Online Mechanic Finder

A Project Report

Submitted in partial fulfilment of the

Requirements for the award of the Degree

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

By

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MAHARASHTRA

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PROFORMA FOR THE APPROVAL PROJECT PROPOSAL

(Note: All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete proforma of approval in any respect will be summarily rejected.)

PNR **No.: ……** Roll no**:** _____

1. Name of the Student_____
2. Title of the Project_____
3. Name of the Guide_____
4. Teaching experience of the Guide _____
5. Is this your first submission? Yes ☐ No ☐

Signature of the Student Signature of the Guide

Date: …… Date: …….

Signature of the Coordinator

Date: ……

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CERTIFICATE

This is to certify that the project entitled **"Online Mechanic Finder"**, is a bonafide work of **Akash Verma** bearing Seat No: **53003160110** submitted in partial fulfilment of the requirements for the award of degree BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai.

Internal Guide **External Examiner** **Coordinator**

Date: **College Seal**

DECLARATION

I hereby declare that the project entitled**, "ONLINE MECHANIC LOCATOR"** done at **MUMBAI**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfilment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** to be submitted a**s** final semester project as part of our curriculum.

Name and Signature of Student

Table of Contents

Online Mechanic Locator

Chapter 1: INTRODUCTION

We all love our Cars and we want them to be in the same new condition as they came from factory. This sounds good but to make it happen, we require a regular servicing of our Car. You may have encountered a situation wherein you are in need of a mechanic to fix your car but you don’t want to give it to a random local mechanic

whom you don't know and you're skeptical about his skills or the amount of money he is charging.

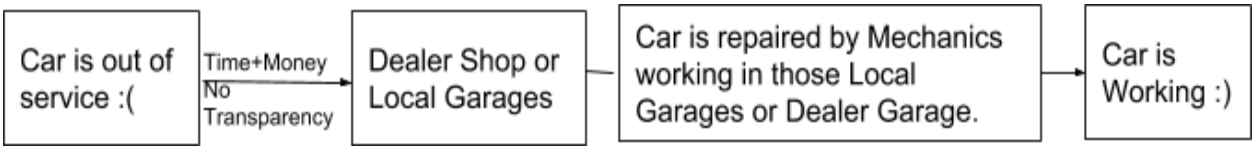
Once your car goes out of warranty you must have faced the hassle of going to your Dealer's Garage for servicing your Car where they will definitely charge you more money than what they used to charge you before when the car was still in warranty.You also have to wait for days or sometimes weeks to get your car back, because they have a large pool of car lined in queue to be repaired and you don't know how long it will take for your car's turn to come for repair.

The system which we are building will make Car Owner's life easy, making car repair and maintenance affordable, convenient, and transparent. Car Owners can find best offers and deals from various different Garages.The system allows Mechanics to showcase their skills and will get online presence where they can solve problem faced by Car Owners and can reach to a larger audience.Hence, making a good sum of money through our system.Our system also allows Garages to increase their sales by showing their services & offers to Car Owners and Motor Parts listing to Mechanics, directly through the system.

1.1 Background:

Dealing with car problems is not only a time-consuming and frustrating experience, it is often expensive. Car owners often lack visibility regarding the quality of mechanics or fairness of the price. At the same time, the mechanics who put in the hard work fixing cars make very little money at repair shops (less than 20% of what consumers pay), and rarely get the recognition they deserve.

The current situation is depicted in diagram below:-



As you can see in the diagram that when car owners go to the repair shop (Dealer Shop or Local Garage), they don't have any metrics to compare the prices for what they've been charged for. It is also a very time-consuming process and you also have to trust your dealer that whether he is installing genuine motor parts or not. Because it has happened in many cases that dealer install faulty auto parts in your car which will work for some months and then it will again fail so you have to come again for repairing and again the whole cycle goes on and on.

Mechanics who are skilled at their work don't get the recognition they deserve.They often work under some garage where they are paid less.

I believe that the current auto repair system is broken and needs a new system where Car Owners will have better experience and it will empower mechanics to live a better life. It will help garages increase their sales by selling their products and services to the appropriate customer through our system. The system will connect

Mechanics,Car Owners and Garages at a single place where they can work together to solve the problem mentioned above.

1.2 Objective:

- ➢ To help Car Owners find best deals and services from Mechanics and Garages.
- ➢ To empower mechanics to live a better life by making his online presence where he can reach to a larger audience and get paid well.
- ➢ To make Car Owner's life easy by removing all the hassles of going to the service center for repairing the car.
- ➢ To boost the sales of products and services of Garages through the system.
- ➢ The car owner has the option to select services provided by the specific Garage or specific Mechanic.

1.2 Purpose, Scope and Applicability

1.2.1 Purpose:

The title itself gives an indirect clue about this project. "Online Mechanic Finder" you can find Mechanics Online to repair your Cars. The project is being executed because there is a need of a system which will allow the users to freely communicate and ask for certain services from the Mechanics.
The Sole purpose is to provide Users a medium through which they can easily, efficiently, securely and comfortably seek help for Car services in a very interactive and friendly User-Interface environment.

Firstly the Car Owner creates his/her account in the application where he/she will be asked for details about their Cars. When the user experiences any problem in their car, instead of going to a Garage the user can find Mechanics on our system and can chat with him. The Owner can also broadcast his car problem so that it will reach to every mechanic in the system and whoever is ready to solve the Owner's Problem can directly chat with Owner and thus can tell his proposed quote to the Owner. In this way Owner will have many quote received by many mechanics and Owner can choose between mechanics based on their reviews,ratings,past work history and his proposed quote.

Secondly the Mechanic himself has a profile on the system through which they can showcase their skills and can reach to a massive audience,providing their services and thus can earn a good amount of money. They can also book slots in Garage for repair space or can see the garages product (i.e. Auto parts) listing and can contact or chat with Garage for bulk orders at discounted price. Mechanic can chat with Owners through Online Chatting feature provided in the system which is secured and responsive.

Through our system Garage can increase their sales by showcasing their products(Auto parts) and services(towing,repair slots,etc) to Mechanics and by attracting Car Owners through lucrative offers like Free Car wash,Free Inspection and Diagnostic,etc.

1.3.2 Scope:

- Storing information of Owners, Mechanics & Garages.
- Check validity of information provided by Owners and Mechanics.
- Giving the ability to chat within the system through an interactive and user friendly chatting portal.
- Storing the reviews and ratings provided by car owners.
- Storing the information of garages like offers and products.
- Giving the ability to mechanics to earn through the system by connecting to Owners and Garages.

1.3.3 APPLICABILITY:

- The System help to connect Car Owners,Mechanics and Garages ,where these entities can work together for the benefit of each other.
- This application registers Customer, Mechanics and Garages profiles.
- It has a Mechanic Profile & Garage Profile listing which makes it convenient for the Owner to select and appoint a Mechanic or select a Garage service.
- Different type of Vehicle services are provided to the user.
- Owner can book a slot for his/her vehicle in a specific garage for repair.
- Mechanics can contact garage for purchasing automobile parts or book slot for repairing the car.
- Garage has the ability to share his product listing and services to mechanics and owners respectively.Thus,increasing the sales.

Chapter 2: SURVEY OF TECHNOLOGIES

2.1 Existing System

2.1.1 Existing Technologies

Android Technology

Android is a mobile operating system developed by Google based on a modified version of the Linux Kernel. Android is a computing platform designed for use in some phones and other devices. The operating system is based in Linux, which provides advanced computer processing. Android technology is maintained and continually developed by the Android Open Source Project (AOSP).

2.1.2 Existing Software/ Tools

There are several softwares which provides environment to develop Android applications. There are advantages and disadvantages for all the softwares. The developer can choose any of the following software to develop an Android Application:

Android Studio

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on Jet Brains' IntelliJ IDEA software and designed specifically for Android development. It is available for Windows, macOS and Linux based operating systems. It is a replacement for the Eclipse Android Development Tools (ADT) as primary IDE for native Android application development.

Apache Cordova

Apache Cordova is a mobile application development framework originally created by Nitobi. Apache Cordova enables software programmers to build applications for mobile using CSS3, HTML5 and JavaScript instead of relying on platform specific APIs like those in Android, IOS or Windows phone. It enables wrapping up of CSS, HTML and JavaScript code depending upon the platform of the device.

Eclipse

Eclipse is an integrated development environment (IDE) used in computer programming, and is the most widely used Java IDE. It contains a base workspace and an extensible plug-in system for customizing the environment. Eclipse is written mostly in Java and its primary use is for developing Java applications, but it may also be used to develop applications in other programming languages via plug-ins.

2.1.3 Existing Applications similar to Online Mechanic Finder

YourMechanic

YourMechanic was founded in 2012 with the goal to make car repair and maintenance affordable, convenient, and transparent.
More info at: https://www.yourmechanic.com/

SuperCheapAuto

SuperCheapAuto is a thriving specialty retail business, specializing in automotive parts and accessories. It is an Australian based car repair company
More info at: https://www.supercheapauto.com.au/

Though these startups are solving the same problem which we are solving but the way of solving the problem is completely different. They provide mechanics under their brand so mechanic themselves could not create their own brand while using their system. This limitations is solved by our system where mechanics can create a good reputation and their own brand by using our system which let them connect to massive user base.We are also keeping the garages in our system giving them the ability to reach to massive audience and increasing their sales.Thus, we are creating an online platform where Owners can be benefitted by getting a good mechanic to repair his car when he needs,Mechanics can increase their earnings and can also book services and products from garages and lastly garages can increase their sales and create online presence through our system.

2.2 Proposed System

2.2.1 Proposed Application - Online mechanic finder

The system which we are building will solve your problem of finding a good mechanic to fix or repair your car. It is quite similar to YourMechanic, but with additional features like we are also including the Garage module which will let good and popular garage advertise themselves and car owners can avail services from garage.

The salient feature of our system is:

- User can book Services from Garage

- User can book mechanic
- Garage can advertise their services
- Mechanic can connect to a huge number of customer and thus can earn a good amount of money

And all these features will eventually make the Car repair problem a good and hassle free experience.

2.2.2 Technology/Tools used in Online Mechanic Finder

The system is built on Android.There are many technologies to choose from to make our android application.Few of them are listed below are:

Android Application Technologies

❖ *JAVA*

Java is one of the most popular languages in Android application development. Due to its salient features, compatibility and popularity among the Android programmers, most of the developers use Java for Android Application.

Not only being the most popular language among different language used to develop Android application but its features is one of the most important reason behind using this technology. Its features are

- Object oriented language. It runs on all the platforms.
- Supports API that make integration very easy.
- It is easy-to-learn and read. Hundreds of open source libraries available.
- Easy to get expert help from Android communities.
- Powerful IDEs make coding easy and error-free.

❖ *XML*

XML stands for Extensible Markup Language. XML is a markup language much like HTML used to describe data. XML tags are not predefined in XML. We must define our own Tags. Xml as itself is well readable both by human and machine. Also, it is scalable and simple to develop. In Android we use xml for designing our layouts because xml is lightweight language so it doesn't make our layout heavy.

Website Technologies

❖ *HTML*

Hypertext Markup Language (**HTML**) is the standard markup language for creating web pages and web applications. Web browsers receive HTML documents from

a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

❖ *CSS*

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

❖ *JavaScript*

JavaScript often abbreviated as **JS**, is a high-level, interpreted

Programming language. It is a language which is also characterized as dynamic, weakly typed, prototype-based and multi-paradigm.

Alongside HTML and CSS, JavaScript is one of the three core technologies of the World Wide Web. JavaScript enables interactive web pages and thus is an essential part of web applications. The vast majority of websites use it, and all major web browsers have a dedicated JavaScript engine to execute it.

❖ *BootStrap (Front-end Framework)*

Twitter Bootstrap is the most popular front end framework in the recent time. It is sleek, intuitive, and powerful mobile first front-end framework for faster and easier web development. It uses HTML, CSS and JavaScript.

Bootstrap is a free and open-source front-end framework for designing websites and web applications. It contains HTML- and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions.

Database

- Databases are classified into two types **SQL** databases and **OTHER** databases.
- Other databases can be anything ranging from the physical files on your desk to complex electronic documents stored and managed by a DBMS on some remote server.
- These other databases also include NoSQL. Which initially was a database without a structure(NO SQL), but now allows combining SQL with the flexibility of NoSQL(Not only SQL).

SQL: A database has tables. A table has rows and columns. All elements in a column has the same datatype.

NoSQL: A database has collections. A collection has documents. A document has fields. Two documents in a collection may or may not have the same fields, that is, the structure of the document is not fixed.

Why? and When? of NOSQL?

Why use NoSQL?

1. **Schema agnostic:** NoSQL databases are schema agnostic. You aren't required to do a lot on designing your schema before you can store data in NoSQL databases. You can start coding and store and retrieve data without knowing how the database stores and works internally. If you need advanced functionality, then you can customize the schema manually before indexing the data. Schema

agnosticism may be the most significant difference between NoSQL and relational databases.

2. **Scalability:** SQL databases are vertically scalable/scaling-in. It means that an increase in load can be managed by increasing the CPU, RAM, SSD, etc., on a single server. NoSQL databases support horizontal scaling/scaling-out methodology that makes it easy to add or reduce capacity quickly without touching with commodity hardware. This eliminates the tremendous cost and complexity of manual sharding that is necessary when attempting to scale RDBMS.
3. **Performance:** Scaling is easier so performance improvement is possible. Commodity servers which are cheaper can be added to increase performance. Also querying the database does not involve the overhead of performing complex joins on tables.
4. **Global availability:** By automatically replicating data across multiple servers, data centers or cloud resources, distributed NoSQL databases can minimize latency and ensure a consistent application experience wherever users are located. An added benefit is that there is no need for specialized DBAs since there isn't much work for them.

When to use NoSQL?

After reading the above advantages, you may be thinking of using MongoDB for all your future projects. But wait! There are specific use cases in which a NoSQL database may prove to be advantageous. NoSQL will not replace RDBMS.

- If you are going to deal with a **lot of data**, Big Data is a term that is thrown around quite often, then you may need NoSQL. It basically means handling data which the traditional methods couldn't manage.
- Social network sites(Facebook, Twitter), e-commerce sites(Amazon, eBay), blogs/news publishing sites (times, medium), etc are creating a huge amount of data, and all this data needs to be stored somewhere till the platform exists.

- The data we talked about in the above points is generally **semi-structured or unstructured data.** If your application produces data in a format that doesn't fit well in a table. As an example, a blog writing platform can store articles and its metadata in tables and retrieve one blog with a complex/nested/join query. On the other hand, store one entire blog as a single document.
- All these platforms are not only needed to store data but also need to have **high read/write performance** on the same. Consider a chat application, which has thousands of messages being sent and received every second. The amount of data generated is huge, not-structured and requires high performance.
- You are working on a project with **rapid time-to-market,** with development practices like agile sprints. NoSQL databases are easier and faster to develop software.
- If your application is heavily dependent on transactions, it is recommended to use an RDBMS because they are more stable, support data integrity and has ACID properties (Note: In a recent release, MongoDB now also supports ACID natively).

❖ *FireBase*

The Firebase Database is a cloud-hosted database. Data is stored as JSON and synchronized in real time to every connected client. When you build cross-platform apps with iOS, Android, and JavaScript SDKs provided by firebase, all of your clients share one Real-time Database instance and automatically receive updates with the newest data. This allows us to build more flexible real time apps easily with minimal effort. Store and sync data with NoSQL cloud database. Data is synced across all clients in real-time, and remains available when your app goes offline.

Chapter 3: REQUIREMENT AND ANALYSIS

3.1 Problem Definition

Defining a problem is one of the important activities of the project. The objective is to define precisely the business problem to be solved & thereby determined the scope of the new system. This phase consist of 2 main tasks. The 1st task within this activity is to review the organization needs that originally initiated the project. The 2nd task is to identify, at an abstract or general level, the expected capabilities of the new system. Thus, it helps us to define the goal to be achieved & the boundary of the system. A clear understanding of the problem will help us in building a better system & reduce the risk of project failure. It also specifies the resources that have to be made available to the project. Three important factors project goal, project bounds & the resource limits are sometimes called the project's term of reference.

3.2 Requirements Specification

3.3 Planning and Scheduling

3.4 Software and Hardware Requirements

3.5 Preliminary Product Description

3.6 Conceptual Models