**Digital Mechanic Web and Mobile Based Application**

By

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1. **INTRODUCTION**

In Pakistan the total number of motor vehicles (including motorcycles, motor cabs/taxis, buses, trucks, cars, jeeps etc.) registered in 2020 were 29,964,594 [1]. Although, as we know that, there are a lot of mechanic shops that are physically available in our country and worldwide. But in most of the cases they are distant from people reach especially when their vehicle stops suddenly and got some issues while travelling, and also when people face issues at home regarding home appliances and purchasing the body parts of their vehicles etc. And the worst thing about is that there is not a single online platform exists that solves all these problems. This is very a big issue for every person which results in a lot time consumption and cost. So, with the help of a visual platform, you can easily place an order for purchasing a specific body part of your vehicle or booking an expert mechanic at the specific location. In this way not only, the problem of many people will be solved. But also, the opportunities of jobs will be increased. And according to estimated research there are 4 billion mobile phone users all around the world [2] and the statistics show that 88 percent of them research online before buying locally [2]. So, looking at all these things I decided to develop mobile and web-based application for taking the entire mechanical business to online. Digital Mechanic is a Web and Mobile based Platform that has aim to provide remarkable mechanic services including expert mechanics for cars and motorcycles to home appliances at the convenience of your door step. We are going to use all those features that will help people in everyday of their life routine from booking of expert mechanics and technicians to selling of related tools and equipment’s.

And for this I have searched internet about this type of Application which can provide mechanical services that can fix most of people’s issues. But unfortunately, I haven’t found a single one that covers all these features. So, I decided to develop web and mobile based application which provide mechanical services from booking of an expert mechanic/technician to buying of related tools and equipment’s. And now if we look at the **background** of the problem then we have the following application that tries somehow to solve this issue but are not yet succeeded.

* **Mechanic USTAAD**
  1. **History**
     + Mechanic USTAAD is a website that provide services for booking of mechanics for cars, bikes and generators.
  2. **How it works**
     + User will have to visit their website, then a user can book a mechanic for repairing their cars, motorcycles or generators.
  3. **Issues**
     + There is no proper user interface designed.
     + User can only book a mechanic but there is no proper way to register a new mechanic in their platform.
     + There is no way to purchase tools and equipment’s.
     + There is no proper way of tracking and managing the order and bookings. Also, they don’t have mobile app.
     + Users can book a mechanic using a call or email.
     + Users are not facilitated for which it is created.
* **Careem**
  1. **History**
     + Careem is a very famous website that provides services for riding, ordering and driving.
  2. **How it works**
     + User will have to visit their website, then a user can ride, become a caption(driver) and order food.
  3. **Issues**
     + Users cannot book a mechanic to repair their vehicles.
     + Users cannot purchase tools and equipment’s.
     + There is no blog to aware people about road accidents and driving.

1. **PROBLEM STATEMENT**

The current system that is based on physical mechanic shop is just wasting of time and energy. People facing a lot of issues in taking their household instruments to mechanic shops and then the shopkeeper demand heavy cost for just few issues in their instrument. And there is also no proper security system.

1. **Admin Problems**
   1. Here, the admin is actually the owner of a mechanic shop.
   2. According to the current system, admin manages a lot of work like;
   3. Managing orders
   4. Managing the customer
   5. Many people left the shop without paying for their order and admin can’t be able to save record of each person. In this way it is difficult for him to make future analysis of his business as well.
2. **User Problems**
   1. Time consumption is the biggest issue for users
   2. Energy is waste when they go to mechanic shop and wait for their work to be done.
   3. They need to move here and there in order to search a specific body part of their vehicle.
   4. They have to wait for their turn in long waiting list.
   5. Cost becomes much higher in physical system.
   6. In case of any emergency, people stuck and wait for along time to contact a mechanic.
   7. There is no visual platform that can be used to fix all these issues.

The **challenges** that can be faced while developing Digital Mechanic can be the following based on the time period, experience, skillset and other unknown problems.

1. Tracking feature for delivery of tools and equipment’s.
2. Creating both website and mobile application in such a short span of time.
3. Connecting backend to both of the applications (web and mobile).
4. User satisfaction design and interface building.
5. **PROPOSED SOLUTION**

So according to the current system we concluded that there must be a technological solution for mechanic shop to facilitate people and the owner of the mechanic shop. Users will be able to place orders from a specific location to get their desired mechanic service from booking of mechanic and technician to ordering tools and equipment’s. And also, the admin of the shop will be able to manage the application very easily by doing analysis of their orders, uploading related blogs and products using his admin dashboard.

Now, for the **methodology**, we are going to use the following modules in our project:

**User:**

1. Authenticated user can purchase tools and equipment’s by adding them to cart and favorite.
2. Authenticated user can view blogs and book a mechanic including tracking feature.
3. Authenticated user can pay using stripe payment gateway and others if possible.

**Admin:**

1. Admin can login to access the private dashboard.
2. Admin can add new blogs.
3. Admin can add new products (Tools and Equipment’s).
4. Admin can add new mechanics.
5. Admin can manage orders and perform analysis.
6. Admin can manage bookings through the dashboard.

**Features:**

1. Responsive And Visualized Menu.
2. Order of products and Booking Mechanic all in one place.
3. Feedback & Review system to better recognize expert mechanics.
4. User can Urgently Book a Mechanic with live tracking system in premium price.
5. Authentication with Google and Facebook.
6. User Friendly Order Page consisting of tabs from order placed to order complete.
7. Feature to apply yourself as a mechanic and once approved he can perform his job and get paid on every booking.
8. Easy to use dashboard for admin to add new products and mechanic into his site and also, he can manage the orders and bookings from the dashboard itself.
9. As many people these days uses mobile phones therefore, I am trying to create this application for both web and mobile using latest technologies that helps me doing this.
10. Various Payment Gateways from stripe and paypal to jazzcash and easypaisa.
11. Push Notifications

* Orders status
* Delivery Completed
* Payment Cleared
* Order Cancelled

1. **MOTIVATION**

I got motivated by the current location of our university. There is no proper mechanic shop located in this area. I personally seen many people facing a lot of problems in their cars and motorcycles and they have no option instead of waiting for a mechanic to come and repair their vehicles. They do wait for a long time but nobody comes and finally they grab a mechanic by hand. So, to minimize the time consumption and energy wastage, I decided to build application for both web and mobile that will facilitate people especially in cities like, Kohat and Peshawar to book a mechanic online and get their job done without any hesitation. Also, I want people to purchase tools and equipment’s online and get as many features as possible.

1. **OBJECTIVES**

* To reduce the time consumption, cost and human energy wastage
* To make hiring of skilled persons possible.
* To make mechanic work easier.
* Customers will have a visual menu to place orders and bookings.
* Fastest service and customer satisfaction will be provided.
* Want to provide an easy-to-use interface.
* To provide all features related to mechanic shop.
* To bring mechanic shop online by building both web and mobile application.

1. **TOOLS & TECHNOLOGY**

* Designing: Figma, Adobe XD or Dribble
* IDE: Visual Studio Code by Microsoft (Latest Version)
* Front-end Development: HTML5, CSS3, JavaScript, Bootstrap, React/React Native and Typescript.
* Back-end Development: Node and Express
* Database: MongoDB, Firebase

1. **WORKPLAN**

|  |  |
| --- | --- |
| Design And Analysis (UI/UX) | 1.5 Month |
| Front End Part with testing | 3.5 Months |
| Back End Part with testing | 3 Months |
| Final Evaluation + Thesis writing | 2 Month |

**Explanation:**

1. **Full Designing with further analysis of project:**
   * I will make design according to the requirements of the whole project and for the designing work I will use Figma and Adobe XD or Dribble. I will complete the designing part in 1 and a half month.
2. **Front End Part with testing:**
   * I will immediately start the front-end job when the design of the project is completed and within 3 and half months, I will complete the front end holding the user and admin modules. And finally, I will test my work according to the workflow.
3. **Back End Part with testing:**
   * The backend tasks for our user and admin modules will be completed within these 3 months. And finally, I will also do the testing according to the workflow.
4. **Final Evaluation of whole project + Thesis writing:**
   * Once all the work completed (Designing + front end + back end), I will do the final evaluation of the whole project and write the thesis within 2 months.
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