

VEHICLE SERVICING WEB APPLICATION

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Abstract – A Vehicle Service is a periodic maintenance check that's carried out at set time intervals (at least every year) or after the vehicle has travelled a certain number of miles. Basic services usually include a visual inspection and oil and filter change, the critical fluids in the engine such as anti-freeze, brake fluid, washer fluid, and steering fluid, are topped up. Also, to ensure the car is in the best condition possible, a check of up to 35 key components is carried out. Traditionally, Vehicle servicing requires a vehicle owner to deposit his vehicle at the showroom centers or automobile repair workshops to get their vehicle serviced, this process looks simple yet is very tedious as one suffers problems like problems like overhauling, unavailability of desired services in distinctive communities, customer burning time in long queues, or maintaining previous vehicle servicing records. In today's fast paced world people tend towards the technology that focuses user convenience and less time consumption to carry out operations with uncompromisable performance. So, therefore we brought this project to light; Online Vehicle Servicing Web Application in the domain of Web development. This project focuses on three modules: Customer, Admin and Mechanic. The customer requests for a mechanic which is monitored by admin and allots a mechanic to the user. The main foundation of this web application is to provide Vehicle servicing where the application GUI allows the customer the power to book a mechanic online, get automatic servicing updates and make payments online. This framework helps in achieving customer goals by the introduction of a Vehicle Servicing Automated System which overcomes problems faced in traditional methods of servicing the vehicle. We use this automated system which works on features like spot-booking, auto-computation of time and charge sum, store computed transactional records to achieve its objective.

Keywords – Web Application, Web development , GUI , Auto-computation.

I. INTRODUCTION

As we know, internet is a backbone of several technologies mainly in the domain of web development to build web applications. This web application is a new innovation that facilitates the administrator to establish communication between customer and local mechanics in the carports belonging in the vicinity of the customer to carry out servicing of their vehicle. The drawbacks in manual system like vehicle overhauling, time consumption, unavailability of desired services in distinctive communities, huge paperwork, burning time in long queues is eliminated in the proposed model. In this proposed model, the user needs to register into the website, enter the details of the vehicle and the problem faced in the vehicle for the admin to supervise the issue and allots a mechanic.

It plays a two-way beneficiary role by not only providing services to the customer but also helps in providing sustenance to mechanics in the market willing to provide their services, or looking for job openings. This can be proved as a great advancement in automobile services for an efficient streamlined vehicle management service. This model is accessible to all the internet users making this model extremely robust, user friendly and portable. Because it is a web application, the performance of the system is viable depending upon the internet connectivity, and is proven easy to upgrade its performance with the introduction of new features to incorporate better GUI and emphasized feedback system

How can this model be useful?

Vehicle Servicing is as essential as fueling up your vehicle. Regular Vehicle Servicing ensures safety and confidence to the driver. With growing needs and technological advancements in automobile industry, there is a significant increase in the number of vehicles, such as cars, bikes, bus, scooters, jeep, rikshaws, truck, tanker, etc., running in the cities. Each and every vehicle we buy comes with a manual, each manual holds certain operation specifications about the vehicle. It also contains details about vehicle maintenance requirements. But not often vehicle owners give their vehicle for servicing unless a major problem occurs. For the longevity of the vehicle it is very important to follow the usage guidelines provided in the manual. Most of the car owners give their vehicle for servicing after reaching a distinctive limit of kilometers used. For a good vehicle performance regular servicing or periodic servicing checks are very important, but not often people show interest to get servicing done, reasons:

- Lack of time
- Procrastination
- Fear of heavy servicing charges
- Lack of expertise in the vicinity

These problems stated above can be eliminated in this automated vehicle servicing model which allows a user to book a mechanic for servicing just within finger tips. This is an effective model

which provides users a web application portal to sign in and book the mechanic to service. Its simplified user interface is its greatest advantage to prove its usability. Admin monitors the system, receives the request and allots a mechanic. The user does not have to worry about finding a servicing center in the vicinity, the admin makes it easier. The status of the vehicle can be checked time-to-time about the details regarding the vehicle servicing. This automated system also relieves a user from being burdened by maintaining a record of its previous bookings, as the record of each servicing is maintained in the database and can be retrieved anytime as per his need. The servicing charges are displayed to the user by its auto-computed sum charge system, where the payment is made online.

I. PROBLEM STATEMENT

Manual Automobile Servicing System is tedious, a consumer should go visit a mechanic or a servicing showroom, fill the paperwork to get their car serviced. Maintaining track of regular servicing schedule dates, status of the vehicle operation is hard. Billing and other scheduled information's data storage is manually done. Manipulations of information together with calculations are done manually and typically accuracy is comprised. Deletion and update of information is somehow troublesome and if possible, it ends up in untidiness.

II. LITERATURE REVIEW

Automobile management model is developed to override problems occurring in manual system by computerizing the system to develop a secure, reliable, easily available and fast management model.

This system holds information about the driver, vehicle type, maintenance condition and fuel. This system uses computerized equipments and a fully functional software application that not just manages servicing as per users request but also holds information and the sale value of the vehicle, manages vehicle insurance etc. The main aim of this system is to automate the existing system by fulfilling its requirements, with a computerized software so that it stores the data, and allows easy access and error free data manipulation. This system strives for better performance and durability.

Primary modules of AMS:

Automobiles module: Operations and procedures related to the vehicle is found in this module.

Booking modules: Booking operations are managed by this module

Charges module: Auto-computed sum of charges is carried out by this module

Customers module: Users information is maintained by this module.

Delivery module: We can create update delete delivery from this module.

Payment module: This module is developed for managing the payment.

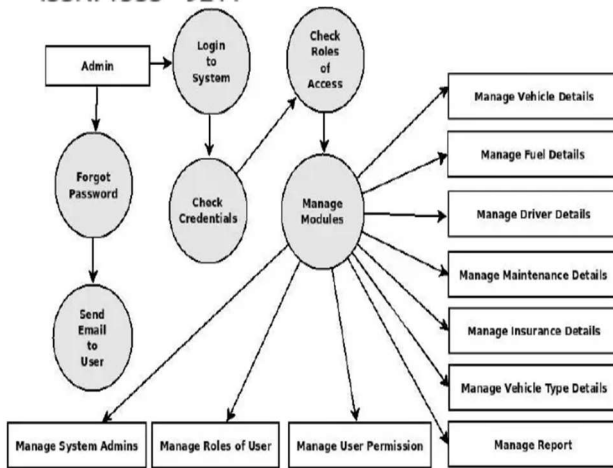


Fig 1: Roles of Automobile Management System

This model is quite similar to the model vehicle servicing web application model as both these models strive to provide mobile car services and maintenance.

The vehicle servicing web application is much preferred as it streamlines the servicing process with much less complexity in the system usage and design. There are very less chances of users making errors. It will also be cost efficient and allow faster execution of tasks. The results show that: (i) project complexity was significantly correlated with schedule growth (positive correlation) but not significantly correlated with cost growth; (ii) resource allocation was significantly correlated with schedule growth (negative correlation) but not with cost growth; and (iii) resource allocation had a buffering effect where increasing resource allocation significantly decreases the effect of project complexity on schedule growth.

III. METHOD

Manual System

In manual system of vehicle servicing the user has to use the traditional method of vehicle servicing where a car owner takes his vehicle to the mechanic repair centre and communicates with the repair centre regarding the status of his vehicle, also is required to get his vehicle back from the servicing, this is the most likely methodology followed in the manual system among other possibilities, such as;

METHOD I: Vehicle owner visits Servicing Centre

Step 1: User needs to find for a local mechanic in the vicinity

Step 2: Needs to allot time from the busy schedule

Step 3: Go visit the servicing centre to drop his vehicle

Step 4: User needs to personally have a telephonic communication to know the status of the vehicle

Step 5: User needs to pick up his vehicle after servicing

Step 6: Payment is also done manually where there is no assurance of not having errors in charging the sum(additional charges or calculation mistakes)

Drawbacks: User tiredness to deliver his vehicle.

METHOD II: Vehicle Owner calls for a Mechanic home

Step 1: The User needs to search for a local mechanic

Step 2: The User needs to make a telephonic communication to the local mechanic

Step 3: The local mechanic needs to note down the address manually

Step 4: The mechanic needs to carry the required inventory to fix the vehicle and personally travel to the desired address given by the user

Step 5: The Mechanic reaches the address, reports his arrival to the user

Step 6: The Mechanic begins to repair

Step 7: After the job is done, the Mechanic collects his service charges from the user and is paid by the User in cash

Drawbacks: Mechanic's difficulty to understand the address.

METHOD III: Vehicle owner making repairs

Step 1: The Vehicle owner personally addresses the problem

Step 2: Tools and other inventory are gathered by the vehicle owner

Step 3: Vehicle owner tries to fix the problem in the vehicle

Drawbacks: The problem is often not addressed correctly.

Proposed System

The proposed system is an automated process, this process can be well explained on categorizing into different system components, they are: 1.Customer 2.Mechanic 3. Admin

Functionalities performed by Customer:

- User needs to Sign-up and Login.
- User can make request for servicing.
- User can view the status of request (i.e) Pending, Approved, Repairing, Repairing Done, Released.
- User can check bill amount.
- User can send feedback to admin

Functionalities performed by Mechanic:

- Mechanic can apply for job and wait for the approval.
- After account approval, mechanic can login into system.
- Mechanic can see how many work is assigned to me.
- Mechanic can change status of service ('Repairing', 'Repairing Done') according to work progress.
- Mechanic can see salary.
- Mechanic can send feedback to admin.

Functionalities performed by Admin:

- First admin will login.
- Admin can create account using superuser

python manage.py createsuperuser

- Give username, email, password and your account will be created.
- After login, Admin can see the recent order of service.
- Admin can see each customer invoice (if two request made by same customer it will show total sum of both request).
- Admin can approve(hire) mechanics (requested by mechanic) based on their skills.

METHOD IV: H-I-A Method

Step 1: The User Sign up/Login into the website using user credentials

Step 2: The User who wants to get his car fixed requests for a mechanic

Step 3: The request is received by the Admin who monitors both mechanic and user module.

Step 4: The Admin grants user a mechanic based on his skill.

Step 5: The Admin updates the user database and mechanic's database by the details of the task

Step 6: The Admin scrutinizes the process for secure, safe, and a legitimate servicing

Step 7: The mechanic can timely update the process of the servicing using the interface, and can be seen by the user.

Step 8: After the receiving "work is done" update by the mechanic. The user is free to get his vehicle delivered.

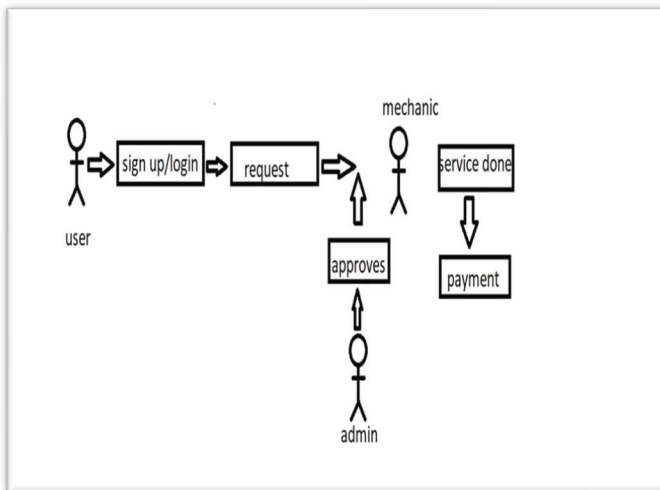


Fig 2: Architecture of H-I-A

IV. FINDINGS

We obtain is a home page of the web application consisting of three modules:

1. USER
2. MECHANIC
3. ADMIN

On selection of the user module it directs us to a Sign-in/Login page where the user needs to register an account entering user details and a password. On logging into the page the user finds several functions to perform, such as, 'view pending request', 'make a request', check the 'approved requests', check the 'approved request bill' to make payment. To make a request, the user needs to click on the function make a request. The page opens with fields such as, Vehicle category, name, number, brand, and a problem description. This helps user to request a mechanic. The user needs to fill the details of the vehicle and the problem incurred in the vehicle and submit.

The Admin from the mechanic module, receives user request. Admin plays a vital role and has access to User requests and Mechanic request to apply for a job. He handles the database in the system. Admin practices the functionalities such as 'Recent Enquiry by Customer' to check the list of requests made by all the customers. 'Approve Enquiry made by the Customer' to approve requests by allotting a mechanic. 'Service cost' to display the servicing charges to the users, 'Hire Mechanics Based on Skill' to hire the mechanics who have applied for a job.

Mechanic module is operated by the Mechanic. The Mechanic module opens with a page that allows Mechanic to either apply for a job or login into the page. For applying a job, the mechanic needs to enter his details and his skills. Based on these skills and his expertise he's hired by the Admin. On logging into the page the mechanic can find if his request is approved. The mechanic can also check if there are any customers allotted. Mechanic practices two primary features, to apply for a job and to update status of the vehicle on being allotted a customer by the admin.

V. DISCUSSION

Customer, Mechanic and the Admin modules work in accordance with their functionality to provide seamless work pattern that is easily understood by the participants in this vehicle servicing system.

This project can be an efficient example of client-server communication, which denotes a relationship between cooperating programs in an application, composed of clients initiating requests for services and servers providing that function or service; a user, first requests for a mechanic from the database to which admin supervises and allots a mechanic based on user's request and mechanic's availability. The user is a client and the database acts as the server where data is stored and also from where the data can be retrieved as a response. Admin plays the intermediary role of a message exchange channel between the two.

Although the system is simple to use and understand it still comes with certain limitations, priority scheduling is a method of scheduling processes based on priority. In this method, the scheduler chooses the tasks to work as per the priority which is different from other types of scheduling, for example, a simple round robin. Priority scheduling involves priority assignment to every process, and processes with higher priorities are carried out first, whereas tasks with equal priorities are carried out on a first-come first-served (FCFS) or round robin basis. The disadvantage to this is that we can lose all the low-priority

processes if the system crashes. This process can cause starvation if high-priority processes take too much CPU time. The lower priority process can also be postponed for an indefinite time.

VI. CONCLUSION (OR LIMITATION OR SUGGESTION FOR FURTHER STUDIES)

To overcome all the drawbacks of the existing system of Vehicle Servicing, this System is required where the complexities in the process of management for vehicle services are reduced for the convenience of Vehicle owners. Through this system timely updates of services of automobiles can be sent to their owners. Vehicle servicing becomes easy through this website. So, the system aims at improving the existing system and providing an efficient way for managing automobile servicing.

The goal of this project is to produce an interactive web application that makes vehicle servicing easier and where user convenience is guaranteed. Immediate notifications can be sent to customer i.e, Vehicle is repairing or repairing done etc. User can directly contact to Mechanic to discuss about problems facing with the vehicle. With growing technology and existent technological infrastructure we can extend its usability by making further advancements in the proposed system like pick up drop services, instant notification alert, dynamic pricing of the service etc along with improved GUI to obtain its future scope.

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