WORKMAN

Thesis submitted for the partial fulfilment of the
requirements for the degree of
Bachelor of Science Software Engineering
at the University of Engineering and Technology Mardan

Submitted by

1.	ZAHID SHER KHAN	19MDSWE054
2.	AFAQ AHMAD	19MDSWE071

Supervised by:

Engr Shaharyar

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Department of Software Engineering

University of Engineering & Technology, Mardan

Declaration

We hereby declare that this project report/thesis entitled "Workman" submitted to the "Software Engineering Department", is a record of an original work done by us under the guidance of Supervisor "Engr Shaharyar" and that no part has been plagiarized without citations. Also, this project work is submitted in the partial fulfillment of the requirements for the degree of Bachelor of "Science Software Engineering".

Team Members: **Signature:**

Zahid Sher Khan

_____

Afaq Ahmad

_____

Supervisor

Engr Shaharyar   _____

Date:

_____

FYPD Report Approval

The Department of Computer Software Engineering, University of Engineering & Technology Mardan accepts the report in the present form and it satisfies the entire requirements of the Final Year Project (FYP).

Approval of FYP Coordinator
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Plagiarism Check Report

Workman

ORIGINALITY REPORT

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ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to all those who helped me to complete this thesis. First of all, we would not have completed this thesis without the generous help of our supervisor (Engr Shaharyar) who has forever been there for us at whatever point we really wanted, the support he provided for make all the difference for us and his consideration to engage us which never bombs constantly. Whose mastery and conduct were priceless in figuring out the procedure and astounding execution rules all through the venture in attempting to tackle a genuine issue

Thank you for being a friend and treating us with respect while we were working on this thesis. You really are a great advisor. We would like to extend our sincere thanks and respect to you. Thank you very much.

To all those who have supported us in our research work. We appreciate all the time and advice you gave us. THANKS.

ABSTRACT

Pakistan has a large workforce among the top 10 in the world. Creating enough job opportunities for such a large workforce is a major challenge. Customers need labors but approach to these labors are difficult,

so, we have developed an app which will make it easy for the labors to find a job they can easily connect with our app and provide their services.

And customer can hire their desire service and labor at home with just a click of a button with our app.

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Chapter No. 1 Introduction

Due to advancing of technology businesses are changing from offline to online, things are becoming easy day to day. As a software engineer, we should also contribute our services to the benefits of the society. why waste our energy and time in this busy era on things you can also do with the touch of a button. In spite of high demands of labors, labors are still unemployed, sometime it is very difficult to find a labor for the specific job.

We are developing an app which will offer services to labors and labors can offer their services to customers.

Different software developers have already developed apps for the specific idea but some of these apps are not offering their services, only one app is offering its services which is not hiring labors but providing their own labors and are limited to three cities.

While in our app you can hire a labor through the app for your specific job or you can select the specific service and we will offer you the appropriate labors for the job.

You can sign in yourself as a labor and offer your service.

The app will connect labors to the customers.

Our application will be deployed over Play Store after development with easy and accessible interface.

Pakistan has a large labor force that stands among the top 10 largest labor forces in the world. To generate sufficient employment opportunities for such a large labor force is a huge challenge. The research shows that 4.51 million people from labor force could not get job in FY2021.

a. Labors with good experience are jobless because there is no platform available for them due to which reaching them is hard.

b. Customer needs their work to be done but they are busy and the communication with the labor is hard because you have to go to contact the labor for the job.

c. Prices are not specific every labor may ask for the price of their own wish.

In the course of this ambitious project, our mobile application aims to bring about a substantial increase in employment opportunities for the labor force, ushering in a new era of

economic empowerment and prosperity. At its core, our application is designed to address a fundamental need within our society – the seamless connection between those in need of labor or services and the skilled individuals eager to offer their expertise to fulfill these needs.

One of the primary objectives of our app is to foster a marketplace where fairness prevails. We believe in providing not only an array of opportunities for laborers to earn a reasonable wage but also a platform for customers to access these services at competitive and affordable prices. In this way, we endeavor to strike a harmonious balance that benefits both parties involved in the labor exchange, thereby contributing to the economic well-being of our community as a whole.

In essence, our app stands as a beacon of hope, serving as a comprehensive job portal catering to a diverse spectrum of labor categories. It is a testament to the aspirations of countless individuals who possess valuable skills and are keen to offer their capabilities to meet the unique needs of customers. Simultaneously, it acts as a lifeline for those customers who, while in search of services, may have previously struggled to connect with the right laborers to address their requirements effectively.

In summary, our mobile application endeavors to transform the employment landscape by bridging the gap between labor supply and demand, all while championing fair pricing and economic empowerment. As we move forward, our commitment to growth and our dedication to serving the needs of our community will continue to be the driving force behind our mission.

Chapter No. 2
Problem Definition/Objectives

2.1 Objectives

a. To develop an Android app using react native technology which will offer services to unemployed labors.
b. To develop an app which will connect labors to the customer.
c. To develop a system in which you can hire labors and services.
d. To develop a system in which you can sign in as a labor and offer your services.
e. To develop an app which can be used by illiterate people by using Google APIs and other technologies.

2.2 Problem Statement

Pakistan boasts one of the world's largest workforces, yet it faces the formidable challenge of creating sufficient job opportunities. In fiscal year 2021, a staggering 4.51 million people in this workforce were unemployed, highlighting the urgent need to bridge the gap between labor supply and demand.

Exacerbating this challenge is the issue of underutilized, experienced workers who remain jobless due to the lack of a suitable platform to connect them with relevant opportunities. On the other side, customers seeking services struggle to find and communicate with the workforce efficiently, leading to missed opportunities.

To address these challenges, there is a pressing need for a platform that seamlessly connects skilled workers with potential employers while simplifying the process for customers to access the services they require. Such a platform has the potential to revolutionize labor markets in Pakistan, unlocking opportunities for both job seekers and service providers, and promoting economic growth and individual empowerment.

Public Survey about workman

The survey was performed from three cities Mardan, Buner and Nowshera

From around 60 people their response was noted we present to you the response in states

1. Do people need app like that?

a. yes (70% peoples were interested)   b. no (20% peoples were not interested in it)

c. (10% peoples were not interested)

2. Can it solve problems of unemployment?
   For poor peoples?
   a. Yes (90% peoples were agreed)
   b. (10% were not interested)

3. Can it solve problems of needs of different persons like plumbers

For peoples in home?

a. Yes (85% peoples were agreed)

b. (10% were not interested)

c. (5% did not respond)

4. can it work in our district?

a. (79% peoples mark yes)

b. (11% peoples says no)

c. (10% didn't respond)

Chapter No. 3 Literature Review

3.1 Literature Review

Apps available on Playstore on our idea
DayLabor
AsanJobs
Kardaan

Drawbacks of these apps

The first app is only showing jobs listed by organizations, their interface is confusing.

The second app is not providing services, it is nearly dead.

The third app is providing limited services in only three cities and are not hiring any Labors they are providing their own labors.

Why our app:

Our upcoming mobile application is on the brink of addressing a critical void in cities that have lacked accessible service platforms. What truly distinguishes our platform is our unwavering commitment to offering a more extensive range of services than what is currently available on existing applications. We've taken it a step further by streamlining the process of hiring laborers, directly connecting skilled workers with individuals seeking their services. But perhaps our most standout feature is our unwavering dedication to ensuring that our platform is user-friendly, designed with utmost simplicity, and accessible to individuals with varying levels of literacy.

In essence, we are poised to make a substantial impact in underserved cities by delivering a comprehensive array of services, simplifying the hiring journey, and prioritizing an intuitive user interface that guarantees accessibility for all. Our mission revolves around innovation and inclusivity, and we are genuinely thrilled to introduce these transformative changes to communities where the convenience has been long-awaited and is sorely needed.

Chapter No. 4 Methodology

Tools and Technologies

a. Front-end

We used React Native to develop our project which is an open-source UI software framework, it is used to develop applications for Android.

b. Backend

c. We used Firebase for backend of our app which is a Realtime database cloud hosted NoSQL database that lets you store and sync data between your users in Realtime.

d. Coding environment

We used visual studio code to develop our app. Vs code is an open-source code editor redefined and optimized for building and debugging modern web and cloud applications.

e. UI/UX

We used Figma for interface design. Figma is a design tool that lets you create designs for mobile and web interfaces, or any other kind of design. It is a collaboration tool for teams and individuals to create and share high-quality work.

f. Version control

We used GitHub for version control. GitHub is a code hosting platform for version control and collaboration. It lets you and other work together on projects from anywhere.

4.1 Accessibility approaches for illiterate people

1. Pictures / Icons:

Illiterate people cannot understand text but they can understand pictures, so to make our app more accessible to illiterates instead of using text we will try to use suitable icons and pictures.

2. Keep it Simple:

We will design our app by keeping the interface simple and accessible so that people can understand it easily.

3. Signs:

Signs will help the users to interact with the Application easily. Using big signs for call, text, etc. will make the user understand the functions easily.

4. Minimal UI:

Decluttering unnecessary elements from the UI will help the user not getting confused/distracted.

5. Usability Testing: To validate the accessibility of my app, I conducted usability testing with individuals who had various disabilities. Their feedback was invaluable in uncovering issues and making necessary improvements.

6. Accessibility Documentation:

I documented accessibility best practices and guidelines for my development team, ensuring that everyone understood how to implement accessibility-related props and components effectively.

As a result of these accessibility approaches, my React Native mobile app became truly inclusive, catering to a broad scope of users. I received positive feedback from users with disabilities, affirming that they could navigate and interact with the app comfortably. Making accessibility a core part of the development process not only expanded my app's reach but also enhanced the overall user experience for all users.

Chapter No. 5 Detailed Design and Analysis

5.1 Deployment

Following is the Software Deployment Process Used in this Application

5.2 Installing IDEs

In the First step of Deployment we code and debug the code of Application. The IDE used in while Developing this application is VScode.

5.3 Installing Database Software
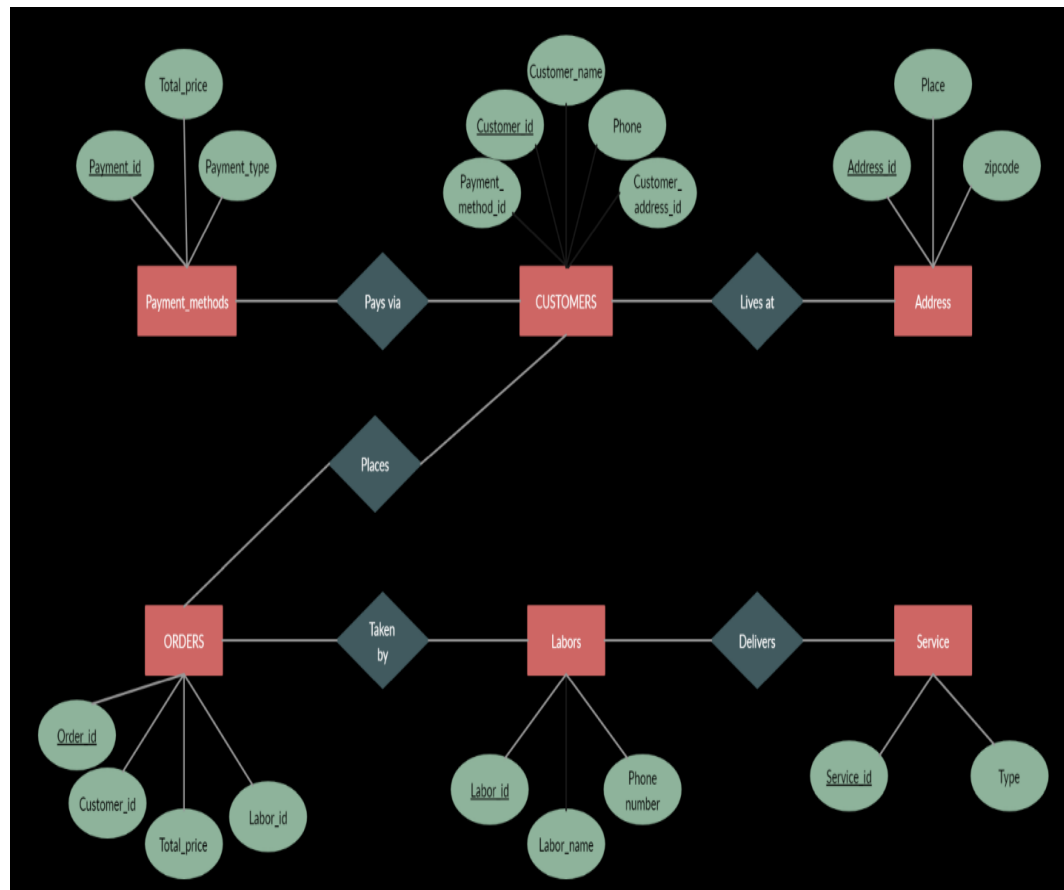
Software used for this Software is Firebase.

Figure 1.1 ER Diagram

Figure 1.2 ER Diagram Enhanced

ER Diagram : Workman
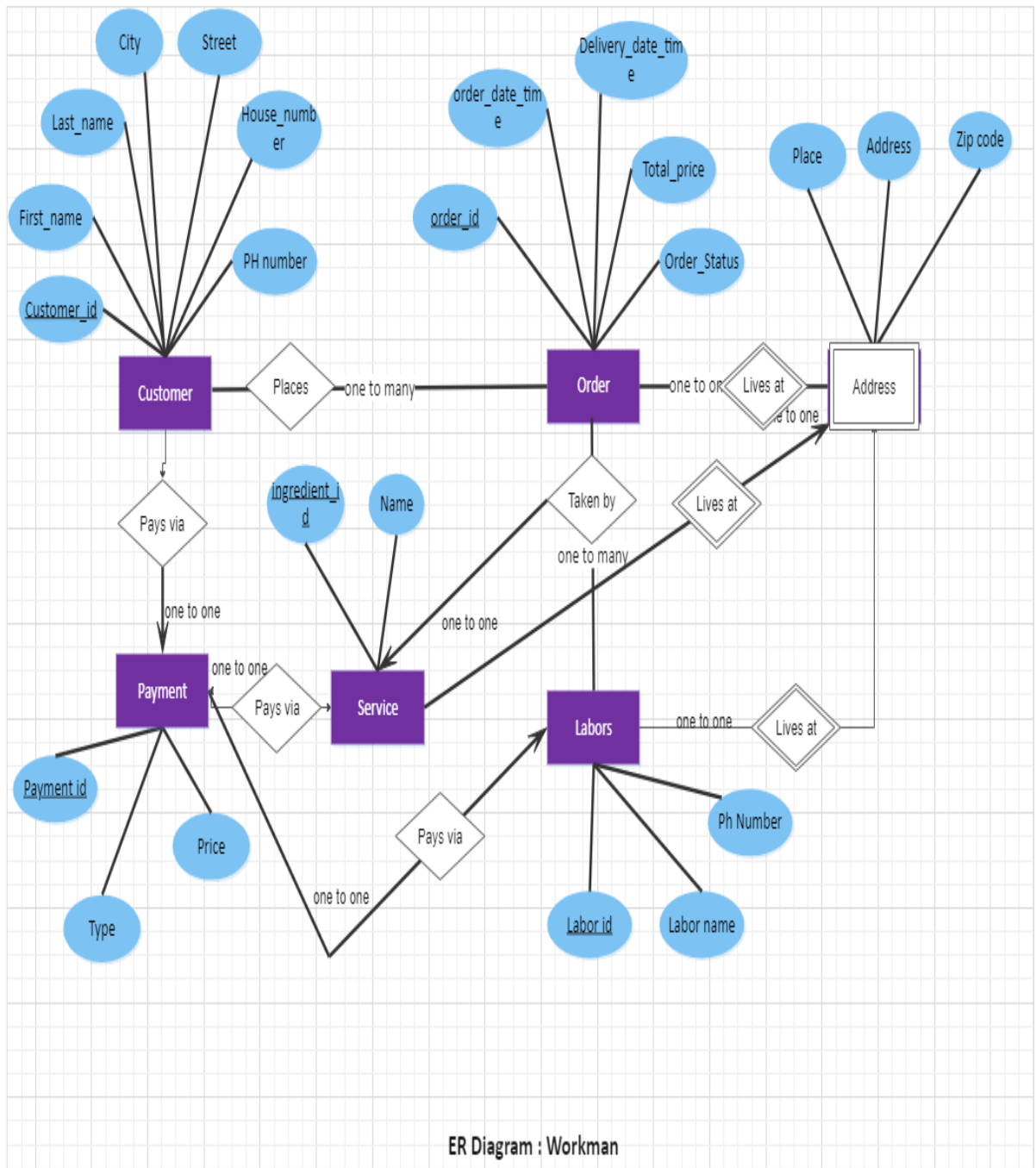
5.4 Analysis

In the initial phases of our project, we embarked on a rigorous process of requirements gathering, aimed at identifying the precise needs and objectives that the labor application should fulfill. Through extensive consultation with stakeholders and end-users, we gathered invaluable insights that laid the foundation for our development journey.

Following requirements gathering, we delved into workflow analysis, meticulously scrutinizing the existing labor-related workflows within the organization. This in-depth analysis allowed us to pinpoint key areas ripe for process improvement and automation. By streamlining and enhancing these workflows, we aimed to optimize efficiency and productivity, ultimately translating into tangible benefits for the organization and its workforce.

As a crucial aspect of our development process, we put in place a comprehensive plan for testing and quality assurance. Our approach is rooted in the belief that thorough testing is paramount to ensuring the labor application's reliability and performance. This testing regimen encompasses various levels, including unit testing, integration testing, and user acceptance testing. Through these rigorous tests, we systematically identify and address any functional or performance issues, ensuring that the application is robust and ready for deployment.

By conducting this thorough system analysis, we have gained a comprehensive and holistic understanding of the labor application's requirements. Armed with this insight, we are well-equipped to design and develop a solution that not only aligns with the organization's needs but also resonates with its users. Our commitment to excellence and attention to detail underpin every step of our development journey, with the ultimate goal of delivering a labor application that enhances efficiency, empowers the workforce, and drives organizational success.

Chapter No. 6 Implementation & Testing

Overview of the architecture

Frontend (React Native)

The frontend will be developed using React Native, allowing the application to run on both Android and iOS devices. It will be responsible for the user interface, user interactions, and data presentation. The frontend will communicate with the backend through API calls.

Backend

The backend is the core of the application that handles business logic, data storage, and interactions with external services. Our app is built in Firebase.

API Layer

The API layer connects the frontend and backend. It exposes endpoints that the frontend can call to perform various operations like hiring labor, placing orders, updating profiles, etc. The API layer will handle data validation, processing, and communicate with the database to retrieve or store data.

Payment Gateway

For now, our Payment is cash on delivery customer will pay the required amount when the work is done to the labor.

Geolocation

For location we have record the location when the user register with our app and use this location for the delivery.

Testing and Deployment

For testing we have used unit testing strategy

Security

We value the privacy of our Customers the information provided by the customers are used by their permissions.

Scalability

We have used firebase and google cloud storage when the customers ratio increases, we can increase the storage by buying space from cloud storage.

User Experience (UX)

We have designed an intuitive and user-friendly interface for both customers and labors to provide a seamless experience.

Offline Support

The app needs internet connection and will be unable to operate offline.

Implementation

Authentication

We have implemented user authentication using Firebase Users (both customers and labors) will be able to register, log in, and reset their passwords if necessary. Store the authentication token securely on the device for subsequent API requests.

User Profiles

We have allowed users to create and manage their profiles. Customers and labors should be able to update their personal information, contact details, and profile pictures.

Finding Labors

Implement a screen where customers can search for available labors based on their work categories and services they are offering.

Hiring Labors

Customers should be able to view labor profiles and request their services. After selecting a labor, the customer can place an order specifying the job details and expected time. The laborer should receive a notification about the job offer.

Accepting/Rejecting Job Offers

Labors can accept or reject the job offers they receive. When a labor accepts a job, the customer should be notified about the acceptance.

Payment Processing

Cash on delivery between customers and labors. When the job is completed, the customers will pay to the labor by hand.

Order History

Both customers and labors should be able to view their past order history, including completed and ongoing jobs.

Notifications

Implement push notifications to notify customers and labors about new job offers, order status updates, and chat messages.

Error Handling and Validation

Ensure proper error handling and validation for user inputs and API responses to provide a smooth user experience.

Deployment

Prepare the application for deployment on both Android and iOS platforms, following the guidelines and best practices for each platform.

Security

Apply security measures such as encryption, secure storage of tokens, and API access controls to protect user data and prevent unauthorized access.

Accessibility

We have ensured the application is accessible to users by following accessibility guidelines.

Testing plan for the project

Functional Testing

We have tested all the features of the application, including user registration, authentication, hiring labors, accepting job offers, etc.

We have verified that each feature works as expected and performs the intended actions without any errors.

User Experience (UX) Testing

We have evaluated the user interface (UI) for usability, consistency, and intuitiveness.

Ensured that the app follows platform-specific design guidelines (e.g., Material Design for Android, Human Interface Guidelines for iOS).

Have tested the app on various devices and screen sizes to ensure responsive design.

Performance Testing

We have measured the app's performance, including response time, loading times, and latency.

Tested the app under various network conditions (e.g., 3G, 4G, Wi-Fi) to check for performance degradation.

Checked for memory leaks and optimize resource usage for smooth user experience.

Security Testing

We have conducted security assessments to identify potential vulnerabilities and weaknesses.

Integration Testing

We have tested the integration points between the frontend (React Native) and backend (API layer).

Validated that data is passed correctly between the frontend and backend components.

Accessibility Testing

We have evaluated the app for accessibility compliance, ensuring it can be used by people.

Cross-Device Testing

We have tested the app on different devices to ensure compatibility and consistency.

Regression Testing

After bug fixes or feature updates, conduct regression testing to ensure that existing functionalities continue to work as expected.
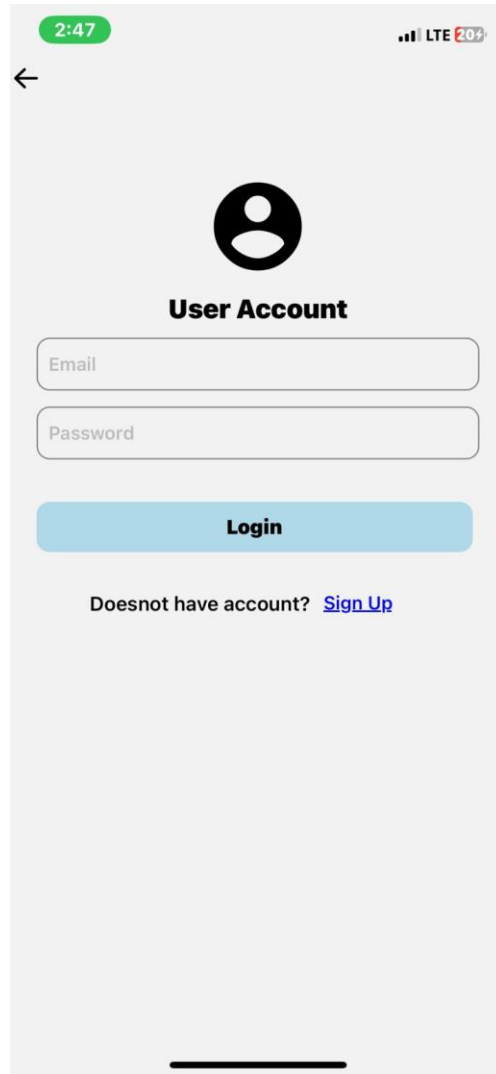
Unit Testing

Certainly, here's a step-by-step guide on how to implement unit testing for a React Native component as if you were describing your personal experience:

1. Prepare Your Environment:

   - To start unit testing for my React Native application, I first made sure I had the right tools in place. This included installing Jest, React Testing Library, and any specific testing libraries for React Native using npm or yarn.

2. Create Test Files:

   - For each component I wanted to test, I created separate test files with names like ComponentName.test.js. This organized my tests and made it easy to locate them later.

3. Write the First Test Case:

   - In my test file, I began by writing my first test case using Jest's test function. I described what the test should achieve in plain language, like "Test that the Button component renders correctly and responds to clicks."

1. Chapter No. 7
   ## Results and Discussion
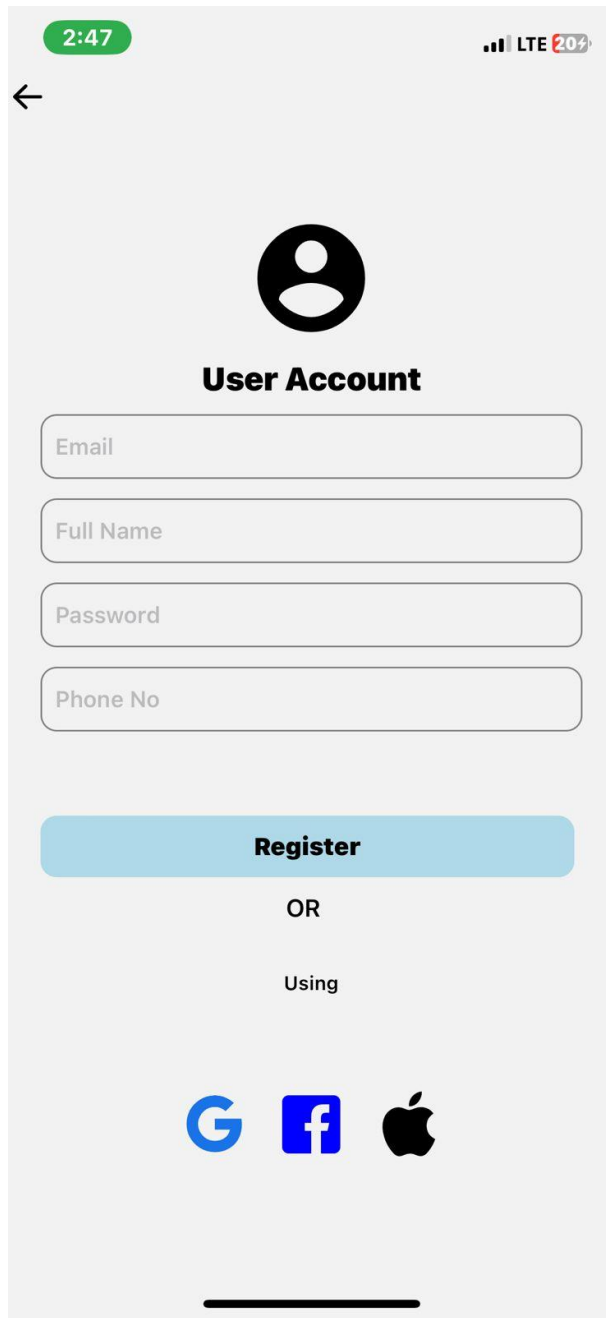
Login Page for Customer

2.

Sign up Page for Customer

3.

Login Page for Labor

4.

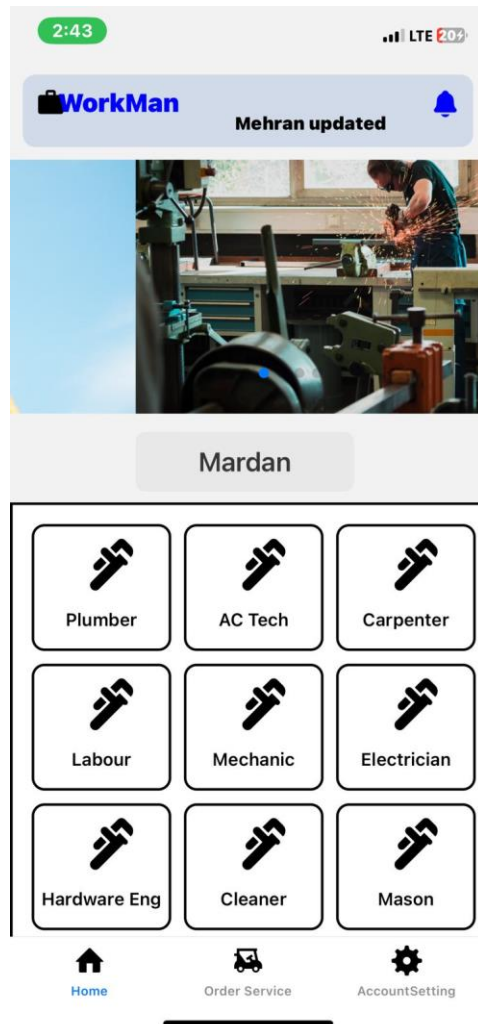## Main Page

5.

6.

This is main page of the User can select either to work or to hire a labor or service.

Selecting a service

7.

Here Customer can select his desires service to order.

Quick Order Option

8.

    Here Customer can Enter his phone number and address to order instantly.

Update Profile

9.

Here User has Also Option to Change/Update his Phone number or name

Worker/Labor Account

10.

Here Labor can sign in to work for the customers
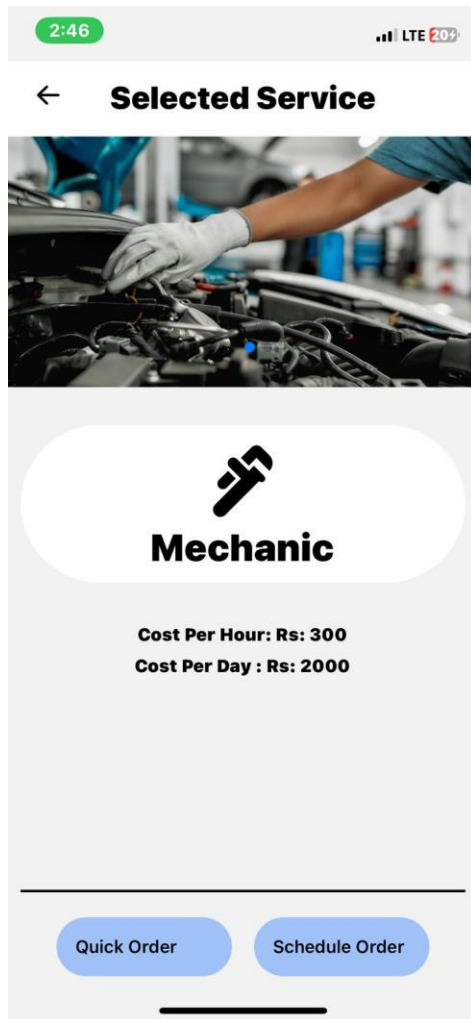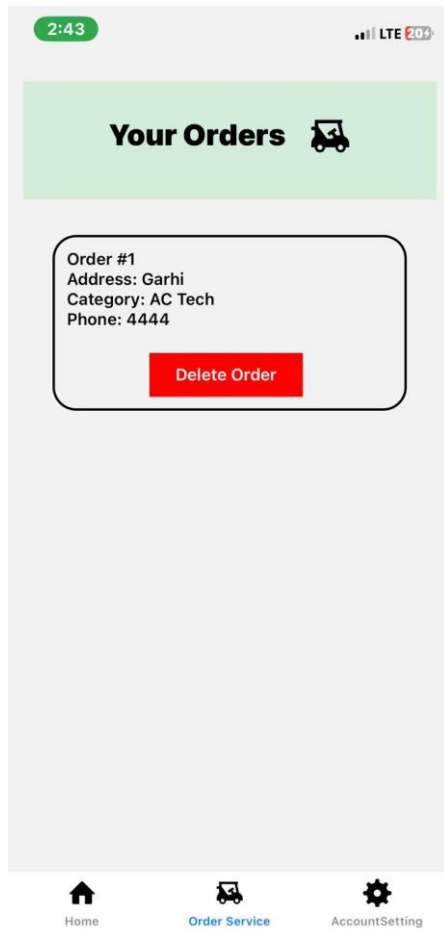
Labor Order Page
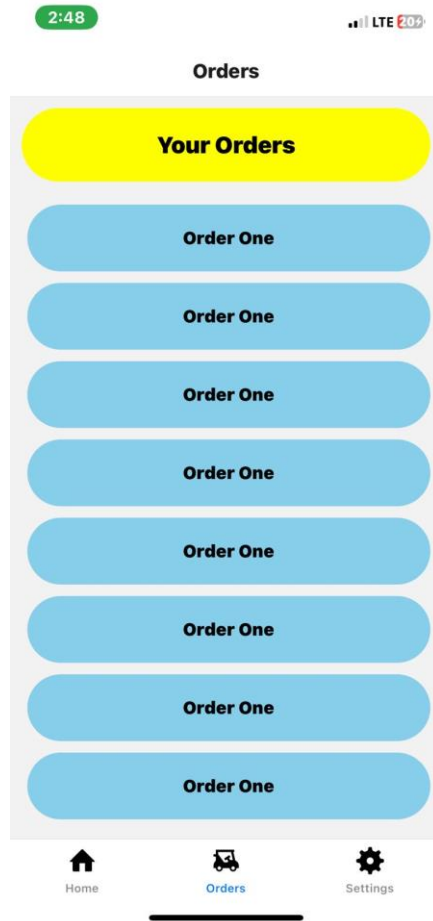
11.

Here Labor can see their current orders.

After selecting a service

12.

Labor Order details

13.

Chapter No. 8 Conclusion and Future Work

5.5 Conclusion

In conclusion, the software project has been a significant undertaking that has successfully achieved its objectives and delivered valuable outcomes. Through meticulous planning, diligent development, and rigorous testing, the project team has created a robust and user-friendly software solution that addresses the identified needs and requirements.

Throughout the project's lifecycle, effective collaboration and communication among team members have played a pivotal role in ensuring its success. The dedication, expertise, and commitment demonstrated by the project team have been instrumental in overcoming challenges and delivering a high-quality software product.

The software project's completion marks a significant milestone, as it provides users with enhanced efficiency, improved functionality, and streamlined processes. The project's successful implementation will enable stakeholders to realize tangible benefits, whether it is increased productivity, cost savings, or enhanced user experiences.

Till now, we have developed the Workman application which offers services to labors and those users which needs these services for their needs.

Further developments can be carried out. Android application has been developed to deliver all the above witnessed operations.

5.6 Future Work

At this stage we have developed the application at coming stages we will advertise our application to a wider audience now we have developed only android application which we will release now on Playstore. In the future we will also develop IOS version of the application

Furthermore, our scope now is district level but it can be stretched to a bigger level and we will be adding more services to our application gradually.

1. FYP to CEP Mapping

S#	Attribute	Complex Problem	Targeted (Yes/No)	Justification
1.	Preamble	*Engineering problems which cannot be resolved without in-depth engineering knowledge. And have some or all of the characteristics listed below:		
2.	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues.		
3.	Depth of Analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models.		

4.	Depth of Knowledge required	Requires research-based knowledge much of which is at, or informed by, the forefront of the professional discipline and which allows a fundamentals-based, first principles analytical approach.	YES	In depth information of labors will be required to acknowledges about the specific city labor unemployment rates.
5.	Familiarity of issues	Involve infrequently encountered issues	YES	Labors are jobless all over the world especially in Pakistan
6.	Extent of application codes	Are outside problems encompassed by standards and codes of practice for professional engineering.		
7.	Extent of stake-holder involved	Involve diverse groups of stakeholders with widely varying needs.		
8.	Consequences	Have significant	YES	After publishing

		consequences in a range of contexts.		the application, customer and labor will be able to get benefits from it.
9.	interdependence	Are high level problems including many component parts or sub problems.		

10.   FYP to SDGs Mapping

Sustainable Development Goals (SDGs)			
	Goal#	Description	Justification
1	**Goal**	**NO POVERTY** End poverty in all its forms everywhere	We will offer jobs to labors thus by employing, poverty will start decreasing
2	**Goal**	**ZERO HUNGER** End hunger, achieve food security and improved nutrition and promote sustainable agriculture	
3	**Goal**	**GOOD HEALTH & WELL-BEING** Ensure healthy lives and promote well-being for all at all ages	
4	**Goal**	**QUALITY EDUCATION** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
5	**Goal**	**GENDER EQUALITY** Achieve gender equality and empower all women and girls	
6	**Goal**	**CLEAN WATER AND SANITATION**	

		Ensure availability and sustainable management of water and sanitation for all	
Goal 7		**AFFORDABLE AND CLEAN ENERGY** Ensure access to affordable, reliable, sustainable, and modern energy for all	
Goal 8		**DECENT WORK AND ECONOMIC GROWTH** Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	By employing labors, we will boost our economy and provide works for labors
Goal 9		**INDUSTRY, INNOVATION, AND INFRASTRUCTURE** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	
Goal 10		**REDUCED INEQUALITIES** Reduce inequality within and among countries	
Goal 11		**SUSTAINABLE CITIES AND COMMUNITIES** Make cities and human settlements inclusive, safe, resilient and sustainable	By providing labors and services which will fix your daily problems which will keep you safe like electric, plumbing etc problems.
Goal 12		**RESPONSIBLE CONSUMPTION AND PRODUCTION** Ensure sustainable consumption and production patterns	providing fair prices for labors as well for customers
Goal 13		**CLIMATE ACTION** Take urgent action to combat climate change and its impacts	
Goal 14		**LIFE BELOW WATER** Conserve and sustainably use the oceans, sea and marine resources for sustainable development	

15	**Goal**	**LIFE ON LAND** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	**Goal**	**PEACE, JUSTICE AND STRONG INSTITUTIONS** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
17	**Goal**	**PARTNERSHIPS** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	

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