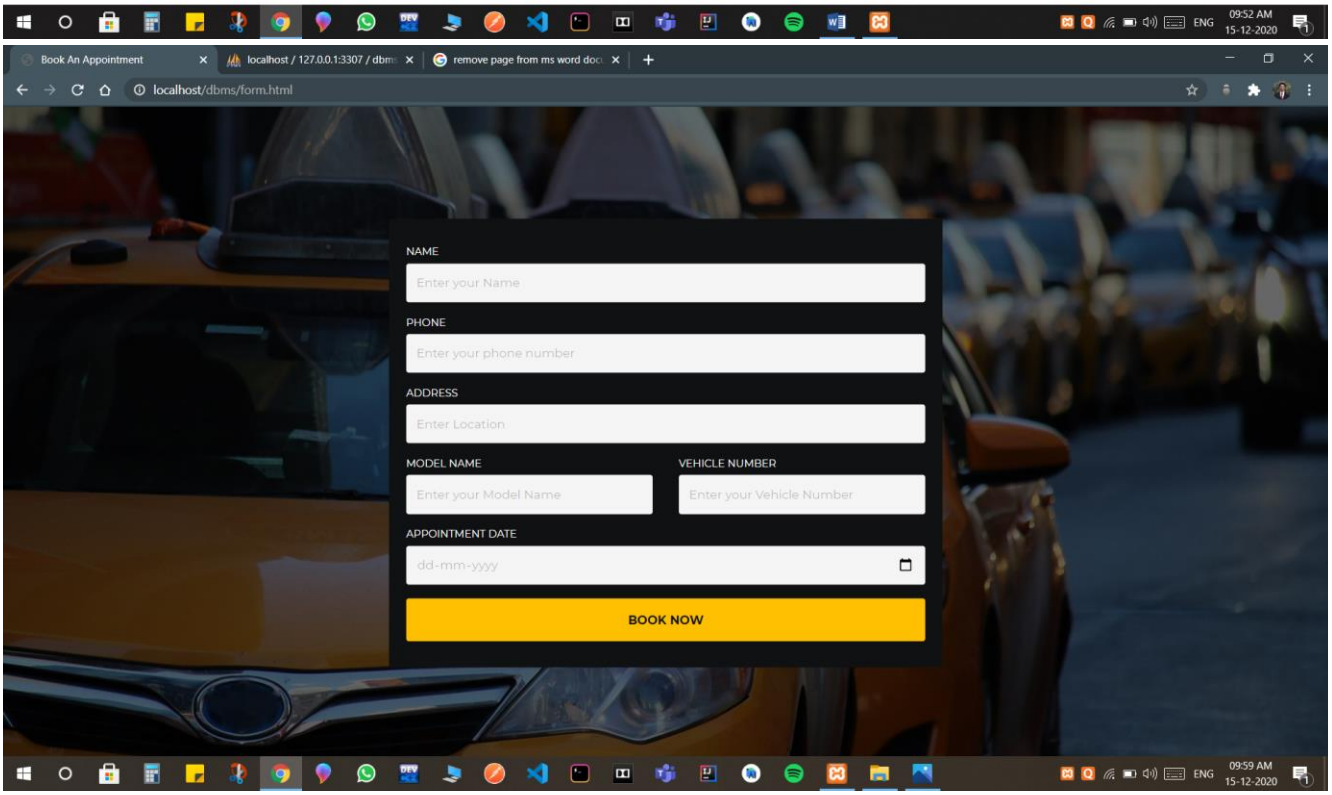
Invoice #: 1843744534
Created: 2020-12-15
Appointment Date: 2020-12-11

Address:-
Garage Management System, Inc.
Dhankavadi, Pune

Ram PAtil .
Pune
1234

Payment Method		Cash
Item	**Quantity**	**Price**
engine	1	100000

Total : 100000



NAME
Enter your Name

PHONE
Enter your phone number

ADDRESS
Enter Location

MODEL NAME
Enter your Model Name

VEHICLE NUMBER
Enter your Vehicle Number

APPOINTMENT DATE
dd-mm-yyyy

Conclusion :

Our mini project “Garage Management System” benefits the Automobile industry as it makes Garage Bookings more convenient for users, provide better interface and saves time by booking an appointment in advance.

References in IEEE format :

- https://ieeexplore.ieee.org/document/6455338/references
- https://ieeexplore.ieee.org/document/8474630/references
- https://ieeexplore.ieee.org/abstract/document/8899668/references
- http://iosrjen.org/Papers/Conf.1901-2019/Volume-1/7.%2038-41.pdf