Transforming spaces to perfect places through our finishing touch!

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Abstract

This document outlines the development of a mobile application designed to bridge the gap between workers and clients for various finishing services. The application aims to offer a seamless platform where clients can access high-quality finishing services, select from premium packages, and ensure accurate and meticulous service delivery. Additionally, the application enhances job opportunities for workers by connecting them with a broader client base, thus boosting their employment prospects. This project details the features, user roles, and technical aspects of the application, emphasizing the importance of precision, excellent service, and continuous monitoring to meet client expectations. The ultimate goal is to provide a reliable, user-friendly interface that benefits both clients and workers, ensuring superior service performance and increased job opportunities in the finishing services industry.

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Chapter 1 (Software proposal)

1.1 Introduction

Homey, your comprehensive solution for architectural finishes. Homey is designed to streamline and simplify the process of completing and enhancing your real estate spaces, providing you with a one-stop platform for all your improvement needs. Homey offers a wide range of services and features to ensure your real estate is finished to perfection.

1.2 Problem Statement

The software aims to solve the following problems:

1- ***Facilitating communication and coordination***: The software provides a central platform for communication between the client, contractor and workers, reducing delays and poor coordination.

2- ***Managing appointments and schedules:*** The program can organize work schedules and distribute tasks among workers effectively, which increases the efficiency of work completion.

3- ***Quality and Monitoring:*** The software can help monitor the quality of work completed and ensure that the work is carried out to the required standards, reducing errors and improving the results.

4- ***Providing multiple services easily:*** with the presence of multiple services such as carpentry, plumbing, and electricity within one scope, the customer can save time and effort in searching for different contractors for each service.

5- ***Dealing with inquiries***: By having a inquiries management system within the application (through Chat Bot) Respond quickly to inquiries and resolve them effectively.

6- ***Providing a complaints response:*** By having a review section, Homey application can response to your complaint and seek to solve it.

7- ***Improving customer experience:*** By simplifying the process of searching and obtaining services, the program can enhance customer satisfaction and contribute to establishing long-term customer relationships.

8- ***Providing convenient payment options:*** Support multiple payment methods (cash on delivery, instant payment) and Possibility of prepayment or payment in installments (in case of finishing apartments).

9- ***Providing qualified craftsmen:*** by creating a database of craftsmen with reviews from previous clients. Conducting professional interviews and tests to ensure the competence of craftsmen.

10- ***Easy and attractive user interface:*** Designing a simple and easy-to-use user interface that enables customers to easily navigate between different sections.

11- ***Guarantee of security and trust:*** Verify the background of the craftsmen registered in the application and Providing insurance for the works carried out.

12- ***A platform for evaluating services:*** Providing a section within the application that allows customers to evaluate services and craftsmen, while displaying these evaluations to new users.

In short, the software can be effective in improving the organization, efficiency and quality of finishing operations, providing significant benefits to clients and contractors alike.

1.3 Objectives:

The objective of this software project is to develop a comprehensive finishing and real estate service management application that connects customers, craftsmen, interior designers, and administrators.

The primary goals of this project are:

1- ***To offer a wide range of finishing and engineering services***: The application will provide a diverse array of services including painting, flooring, plumbing, electrical work, and interior design. It will feature special offers and packages that cater to different customer needs and budgets, enhancing the overall user experience.

2- ***Packages option:*** Homey provides you with a comprehensive package according to your needs which lets you choose a ready package or customize one.

3- ***To connect customers with the best craftsmen:*** The software will list craftsmen to clients to choose the relevant worker.

4- ***To provide robust customer service and follow-up:*** The application will include a customer service feature where users can report issues, ask questions, and provide feedback. Dedicated representatives will follow up on these interactions to ensure problems are resolved and feedback is addressed. After the service is completed, a representative will visit the customer to verify that the work meets expectations and that the customer is satisfied.

5- ***To facilitate seamless service requests and management:*** The user-friendly interface will allow customers to request services by selecting from a list of available craftsmen, confirming their choices, choosing payment methods, and scheduling appointments. The software will provide real-time updates and notifications to keep customers informed throughout the process.

6- ***To enable workers to manage their jobs efficiently:*** Craftsmen can use the application to receive and respond to job requests, view job details, and manage their schedules. The software will display the wage for each job upfront, ensuring transparency. Craftsmen can also update their status and communicate with customers and administrators as needed.

7- ***To provide administrative oversight and quality control:*** Administrators can depend on firebase to monitor job progress, manage worker profiles, handle customer service inquiries, and ensure quality control.

By targeting customers, craftsmen, interior designers, and administrators, this finishing and real estate service management application aims to provide a versatile platform that enhances the quality and efficiency of service delivery.

1.4 System Overview:

Homey provides you with a variety of workers, features and payment methods. Homey covers a broad spectrum of real estate finishing services to meet all your requirements.

The application's intuitive and easy-to-navigate interface ensures that you can find and book the services you need quickly and efficiently.

This system architecture of Homey is divided into two main components: mobile application and a work in future- website.

The mobile application allows you to easily navigate and watch variety of services you can deal with and add to cart. it also has lots of trusted workers you can choose the best one of them according to your needs and start finishing your real estate at a secure channel via Homey application between you and the worker to guarantee everything is going well.

Also, workers can use Homey to apply and get jobs, so Homey will be a great opportunity to the problem of lack of jobs.

The user's sensitive data is encrypted and the user is authenticated using two factor authentication method, so you can trust all transactions and feel secure to use it.

The main two features of Homey applications that you can choose a single service or the other choice you can apply to a package which have an overview that describe to you what the package consists of.

The application inputs are the data of the workers and users and if they need to add a photo of their homes.

1.5 Methodology and technical approach

1.5.1 Flowchart of the system

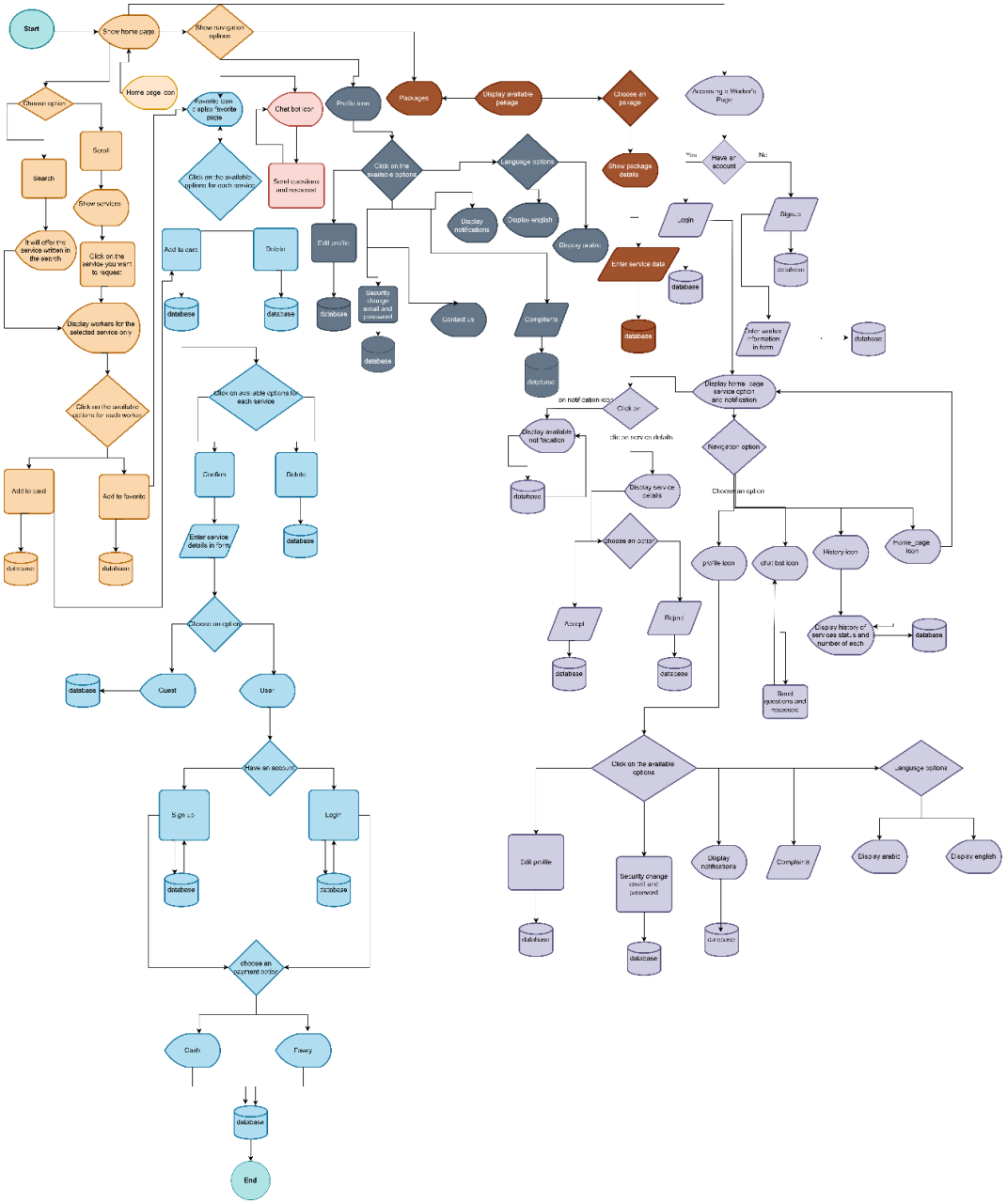


Figure 1.1 : Flowchart of Homey System

1.5.2 Dataset:

- **Data description of customers:**

Name
Contact Number
E-mail
Address
Password
Service Type: The type of service requested (e.g., Carpentry, Plumbing, Electrical, Painting, Engineering).
Budget: The customer's budget (in case of packages).
Location: The location where the service is needed.
Preferred Date: The preferred date for the service.
Comments: Additional comments or specifications provided by the customer.

- **Data description of workers:**

Name
E-mail
Password
Age
Contact Number
National ID
Address
Job: (e.g., Carpenter, Plumer, Electrician, Painter, Engineer).

- **Data document:**

Data Collection Method: The data was gathered through the "Homey" application. Customers fill out a form detailing their service requirements and other related information. The data is then stored in a database for processing and matching with suitable service providers. Also workers can fill the form designed for whom, so their data stored in database

The data was collected through the "Homey" application, where users submit requests for various services such as carpentry, plumbing, electrical work, painting, and engineering. Users fill out a form specifying their requirements, location, and preferred date for the service.

Data Quality: The data undergoes regular validation checks to ensure accuracy and completeness. Incomplete entries are flagged and reviewed. Duplicates are identified and removed to maintain the integrity of the dataset.

Limitations: The data may contain biases due to self-reporting. Some customers may overestimate or underestimate their budget or service requirements. Additionally, the data is limited to customers who have access to and are willing to use the " Homey " application.

Considerations: When analyzing the data, consider the varying levels of detail provided by different customers. Some fields, such as comments, may contain subjective or unstructured

information that requires careful interpretation. The dataset reflects the demand for services within the user base of " homey " and may not be representative of the wider market.

1.6 Evaluation Plan and maintenance:

1. **User Feedback Mechanism:**

    a. Implement a feedback feature within the app to capture user suggestions and bug reports.
    b. Regularly review and analyze user feedback to identify areas for improvement.

2. **Performance Monitoring:**

    a. Utilize analytics tools to track app performance metrics such as app crashes, loading times, and user engagement.

    b. Set performance benchmarks and regularly assess the app's performance against these benchmarks.

3. **User Testing:**

    a. Conduct user testing sessions to gather insights on usability and functionality.
    b. Incorporate feedback from user testing to enhance the user experience and address any usability issues.

4. **Continuous Improvement:**

    a. Establish a process for continuous improvement, where updates and enhancements to the app are rolled out on a regular basis.
    b. Monitor app store reviews and ratings to gauge user satisfaction and make adjustments accordingly.

5. **Stakeholder Reviews:**

    a. Schedule periodic reviews with key stakeholders to gather feedback on the app's alignment with business goals and objectives.
    b. Use stakeholder input to prioritize future development efforts and ensure the app remains aligned with organizational priorities.

Chapter 2 (Software Analysis)

2.1 Introduction

Homey application is your essential tool for finishing. If you're a homeowner and you want to Finish or repair your building or part of it, our mobile application revolutionizes the way you finish this building because we have the most efficient workers in our application.

Imagine effortlessly comparing software features, estimating costs, and ensuring compatibility across different house finishing projects, all from your smartphone or tablet. With intuitive interfaces and powerful, Homey simplifies complex workflows, streamlines collaboration, and enhances efficiency throughout the house finishing process.

Trust Homey application for its accuracy, reliability, and easy experience. Whether you're renovating a single room or managing multiple projects, our application is your ultimate companion for achieving flawless house finishing results.

2.1.1 Problem Analysis and Motivation

Customers face problems in finding skilled, reliable and efficient workers to finish their houses and accessing services difficulty. Many clients face challenges in accessing skilled workers due to the lack of centralized platforms (apps) to search for diverse and suitable services for their needs. The application can help to analyze the quality of work done by different workers by collecting and analyzing customer reviews, ratings, and feedback. This can help customers to make informed decisions about which workers will be chosen. It also helps customers to compare the cost of different workers or the company’s economy packages and make informed decisions about which one to make. Customers can find workers or company's economic packages that are available to work on their project in a timely manner. This can be done by receiving message from worker or company states that he accepts or rejects this task after the customer chooses him. Software can help customers to communicate with workers or companies more effectively. This can help to ensure that the project is completed on time and to the customer's satisfaction.

Customer Acquisition Challenges for engineers that engineers struggle with reaching new clients and building a sustainable customer base. The app offers engineers a chance to reach a broader customer base and enhance business growth by providing their services to a larger pool of potential clients. Workers need a platform to access new and diverse job opportunities more quickly and effectively through providing them with available clients easily through the services that are requested from them through the application. It enables workers to improve utilization of their skills and expand their professional networks.

2.1.2 Scope of the project

Our project connects the workers and the clients together so that the client can obtain various finishing services and the worker can reach the clients quickly through the application. The project scope includes the following activities:

Research: The application will study everything related to the worker, the client, and the services they will need and how to provide them to the client.

Accuracy and Distinguish: The application will develop quick, inexpensive and easy methods of payment for worker and customer, it will also develop services and features that attract the customer. The application will save time and effort in searching for workers.

Marketing and promotion: Using digital and traditional marketing strategies to attract more customers and workers and increase awareness of the services provided.

User-Friendliness: The application is easy and simple for workers and customers to use throughout the different and easy interfaces in the application.

Permanent monitoring: Providing excellent customer service that includes effective communication with customers before, during, and after a service to ensure their complete satisfaction.

Development: Develop and maintain an application for Android and iOS that supports all the mentioned functions. Secure customers' personal data and information strictly in accordance with applicable laws and legislation.

The scope of the project is to provide comprehensive finishing, renovation and maintenance services for apartments and buildings, in addition to managing the process of connecting customers with workers in an effective manner that ensures quality work and complete customer satisfaction.

2.1.3 Target User Groups

Homey application targets a group of users who want to finish their apartments, shops, or whatever property they want to finish in a decent and distinctive manner, at an excellent cost, and to their satisfaction. Homey application targets the users through providing many services such as carpentry and plumbing that allow the user to use any of them for finishing alone, so the user can use the application and request a complete finishing service or request a separate service alone as he wants. Homey application also targets customers who want specific packages for property finishing, in addition to the advantage of tailoring their finishing packages themselves and choosing what they want at a special price for them. Homey application can attract customers who also want repair services in addition to finishing services. Our application also can provide post-finishing cleaning services for users who suffer from the problem of the place not being clean after finishing. Homey application users are not limited to those who want a finishing or repair service only, but also provides workers with available clients easily through

the services that are requested from them through the application. It also allows the workers to see all the tasks required for implementation, whether finishing or repair.

2.1.4 Definitions, Acronyms and Abbreviations

***1*- CS:** Customer service refers to support and assistance given before, during and after a service. It includes a wide range of activities.

***2*- OTP Verification:** A one-time password is used as part of an authentication process with the purpose of verifying the identity of a user to allow access to a web or mobile service.

***3*- Verification Code:** A numeric or alphanumeric code that is texted or emailed to users to verify their identity.

***4*- Wishlist:** all the things that you would like it in our application put it in your wish list.

***5*- Chatbot:** is a software application interface that is designed to mimic human conversation through text or voice interactions.

2.2 System Requirements

The "System Requirements" section outlines the critical components necessary for the successful development, deployment, and operation of the finishing. This section provides a detailed description of the project's sponsor, business model, business need, and business request, ensuring all stakeholders have a clear understanding of what is required to meet the project's objectives and deliver a high-quality, efficient, and user-friendly solution. These requirements form the foundation for the design and development phases, guiding the project to successful completion.

2.2.1 Project Sponsor

Project sponsor Omar Khalaf, a contractor at Manar Projects and Contracting, is responsible for providing financial support and resources from the project’s inception until its completion.

2.2.2 Business Model Canvas

Key Partners:

- Contractors and craftsmen
- Material suppliers
- Technology providers (for app development and maintenance)
- Marketing agencies

Key Activities:

- Development of the mobile application and website
- Coordination of service requests and assignments
- Customer support and issue resolution
- Quality assurance and follow-up the service

Key Resources:

- Skilled craftsmen (both high-wage and medium-wage workers)
- Customer service representatives
- Development and IT team
- Financial resources

Value Propositions:

- High-quality and diverse finishing services
- Reliable and efficient customer support
- Transparent pricing with options to choose service levels
- Post-service follow-up to ensure customer satisfaction

Customer Relationships:

- Personalized service through dedicated customer support
- Regular follow-ups and feedback collection
- Easy-to-use interface for seamless interaction

Channels:

- Mobile application (Android and iOS)
- Website >>
- Customer service hotline

Customer Segments:

- Homeowners seeking renovation and finishing services
- Real estate developers requiring finishing for properties
- Interior designers coordinating with craftsmen
- Engineers supervise multiple units

Cost Structure:

- Labor costs for craftsmen and customer service
- Technology development and maintenance expenses
- Marketing and advertising expenses

- Administrative Cost

Revenue Streams:

- Commission for each service
- Commission of Special packages for customers

2.2.3 Business Need:

The current market lacks a comprehensive platform that connects customers with skilled craftsmen and provides robust customer support and service follow-up. The objectives are to develop a user-friendly application for service requests and management, connect customers with high-wage and medium-wage craftsmen, and provide continuous support and follow-up. Benefits include increased operational efficiency, higher customer satisfaction and retention, and expanded market share and revenue growth.

2.2.4 Business Request:

The business request for the Homy project is This business request aims to address the challenges faced by customers when seeking finishing services, including full and partial finishing, and maintenance. We aspire to provide a comprehensive solution that ensures customers have a seamless and efficient experience at competitive prices, with high-quality finishes that cater to all tastes, easy communication, and prompt service delivery.

2.2.5 Business Value:

The Homey project has the potential to provide numerous benefits for field of finishing, including:

It will connect customers with reliable finishing and maintenance service providers. By offering a variety of service packages and streamlining the process of requesting and receiving services, the application can make it easier and more convenient for customers to get the work they need done.

2.2.5.1 Measurability/Measuring Success

To assess the success of the "Homy" project, a set of criteria can be used, including:

1. Ease of Service Request:

- Number of service requests submitted through the app.
- Speed of processing service requests.
- User satisfaction with the ease of using the app to request services.
- User ratings of the app usage experience.

2. Quality of Services Provided:

- User satisfaction with the quality of services provided.
- User ratings of quality.
- Number of complaints filed by users.
- Complaint resolution rate.

3. Cost Efficiency:

- Prices of services offered through the app compared to market prices.
- User satisfaction with service prices.
- App operation and maintenance costs.

4. Customer Satisfaction:

- Customer retention rate.
- Service recommendation rate to others.
- Positive and negative customer feedback.

5. Market Impact:

- Number of finishing and maintenance companies registered on the platform.
- Transaction volume through the platform.
- Platform awareness among consumers.

In addition to these quantitative criteria, it is also important to collect qualitative feedback from users. This can be done through surveys, interviews, and focus groups.

2.2.5.2 Benefits/Implications

The Homey project has the potential to provide numerous benefits for field of finishing, including:

- **Easy to find a reliable finishing company**: The project will provide a platform for homeowners to easily find and connect with reputable finishing companies in their area.
- **Easy way to request finishing and maintenance services through the app:** The project will provide a convenient and user-friendly way for homeowners to request finishing and maintenance services through the app.
- **Price transparency:** The project will provide homeowners with transparent pricing for all finishing and maintenance services.
- **Easy communication:** The project will provide a platform for easy and quick communication between homeowners and finishing technicians and companies.
- **Fast service delivery:** The project will ensure that all services are completed on time and within budget.
- **High quality**: The project will ensure that all services are completed to a high standard of quality.

- **Customer satisfaction:** The project will prioritize customer satisfaction by providing excellent customer service.

2.2.6 Specific Problem or Limitation:

Challenges Facing the "Homey" Project

The "Easy Service Request through the App" project has the potential to provide numerous benefits, but it also faces several challenges that could hinder its success. These challenges can be categorized into internal and external factors:

Internal Challenges:

1. **Technical Challenges:**
    - Ensuring the app is user-friendly, stable, and secure.
    - Integrating the app with various service providers and payment systems.
    - Maintaining data privacy and security.
2. **Marketing and User Acquisition:**
    - Attracting a sufficient number of users, both service seekers and service providers.
    - Building a strong brand presence and gaining user trust.
    - Implementing effective marketing strategies to reach the target audience.
3. **Operational Efficiency:**
    - Efficiently managing service requests, dispatching technicians, and handling payments.
    - Maintaining high-quality service standards and ensuring customer satisfaction.
    - Effectively managing customer support and resolving issues promptly.

External Challenges:

1. **Market Competition:**
    - Existing competitors in the market are offering similar services.
    - Differentiating the app and providing a unique value proposition.
    - Adapting to changing market trends and customer preferences.
2. **Regulatory Compliance:**
    - Adhering to relevant regulations and industry standards.
    - Obtaining necessary licenses and permits for operation.
    - Ensuring data privacy and protection in accordance with regulations.

3- **Consumer Behavior and Adoption:**

    - Encouraging users to adopt the app and make it a habit for service requests.
    - Building trust and confidence in the app's reliability and security.
    - Educating users about the benefits of the app and changing their behavior.
    - Customer interaction with technicians outside the application

2.3 Feasibility Study

2.3.1 Executive Summary

The executive summary briefly explains the business plan. We recommend completing the summary only after finishing the entire business plan.

Company Name: Homey

Legal Structure: Limited Liability Company (LLC), Sole Proprietorship.

Company Status: New Company

- **Pre-Operation Start Date**: 1/10/2023
- **Pre-Operation Period**: 3-4 months
- **Operation Start Date**: 1/7/2024

Company Activity Classification: Commercial

- **Operations, Products, Services, and Basic Needs:**

The company offers software based on Homey technology a modern technology designed to enhance finishes process. Our company aims to launch an application that provides a seamless and realistic virtual experience for home finishing, allowing clients to visualize and plan their home projects in a virtual environment before implementation. This technology makes the home finishing process more efficient and user-friendly.

- **Project Workflow:**

1. Prepare the feasibility study and present it to the funding entity.
2. Select the project area.
3. Determine financial capabilities.

Location: The project consists of a rented apartment from which the company is managed, communicating with clients and providing services.

- **Company Mission**

The company will provide software services to clients in the home finishing sector, by offering programs that simulate actual reality and turn it into virtual reality to facilitate the planning and execution of finishes projects. This allows clients to experience and modify their home designs virtually, ensuring satisfaction before the actual work begins

- **Company Tasks:**

Design products and applications: Create VR and Homey products and applications to enhance user experience, including smart glasses and other devices for virtual home tours

- **Training and education**: Provide training courses and educational programs to help users understand how to use these technologies and products for home finishing.

- **Research and development**: Conduct R&D to improve VR and Homey technologies, focusing on performance, cost, and error reduction.

- **Advertising and marketing**: Use marketing and advertising to promote products and educate the public about their benefits and usage.

- **Provide content and applications**: Offer applications related to VR and Homey, such as virtual home design, interior decoration planning,

- **Company Vision**

The company aims to be the first leading Arab company in the field of virtual reality and Homey applications for architectural finishes in the Arab region and worldwide, laying the foundation for localizing information technology and Homey industries in Arab countries.

- **Project Timeline:**

1. Obtain necessary licenses.
2. Launch the project and start marketing and advertising.
3. Monitor project operations and progress.
4. Begin the project establishment phase.

Marketing strategy

1. Understand Your Audience

Homeowners and Renovators: Target individuals who own homes or are actively involved in renovation projects.

Demographics: Consider age, income level, and geographic location.

Psychographics: Focus on their interests in home improvement, design trends, and sustainability.

2. Highlight Unique Selling Points

Customization: Emphasize the app's ability to customize and visualize finishing options (paint, flooring, fixtures).

Ease of Use: Highlight user-friendly interfaces for planning and executing finishing projects.

Cost Efficiency: Showcase how using the app can save money through smart choices and comparisons.

3. Craft a Compelling Message

Value Proposition: Clearly state how the app simplifies the finishing process and enhances home aesthetics.

Emotional Appeal: Connect with users' desires for a beautiful, personalized living space.

4. Choose Marketing Channels

- **Digital Marketing:**

Social media: Utilize platforms like Instagram and Pinterest for showcasing before-and-after transformations and DIY tips.

- **Paid Advertising:** Consider Google Ads for targeted keywords related to home renovation and Facebook Ads for demographic targeting.

- **Content Marketing:**

Blog: Publish articles on home improvement tips, trends in finishing materials, and success stories.

Video: Create tutorials on using the app, customer testimonials, and project showcases.

- **Email Marketing:**

Newsletter: Send out regular updates, tips, and promotions to subscribers interested in home improvement.

5. Partnerships and Influencers

Collaborate with Home Improvement Influencers: Partner with influencers who specialize in DIY projects or home renovation.

Partnerships with Contractors and Suppliers: Form alliances with local contractors, painters, and home improvement stores.

6. Offer Incentives

Free Trials or Demos: Provide initial access to premium features or a limited-time trial period.

Discounts and Special Offers: Offer discounts on app purchases or exclusive deals on finishing materials through partnerships.

7. Measure and Adjust

Analytics: Monitor user engagement metrics, app downloads, and conversion rates from different marketing channels.

Feedback: Collect user feedback through app reviews, surveys, and customer support interactions to improve features and user experience.

- **Sales strategy**

1. Understand Customer Pain Points and Needs

Research: Conduct surveys, interviews, or analyze app usage data to understand what drives users to seek a finishing home app.

Identify Pain Points: Highlight common challenges in home finishing projects such as decision-making, cost estimation, or finding reliable contractors.

2. Craft Your Value Proposition

-Unique Selling Points (USPs): Highlight what sets your app apart from competitors.

-Customization: Ability to visualize different finishing options.

-Cost Efficiency: Helps users make informed decisions to stay within budget.

-Ease of Use

Decision Stage

Sales Collateral: Provide case studies, testimonials, and comparison charts showing the app's benefits.

Action Stage

Closing the Sale: Provide clear pricing plans, subscription options, or purchasing pathways within the app.

Incentives: Offer discounts for annual subscriptions or bundle offers with finishing materials.

3. Sales Enablement

Training and Support: Ensure your sales team and customer support are well-trained on the app's features and benefits.

Feedback Loop: Gather customer feedback through surveys, reviews, and support interactions to continuously improve the app and sales process.

4. Partnerships and Alliances

Collaborate with Contractors: Form partnerships with local contractors, painters, or home improvement stores to offer bundled services or promotions.

- **Pricing strategy**

Developing a pricing strategy for a finishing home requires careful consideration of value perception, competitive landscape, and target market affordability. Here's a structured approach to creating an effective pricing strategy:

1. Understand Value Perception

Unique Value Proposition: Clearly define what makes your app stand out in terms of features, usability, and benefits compared to alternatives.

Customer Benefits: Highlight how using your app saves time, reduces costs, or enhances the quality of home finishing projects.

2. Set Pricing Levels

- Tiered Pricing: Create different pricing tiers (e.g., basic, standard, premium) based on the depth of features or usage levels.

-Value-Based Pricing: Align pricing with the perceived value of the app's benefits and savings it provides in home finishing projects.

3. Consider Pricing Strategies

- Penetration Pricing*:* Initially set lower prices to gain market share quickly and attract early adopters.

- Bundle Pricing: Offer discounted pricing for bundles that include additional services or products related to home finishing.

-Profit Margin: Determine the desired profit margin and adjust pricing accordingly to achieve profitability goals.

4. Communicate Value Clearly

Transparent Pricing: Clearly communicate what each pricing tier includes to avoid confusion and justify the value offered.

• Market characteristics

1-Environmental Consciousness: Increasing interest in sustainable and eco-friendly home finishing options.

2. Market Trends

-Personalization: Demand for customizable solutions that cater to individual tastes and preferences.

-Sustainability: Preference for eco-friendly materials and energy-efficient solutions in home renovations.

-Remote Work Influence: Increased focus on home environments due to the rise of remote work, leading to more investment in home improvements.

3. Regulatory Environment

-Environmental Standards: Adherence to environmental standards for materials and practices in home finishing.

4. Seasonality

-Peak Seasons: Certain times of the year may see increased demand for home renovation projects (e.g., spring and summer).

-Holiday Influence: Seasonal factors such as holidays affect consumer spending on home improvements.

- **Market needs**

1. Sustainability and Eco-Friendly Options

Problem: Increasing demand for sustainable and eco-friendly options in home renovations.

Solution: Include features that highlight environmentally friendly materials, energy-efficient solutions, and sustainable practices to appeal to eco-conscious users.

2. Security and Trust

Problem: Concerns about data security and trustworthiness of online platforms for home improvement.

Solution: Implement robust security measures, transparent policies, and reliable customer support to build trust and confidence among users.

- **Market trends**

The volume of investments in real estate finishing

1- Competitive advantage/key to success

The competitive advantage it offers is:

1. Integrated Project Management and Coordination

Unique Feature: Provide robust project management tools within the app, such as task scheduling, budget tracking, contractor communication, and milestone tracking.

Benefit: Streamlines the entire home improvement process, from planning to execution, ensuring projects stay on schedule and within budget.

2. User-Friendly Interface and Accessibility

Unique Feature: Design a highly intuitive and user-friendly interface that is accessible across various devices (mobile, tablet).

Benefit: Enhances usability and convenience for users, enabling seamless navigation and interaction with the app's features anytime and anywhere.

3. Data Security and Privacy Assurance

Unique Feature: Implement robust security measures and transparent data privacy policies to safeguard user information.

Benefit: Builds trust and confidence among users, reassuring them that their personal data and project details are protected while using the app.

- **The risks facing the company and how to overcome them**

1. Technical Challenges

Risk: Potential bugs, glitches, or performance issues in the app.

Strategy: Conduct thorough testing phases to identify and fix bugs before launch

2. User Acquisition and Adoption

Risk: Difficulty in attracting and maintaining a sufficient user base.

Strategy: Implement a robust marketing strategy social media),

3.Data Security and Privacy Concerns

Risk: Potential breaches of user data leading to loss of trust and legal implications.

Strategy: Implement stringent security measures (encryption, secure authentication) to protect user data.

4. Customer Satisfaction and Reputation Management

Risk: Negative reviews or poor user experiences impacting brand reputation.

Strategy: Prioritize customer feedback and implement mechanisms (surveys, feedback loops) to gather insights for continuous improvement. Respond promptly to user concerns and issues, demonstrating commitment to customer satisfaction.

What is required to have the space and land location, if you want it?

• **Amount required for financing:** 1,380,000

• **Required land area:** Renting an apartment with an area ranging from 100 to 150 square meters

• **Funding source:** Obtaining funding from a financier for the project from the beginning to the end of project implementation

• **Reasons for requesting financing:**

- Benefit from facilitation services in obtaining the necessary licenses needed by the project.

-Obtaining financial financing that helps the project expand and provide good marketing that supports its spread inside and outside Egypt.

• **Founders' experiences**

The founder has the technical expertise and ability to manage the program.

Total number of employees (expected): 12 workers.

2.3.2 Organizational summary of the Project

As a new mobile application, we aimed at revolutionizing the way people access and manage a variety of services. The application connects users with service providers for skilled finishers and customers seeking their services. This feasibility study evaluates the organizational viability of our project.

Market Demand:

There is a growing demand for convenient and reliable service solutions that can be accessed through a single platform. Traditional methods of finding service providers often involve time-consuming searches and lack of reliability. The widespread availability of smartphones and advancements in technology have made it possible to connect users with service providers in a seamless and efficient manner. This growing demand presents a significant opportunity for us.

Investment:

The investment required for our project is significant in the service sector, as it involves developing a robust application and establishing partnerships with various service providers. However, the cost savings for users who no longer need to spend excessive time and effort searching for reliable service providers, combined with the convenience of having multiple services available through one app, provides a strong return on investment. Revenue will be generated through service fees, advertisements, and premium memberships.

Marketing Plan:

Our team has developed a comprehensive marketing plan to promote the application and reach its target audience. The application will be uploaded to major app stores and promoted through a variety of channels, including digital advertising, social media campaigns, and partnerships with influential bloggers and reviewers. The marketing plan includes strategies to raise awareness, drive downloads, and encourage user engagement and retention.

Labor Market:

The current labor market presents a favorable environment for the success of our project. The growing gig economy and the increasing number of freelancers and small businesses looking for new clients align well with our model.

The marketing plan developed by the team, combined with the high demand for accessible service solutions, increases the likelihood of success in the market.

Services:

1- Service delivery and workflow

Table 2.1 shows services with its description

Name	Description
Home finishing app	A mobile application that connects homeowners with professionals for home finishing services
Marketplace	Offering a marketplace for home finishing materials and products
Services	Glass & glazing, landscaping, Montal (decorative plasterwork), gypsum [work], metalwork, interior decorator, electrician, carpenter, painter, flooring, plumbing, masonry, and landscaping
Packages	Economy Package, Luxury Package, Super Luxury Package, Ultra Super Luxury Package

Assuming I get two orders for each service per month and three orders for each package per year, and assuming the average apartment area is 150 meters,

2.3.3 Market Analysis for an architecture finishing Service Mobile App

1. Market Overview and Size

The Metaverse market consists of four primary components:

- **Security, Payment, and Electronic Identity Systems:** This segment involves systems that ensure safety and manage transactions and identity within the virtual world.
- **Operating Systems and Infrastructure:** This includes essential infrastructures such as communication networks and operating systems.
- **Content Distribution and Discovery Platforms:** Platforms that facilitate the sharing and discovery of content, including 3D development platforms, visual search engines, and AI services.
- **Content and User Experiences:** The experiences and content generated by interactions within virtual worlds, which are then used to improve the infrastructure of the system.

Despite the financial and investment challenges faced by the Metaverse market in 2022, a McKinsey report indicated that investment interest in the Metaverse is expected to grow over time. The digital system could potentially achieve a market value of $4 to $5 trillion by 2030 across various sectors such as banking, education, healthcare, and tourism.

2. Impact of Market Changes

Changes in the market, such as interest rate fluctuations or supply and demand shocks, are seen as positive developments that motivate us to launch our project. These changes indicate an increased demand for our company's services and software.

3. Target Market Segments

Market Penetration and Share: Our project is new but not difficult to enter the market. We plan to gradually enter the market by reducing the price of our services to the lowest possible level while meeting all customer needs and maintaining constant communication to address any issues. The goal for the next five years is to expand and dominate the Egyptian market, particularly in the education and business sectors.

Market Share Growth Strategy:

1. Client Outreach: Engage with as many potential clients as possible to explain our services and software, demonstrating how they meet current and future needs and highlighting their economic benefits.

2. Post-Sale Support: Maintain ongoing communication with clients post-sale to ensure smooth operation and resolve any technical issues.

3. Client Referrals: Encourage current clients to market our software to other companies.

4. Sector Expansion: Target additional economic sectors such as education, industry, commerce, and tourism.

5. Social Media Presence: Create a company page on social media and market our software through influencers.

6. Funded Advertisements: Run sponsored ads to attract more potential clients.

7. Printed Marketing: Use business cards and other printed marketing materials to promote the company.

4. Competition

Since our company leverages Metaverse technology, we are new to the market with no direct competitors currently.

Barriers to Entry:

- High project costs and challenging import processes needed to recoup investments.

- Expensive project costs that young programmers cannot afford.

- Lack of specialized programming talent.

5. Customers

Current and Potential Client Types:

- Private Sector Companies: Especially those involved in import and export or any external transactions.

- E-Learning Centers and Online Course Providers

- Private Schools

Target Customer Characteristics: Medium to large companies and institutions in both the private and public sectors, as well as educational institutions and international companies capable of affording our services.

Trends: Increasing use of electronic programs and applications that facilitate remote communication, both officially within companies and institutions and personally among individuals. The use of applications like Zoom has surged post-COVID-19 and continues to be widespread.

6. Suppliers

Key Suppliers: The nature of our business does not rely on suppliers for service quality but rather on skilled labor, making supplier influence minimal.

Supplier Alternatives: Currently, there are no plans or alternatives for new suppliers, as the current suppliers meet all necessary criteria within the company's budget.

7. Market Entry Timing

Considering the positive market trends and the increasing demand for Metaverse-related services, now is an opportune time to enter the market. This strategic timing will allow us to capitalize on the growing interest and investment in virtual world technologies

2.3.4 SWOT analysis

Table 2.2 SWOT Analysis

Strengths	Weaknesses
1. Convenience: Users can manage their home finish from anywhere using their mobile devices, which is much more convenient than traditional methods. 2. Real-time updates: The application can provide various tasks, such as painting, flooring, installations, and many more, which makes it easier for homeowners to finish their homes in a faster and easier time. 3. Communication: Facilitates better communication between homeowners and workers through built-in messaging or notification systems, ensuring everyone is on the same page regarding preferences, changes and schedules. 4. Project Management: Helps manage budgets and schedules more effectively by providing task scheduling. 5. Feedback and Reviews: Enables users to provide feedback about services and contractors during the finishing process, which can help future homeowners make informed decisions. 6. Documentation: Serves as a digital record of the entire finishing process, including contracts, receipts, warranties, and before-and-after photos, which can be valuable for insurance purposes or future renewals. 7. Scalability: With the ability to expand into different types of projects (such as apartments and offices), the app can meet	1.User Adoption: Some homeowners, especially older or less tech-savvy individuals, may find it difficult to adopt and use a mobile app to manage home finishing tasks, and prefer traditional methods with which they are more familiar. 2. Reliability and Stability: Mobile applications can sometimes experience bugs, crashes, or connectivity issues, which can disrupt users' ability to effectively manage their home finishing projects. - Reliance on Connection: The effectiveness of the application may depend heavily on a stable Internet connection, which may be an issue in areas with poor connectivity or during times of network congestion. 3. Development and Maintenance Cost: Developing and maintaining a robust mobile app requires significant resources, including time, money, and ongoing support, which can be costly for small businesses or startups. 4. User Engagement and Retention: Keeping users engaged long-term can be difficult, especially after the initial excitement of using the app wears off. Continuous updates, new features, and effective customer support are essential to maintain user interest.

the needs of a broader audience beyond just homeowner	
Opportunities	Threats
1.Technological progress: Opportunities abound with technological advancement. Implementing these features can provide innovative solutions to make it easier for people to simulate renovations, customize spaces, facilitate communication, and save time and effort. 2. Collaboration with professionals: Partnerships with contractors and engineers can create opportunities for programs for integrated services within the application, which provides ease for the user to finish his home. 3. Subscription and Monetization: Offering premium features or subscription models with home improvement workers can create revenue streams and monetization opportunities for them, ensuring the app's sustainability and growth.	1.Competitive Market: The home improvement market is highly competitive, with many established players and new entrants constantly innovating. Competing and gaining market share can be difficult. 2. Negative user comments and reviews: Negative reviews or bad user experiences shared online can significantly damage an app's reputation and deter potential users from downloading or using it.

2.3.5 The Financial Plan

Funding Requirements:

The amount of financing needed to operate the business:

Investment cost	cost	Specifications (size, type)	quantity	Total cost
computers	200,000	Small size (apple – dell – hp)	8	200,000
Mobile devices	150,000	Latest models for testing (iPhone, android)	2	150,000
Server and cloud services	120,000		1	120,000
Internet connection devices	80,000	We or Vodafone	1	80,000
Office furniture and equipment	180,000	Four desks and chairs, and pantry equipment		180,000
Printing and design for marketing	150,000	For social media and others		150,000
Working capital	500000			500000
Total				1,380,000

Operation cost	2024	2025	2026	2027	2028
Development team salary	120,000	132,000	145,200	159,720	175,692
Host fees	150,000	165,000	181,500	199,650	219,615
Salaries and wages	500,000	550,000	605,000	665,500	732,050
rent	36,000	39,600	435,600	479,160	527,076
Advertising fees	15,000	16,500	18,150	199,65	219,61.5
Utilities	70000	77,000	84,700	93,170	102,487
Total	756,000	980,100	1,470,150	1,617,165	1,778,881.5
Present value	687,272	810,000	1,104,545.455	1,104,545.455	1,104,545.455

present value of operation cost = 4,810,908.365

Result

Revenue	2024	2025	2026	2027	2028
Service provider fees	1,179,732	1,415,678.4	1,698,814.08	2,038,576.896	2,446,292.2752
Advertising income	500,000	600,000	720,000	864,000	1,036,800
Total	1,679,732	2,015,678.4	2,418,814.08	2,902,576.896	2447329.0752
Present value of revenue	1,527,029	1,665,849.9	1,817,291.4	1,982,499.07	1,519,598.8

present value of revenue= 8,512,268.17-4,810,908.365-1,380,000 = 2,321,359.805

Tax= zero

Payback period 2 years

ROI=2,321,359.805/1,380,000%100=168%

2.4 The Interviews

we conducted several interviews with some technicians to understand some of the problems they face when using the application, to learn about the workflow for each service, and to get their opinion on the development of an application for finishing services. The interviews were conducted by phone and were with technicians in various fields to get useful ideas for implementing the application and avoiding problems.

Interview 1

Person interviewed: **Kamal Hassan**

Director**: plumbing technician**

Interviewer: **Asmaa Khalaf**

Summary of interview**: She asked some questions like:**

1. **Have you ever used an electronic application to receive orders? No**

2. **Is there an expected demand for an electronic application for finishing services? Yes, due to technological advancements.**

3. **What are the challenges you face when using an application to provide finishing requests to a technician? Lack of internet in some places where the technician is present.**

4. **What are the procedures for implementing the service? First, the place will be inspected, then the requests will be written for the customer and the start date of work will be agreed upon.**

5. **Do you need notifications from the app about the offered requests? I prefer to be contacted by customer service because the internet is not always available.**

Interview 2

Person interviewed: Adel Abdelmassih

Director: electrician

Interviewer: Asmaa Khalaf

Summary of interview: she asked some questions like:

1. **Have you ever used an electronic application to receive orders? No**

2. **Is there an expected demand for an electronic application for finishing services? Yes, due to the speed of communication.**

3. **What are the challenges you face when using an application to provide finishing requests to a technician? customer information is incorrect.**

4. **What are the procedures for implementing the service? First, the place will be inspected, then the requests will be written for the customer and the start date of work will be agreed upon.**

5. **Do you need notifications from the app about the offered requests? yes.**

Interview 3

Person interviewed: Kamal Anwar

Director: carpenter

Interviewer: Asmaa Khalaf

Summary of interview: she asked some questions like:

1. **Have you ever used an electronic application to receive orders? No**

2. **Is there an expected demand for an electronic application for finishing services? Yes, due to the ease of receiving orders.**

3. **What are the challenges you face when using an application to provide finishing requests to a technician? I don't understand how to use electronic applications.**

4. **What are the procedures for implementing the service? First, the place will be inspected, then the requests will be written for the customer and the start date of work will be agreed upon.**

5. **Do you need notifications from the app about the offered requests? yes.**

Interview 4

Person interviewed: Samih Mofdy

Director: ceramics artist

Interviewer: Asmaa Khalaf

Summary of interview: she asked some questions like:

1. **Have you ever used an electronic application to receive orders? No**

2. **Is there an expected demand for an electronic application for finishing services? Yes, because it will increase orders and let customers know about the technician.**

3. **What are the challenges you face when using an application to provide finishing requests to a technician? using the application will be difficult at first.**

4. **What are the procedures for implementing the service? First, the place will be inspected, then the requests will be written for the customer and the start date of work will be agreed upon.**

5. **Do you need notifications from the app about the offered requests? yes.**

Questionnaires

For the customer:

- **Do you prefer using technology to request services (like a finishing technician or a finishing company, etc.)?**
- **What are the reasons that make you prefer using electronic services?**
- **What are the reasons that make you satisfied with the service?**
- **What are the reasons that make you dissatisfied with the service?**
- **Have you ever dealt with a technician through an app?**
- **What feature would you like to see in the app that would add value or benefit for you?**
- **What problems do you face with technicians?**
- **Do you have difficulty finding reliable technicians?**

- **How do you prefer to communicate with the technician when requesting a service (via app or traditional methods)?**
- **How do you trust an app for requesting a service?**
- **What factors make you trust a technician?**
- **Do you prefer to pay in cash or electronically?**
- **If you prefer cash payments but learn about the benefits of online payment, would you change your mind?**
- **Do you usually have disagreements with the worker over service pricing?**
- **What method of communication do you prefer between you and the worker after requesting the service through the app (in-app chat or phone calls)?**
- **What problems do you face with finishing services?**

For the worker:

- **How old are you?**
- **If you were offered work through the app, would you accept it or not?**
- **If you wouldn't accept it, can you tell us the reason for the refusal?**
- **What would make you trust our app?**
- **What problems do you face with customers?**
- **Do you prefer to receive your money in cash or is electronic payment okay?**
- **If you prefer cash but learn about the benefits of receiving money electronically would you change your mind?**
- **Do you usually have disagreements with the customer over service pricing?**
- **How do you determine the pricing of the service?**
- **What would you add to our app by working with us?**
- **If you have work with us and also have work elsewhere, which would you choose?**
- **As a technician, would you use the app to request other services for yourself, friends, or family?**
- **What guarantees us that you won't deal with the customer outside the app?**
- **Do you have a mobile phone?**
- **What is your level of proficiency in using apps?**

Details notes:

- **Some clients cannot communicate with workers when they want to finish their apartments**
- **There are also problems of incompatibility between them regarding the price, as the application helps prevent there being no compromise between the client and the worker or engineers**
- **Likewise, some workers are content with working for relatives and friends and do not have success in dealing with strangers to find work that is compatible with them.**

- **Many customers do not have confidence in workers, so the application will address this point**

2.5 The Definition of Requirements

2.5.1 Functional Requirements:

Functional requirements specify specific functions or capabilities that the system must have, such as the ability to allow customers to order finishes, select skilled craftsmen, schedule appointments, and make payments. The system should enable artisans to accept or reject work requests. Additionally, the system should facilitate customer support by allowing users to report issues, ask questions, and receive assistance through an integrated chatbot for instant responses. It should also include a follow-up mechanism where representatives ensure that the service is completed to the customer's satisfaction. Moreover, the system must offer personalized service packages and special offers to customers. It also offers packages with appropriate and different prices depending on the customer’s needs.

2.5.2 Non-Functional Requirements

Non-functional requirements describe how a system performs a specific function rather than the specific behaviors or functions of the system.

They represent the usability, reliability, performance and security of the system.

The application will be user friendly, secure against unauthorized access, convenience for clients or workers, fast and reliable so you can rely on it when choosing any service.

2.6 Use Cases

Home Page Use Case:

Use Case: Home Page	ID: UC-1	Priority: High
Actor: User		
Description: This use case shows services that customers will choose.		
Trigger: the customer wants to choose services he needs. Type: External		
Preconditions:1-the customer has access to the internet and devices capable of accessing the service system application. 2-When the customer clicks on the word “Start” on the first page, the homepage will appear		
Normal Course: 1-in the top navigation bar there is a cart button that will display chosen services, and a notifications button will display customer’s notification. 2-there is a search button that customers use to search about services. 3-in the second section there is a list of services a customer can click on the service he wants. 4-in the third section the user can access his account as a worker. 5-at the bottom of the page there is a navigation bar which has options (home page - favorite page -economic -chat bot-setting).		
Alternatives Course: On other pages there is a navigation bar. If the user clicks on the home page option he will go back to the home page.		
Postconditions: the customer will navigate to the page he wants.		
Exceptions: 1- If the customer chooses the wrong service that he does not want. 2- if the customer clicks the wrong button that he doesn't want. 3- if the customer writes something wrong in the search bar.		

Summary Inputs	Source	Outputs	Destination
the words which the user writes in the search bar and The click the customer does.	Customer	the page which the customer wants.	the system

workers of the service use case:

Use Case: workers of the service page	ID: UC-2	Priority: High
Actor: Customer/ Client		
Description: Customer chooses a worker from available workers to request for a service.		
Trigger: Customer presses on any service at the home page. Type: External		
Preconditions: The customer must select one service from all available services.		
Normal Course: When the customer chooses the worker he/she wants he can click on the "cart" icon to add this worker in this service in the cart to request for the service. He can click on the "Favorite" icon to add this worker in the Favorite page .		
Alternatives Course: The customer chooses a worker but notifies that he isn't available at that time the customer chooses another one.		
Postconditions: if the customer chooses the “add to cart” icon, he adds this worker and service to the cart. If the customer chooses the “favorite” icon, he adds this worker to the favorite page.		
Exceptions: The customer clicks on the "cart" icon of a worker he doesn't want to request. The customer adds the wrong worker to the Favorite page.		

Summary Inputs	Source	Outputs	Destination
The click the customer does.	Customer	The worker is added to the cart or the Favorite page.	Database of the app

cart use case:

Use Case: cart page	ID: UC-3	priority: high
actor: customer		
description: this use case describes what user action can do in his cart.		
trigger: when the user clicks on the cart icon in the home page. type: external		
preconditions: In the home page screen, there is a cart icon when the user clicks on it, the cart page will appear.		
normal course: the user sees which services he adds and who will do it. the user can add this worker to favorite worker This can be done through clicking on the favorite icon. if the user wants to delete the service, click on delete icon. the user confirms the services in this cart.		
alternative course: After choosing the worker to do service, click on add to cart. the cart page will appear. the user show services the user can delete workers from cart or add workers to favorite worker		
postcondition: the message states do you continue as guest or login.		

Exceptions: the user doesn't add services to this page ,the page will be empty. the user by mistake deletes the worker or adds him to the favorite worker			
summary input	sources	outputs	destinations
The click the customer does.	Customer	login page	Database of the app

login use case:

use case: login	ID: UC-4	priority: high
actor: customer		
description: this use case describes how the user will login.		
trigger: the user want login to continue using the app and getting more access type: external		
preconditions: after the user confirms his order in the cart page.		
normal course: the user enters his email and password then clicks in login. the app will check if the user is valid or not. if the user is valid, the form page will display.		
alternative course: the user clicks on the option edit profile the setting page. the user must login before adding workers to the favorite page.		
postcondition: the form page will appear if the user clicks on the login button and the user is valid.		

exceptions: if the user tries to login and doesn't have an account or enters the wrong password or email, the message will appear saying there is something wrong in the password or email. if the user doesn't enter his email or password, the message will appear saying the field is required.			
summary input	sources	outputs	destinations
personal information	user	the form page	Database of the app

sign up use case:

use case: sign up	ID: UC-5	priority: high
actor: customer		
description: this use case describes how the user will register an account.		
trigger: the user want register an account for the first time to continue using the app and getting more access type: external		
preconditions: When the customer clicks on create a new account on the login page, he will be taken to the sign up page		
normal course: the user enters his personal data then clicks in sign up. The app notifies the customer has created an account and displays the form page.		
alternative course: if the user does not have an account and click on option edit profile in the setting page or try to add workers to the favorite page. The message appears to state the user must login or sign up.		
postcondition: the customer details and data will be stored in firebase. the customer has a new account, can access features of the service system, and can be identified as a registered user.		

the form page will appear if the user clicks on the sign up button
exceptions: The app may make errors (If incomplete data is entered, a problem will appear, If you enter a Gmail that already exists, an error will appear and If the password conditions are not met, a problem will appear) The customer may enter false information.

summary input	sources	outputs	destinations
personal information	user	New Account – form page will appear	Database of the app

form of services use case:

use case: form of services	ID: UC-6	priority: high
actor: customer		
description: this use case describes the form which the user fills to complete his order.		
trigger: after the user login he wants to fill to complete his order. Type: external		
preconditions: after the user clicks on confirm button in the cart page and then login.		
normal course: the user enters his personal data such as his address, phone, etc. After he completes his information, he clicks the payment button, and the payment page will appear		
alternative course: When the customer chooses a specific service, clicks on the service, presses confirmation, and then login the form page will appear.		
postcondition: the customer details and data will be stored in firebase. the payment page will appear.		
exceptions: 1-If the customer enters incorrect data a problem will occur. 2-If you enter incomplete information, an error will appear.		

summary input	sources	outputs	destinations
personal information	user	payment page will appear	Database of the app

payment use case:

use case: Payment for services	ID: UC-7	priority: high	
actor: customer			
description: Customer pays for services he registers.			
trigger: Customer presses on the "Payment" button in the services form page. type: external			
preconditions: Customer registers for a service form.			
normal course: Customer must choose if he wants to pay cash or through fawry service then click on "Execute the request". A message appears that the request is done then he returns back to the home page.			
alternative course: Address of the customer is wrong or unavailable. The user must edit his personal information in the form that registers the service from it and click on payment button			
postcondition: A message appears that the request is done then he returns back to the home page.			
exceptions: Customer chooses wrong option he doesn't want Wrong or unavailable address of the customer			
summary input	sources	outputs	destinations
Payment option	Customer/Client	Message of Payment is done and the home page will appear.	Database of the app

favorite worker use case:

use case: favorite worker ID: UC-8 priority: high			
actor: customer			
description: this use case describes what user action can do in a favorite worker page.			
trigger: when the user clicks on the favorite icon in the home page. type: external			
preconditions: in the home page screen, there is a favorite icon when the user clicks on it if the user login in, the favorite worker page will appear. or the user must login and then click on the favorite icon.			
normal course: the user sees workers he added to this page. the user can delete this worker from favorite worker This can be done through clicking on the delete icon. if the user wants to add a worker and the service to his cart click on the cart icon. In this page there is a navigation bar which options go to the home page, chat bot and economic packages page the user can choose between those options.			
alternative course: After choosing the worker to do service, click on the favorite worker icon if the user is logged in, the favorite worker page will appear.			
postcondition: the customer's favorite worker will be stored in a firebase. the home page appears after the user clicks on the home page icon.			
exceptions: the user doesn't add workers to this page, the page will be empty. the user by mistake deletes the worker or adds him to the cart.			
summary input	sources	outputs	destinations
The click the customer does.	customer	back to home page	Database of the app

Reservation of economic package use case:

use case: Reservation of economic package ID: UC-9 priority: high			
actor: customer			
description: Customer registers for the economic package			
trigger: Customer presses on button "Show" in the packages Home type: external			
preconditions: Customer chooses the economic package and then login			
normal course: When the customer chooses the economic package, he fills a form, he enters his information such as his name, address, mobile number and upload a picture of the building he wants to finish then click on "Register Now" to request for this package. A message appears that customer service will communicate with him then he returns back to the packages home page.			
alternative course: The customer clicks on the "Show" button for the wrong package he doesn't want: He goes back to the packages home page and chooses the package he wants.			
postcondition: Customer registers for the package A message appears that customer service will communicate with him then he returns back to the packages home page.			
exceptions: If the customer miswrites personal information The customer clicks on "Register Now" button for the wrong package he doesn't want			
summary input	sources	outputs	destinations
Customer's information	customer	Customer registers for the package go back to the home page of packages.	Database of the app

chatbot use case:

<table>
<tr><td colspan="4">use case: chatbot ID: UC-10 priority: high</td></tr>
<tr><td colspan="4">actor: user</td></tr>
<tr><td colspan="4">description: This use case describes how the user chats.</td></tr>
<tr><td colspan="4">trigger: The user clicks on the chatbot icon/button that is prominently displayed on the application.
type: external</td></tr>
<tr><td colspan="4">preconditions:
Internet Access: The user must have access to a stable internet connection.</td></tr>
<tr><td colspan="2">normal course: The use case starts when the user clicks the ”chat” tab on the navigation bottom in the home page.
-Then, the user navigates to the chat page, asks questions for any help and the chatbot provides instant responses based on the user’s inquiries.</td><td colspan="2">user’s inquires
Chatbot responses</td></tr>
<tr><td colspan="4">alternative course: Implement chatbots to handle customer inquiries, provide support, and answer frequently asked questions. These chatbots enhance customer service efficiency and reduce response time.</td></tr>
<tr><td colspan="4">postcondition: The chatbot provides accurate and relevant information or performs the desired action.</td></tr>
<tr><td colspan="4">exceptions: Technical Errors: Chatbots can encounter technical issues such as server errors, API failures, or connectivity problems.
Misunderstanding User Input: Chatbots may misinterpret user messages due to spelling errors, or ambiguous language.
Out-of-Scope Requests: Users may ask questions or make requests that fall outside the chatbot’s capabilities.
Context Loss: Chatbots may lose context during long conversations or when users switch topics abruptly.</td></tr>
<tr><td>summary input</td><td>sources</td><td>outputs</td><td>destinations</td></tr>
<tr><td>User queries</td><td>user</td><td>Chatbot response</td><td>Chatbot Knowledge Base</td></tr>
</table>

profile setting use case:

use case: profile setting	ID: UC-11	priority: high	
actor: user			
description: This use case describes how the user can customize and manage his profile setting.			
trigger: It occurs when the user clicks a profile icon that is displayed in the home page, then he goes to his profile page. type: external			
preconditions: The UI components (buttons, theme, language selection) should be properly designed and accessible.			
normal course: The use case starts when the user clicks the ” profile” icon on the navigation bottom in the home page. -Then, the user navigates to his profile page. -User accesses the profile settings section. -Users select the specific information they want to edit or manage (personal info, theme, language and so on). -User makes changes and saves the updated profile.			
alternative course: When the user cancels, revert the UI to the original profile data without saving any changes. - If there are network issues during data synchronization (e.g., poor connectivity, server downtime), handle them gracefully, show an error message and prompt the user to retry or check their internet connection.			
postcondition: Changes made in the profile settings should be saved to a backend (e.g., database).			
exceptions: Network issues (e.g., poor connectivity, server downtime) can occur by mistake the user selects an option he does not want.			
summary input	sources	outputs	destinations
The click the user does.	user	Changes made in the profile	Backend Storage

edit profile use case:

use case: edit profile ID: UC-12 priority: high			
actor: Registered Users			
description: This use case describes how the user can edit his personal information.			
trigger: It occurs when the user clicks an edit profile button that is displayed in the setting page. type: external			
preconditions: The user must be logged in to the system with authorized access to their profile information. ensure that only authenticated users can edit their profiles. The user's profile data (such as name, contact details, preferences) must already exist in the system.			
normal course: User selects the specific information they want to edit. User makes changes and saves the updated profile.			
alternative course: If the user cancels the changes, the system retains the original profile information.			
postcondition: The user's profile information is updated in the system. The user receives confirmation of successful changes.			
exceptions: Users may enter invalid or incorrect data Technical issues (e.g., server downtime, database errors) can prevent successful profile updates Data corruption, incomplete updates, or partial changes may occur during the editing process**.** Profile Validation Failures: Certain rules or constraints (e.g., password complexity requirements, minimum character length) may not be met.			
summary input	sources	outputs	destinations

user's personal information	user	Confirmation message of successful profile updates.	Backend Storage

OTP use case:

use case: OTP	ID: UC-13	priority: medium	
actor: Registered Users			
description: this case contains a verification code from the user's phone to be authenticated			
trigger: customer presses on the "Login" button after he typed his email and password type: external			
preconditions: Users log into the application			
normal course: after the user is already registered, then the OTP will be sent to the user's phone. After the user enters the OTP he will press " submit " button .			
alternative course: if the user didn't enter the correct OTP, the system will resend it according to the request of the user			
postcondition: after the user enters the OTP, the screen of "successfully verified" will appear.			
exceptions: if the user doesn't register in the application, he can't choose the option of two step verification.			
summary input	sources	outputs	destinations
OTP number	user	Verified or not	OTP page

Evaluation use case:

use case: evaluation ID: UC-14 priority: high.			
actor: Registered customer			
description: how the customer will evaluate the worker's performance and speed of delivery and finishing service.			
trigger: client presses on the "evaluation" symbol which is displayed in the settings page. type: external			
preconditions: Users registered in the application and ordered a service then they want to evaluate it			
normal course: users find four sections of evaluation (features, problems, worker's performance and speed of delivery and finishing service.), they type their evaluation whether good or bad and then evaluations will be sent to appear in the profile of workers and on the services in the form of stars.			
alternative course: after the worker finishes his task, he asked the customer to evaluate worker's performance			
Postcondition: All evaluations will be sent to the profile of workers and the services.			
exceptions: if users don't have an account, they can't evaluate a worker or a service.			
summary input	sources	outputs	destinations
customer's evaluation	customer	Message states "the evaluation was sent successfully."	application's database

worker’s home page use case:

use case: worker’s home page ID: UC-15 priority: high			
actor: Registered worker			
description: This use case describes the home page of the worker.			
trigger: It occurs when the worker login to the system. type: external			
preconditions: The user must be logged in to the system.			
normal course: in this page the worker can see his notification by clicking notification icon and also can see the number of orders he asked to do. In the second section there is a list of orders the worker receives, the worker can see order’s details by clicking “show details” in order. at the bottom of the page there is a navigation bar which has options (home page -history -chat bot setting).			
alternative course: On other pages there is a navigation bar. If the worker clicks on the homepage option he will go back to the home page.			
postcondition: the worker will navigate to the page he wants.			
exceptions: by mistake navigate to the page he does not want.			
summary input	sources	outputs	destinations
The click the worker does.	worker	the page which the customer wants.	the system

order’s details use case:

use case: order’s home page	ID: UC-16	priority: high	
actor: Registered worker			
description: This use case describes the order's details page.			
trigger: It occurs when the worker clicks on ”show details” in order displayed in the homepage. type: external			
preconditions: The user must be logged in to the system.			
normal course: in this page the worker can see the details of order and decide to accept or reject.			
alternative course: the worker wants to review the details of the order to decide to accept or reject.			
postcondition: the system sends the decision of the worker as notification to the customer.			
Exceptions: by mistake the worker accepts or rejects the order.			
summary input	sources	outputs	destinations
The click the worker does.	worker	notification to the customer	the system

worker's form use case:

use case: worker's form	ID: UC-17	priority: high	
actor: Registered worker			
description: This use case describes the form page of the worker.			
trigger: It occurs when the worker creates an account. type: external			
preconditions: The user must be logged in to the system.			
normal course: the worker fills out this form then sends this form.			
alternative course: the worker wants to joint to the app, he must sign up and fill this form.			
postcondition: message states "the request sent successfully".			
exceptions: Users may enter invalid or incorrect data Technical issues (e.g., server downtime, database errors) can prevent successful send form.			
summary input	sources	outputs	destinations
worker's personal information	worker	message states "the request sent successfully".	the system's database.

2.7 Management Plan

Introduction

The management plan for the mobile app service for home finishing outlines the key components necessary to successfully manage the project from inception to completion. The plan includes defining project milestones, resource allocation, scheduling, and risk management strategies. This structured approach ensures that all project aspects are addressed efficiently, leading to the timely and cost-effective delivery of the app.
The Project Management Plan relates to how you organize and manage the operations of your application to provide finishing and maintenance services. It also aims to organize all operational and administrative aspects to ensure the provision of high-quality services to customers, including dealing with workers, ensuring quality, achieving customer satisfaction, and maintaining the required service levels.

2.7.1 Current state of the project:

The current state of the project highlights the process made so far, including the completion of documentation, UI/UX, and the start of implementation.

2.7.2 Phases:

The management plan for the application consists of a series of phases, each with specific tasks and objectives. The goal of each phase is to bring the project closer to completion and ensure that it meets the desired standards as shown in figure 2 , the phases include:

phase 1: Project initiation this phase involves Define project scope and Feasibility study.

phase 2: Planning this phase involves gathering requirements from stakeholders, roles, and communication channels that can be done (through Interviews with companies offline-Survey with customers and workers) Document functional requirements, Document non-functional requirements.

phase 3: System Design this phase involves create high level design, Break down system into components, design interfaces.

phase 4: implementations this phase involves writing code based on design specifications, Develop and integrate individual components, conduct code review and ensure requirements are met.

phase 5: Testing this phase involves Develop test plans based on requirements, Execute unit test to verify individual requirements, perform integration test, system test to validate entire system with requirements.

phase 6: Deployment this phase involves ensuring that the application is properly configured, tested, and securely released to the production environment.

phase 7: Maintenance this phase involves maintaining software and Maintaining Hardware.

phase 8: Closing this phase involves Project delivery and Project discussion.

2.7.3 Microsoft Project Screenshots

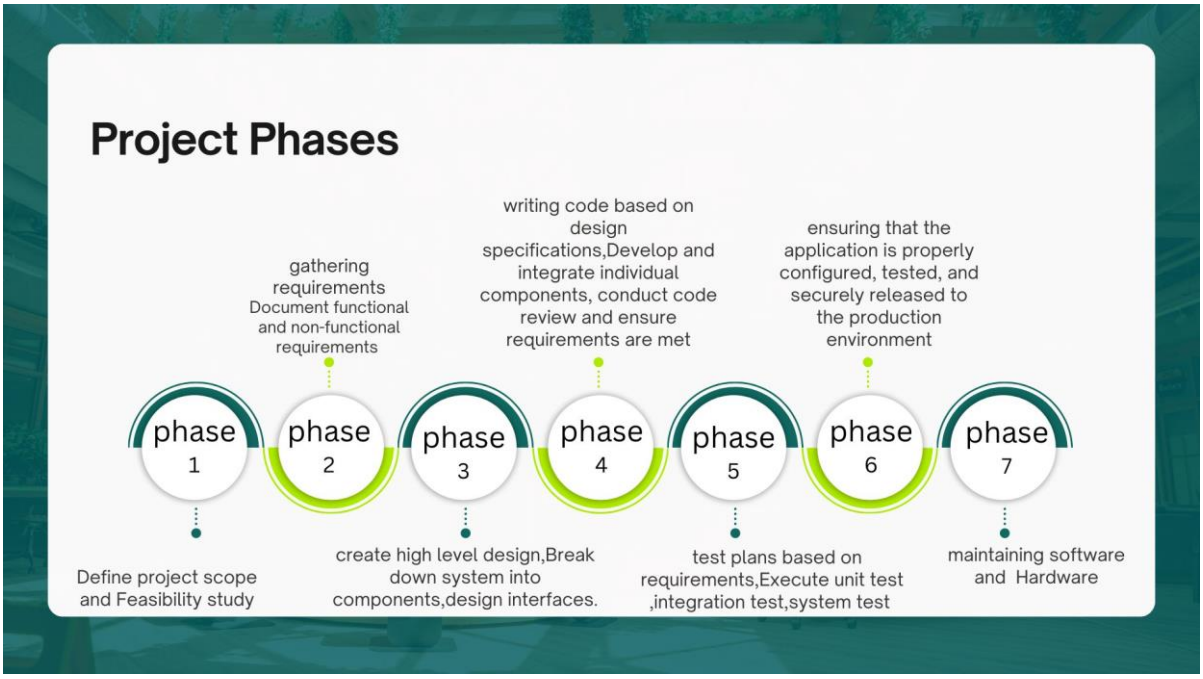


Figure 2.1 shows Project Phases

To demonstrate the management plan, below are the key screens from Microsoft Project that outline the project's timeline, task dependencies, resource allocation, and milestones.

1. Project Timeline and Milestones:

   Gantt Chart:

   a. Shows the project timeline, key milestones, and the duration of each task.

   b. Highlights the critical path and task dependencies.

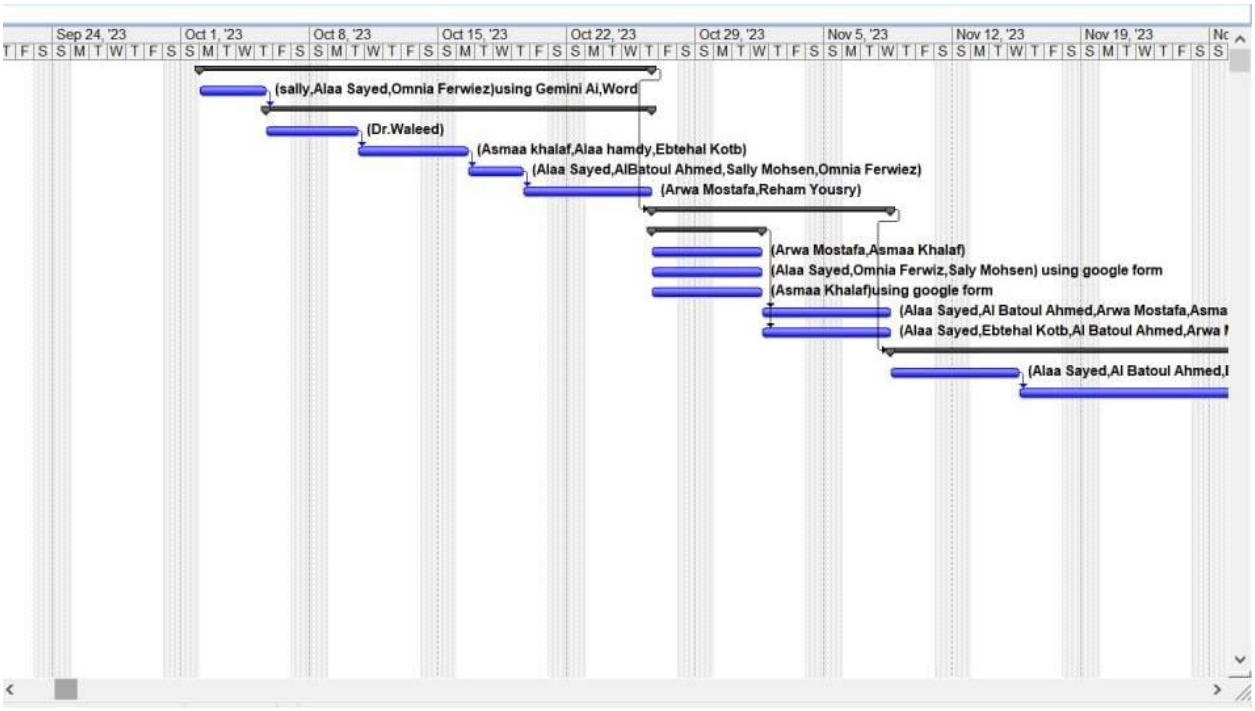


Figure 2-0-1 Gantt Chart Screenshot

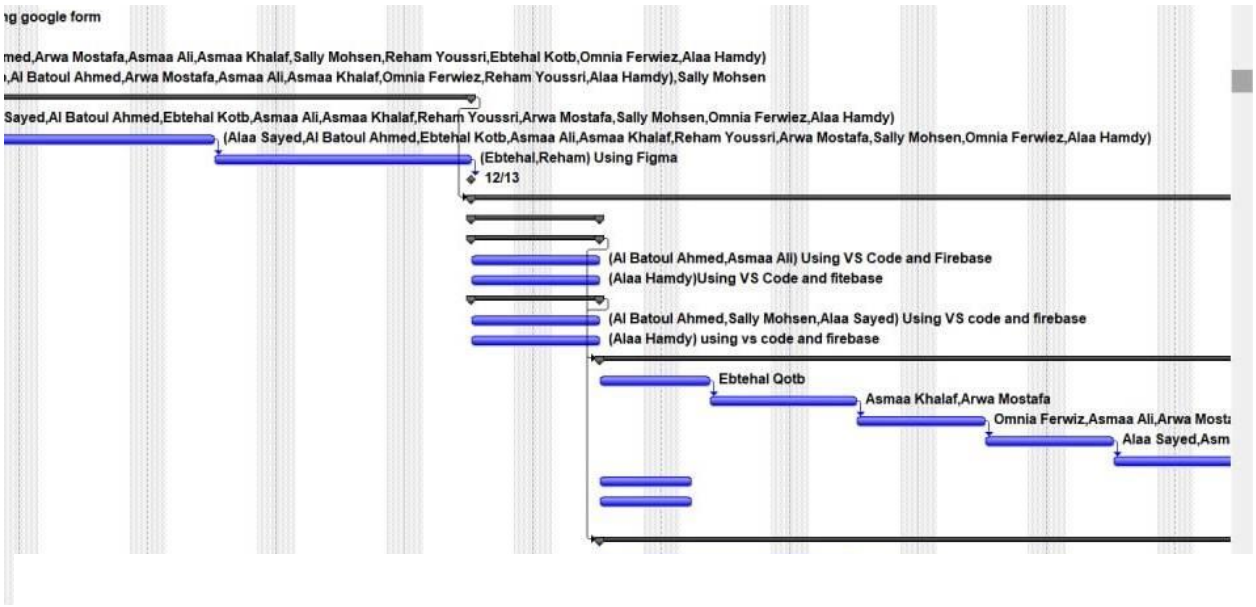


Figure 2-3 Gantt Chart Screenshot

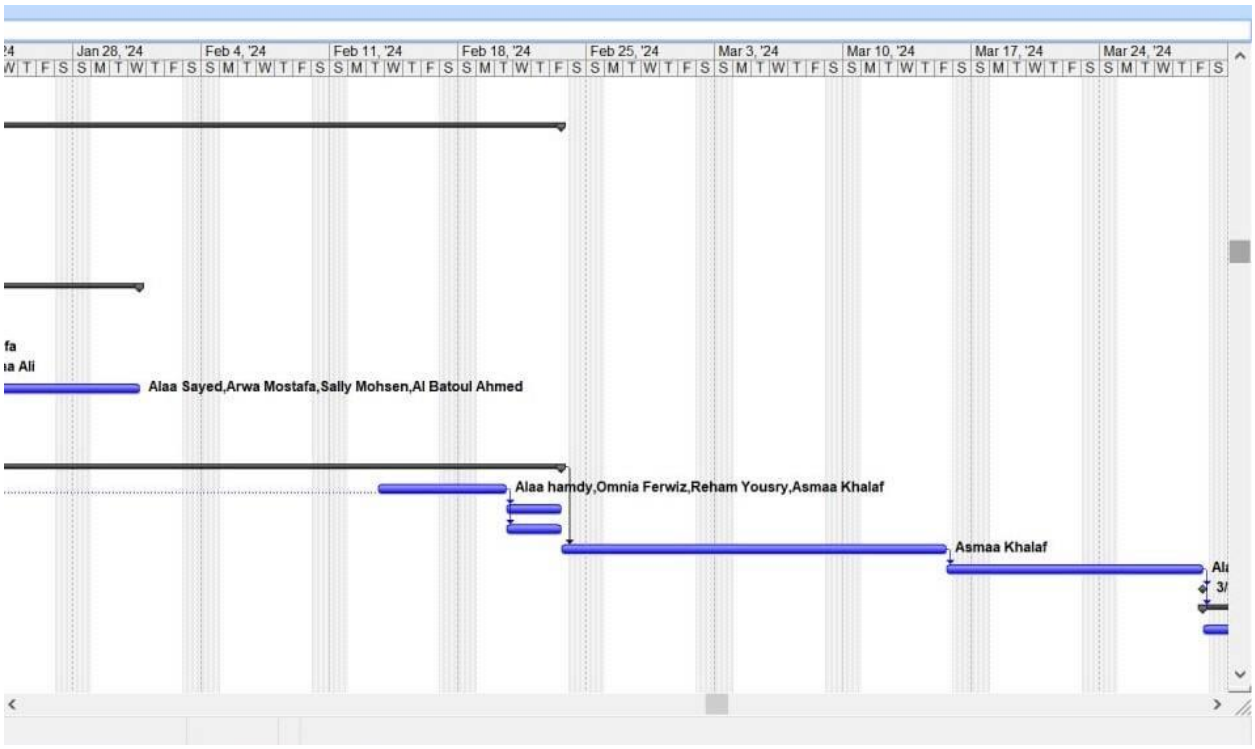


Figure 2.4 Gantt Chart Screenshot

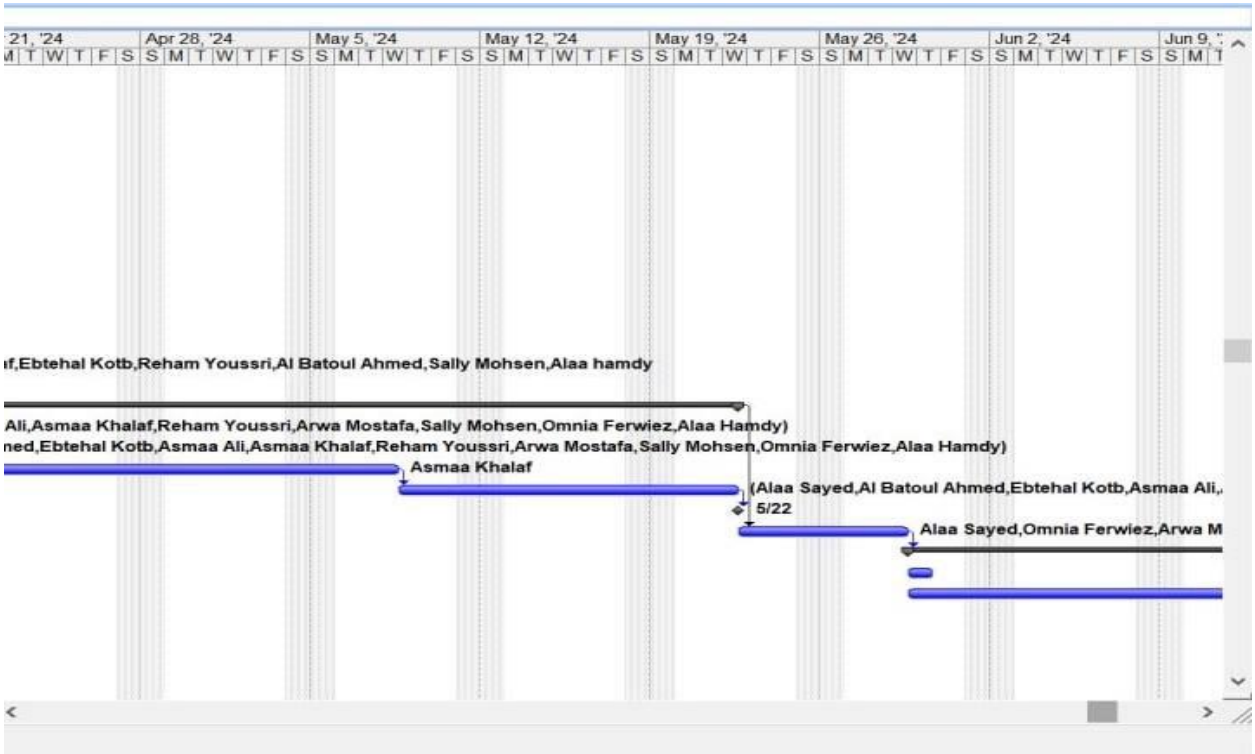


Figure 2.5 Gantt Chart Screenshot

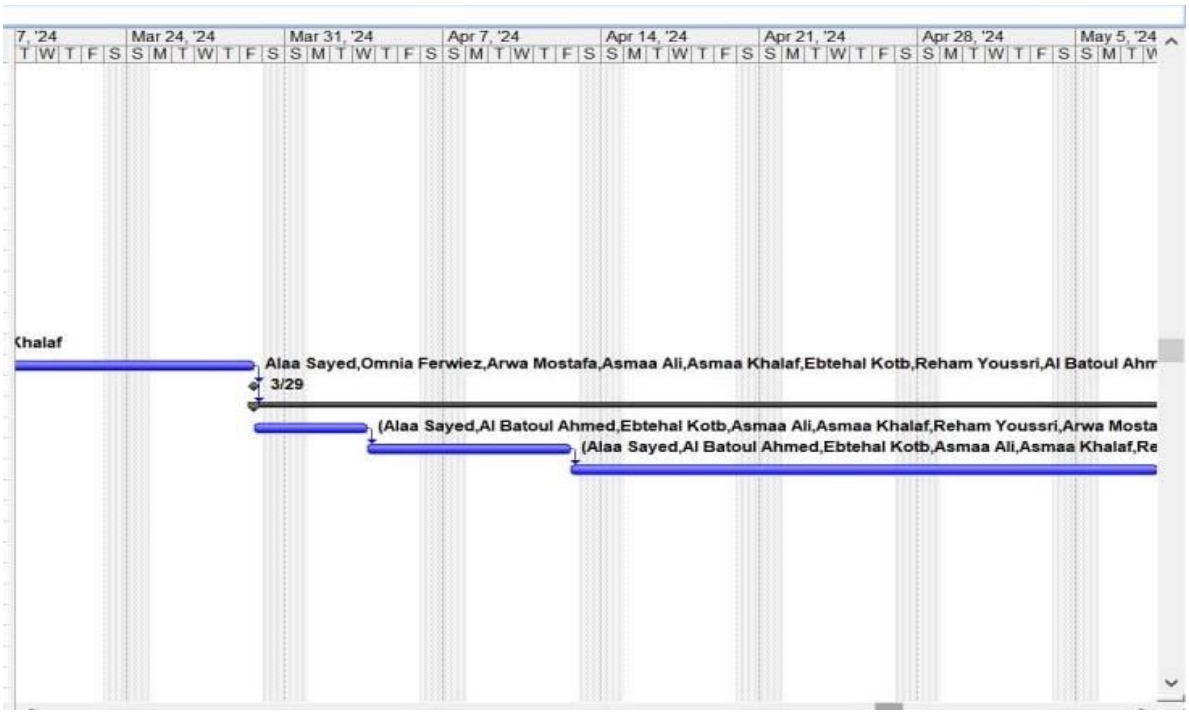


Figure 2.6 Gantt Chart Screenshot

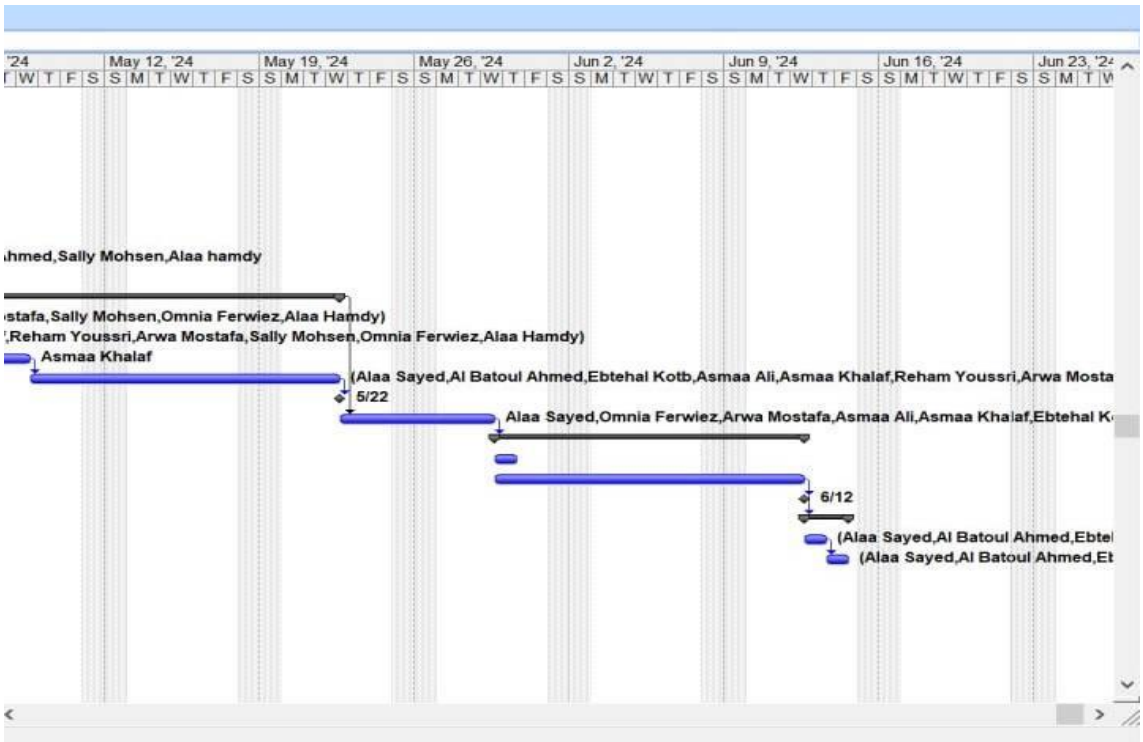


Figure 2.7 Gantt Chart Screenshot

2. **Task Dependencies:**

- **Network Diagram:**
  - Visual representation of task dependencies and workflow.
  - Helps in identifying potential bottlenecks and optimizing the project schedule.

Screenshot Example:

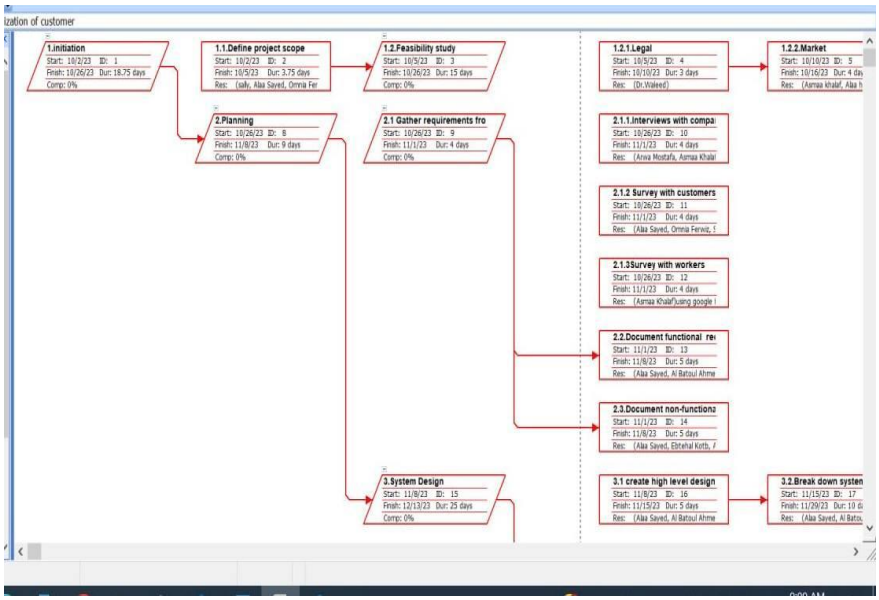


Figure 2.8 Network Diagram

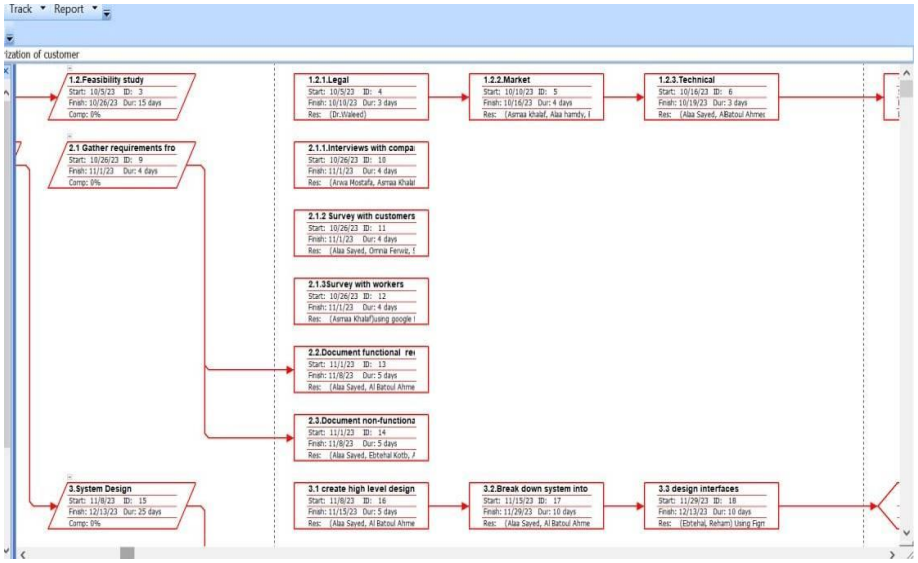


Figure 2.9 Network Diagram

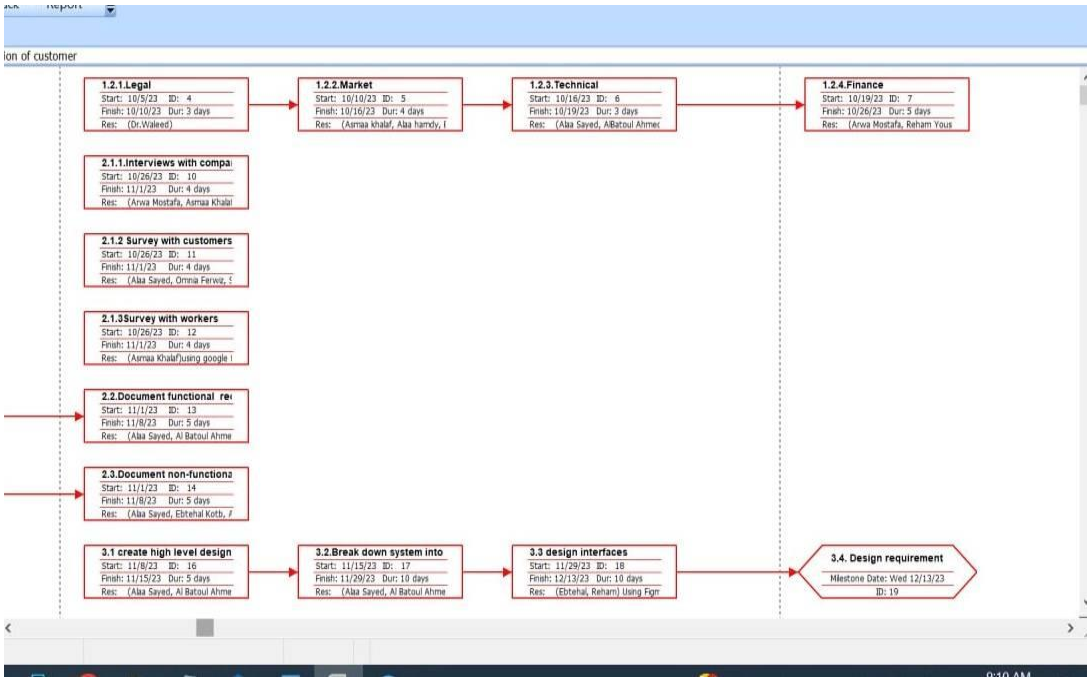


Figure 2.10 Network Diagram

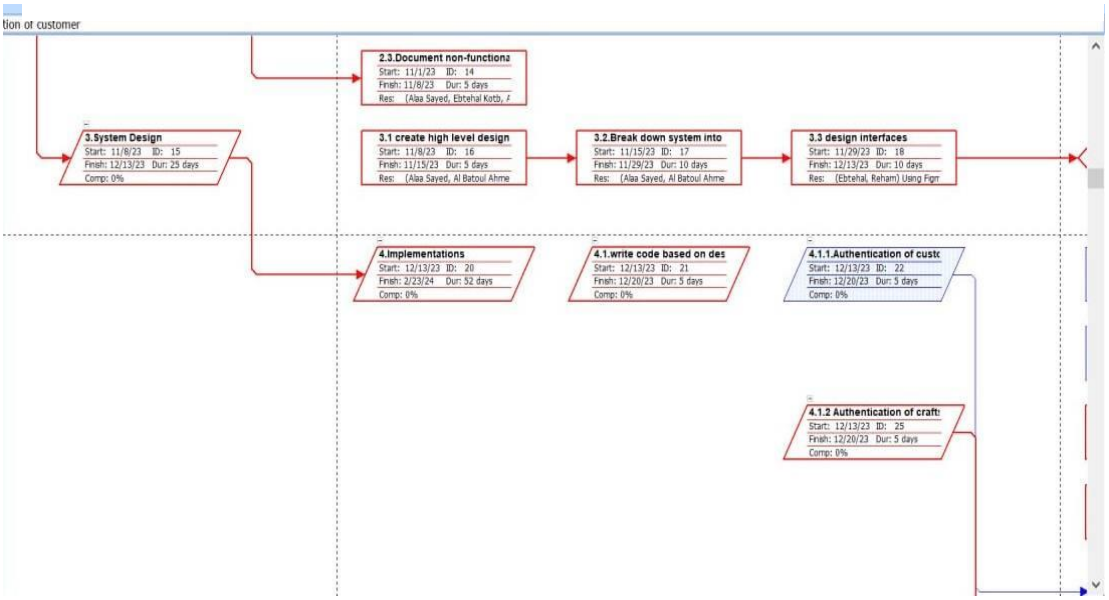


Figure 2.11 Network Diagram

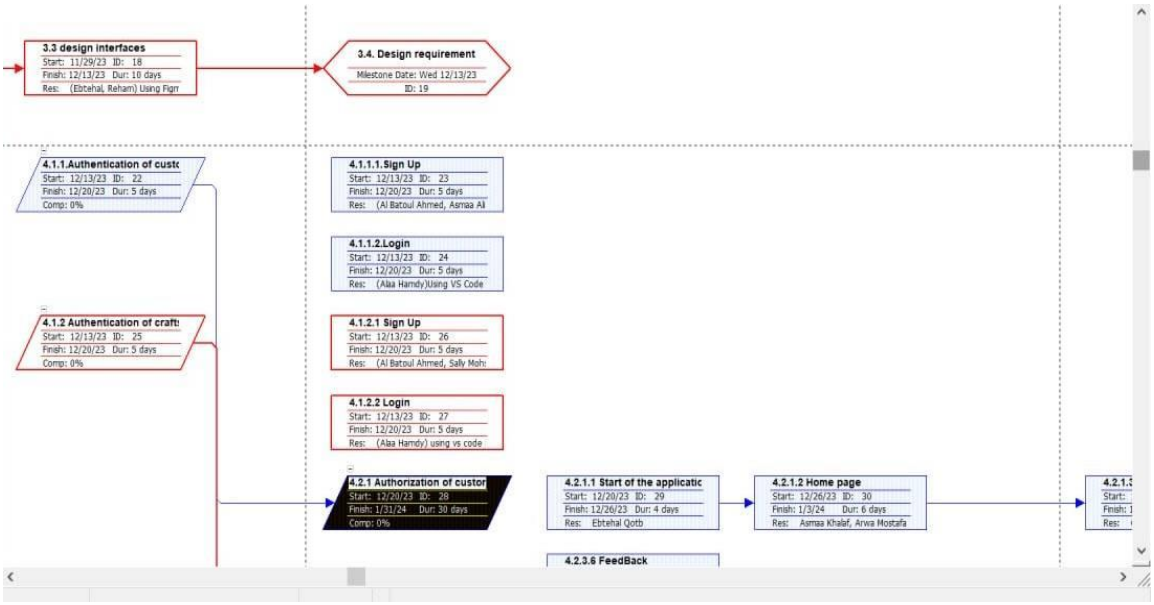


Figure 2.12 Network Diagram

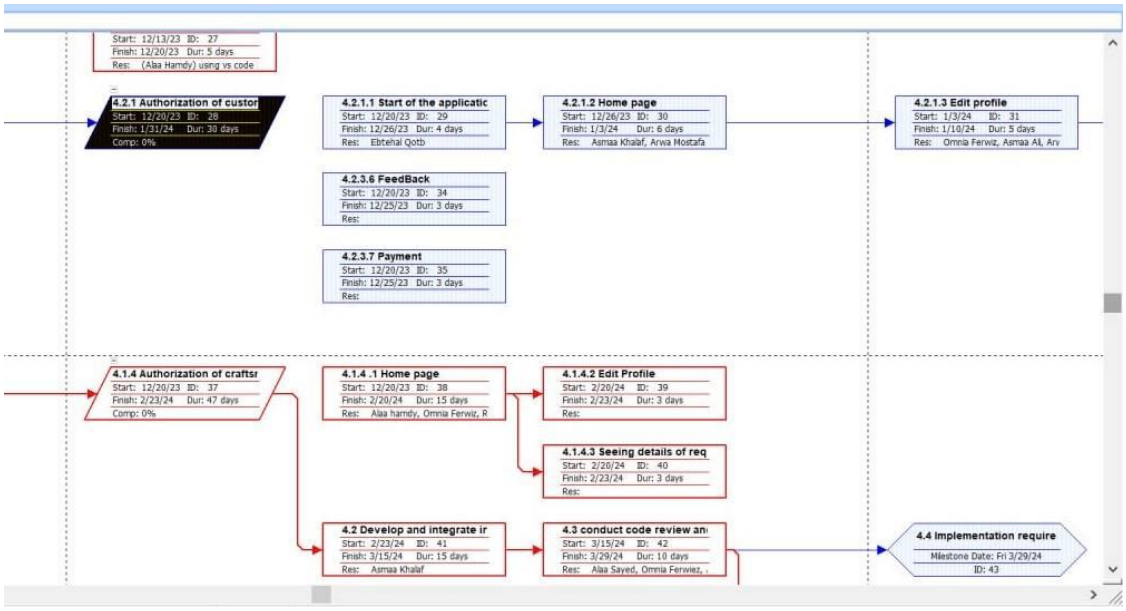


Figure 2.13 Network Diagram

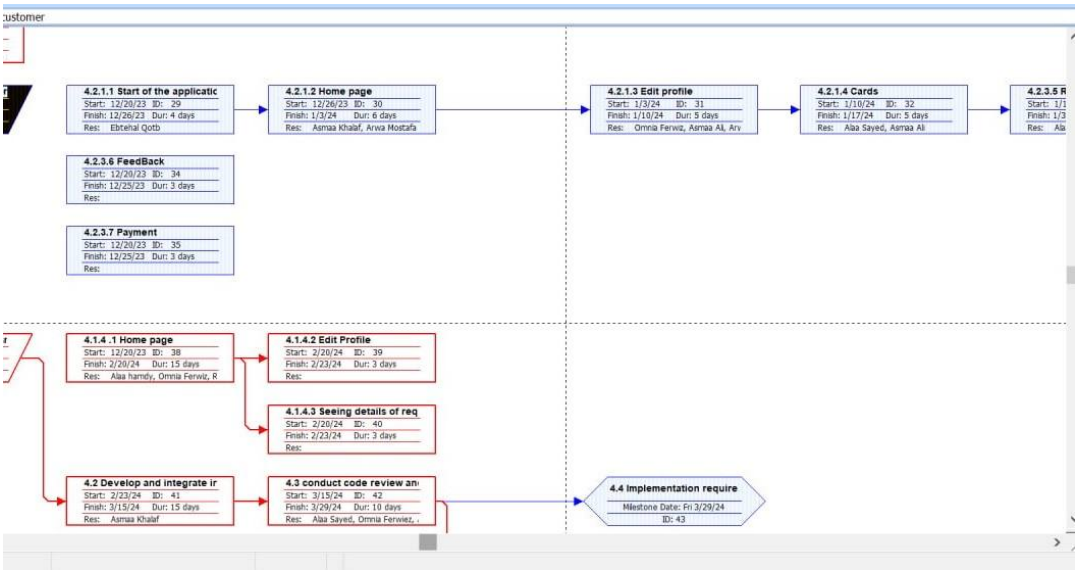


Figure 2.14 Network Diagram

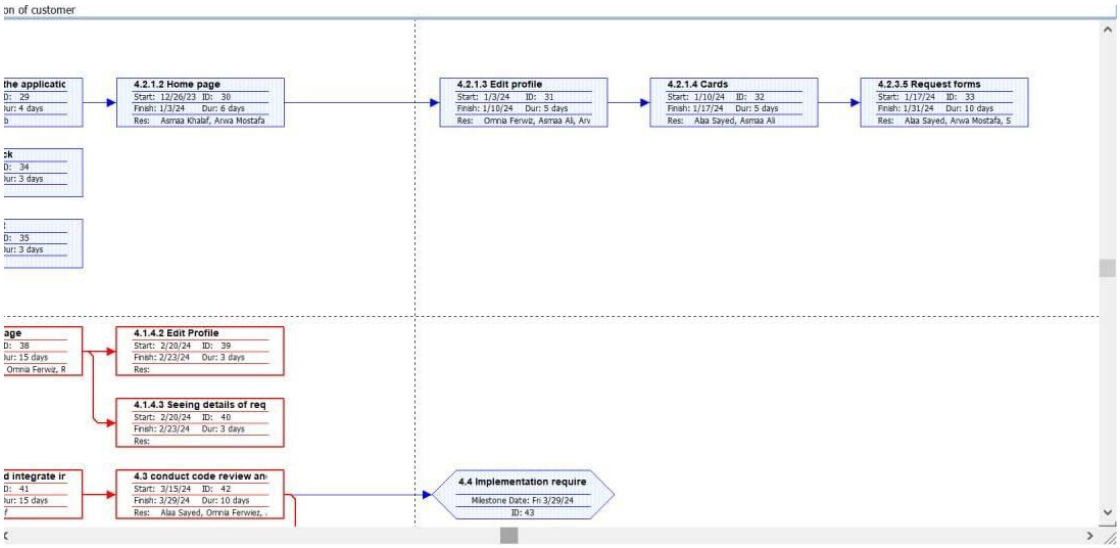


Figure 2.15 Network Diagram

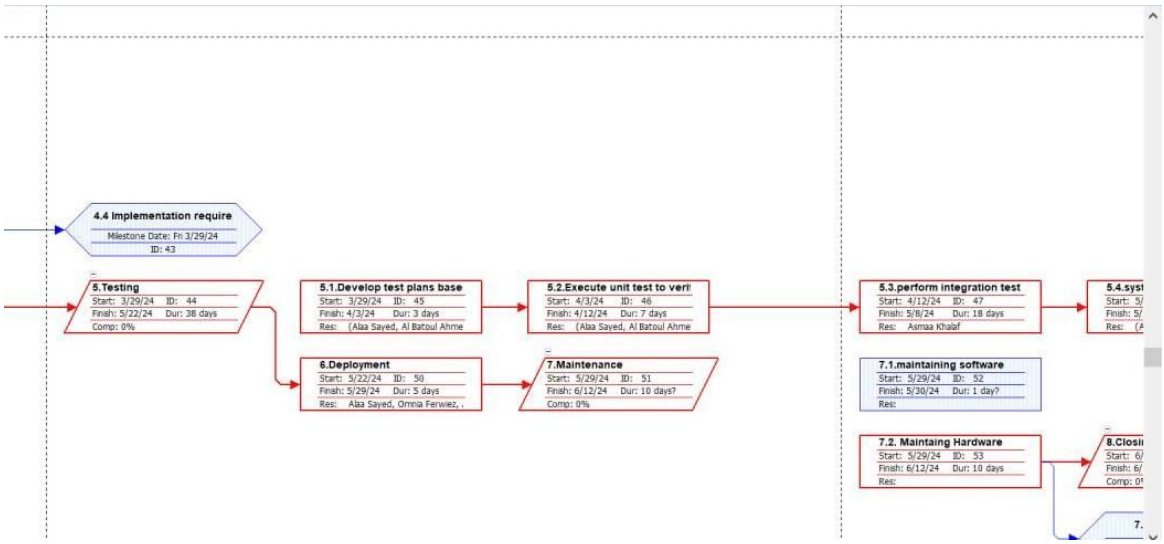


Figure 2.16 Network Diagram

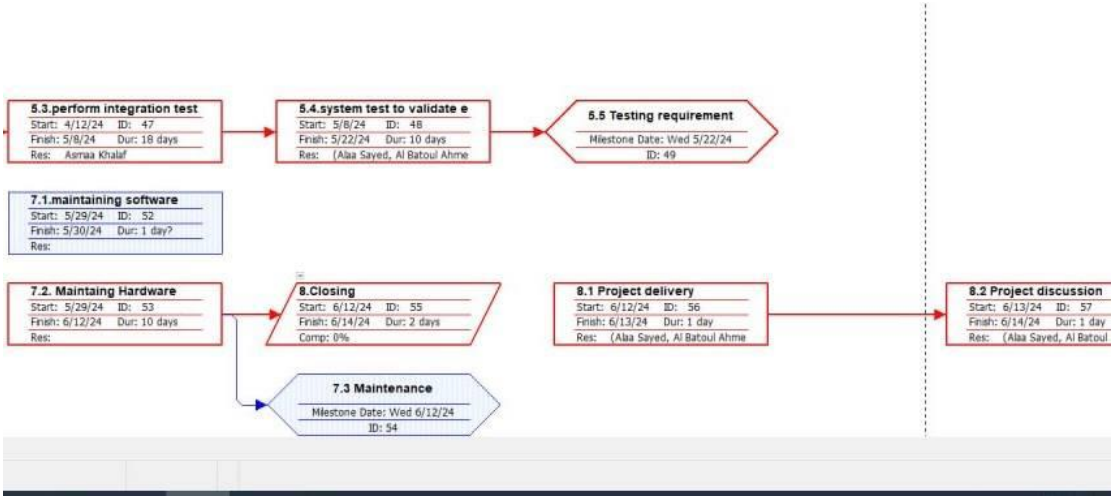


Figure 2.17 Network Diagram

3. Resource Allocation:

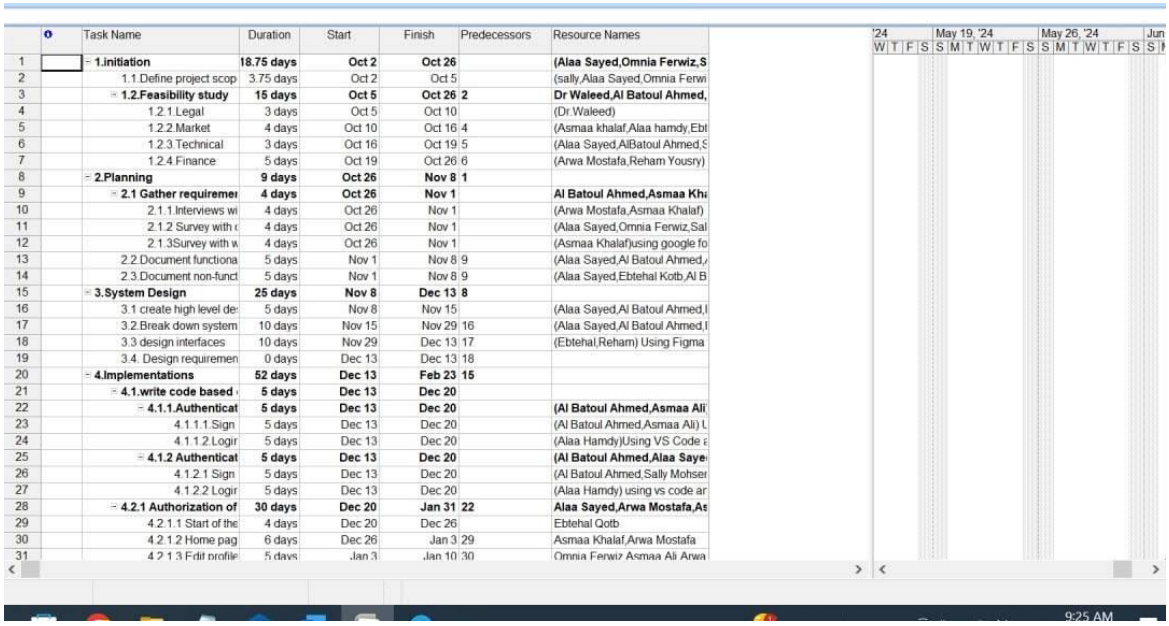
- **Resource Sheet:**
  - Lists all resources assigned to the project.
  - Details the availability and allocation of each resource.

4. Task Assignment:

- **Task Usage:**
  - Shows detailed task assignments for each team member.

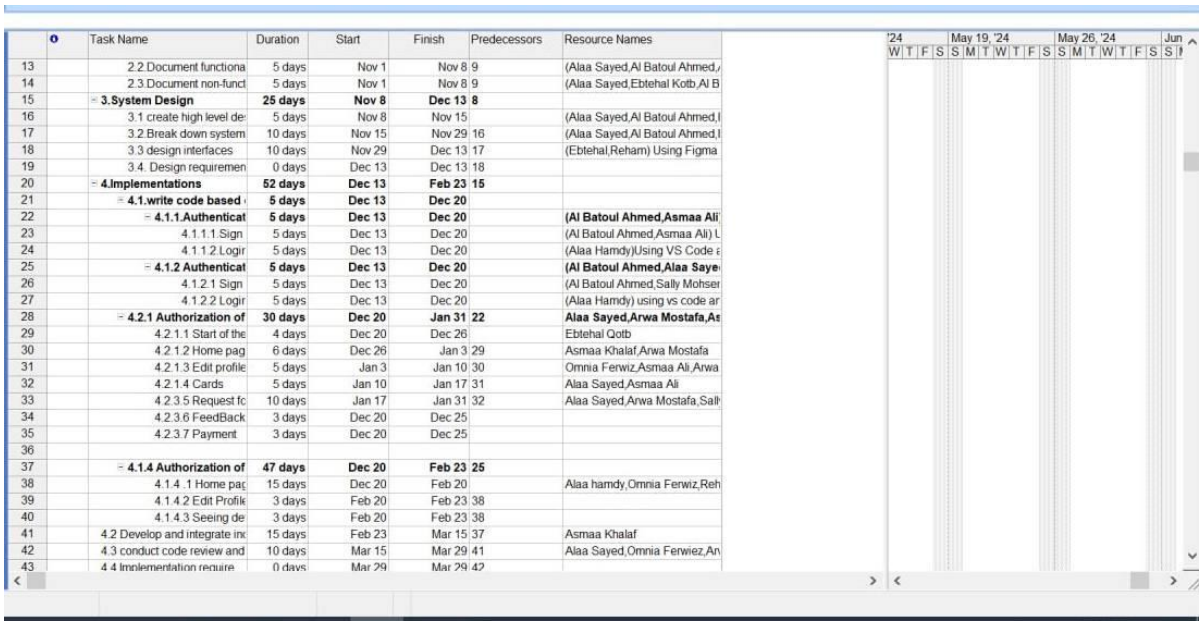
- Helps in tracking progress and ensuring balanced workload distribution.

Screenshot Example:



	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	**1.initiation**	**18.75 days**	**Oct 2**	**Oct 26**		**(Alaa Sayed,Omnia Ferwiz,S**
2	1.1.Define project scop	3.75 days	Oct 2	Oct 5		(sally,Alaa Sayed,Omnia Ferwi
3	**1.2.Feasibility study**	**15 days**	**Oct 5**	**Oct 26**	**2**	**Dr Waleed,Al Batoul Ahmed,**
4	1.2.1.Legal	3 days	Oct 5	Oct 10		(Dr.Waleed)
5	1.2.2.Market	4 days	Oct 10	Oct 16	4	(Asmaa khalaf,Alaa hamdy,Ebt
6	1.2.3.Technical	3 days	Oct 16	Oct 19	5	(Alaa Sayed,AlBatoul Ahmed,S
7	1.2.4.Finance	5 days	Oct 19	Oct 26	6	(Arwa Mostafa,Reham Yousry)
8	**2.Planning**	**9 days**	**Oct 26**	**Nov 8**	**1**	
9	**2.1 Gather requiremer**	**4 days**	**Oct 26**	**Nov 1**		**Al Batoul Ahmed,Asmaa Kha**
10	2.1.1.Interviews wi	4 days	Oct 26	Nov 1		(Arwa Mostafa,Asmaa Khalaf)
11	2.1.2 Survey with	4 days	Oct 26	Nov 1		(Alaa Sayed,Omnia Ferwiz,Sal
12	2.1.3Survey with w	4 days	Oct 26	Nov 1		(Asmaa Khalaf)using google fo
13	2.2.Document functiona	5 days	Nov 1	Nov 8	9	(Alaa Sayed,Al Batoul Ahmed,/
14	2.3.Document non-funct	5 days	Nov 1	Nov 8	9	(Alaa Sayed,Ebtehal Kotb,Al B
15	**3.System Design**	**25 days**	**Nov 8**	**Dec 13**	**8**	
16	3.1 create high level de	5 days	Nov 8	Nov 15		(Alaa Sayed,Al Batoul Ahmed,I
17	3.2.Break down system	10 days	Nov 15	Nov 29	16	(Alaa Sayed,Al Batoul Ahmed,I
18	3.3 design interfaces	10 days	Nov 29	Dec 13	17	(Ebtehal,Reham) Using Figma
19	3.4. Design requiremen	0 days	Dec 13	Dec 13	18	
20	**4.Implementations**	**52 days**	**Dec 13**	**Feb 23**	**15**	
21	**4.1.write code based**	**5 days**	**Dec 13**	**Dec 20**		
22	**4.1.1.Authenticat**	**5 days**	**Dec 13**	**Dec 20**		**(Al Batoul Ahmed,Asmaa Ali**
23	4.1.1.1.Sign	5 days	Dec 13	Dec 20		(Al Batoul Ahmed,Asmaa Ali) L
24	4.1.1.2.Logir	5 days	Dec 13	Dec 20		(Alaa Hamdy)Using VS Code a
25	**4.1.2 Authenticat**	**5 days**	**Dec 13**	**Dec 20**		**(Al Batoul Ahmed,Alaa Saye**
26	4.1.2.1 Sign	5 days	Dec 13	Dec 20		(Al Batoul Ahmed,Sally Mohser
27	4.1.2.2 Logir	5 days	Dec 13	Dec 20		(Alaa Hamdy) using vs code ar
28	**4.2.1 Authorization of**	**30 days**	**Dec 20**	**Jan 31**	**22**	**Alaa Sayed,Arwa Mostafa,As**
29	4.2.1.1 Start of the	4 days	Dec 20	Dec 26		Ebtehal Qotb
30	4.2.1.2 Home pag	6 days	Dec 26	Jan 3	29	Asmaa Khalaf,Arwa Mostafa
31	4.2.1.3 Edit profile	5 days	Jan 3	Jan 10	30	Omnia Ferwiz,Asmaa Ali,Arwa

Figure 2.18 Network Diagram



	Task Name	Duration	Start	Finish	Predecessors	Resource Names
13	2.2.Document functiona	5 days	Nov 1	Nov 8	9	(Alaa Sayed,Al Batoul Ahmed,/
14	2.3.Document non-funct	5 days	Nov 1	Nov 8	9	(Alaa Sayed,Ebtehal Kotb,Al B
15	**3.System Design**	**25 days**	**Nov 8**	**Dec 13**	**8**	
16	3.1 create high level de	5 days	Nov 8	Nov 15		(Alaa Sayed,Al Batoul Ahmed,I
17	3.2.Break down system	10 days	Nov 15	Nov 29	16	(Alaa Sayed,Al Batoul Ahmed,I
18	3.3 design interfaces	10 days	Nov 29	Dec 13	17	(Ebtehal,Reham) Using Figma
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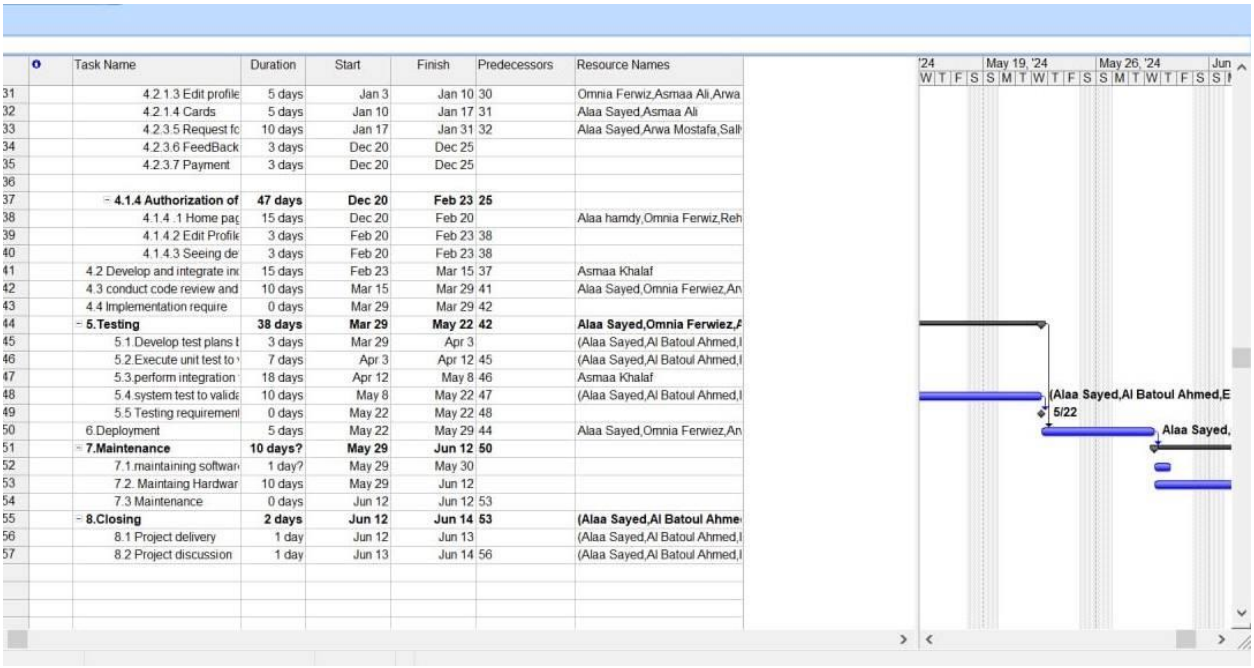
20	**4.Implementations**	**52 days**	**Dec 13**	**Feb 23**	**15**	
21	**4.1.write code based**	**5 days**	**Dec 13**	**Dec 20**		
22	**4.1.1.Authenticat**	**5 days**	**Dec 13**	**Dec 20**		**(Al Batoul Ahmed,Asmaa Ali**
23	4.1.1.1.Sign	5 days	Dec 13	Dec 20		(Al Batoul Ahmed,Asmaa Ali) L
24	4.1.1.2.Logir	5 days	Dec 13	Dec 20		(Alaa Hamdy)Using VS Code a
25	**4.1.2 Authenticat**	**5 days**	**Dec 13**	**Dec 20**		**(Al Batoul Ahmed,Alaa Saye**
26	4.1.2.1 Sign	5 days	Dec 13	Dec 20		(Al Batoul Ahmed,Sally Mohser
27	4.1.2.2 Logir	5 days	Dec 13	Dec 20		(Alaa Hamdy) using vs code ar
28	**4.2.1 Authorization of**	**30 days**	**Dec 20**	**Jan 31**	**22**	**Alaa Sayed,Arwa Mostafa,As**
29	4.2.1.1 Start of the	4 days	Dec 20	Dec 26		Ebtehal Qotb
30	4.2.1.2 Home pag	6 days	Dec 26	Jan 3	29	Asmaa Khalaf,Arwa Mostafa
31	4.2.1.3 Edit profile	5 days	Jan 3	Jan 10	30	Omnia Ferwiz,Asmaa Ali,Arwa
32	4.2.1.4 Cards	5 days	Jan 10	Jan 17	31	Alaa Sayed,Asmaa Ali
33	4.2.3.5 Request fc	10 days	Jan 17	Jan 31	32	Alaa Sayed,Arwa Mostafa,Salh
34	4.2.3.6 FeedBack	3 days	Dec 20	Dec 25		
35	4.2.3.7 Payment	3 days	Dec 20	Dec 25		
36						
37	**4.1.4 Authorization of**	**47 days**	**Dec 20**	**Feb 23**	**25**	
38	4.1.4 .1 Home pag	15 days	Dec 20	Feb 20		Alaa hamdy,Omnia Ferwiz,Reh
39	4.1.4.2 Edit Profile	3 days	Feb 20	Feb 23	38	
40	4.1.4.3 Seeing de	3 days	Feb 20	Feb 23	38	
41	4.2 Develop and integrate in	15 days	Feb 23	Mar 15	37	Asmaa Khalaf
42	4.3 conduct code review and	10 days	Mar 15	Mar 29	41	Alaa Sayed,Omnia Ferwiez,An
43	4.4 Implementation require	0 days	Mar 29	Mar 29	42	

Figure 2.19 Network Diagram



	Task Name	Duration	Start	Finish	Predecessors	Resource Names
31	4.2.1.3 Edit profile	5 days	Jan 3	Jan 10	30	Omnia Fenwiz,Asmaa Ali,Arwa
32	4.2.1.4 Cards	5 days	Jan 10	Jan 17	31	Alaa Sayed,Asmaa Ali
33	4.2.3.5 Request fc	10 days	Jan 17	Jan 31	32	Alaa Sayed,Arwa Mostafa,Salh
34	4.2.3.6 FeedBack	3 days	Dec 20	Dec 25		
35	4.2.3.7 Payment	3 days	Dec 20	Dec 25		
36						
37	**4.1.4 Authorization of**	**47 days**	**Dec 20**	**Feb 23**	**25**	
38	4.1.4 .1 Home pag	15 days	Dec 20	Feb 20		Alaa hamdy,Omnia Fenwiz,Reh
39	4.1.4.2 Edit Profile	3 days	Feb 20	Feb 23	38	
40	4.1.4.3 Seeing de	3 days	Feb 20	Feb 23	38	
41	4.2 Develop and integrate in	15 days	Feb 23	Mar 15	37	Asmaa Khalaf
42	4.3 conduct code review and	10 days	Mar 15	Mar 29	41	Alaa Sayed,Omnia Fenwiez,An
43	4.4 Implementation require	0 days	Mar 29	Mar 29	42	
44	**5.Testing**	**38 days**	**Mar 29**	**May 22**	**42**	**Alaa Sayed,Omnia Fenwiez,A**
45	5.1.Develop test plans t	3 days	Mar 29	Apr 3		(Alaa Sayed,Al Batoul Ahmed,I
46	5.2.Execute unit test to	7 days	Apr 3	Apr 12	45	(Alaa Sayed,Al Batoul Ahmed,I
47	5.3.perform integration	18 days	Apr 12	May 8	46	Asmaa Khalaf
48	5.4.system test to valida	10 days	May 8	May 22	47	(Alaa Sayed,Al Batoul Ahmed,I
49	5.5 Testing requirement	0 days	May 22	May 22	48	
50	6.Deployment	5 days	May 22	May 29	44	Alaa Sayed,Omnia Fenwiez,An
51	**7.Maintenance**	**10 days?**	**May 29**	**Jun 12**	**50**	
52	7.1.maintaining softwar	1 day?	May 29	May 30		
53	7.2. Maintaing Hardwar	10 days	May 29	Jun 12		
54	7.3 Maintenance	0 days	Jun 12	Jun 12	53	
55	**8.Closing**	**2 days**	**Jun 12**	**Jun 14**	**53**	**(Alaa Sayed,Al Batoul Ahme**
56	8.1 Project delivery	1 day	Jun 12	Jun 13		(Alaa Sayed,Al Batoul Ahmed,I
57	8.2 Project discussion	1 day	Jun 13	Jun 14	56	(Alaa Sayed,Al Batoul Ahmed,I

Figure 2.20 Network Diagram

5. Communication Plan:

- **Communication Schedule:**
  - Details the schedule for regular meetings and updates.
  - Ensures all stakeholders are informed and engaged throughout the project lifecycle.

2.7.4 Division of Responsibilities

Division of responsibilities among team members is a crucial part of Homey application to ensure that every team member knows his responsibilities and every phase is go well and at time

1-Project initiation

- Define project scope: (Alaa Sayed, Omnia Farwiz, Sally Mohsen)
- Feasibility study
  (subtasks)
  Legal (Dr Waleed)
  Market: (Asmaa Khalaf, Alaa Hamdy, Ebtehal Kotb)
  Technical: (Alaa Sayed, Sally Mohsen, Omnia Farwiz)
  Financial: (Arwa Mostafa, Reham Yousry)

2-Planning and Requirement Gathering (all of the team)

- Gather requirements from stakeholders, roles, and communication channels:
  (subtasks)
  Interviews with companies offline: (Arwa Mostafa, Asmaa Khalaf)
  Survey with customers: (Alaa Sayed , Omnia Farwiz , Sally Mohsen) using google form
  Survey with workers: (Asmaa Khalaf) using mobile phone

- Document functional requirements: (meeting offline all team)

- Document non-functional requirements: (meeting offline all team)

3-System Design

-Create high level design (all the team)

-Break down system into components (all the team)

-Design interfaces :(Ebtehal and Reham) using figma

4-Implementations:

Table 2.3 shows Tasks Implementation

Task	Assigned Developer
Customer part	
The start of the app	Ebtehal Saleh
The second screen	Ebtehal Saleh
Home Page	Asmaa Khalaf
Labors page	Al Batoul Ahmed
Sign Up Customer	Al Batoul Ahmed and Asmaa Ali
Login Customer	Alaa Hamdy
Favorite page	Alaa Hamdy
Cart Page	Alaa Sayed and Asmaa Ali
Form of Customer Request	Alaa Sayed and Arwaa Moustafa
Labor Part	
Sign up for Labor	Al Batoul Ahmed , Alaa Sayed and Sally Samir
Labor's Form	Al Batoul Ahmed
Home page	Alaa Hamdy and Omnia Farwiz
Main for each	
Edit Form	Omnia Farwiz and Asmaa Ali
theme , language	Asmaa khalaf
Chatbot	Alaa Hamdy, Omnia Farwiz, Al Batoul Ahmed
Settings	Asmaa Khalaf
Packages	Asmaa Khalaf

5-Testing

-Develop test plans based on requirements (all the team)

-Execute unit test to verify individual requirements (all the team)

-Perform integration test (Asmaa Khalaf)

-System test to validate entire system with requirements (all the team)

6- Deployment (All the team)

7-maintenance (All the team)

8-Closing the system and delivery (All the team)

2.7.5 Management Risk:

1-Quality of service and finishing:

An error in choosing the workers or contracting companies available through the application can lead to the provision of low-quality services.

The inability to ensure that the finish is performed to the required quality can negatively impact customer satisfaction and the reputation of the application.

2-Customer experience and customer service:

Providing an outstanding customer experience requires providing effective customer support and service before, during and after the service is provided.

Ensuring a quick and efficient response to customer needs and problems can be a challenge with the day-to-day operation of the application.

3- Time management:

the system does not guarantee the time in which the worker will complete the service required of him.

4- Organizations:

Ensure compliance with all local and national regulations and licenses related to construction and finishes.

-To minimize these risks, the application must develop clear strategies for quality management, internal audit and continuous improvement. Training and continuing education policies for workers should also be in place to ensure that services are implemented at the highest level of quality.

Chapter 3 (Software Design)

3.1 Introduction

The software design for the Homey application is a critical phase of the project, as it lays the foundation for the development of a robust and scalable home improvement solution. The software design defines the architecture, modules, and interfaces of the Homey application, considering the functional and non-functional requirements and use cases. The software design must consider the needs of the users, stakeholders, and customers, as well as the constraints and limitations of the technology.

The software design must also ensure that the application is user-friendly, secure, and reliable, while also providing high performance and functionality. The software design must provide a clear and concise vision of the Homey application and ensure that it meets the expectations of all stakeholders involved in the project. When the detailed design is complete, the analysis of the requirements traceability documents should show the relationship between the software design components and the software requirements, providing evidence that all requirements are accounted for.

3.1.1 Project Background / purpose

The purpose of the Homey project is to develop a comprehensive and user-friendly platform that enables customers to find and hire suitable professionals for all their home finishing needs, including painting, carpentry, plumbing, and interior design. The platform will provide a detailed directory of skilled workers along with their profiles, ratings, and reviews from previous clients, helping customers make informed decisions.

The primary goal of the Homey project is to provide a cost-effective and convenient solution for homeowners looking to complete their home improvement projects with ease. The platform will streamline the process of finding qualified professionals, scheduling services, and managing payments, thus reducing the hassle and time involved in home finishing projects.

Additionally, the Homey platform will support features such as virtual consultations, project tracking, and budget management. With its user-friendly interface and accessibility for all age groups, the Homey platform aims to improve the overall customer experience and ensure high-quality home improvement outcomes.

Overall, the Homey project aims to revolutionize the home improvement industry by providing a comprehensive solution that enhances the quality and convenience of home finishing services, making the entire process more accessible and efficient for homeowners.

3.1.2 Hosting platform

The Homey project can be hosted on various platforms, including cloud hosting platforms like Google Cloud Platform (GCP) and backend-as-a-service (BaaS) platforms like Firebase, GitHub.

Google Firebase

Google Firebase is a comprehensive backend-as-a-service (BaaS) platform provided by Google, well-integrated with Flutter. It offers a range of services including real-time databases, Firestore, authentication, cloud storage, and hosting for static files. Firebase supports hosting services for various types of applications including Android and iOS. It also provides notifications that can be used in the Homey application.

Google Cloud Platform (GCP)

Google Cloud Platform (GCP) offers scalable services that can be integrated with the Homey app. GCP is a suite of cloud computing services that runs on the same infrastructure as Google's end-user products such as Gmail and Google Drive. It provides a set of management tools and a series of modular cloud services including computing, data storage, and machine learning. The Homey application can use Google Cloud Functions for running serverless code and Google Cloud Firestore as a NoSQL document database.

Dialogflow (Google Cloud)

Dialogflow, part of Google Cloud, provides natural language understanding to design and integrate a conversational user interface into the Homey application. It supports rich media responses, multilingual conversations, and fulfillment through cloud functions. This allows the Homey application to use a Chatbot to answer any user questions efficiently.

By leveraging these platforms, the Homey project can benefit from powerful and flexible infrastructure, ensuring high performance, reliability, and enhanced user experience.

3.2 System Architecture:

The Homey system architecture and distribution is a comprehensive framework incorporating multiple components and technologies to provide effective useability.

It comprises various modules and tools including:

client interface provides an interface front end for interacting with system and server and data storage. The client server communication occurs through firebase. The architecture is designed to ensure scalability, reliability, security and performance.

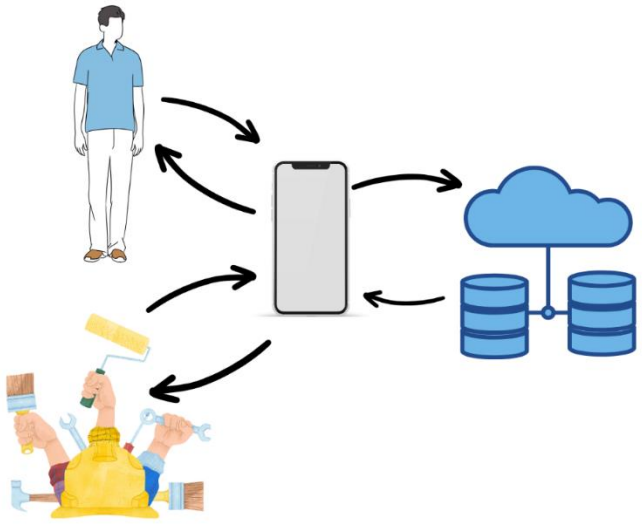


Figure 3.1 shows System Architecture of our software

3.2.1 Architectural Design:

front-end layer:

This layer is responsible for presenting the data to the user through a graphical user interface (GUI). The GUI is designed by using figma and implemented by using flutter.

Application Layer:

This layer contains the business logic of the application and is responsible for processing and transforming data from the backend layer into a form that can be displayed by the frontend layer. The application layer is implemented by server-side language such as dart in flutter.

Back-end Layer:

This layer is responsible for storing and retrieving data from database.it contains the database management system and the database itself which is typically implemented by using firebase.

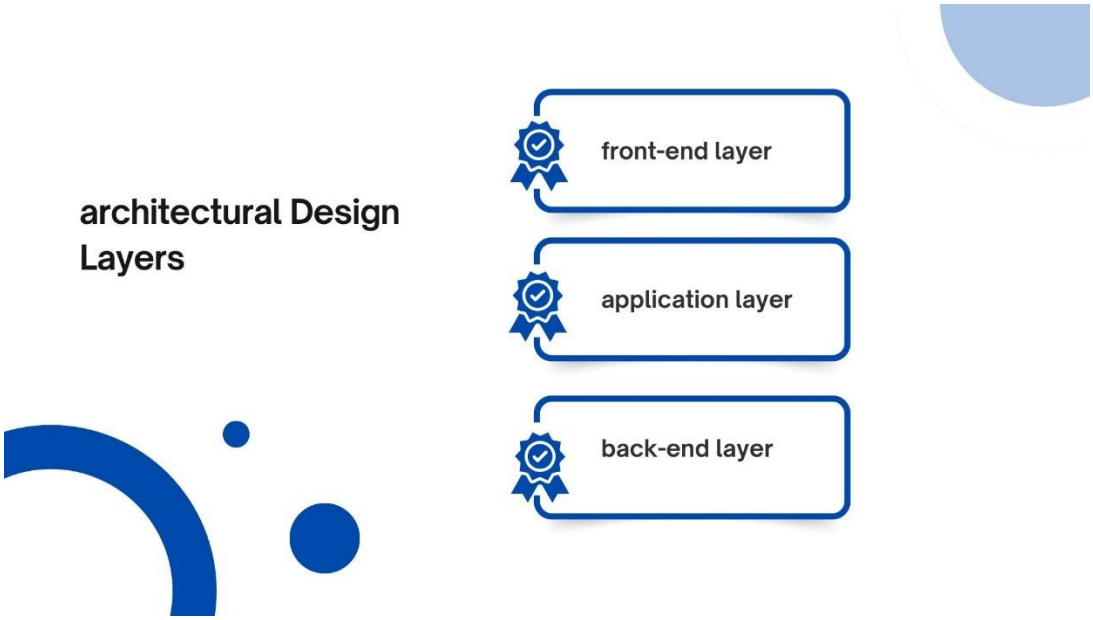


Figure 3.2 shows Architectural Design Layers

3.2.2 Decomposition Description:

Decomposition is the process of breaking dawn the entire complex application system into smaller units. In Homey application, the application architecture can be divided into different components that will be integrated to be the final system.

1- **User interface:** This component is responsible for providing a user-friendly interface for each of clients, workers and managers.

2- **Data collection and management:** This component is responsible for collecting, storing and managing the data.

3- **Communication and notifications:** This component is responsible for notify users with any new updates or offers and act as a tool to ease communication of users and admins of the system.

4- **Compliance and security:** This component is responsible for ensuring that the system is compliant with the regulatory requirements and standards, also to secure the users data.

3.2.3 Design Rationale:

The multi-tier architecture was chosen for homey application because it provides a clear separation of concerns and allows for a scalable and maintainable system

The front-end layer focuses on presentation and user interaction.

The application layer focuses on business logic.

and the backend layer focuses on data storage and retrieval.

This decomposition makes it easier to manage and update the system as changes to one layer do not affect the other layers. The use of firebase to communicate between layers also allows for greater flexibility in changing and updating individual components.

3.3 Data Design

3.3.1 Data Description

The data description of Homey can be divided into Two entities, each representing different aspects of the application. These entities are the customer, the worker.

The customer entity represents the person who requests the service and saves it in the application. This entity has a many-to-many relationship with Services, as one customer can request multiple services, and one service can be requested by multiple customers.

The worker entity represents the person who performs the service .This entity has one-to-many relationship with Services, as one worker can perform one service, and one service can be performed by multiple workers.

3.3.2 Data Dictionary

A data dictionary is a collection of descriptions of the data objects or items in a data model for the Homey system. It defines the structure, characteristics, and relationships of the data within the system.

In the Homey system, a data dictionary is used to document the data elements and their attributes, including data type, length, format, and any constraints. The data dictionary helps to ensure that the data is consistent and accurate throughout the system. Here are some of the data elements in the Homey system's data dictionary:

1-Services

Field	Type	Nullable	Default
Service_id	Varchar(30)	No	Null

Service_name	Varchar(30)	No	Null
Service_image	Byte array	No	Null
Service_description	Varchar(30)	No	Null

2-Worker

Field	Type	Nullable	Default
Worker_id	Varchar(30)	No	Null
Worker_name	Varchar(30)	No	Null
Worker_rate	Int(4)	No	Null
Service_id	Varchar(30)	No	Null

3-History of customer

Field	Type	Nullable	Default
History_id	Varchar(30)	No	Null
User_id	Varchar(30)	No	Null
Service_image	Byte array	No	Null
Total_services	Int(4)	No	0
date_service	Int(40)	No	0
Request_status	Int(4)	No	Null

4-Card

Field	Type	Nullable	Default
Card_id	Varchar(30)	No	Null
Service_name	Varchar(30)	No	Null
Service_description	Varchar(30)	No	Null
Service_image	Byte array	No	Null
Worker_name	Varchar(30)	No	Null
Request_status	Varchar(30)	No	Waiting
Customer_id	Varchar(30)	No	Null

5-Services_form

Field	Type	Nullable	Default
Form_id	Varchar(30)	No	Null
Card_id	Varchar(30)	No	Null
User_name	Varchar(30)	No	Null
User_address	Varchar(30)	No	Null
User_phone	Varchar(30)	No	Null
Payment_method	Varchar(30)	No	Null

6-Favorite

Field	Type	Nullable	Default
Favorite_id	Varchar(30)	No	Null
Service_image	Byte array	No	Null
Customer_id	Varchar(30)	No	Null
Service_name	Varchar(30)	No	Null
Worker_name	Varchar(30)	No	Null

7-Packages

Field	Type	Nullable	Default
Package_id	Varchar(30)	No	Null
Package_name	Varchar(30)	No	Null
Package_image	Byte array	No	Null
Package_description	Varchar(30)	No	Null
Package_price	Int(40)	No	0

8-Packages_form

Field	Type	Nullable	Default
Package_form_id	Varchar(30)	No	Null
User_name	Varchar(30)	No	Null
User_phone	Varchar(30)	No	Null
User_address	Varchar(30)	No	Null

attachment	Varchar(30)	No	Null

9-Customers

Field	Type	Nullable	Default
Customer_id	Varchar(30)	No	Null
Customer_name	Varchar(30)	No	Null
Customer_Email	Varchar(30)	No	Null
Customer_Phone	Varchar(30)	No	Null
Customer_password	Varchar(30)	No	Null

10-Worker_notification

Field	Type	Nullable	Default
Notification_id	Varchar(30)	No	Null
Notification_Status	Varchar(30)	No	Null

11-Customer_notification

Field	Type	Nullable	Default
Notification_id	Varchar(30)	No	Null
Request_status	Varchar(30)	No	Null
Worker_id	Varchar(30)	No	Null
Worker_image	Bayte array	No	Null

12-Complaints

Field	Type	Nullable	Default
Complaint_id	Varchar(30)	No	Null
Customer_id	Varchar(30)	No	Null
Complaint_status	Varchar(30)	No	Null
Complaint_content	Varchar(30)	No	Null

3.4 Component Design

The component design describes communication interfaces, and functionalities of each component regarding the whole software design.

3.4.1 User Authentication Module:

The user authentication module in the application is responsible for verifying the identity of the user. It is a critical component of the system as it ensures that only authorized users can view and manipulate sensitive personal data.

The module is implemented by using standard authentication techniques such as email/password combinations the user's credentials are verified against a database that stores information about authorized users. If user's credentials are verified the module grants access to the application and set up a session for the user allowing them to use the system for a specified amount of time before having to re-authenticate.

The user authentication module also provides a mechanism for users to reset their passwords in the event that they forget them. This process typically involves sending a password reset link to the user's email address, which they can use to reset their password.

The application provides effective protection against unauthorized login attempts to prevent unauthorized access to sensitive data. A user authentication module for the application provides the following capabilities as the functional requirements:

Register a new account: users must register in the application with some data which the application needs such as name, email, password, etc. One of the important data for authorized login is the email and the password.

In addition, the user authentication module includes security measures to prevent unauthorized access to sensitive data for example the module implements measures such as encryption, security socket layer (SSL)and secure data storage to ensure the confidentiality and security of user data.

In conclusion the user authentication module is a critical component of the homey project that ensures that only authorized users can access their data, while also providing a secure and convenient way for users to manage their account information.

3.4.2 Data Storage Module:

The Homey System has a data storage module which is a component or subsystem within an application. It is responsible for managing the storage, retrieval, and manipulation of data. There are 13 main entities in the data storage module or ERD as shown in figure 3.3, which are service,

worker, history of customer, history of worker, cart, service-form, favorite, package, package-form, customer, worker-notification, customer-notification and feedback.

The service entity holds information about the service which is requested from the customer. This entity contains attributes such as service-id, service-name, service-image, service-description. This entity has a one-to-many relationship with worker entity.

The worker entity holds information about the worker who is responsible for making the service. This entity contains attributes such as worker-id, worker-name, worker-age, worker-phone, worker-address, service-type, worker-rate and service-id. This entity has a one-to-many relationship with worker-notification, history of worker and feedback entities.

The history of customer entity holds information about all the history (services) that the customer makes. This entity contains attributes such as customer-history-id, customer-id, service-image, total-services, date-service and request-status.

The history of worker entity holds information about all the history (services) that the customer makes. This entity contains attributes such as worker-history-id, worker-id, confirm-date, date-service, payment status and request-status.

The cart entity holds information about the service that the customer wants to request. This entity contains attributes such as cart-id, service-name, service-description, service-image, worker-name, request-status, customer-id. This entity has a one-to-many relationship with customer entity.

The service-form entity holds information that the customer enters to request for a service. This entity contains attributes such as service-form-id, cart-id, customer-name, customer-address, customer-phone and payment-method. This entity has a one-to-many relationship with customer entity.

The favorite entity holds information about the favorite services and workers for the customer. This entity contains attributes such as favorite-id, service-image, customer-id, service-name, and worker-name. This entity has a one-to-many relationship with customer entity.

The package entity holds information about the package that is requested from the customer. This entity contains attributes such as package-id, package-name, package-image, package-description, and package-price. This entity has a one-to-many relationship with customer entity.

The package-form entity holds information that the customer enters to request for the package. This entity contains attributes such as package-form-id, customer-name, customer- phone, customer-address and attachment. This entity has a one-to-one relationship with package entity.

The customer entity holds information about the customer who is requested for a service. This entity contains attributes such as customer-id, customer-name, customer-email, customer-phone and customer-password. This entity has a one-to-many relationship with feedback, history of customer and customer notification entities.

The worker notification entity holds information about the notifications that reach the worker. This entity contains attributes such as worker-notification-id, customer-name, customer-email, customer-phone, attachment and notification-status.

The customer notification entity holds information about the notifications that reach the customer. This entity contains attributes such as customer-notification-id, service-name, worker-id, request-status and worker-image.

The feedback entity holds information about the features, complaints, worker rate and speed of communication and service implementation that the customer writes. This entity contains attributes such as feedback-id, customer-id, features-rate, features-content, complaints-rate, complaints-content, worker-rate, worker-content, speed of communication-rate and speed of communication-content.

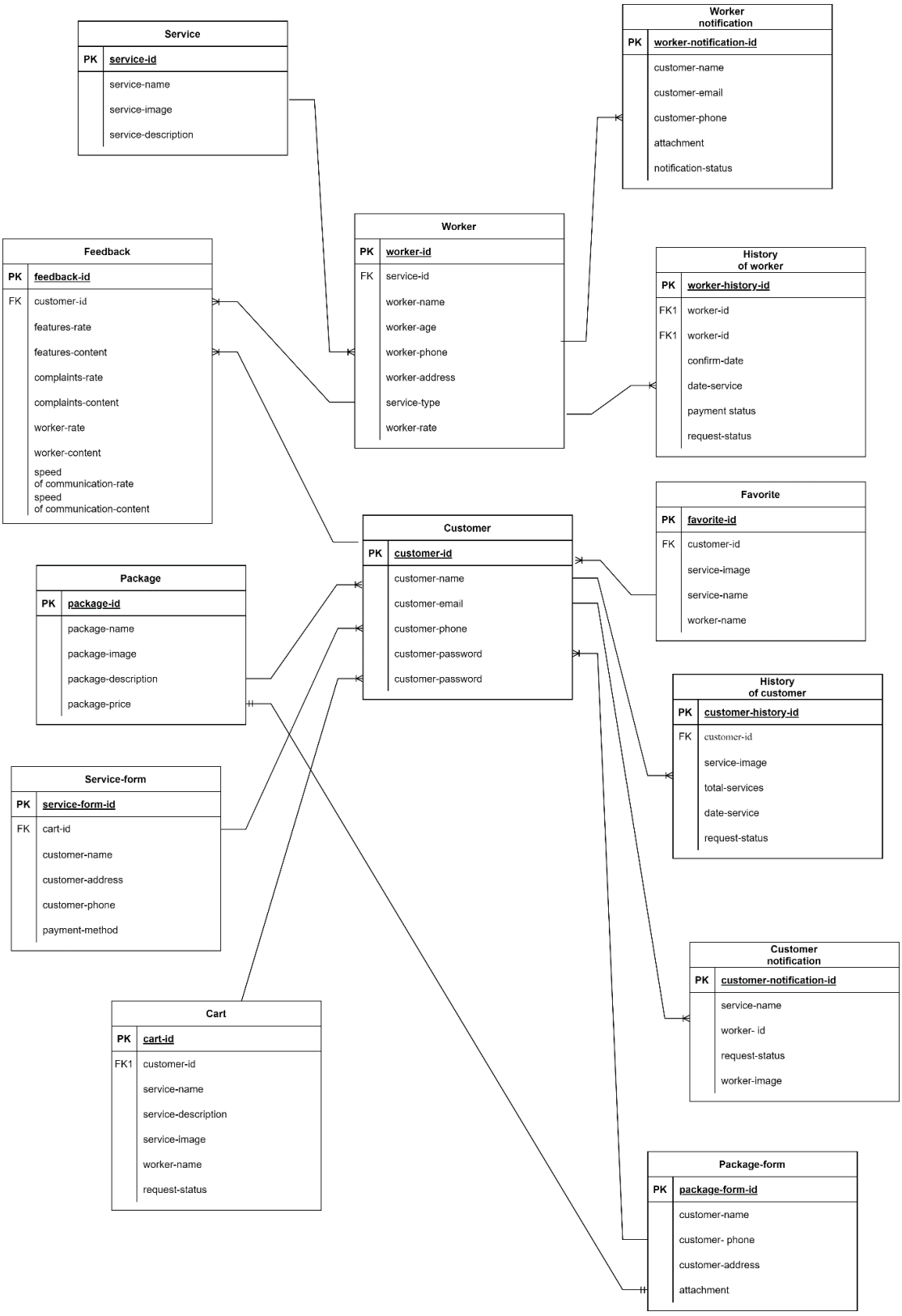


Figure 3.3 ERD of Homey System

3.4.3 User Interface Module:

The UI of the Homey project is a crucial element that enables users to interact with the application seamlessly to facilitate their requests for finishing services. It provides an intuitive and user-friendly interface for users to request services, enter their details, and navigate through the app.

Key UI Components:

1. **Splash Screen:**
    - Displays a brief introduction to the app.
2. **Homepage:**
    - Presents an overview of all available services.
    - Offers quick navigation shortcuts to other pages.
    - Provides access to the worker's account.
3. **Settings:**
    - Allows users to modify their personal profile.
4. **Chatbot:**
    - Enables users to inquire about app usage and access available packages.
5. **Service and Package Request:**
    - Provides a dedicated interface for entering data required to request services and packages.

User Data Management:

- The UI empowers users to manage their data, including email and password.
- It offers options to edit and update personal information.

User Account Management:

- Facilitates account creation and login for new users.
- Enables registered users to change their password and email.

Notifications:

- Displays a notification interface to showcase order updates and changes.
- Sends email notifications to users if they forget their password.

Customization:

- Grants users the flexibility to personalize the interface according to their preferences.
- Allows users to switch between dark mode and light mode.
- Provides language selection options.

3.4.4 Data Processing Module:

Data processing module is an important part of Homey application that can be in :

User Profiles: Storing and managing user profile data, including preferences and past project details.

Project Specifications: Collecting and managing data related to home finishing projects, such as measurements, materials needed, and design preferences.

Progress Tracking: Keeping track of the progress of various projects and updating the status based on user inputs.

Usage Analytics: Collecting and analyzing data on how users interact with the application to identify popular features or areas needing improvement.

User Feedback Analysis: Collecting and analyzing feedback from users to identify trends and areas for improvement.

3.4.5 Data Flow Diagram:

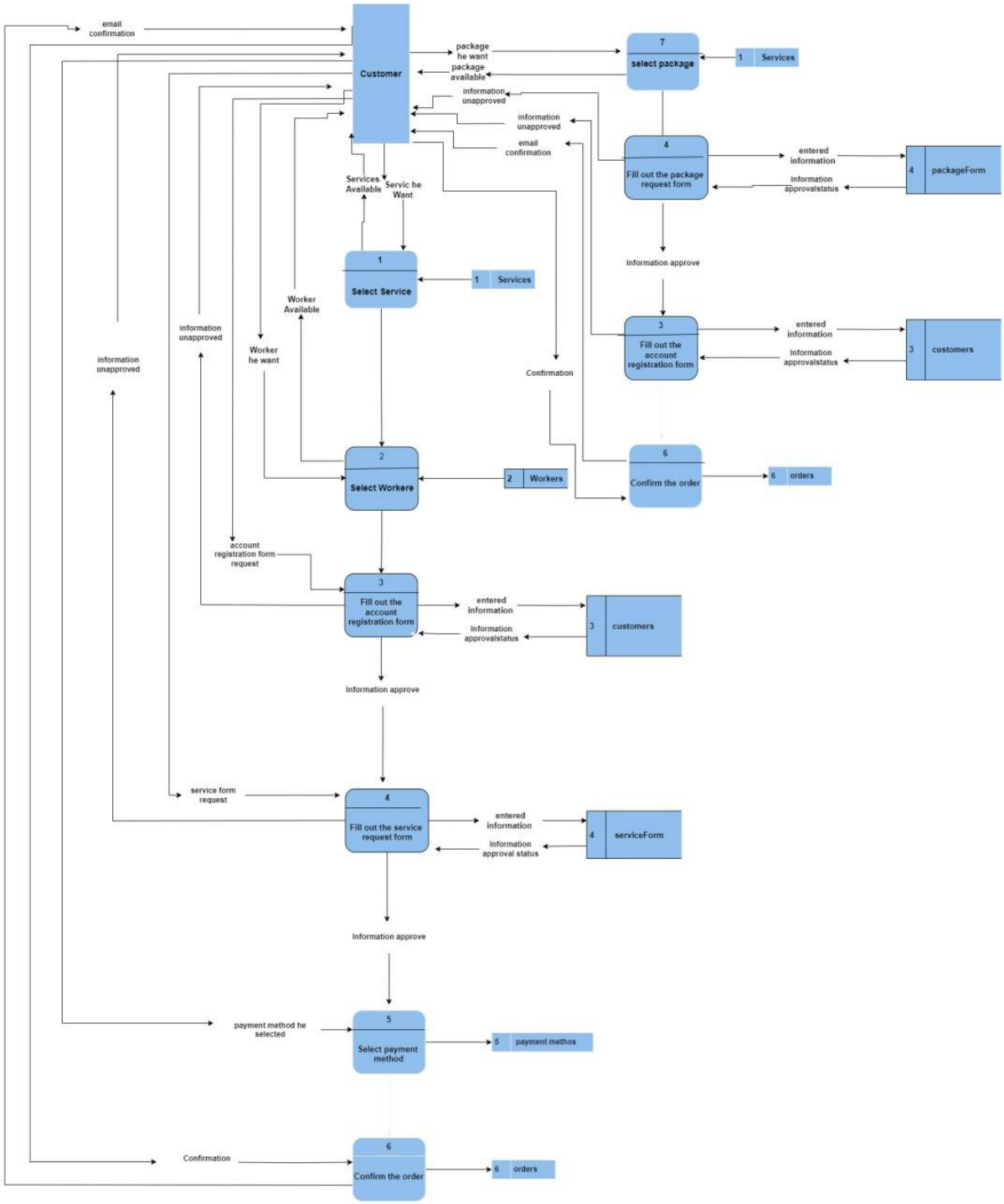


Figure 3.4 DFD for customer

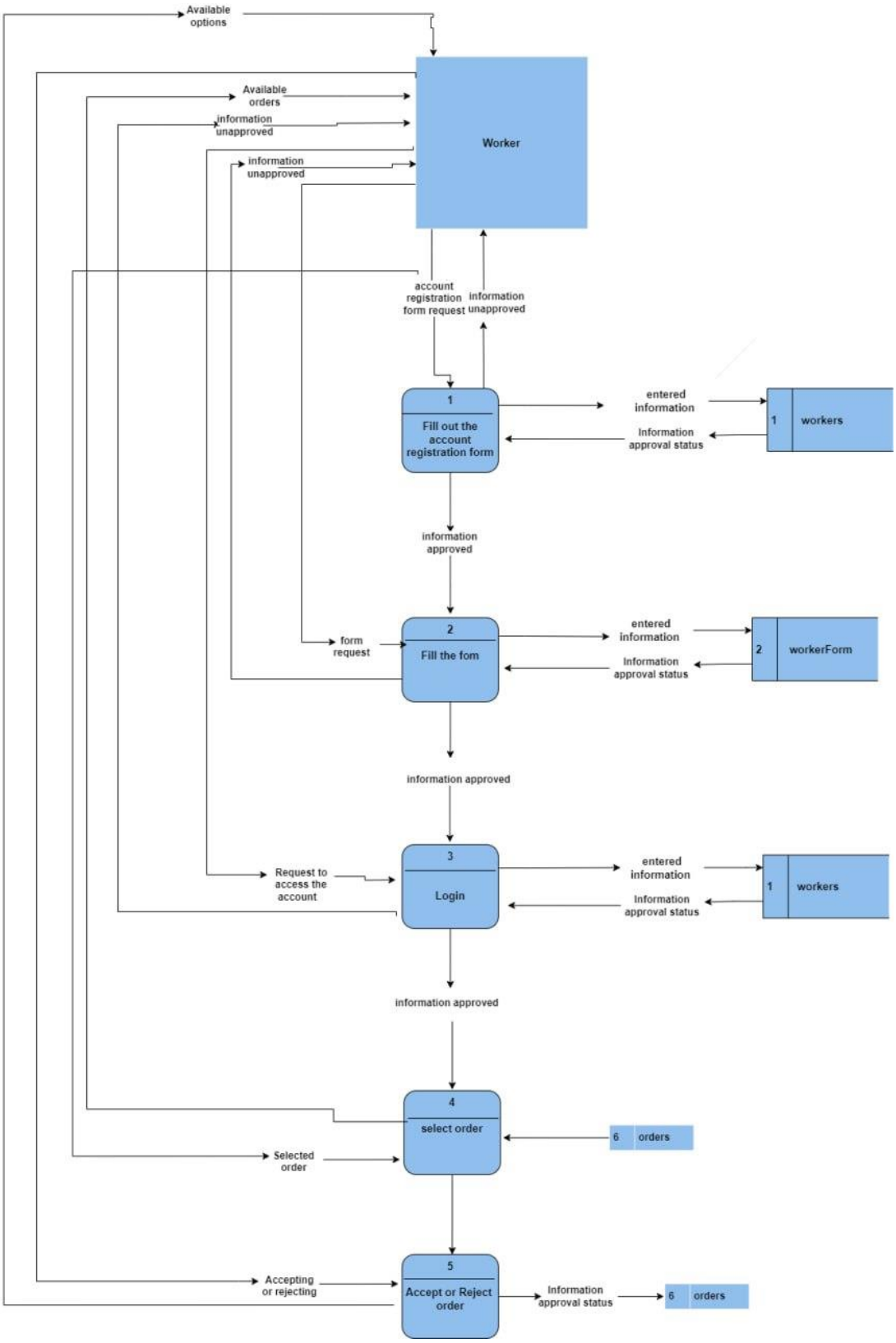


Figure 3.5 DFD for Worker

3.5 User Interface Design

The user interface (UI) of the Homey is a critical component that provide a seamless user experience. It is designed to be simple and intuitive, allowing users to quickly and easily access the information and features they need.

The following is a high-level overview of the Homey

- **User Interface**

1- **The introduction screen:** this is the first screen that the user could see and contains the logo of Homey with an animation.
2- **The brief screen:** this is the second screen that contains a small brief about homey application and the start button to go to the home page.
3- **The Home page**: is the main screen is the central hub of the program, providing an overview of all the services offered and allowing users to access their accounts and navigate between different sections of the program. It displays a clear and organized presentation of all the services offered by the program. Each service is represented by a tile or icon, accompanied by a brief description and any relevant information. It provides easy access to user accounts. Users can log in to their accounts to manage their profiles, settings, and subscriptions.

4- **Service Selection and Worker Access:** Upon selecting a specific service, users are directed to a page displaying a list of available workers for that service. Each worker's profile includes their name, rating, availability status, and any other relevant information. Selecting a particular worker initiates the login process, directing the user to their respective login page. Once logged in, the worker can access their dashboard and manage their tasks and appointments.

5- **The Services Cart page:** displays the list of services that the customer has chosen to perform. It contains the name of the service to be performed, the name of the worker who will perform the service, and a brief description of the service. It also contains 2 buttons below each service, an add to favorites button where the customer can add the service and the worker’s name to his favorites for easy access again, and a delete button where the customer can delete the service from the service card. There is also a Confirm button to confirm the selection of services. When you click on it, the registration form page will appear.

6- **The service registration page**: displays a form in which the customer fills in some data to book the service, as it is easy to access. It contains the name of the service, its image, and some data to be filled in. After filling out the information and clicking on the payment button below, a message will appear telling him if he wants to continue as a guest or if he wants to create an account.

7- **The favorite worker screen:** in this screen the user shows the worker he added them to the favorite worker screen and can also delete one of them or more from this screen or add to the cart screen.

8- **The packages page:** serves as a central hub for exploring and managing subscription packages within the program. It provides users with an organized overview of available packages, allowing them to select and subscribe to the plans that best suit their needs. The packages page displays a clear and organized presentation of all available subscription packages offered by the program. Upon selecting a package, users can view detailed information about its features, pricing, and benefits.

9- **The package registration page:** displays a form in which the customer fills in some data to book the service, as it is easy to access. It contains the name of the service, its image, a simple description of it, and some data to be filled in. After filling out the information and clicking on the payment button below, a message will appear telling him if he wants to continue as a guest or if he wants to create an account.

10- **The chatbot screen:** in this screen the user can ask the questions about the application and the chatbot will answer those questions.

11- **The Edit profile screen:** allows for the user to see and update/edit his personal information. The user can see his profile picture, his name, his e-mail, his mobile number and his password and allow him to edit this information through changing it and clicking on "Update" button. There is a success or error message is shown to inform the user about the status of his information. This ensures his account details are current and accurate.

12- **The Profile settings page**: serves as a central hub for managing user preferences and configurations. It provides users with control over various aspects of their experience within the program. Users can access and edit their profile information, including name, email address, and contact details, can manage notification settings, enabling or disabling notifications for various events and activities within the program, select their preferred language for the program interface and content. Supported languages include Arabic and English, access and review the program's policies and terms of service, switch between light and dark mode for the program interface, and access the complaints page to file reports or grievances.

13- **Customer login screen:** In this screen the users can login with their existing account or create a new one and can also use the option forget password if the user forgets his password. the login process is quick and secure ensuring that user’s data is protected.

14- **The customer sign-up page:** is designed to register new users who wish to order home finishing services It requires full name, email address, mobile number, address, password, and confirm password.

15- **The screen of OTP:** this screen has 4 cells to type in the 4 numbers of OTP code to be authenticated and verified.

16- **Payment screen:** In this screen the user can see his information such as his address and phone.in addition to choose the method of payment cash or fawry.

17- **Home page worker:** In this screen the worker can see a list of requests he was asked to do. The worker can press on the show button to see the details of the task and there is a notification icon if the worker clicks on it, he will see his notifications.

18- **The Review screen:** this screen contains four types of questions about what good things you see in ordering are, what the problems you may face, how you evaluate the worker's performance and a question about the process and speed of the service. then you can submit your review and the message of "your review has been sent successfully" will appear.

19- **For the worker:** The notifications page displays to the worker the updates and changes that occur to his account when the customer requests a new service from him, and the request notification appears to him.
For the customer: The notifications page displays to the customer the updates and changes that occur to his account when the worker approves or rejects the service he wants to perform.

20- **On the page of services details**: the worker is shown the total orders that he received for each service. When he clicks on the view details button, he goes to the service details page, which contains details about the service, such as its name, address, and so on. Then the worker chooses to accept or reject the service.

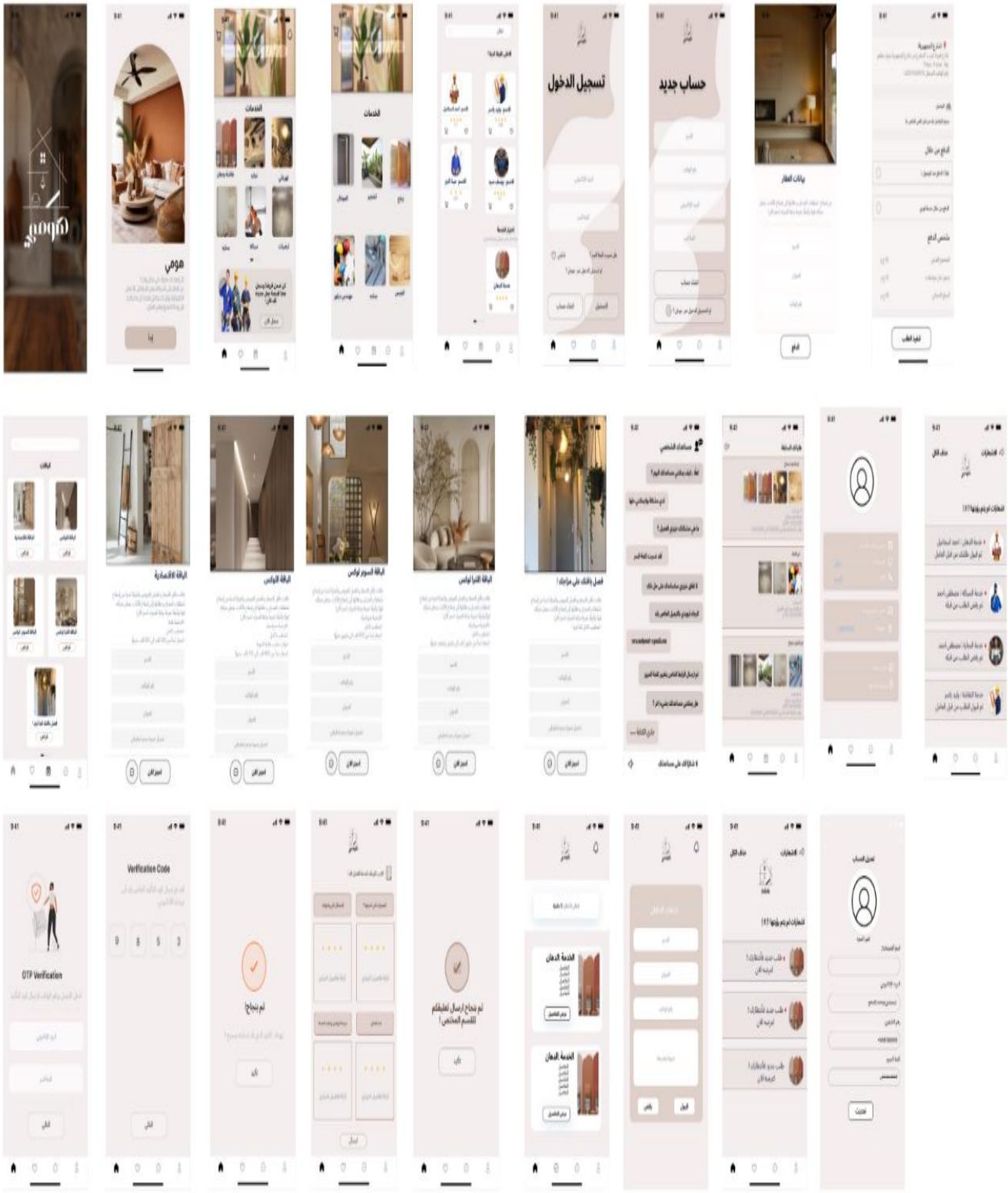


Figure 3.6 shows User Interfaces of Homey System

3.6 Testing and Quality Assurance

Testing and Quality Assurance (QA) are critical components in the software development lifecycle aimed at ensuring that a service meets specified requirements and functions correctly.

Testing involves executing a system to identify any gaps, errors, or missing requirements in contrast to the actual desired requirements. It includes various types such as:

Unit Testing: Testing individual components or modules for correct functionality.

Integration Testing: Ensuring that different modules or services work well together.

System Testing: Testing the entire system as a whole to ensure it meets the specified requirements.

User Acceptance Testing (UAT): Verifying the service's acceptability and ensuring it meets the business needs and requirements. Conduct testing with real users to ensure the application meets their needs and expectations.

Performance Testing: Assess the application's performance under various conditions, including load, stress, and scalability testing.

Security Testing: Identify vulnerabilities and ensure the application is secure from threats and attacks.

Compatibility Testing: Ensure the application works seamlessly across different devices and operating systems.

Usability Testing: Evaluate the application's user interface and user experience to ensure it is intuitive and user-friendly.

Regression Testing: Verify that new code changes do not adversely affect existing functionality.

Quality Assurance (QA) is a broader concept focused on improving the processes to deliver Quality Services to the customer. QA ensures that the processes used to manage and create deliverables are effective and efficient with respect to their quality standards.

Importance of Testing and QA:

Identifying Defects Early: Detecting and fixing defects early in the development process saves time and cost.

Ensuring Functionality and Reliability: Ensures that the software functions as expected and is reliable under various conditions.

Customer Satisfaction: Delivers a service that meets customer expectations and requirements, leading to higher customer satisfaction.

Preventing Costly Failures: Helps in preventing system failures that could be expensive and damaging to the business.

Improving User Experience: Ensures a smooth, error-free experience for the user, enhancing the overall usability and user experience.

Compliance: Ensures that the software meets regulatory and compliance requirements.

In summary, Testing and QA are essential for delivering high-quality, reliable, and user-friendly software, ultimately leading to the success and sustainability of a business.

3.7 Requirement Matrix

In Requirement Traceability Matrix, we set up a process of documenting the links between the user requirements proposed by the client to the system being built. In short, it's a high- level document to map and trace user requirements with test cases to ensure that for each and every requirement adequate level of testing is being achieved as shown in table 3.1.

Table 3.1 shows Requirement Matrix

Requirement name	**System component**
1-User authentication	User authentication model
2-User interface	User interface model
3-Data processing and analysis	Data processing
4-Data storage and retrieval	Data storage model
5-Data security and privacy	Data security and privacy model
6-User-friendly interface	User interface design
7-Accuracy and reliability	Testing and quality assurance
8-Alerts and notifications feature	Alerts and notifications model
9-Correctness	Evaluation and monitoring
10-Scalability and reliability	System architecture
11-Data mangagement	Data managment

Chapter 4 (Software requirements specifications)

4.1 Introduction:

The SRS document of the application outlines the functional and nonfunctional requirements of the homey software. This document serves as a contract between the development team and stakeholders to ensure that the end product meets the expectations of the stakeholders and end users.

providing a clear understanding of the requirements, constraints, and objectives for the homey software, and will be used as the basis for design, development, testing and delivery.

4.1.1 Intended Audience and Reading Suggestions:

The intended audience of the homey application are individual Customers who are needing finishing services such as plumbing, carpentry, etc. and customers looking for economic finishing packages. Professional Workers such as plumbers, carpenters, and electricians and Engineers who offer finishing packages to customers.

Reading Suggestions for the customer is reading reviews and experiences of previous customers with workers and package engineers. for the Professional Worker: articles on small business Management such as Tips on how to improve time management and increase efficiency or customer feedback and reviews like studying customer reviews to understand strengths and weaknesses and improve service. For the engineer: books on project management such as books to help improve project management skills and customer communication.

By identifying the intended audience and providing appropriate reading suggestions, the user experience can be enhanced, and the application's effectiveness in meeting their needs can be increased.

4.1.2 product scope:

The scope of homey application is to facilitate the process of finding skilled workers such as plumbing, carpentry, and electrical work, etc for customers and also provides multiple options for economic packages and customer Support such as technical support via chat or sending the problem the user faces. On the other side the application scope is to provide a list of requests which the worker asked to do and they can see customer reviews and ratings.

4.2 Overall Description:

The app provides the services the client needs for finishing. It also provides workers who will perform the service, and through the application, the customer and the worker communicate with

each other. There are also economic packages for installments and additional offers for the customer.

4.2.1 Product Perspective:

Homey application provides many distinguished services to the client, including (painting, carpentry, electrician, carpentry, etc.). In these services, the customer chooses what he wants, and a form will appear for him to register the data.

4.2.2 Product Functions:

The application will provide a range of basic functions to help the user implement the service. These functions include:

1_ The presence of a notifications button to alert the user of any changes or events in his account

2_ The customer can choose the way he wants to pay with it.

3_ The customer can search for any service he wants through the search button.

4_ If the user wants to know any information about the application, he can ask a chatbot.

5_ The customer can see his favorite services from the favorite button.

4.2.3 User classes and characteristics:

Homey application is designed for 3 types of users:

Clients: who can order any service that they want.

Workers: who can apply to the application as a worker and start their job, seeing orders and dealing with clients.

Engineers: who can be involved into the application and offer packages and services to the clients.

4.2.4 Operating environment:

Homey application is designed to work on both hardware and software platform to provide a seamless experience to users. Hardware platforms that contain mobile phone devices. Software is a phone application implemented by using flutter framework and firebase.

4.2.5 Design and Implementation Constraints:

Homey application will be varied in design and implementation, including:

1-Providing and improving all the services the client needs and the list of workers with a different rating.

2- provide a list of an economic package and the customer chooses that suits his financial circumstances.

3- If there is something the user wants to inquire about, he will ask the chatbot.

4- The user is not allowed to log in twice with the same account, so he must create a new account

5- After the service ends, a list of all the customer requests will be displayed for review.

6- If there are any comments related to the application, they will be sent through the evaluation.

7- To ensure privacy and security, data is protected through authentication.

4.2.6. User Documentation:

Homey application will include a comprehensive description of all the system that keep the user aware of all the system and guide them how to use, from ordering a service to getting everything finished.

4.2.7 Assumptions and dependencies:

1- availability of mobile phone devices for users and internet connection to support real-time ordering.

2-user adoption of the application and willingness to use Homey to order a service.

3-availability of skilled workers to finish services at a good quality.

4-trustiness of the users to the system to finish their home through the application.

These assumptions and dependencies are crucial to Homey application to get the best experience of using it and ensure its success.

4.3 External Interface Requirements:

The External Interface Requirements for the Home Finishing Application are crucial for the overall design and implementation of the system. Those interfaces are necessary for effective and efficient interaction with external components and devices.

4.3.1 Hardware Interfaces:

The Home Finishing Application should be compatible with a wide range of devices to collect user data and provide a seamless user experience such as Mobile Devices which have: Camera to capture photos and videos of the home, RAM: At least 4 GB, CPU: High-performance, Internal Storage: Sufficient for caching data, Flash: If available.

4.3.2 Software Interfaces:

The system should be compatible with multiple operating systems and integrate with other systems such as project management and engineering software for data interoperability and seamless integration. The software requirements include:

Database

The Home Finishing Application utilizes Firebase as its database solution for users. Firebase offers real-time data synchronization, and robust scalability, ensuring efficient data management

and storage directly in the cloud. This choice enhances performance and responsiveness while minimizing latency in accessing critical user data, providing a seamless and reliable user experience across devices.

Minimum SDK:

The Home Finishing Application developed with Flutter and Firebase requires a minimum SDK of version 24 for devices.

Libraries

The application utilizes Firebase SDK along with other essential Flutter libraries. These libraries enable seamless integration with Firebase services such as real-time database, authentication, and cloud storage, ensuring efficient data handling, secure user authentication, and real-time synchronization.

Operating Systems:

Compatibility with the latest and previous versions of Android and iOS.

User Interfaces (UI):

Customer Interface:

Easy Registration and Login processes using email and password.

Service Request: Viewing laborers that do the services that the customer needs to request it .

Profile Management: the user can see his requests and history of the previous requests that he has done and canceled.

Search and Filter Options: Tools to search and filter workers based on skills, ratings, availability, and location.

Reviews and Ratings: Section for viewing and leaving reviews and ratings for workers.

Notifications: Real-time notifications for updates, promotions, and reminders.

Customer Support: Access to chat support, FAQs (Frequently Asked Questions), and contact information for assistance.

Worker Interface:

Job Listings: Section displaying available job requests with detailed descriptions.

Job Application: Interface for applying to job requests and communicating with customers.

Profile Management: editing his profile and seeing his accepting requests at the history to manage his time at work.

Notifications: Real-time notifications for job offers, customer messages, and payment updates.

Support: Access to chat support and resources for improving service quality.

4.3.3 Communication Interfaces:

Communication interfaces are essential for the Home Finishing Application to interact with other systems and services. The communication requirements include:

- **Inter-System Communication**: The system should communicate with other systems using standardized protocols.
- **Data Storage**: Data will be stored in a single database managed by Firebase Fire store, with an estimated size of 20 MB per user.
- **User Registration**: Users can sign up using their email details via their Gmail accounts.
- **Security Interfaces:** Secure authentication mechanisms and the password is encrypted to make the user accounts safe from any attack to ensure privacy and security.
- **Data Protection:** Compliance with data protection regulations such as to safeguard user data. This update reflects the use of Firebase Firestore for data storage.
-

4.4 System Features:

User Registration and Profile Management: Homey provides a user registration through email, phone number. It also provides detailed profiles for users including contact information, addresses, and preferences.

Service Listings: Homey includes catalog of services that include comprehensive list of services offered, such as carpentry, electricity, plumbing, gardening, and interior designer etc. it also includes service details to explain detailed descriptions of each service, including workers, their name, their rate, and adding them to the cart or to the favorite page

Booking service: booking that is easy-to-use for selecting services

Communication Tools: There are notifications for confirmation of accepting or rejecting the worker, the requested orders from the worker and acceptance or rejection of a service for the customer. Customer Support Chat that is live chat support for customer inquiries and assistance as Chatbot.

Ratings and Review: that enable users to rate workers based on their work for the service requested.

Customization Options: Homey allows users to customize services based on their specific requirements as it is found in packages. Homey offers different packages with varying levels of service to cater to different budgets and needs.

User Experience Features: Homey provides user-friendly, intuitive and easy-to-navigate interface. Homey has advanced search and filters options to find specific services quickly.

Security and Privacy: Homey has its clear privacy policy detailing data use and protection measures. Strong user authentication mechanisms to prevent unauthorized access is provided by Homey application.

Multilingual Support: Homey offers the application in multiple languages to cater to a diverse user base.

Data security: Homey includes robust security measures to ensure the confidentiality and privacy of user data.

4.5 Other nonfunctional requirements:

4.5.1 Performance requirements:

Speed and Efficiency:

High Performance and Quick Response: The app should load and navigate between screens in less than 3 seconds and handle customer requests and data updates in real-time without delay.

Search and Filter: Execute search and filter operations quickly and accurately, allowing customers to find workers easily.

Compatibility:

The app should be compatible with both the latest and previous versions of Android and iOS and run smoothly on a variety of devices with different specifications.

Stability and Reliability:

Stability: The app should be stable and not prone to crashes or sudden stops.

Backup: Regular backup system to protect user data and ensure recovery in case of any malfunction.

Reliability: The system must be reliable, so that the user can use it safely and reliably, so the system runs on at least 97% reliability.

Scalability:

The system should be capable of handling an increase in the number of users and expanding the customer and worker base without affecting performance.

Resource Consumption:

Battery Consumption Optimize energy usage to ensure the app does not drain the device's battery quickly.

Data Usage: Minimize data consumption to provide a comfortable experience for users relying on limited data plans.

Customer Satisfaction:

Meeting or exceeding customer expectations through clear communication, responsiveness to concerns, and delivering as promised.

Availability:

The system should be designed to minimize downtime and ensure high availability The system is available 24 hours.

4.5.2 Safety Requirements

Homy should comply with all relevant safety regulations and standards to ensure the protection of user data and privacy. It should be designed to minimize potential risks to users, such as data breaches or unauthorized access.

Access Permissions: Restrict access to sensitive data and functions within the app based on user roles (customer, worker, engineer).

Defense Against Attacks:

Intrusion Prevention: Use firewalls and intrusion detection systems to protect the app from hacking attempts and cyber-attacks.

Emergency Support:

Disaster Recovery Plan: Have a disaster recovery plan in place to quickly restore service in case of any malfunction or disaster.

Technical Support: Offer 24/7 technical support to handle any security or technical issues users might face.

4.5.3 Security Requirements:

Homy should implement robust security measures to protect user data and prevent unauthorized access and should be designed to meet industry standards for data encryption and secure communication.

Security Updates: Provide regular security updates to address vulnerabilities and ensure the app remains secure.

4.5.4 Software Quality Attributes:

Homy should be user-friendly and easy to use, with a clear and intuitive interface.

The system should be scalable and able to adapt to changing user needs and requirements over time.

The software should be thoroughly tested and validated to ensure high reliability and stability.

The ability to maintain, modify information and update fix problems of the system. Software can be used repeatedly without distortion.

Administrators and many other users can access the system, but the access level is controlled for each user according to their work scope.

4.5.5 Business Rules:

Homy should comply with all relevant regulations and guidelines related to data privacy and security.

The system should be designed to support the growth and success of the business, including the ability to monetize the platform and generate revenue.

Homy should be designed to support the business strategy and goals, including the ability to integrate with other systems and platforms as needed.

Conclusion

In the first chapter, the software proposal, the overall concept of Homey is introduced and the key objectives are outlined. Homey software aims to simplify the process of finishing homes and enhancing your living spaces, providing you with a one-stop platform for all your home improvement needs. Whether you are moving into a new home or looking to upgrade your current living environment, Homey offers a wide range of services and features to ensure your home is finished to perfection.

The second chapter, the software analysis, delved deeper into the requirements and constraints of the software. A thorough analysis of the market and competitors was conducted, and user requirements and constraints were identified. The results of the analysis provided important insights into the key features and functionalities that need to be included

in the software to make it appealing to users and competitive in the market. This chapter also included a discussion of the potential challenges and limitations of the software, and how these could be addressed in the design and development process.

The third chapter, the software design, detailed the design of the software, including the user interface, system architecture, and the data storage model. The design was created in such a way as to meet the requirements outlined in the analysis, while also being aesthetically pleasing and easy to use. The design also took into account the technical constraints of the software and the hardware on which it will run, to ensure that it will be feasible to develop and implement.

the final chapter, the software requirements specifications, provided a comprehensive description of the functional requirements and nonfunctional requirements of the software. This chapter served as a contract between the development team and stakeholders, outlining the product 's intended behavior, constraints and features.it provided a clear understanding of the requirements, constraints and objectives for the homey software, and will serve as the basis for design, development, testing and delivery.

Future works

1- **Online customer serves.**
2- **Add a voice recording or upload a photo in the chatbot**
3- ***Adding Repair Services:***

Plan to introduce a section for repair services in the app, allowing users to request specific repair tasks such as electrical repairs.

4- ***Expanding the Supplier and Partner Base:***

Build new partnerships with local and international suppliers to ensure the availability of the best materials and tools at competitive prices.

5- ***Expanding Payment Options:***

Introduce the option to pay via Visa and offer installment payment facilities to provide convenience for everyone

6- **Clints can choose the nearest worker to finish their service**

Appendices

Appendix A: Professional Considerations

Implementing a professional mobile application for finishing services requires meticulous planning and consideration of various factors to ensure success, meet user needs, and operate reliably. Here are key professional considerations:

Project Planning and Management

- **Requirements Gathering**: Understand and document user needs, business requirements, and technical specifications.
- **Scope Management**: Clearly define the project scope to avoid scope creep.
- **Timeline and Milestones**: Set realistic timelines and milestones for project phases.
- **Resource Allocation**: Ensure the right people, tools, and budget are in place.

Technical Considerations

- **Technology Stack**: Select technologies that are suitable for the application's requirements and future scalability.
- **Scalability and Performance**: Design the application to handle growth and high performance.

- **Security**: Implement robust security measures to protect against threats and vulnerabilities.

Development Practices

- **Agile Methodology**: Consider using agile practices for iterative development and frequent feedback.
- **Version Control**: Use version control systems (e.g., Git) for code management.
- **Code Quality**: Maintain high code quality through code reviews, automated testing, and adherence to coding standards.
- **Documentation**: Provide comprehensive documentation for developers and end-users.

User Experience (UX)

- **User-Centered Design**: Design the application with the end-user in mind to ensure a positive user experience.
- **Accessibility**: Ensure the mobile application is accessible to all users.
- **Usability Testing**: Conduct usability testing to gather feedback and make necessary improvements.

Deployment and Maintenance

- **Deployment Strategy**: Plan for efficient deployment processes.
- **Monitoring and Logging**: Implement monitoring and logging to track application performance and issues.
- **Support and Maintenance**: Plan for ongoing support, bug fixes, and updates.

Communication and Collaboration

- **Stakeholder Engagement**: Regularly communicate with stakeholders to keep them informed and involved.
- **Team Collaboration**: Foster a collaborative environment among team members.

Risk Management

- **Risk Assessment**: Identify potential risks and develop mitigation strategies.
- **Contingency Planning**: Prepare for unforeseen issues with contingency plans.

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  -Mr. Mohamed Abdel-Naser

  -Mr. Ahmed Hassan: Owner of Sal7ly Company