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1.PROBLEM DOMAIN

1.1 Background to the Problem

One of the best things about living in the modern era is the convenience of online shopping. Whether it's travel, electronics, financial products or clothing, we can find prices on what we want to buy instantly, from multiple vendors. However, when it comes to home improvement or repairing existing things, the exact opposite happens. Moreover, life becomes unstable due to various problems such as electronic appliance malfunctioning, water tap leaking, car getting damaged etc. It's quite difficult to find and hire technician in the local market because they usually don't have any fixed gathering spot or most of them are not experienced enough. Even if we manage to locate a specialist, it turns out that they ask for unrealistic amount for the service. We commonly experience problems with power, water, electronic components, car breakdowns, etc. While shifting our home from one place to another is another tough task since we are too busy and don't know where to find relevant technician due to insufficient knowledge regarding technician whereabout and market price to install our electric appliance such as air conditioner, fan or TV.

Numerous issues like this continue to plague thousands of people. People are looking for solutions to this issue. There are several potential causes for this issue. People don't know where to communicate, which is the fundamental cause. When we run into a difficulty, we don't know where to turn to address the true problem, which makes it tough for us to solve it. In addition to these issues, there are some other issues, such as the fact that many individuals do not want to invite any technician inside their home for security reasons. People become suspicious when it is observed that numerous dishonest individuals break into homes pretending to be technicians and even commit theft and robbery. For these reasons, a lot of individuals don't feel safe.

1.2 Solution to the Problem

To address these issues, we have developed an innovative concept. Our solution will solve each of the issues listed above. The solution is HandyMate. After registering, the customer can select which type of technician that he needs by selecting different categories according to his need. The customer has to add some necessary information after he select the category such as his address, arrival date and time. The money that is charged from the customer will be split into 80-20 the technician will take the 80% and they'll pay 20% of his income through online payment to the app management account. We will benefit from all these. Hopefully investors can make their profits and the solution feasible to the meet the business objective.

To use our software the both the customer and the technician have to register and the technician need to go through a series of basic test that can ensure their experience and their technical skill. The customer can hire service and the technician can accept the customer job request. Users can make payment through the app and review the service provided. Our purpose is to provide customer with quality service with reasonable cost- and hassle-free experience. This will save customer's time and money and there will be no chance of any security issues as the information of both parties are stored by the system so in case of any legal issues it can be solved fast. Both the customer and technician will be benefited and business goals of investors can be achieved which is further explained in cost and profit analysis.

Although such idea can be seen online, but there are several limitations. Such as they do not play a very strong role in the security of a user. A high price is charged from the customer for each task. Not many technicians are available in their system. The system that exists so far does not offer various offers or discounts. But our system will solve all these problems and we will charge reasonable price for each work from the user than the system that is close to us in the market so far. From time to time, we will give different promo code and incentives to customers and technicians so that they use our system more.

2.SOLUTION DESCRIPTION

2.1 System Features

Our system will use by a number of people. For each user, there is a distinct set of requirements.

- System Admin
- Customer
- Technician

Common Features for all users:

Serial	Function	Field	Description
1	Log In	● Enter Username/Email: ● Enter Password: ● Login ● Forgot Password ● Registration required for customers and technician	● Users (Mentioned User Types) can login using username or email and password. ● Users can reset their password by clicking Forgot Password
2	Forgot Password	● Enter email: ● Reset Password (An email will be sent to the email) ○ Enter Code (Found in email): ○ Enter New Password: ○ Confirm New Password: ○ Set New Password	● To reset the password, users have to enter the email of his/her existing account. If the email is correct then an email with a code will be sent to that email address. ● By using the code in the email, the user can reset the password.

Features for System Admin:

Serial	Function	Field	Description
1	Verify user's profile	● Name ● Address ● E-mail ● Phone Number	● Admin can verify profile of customer or technician
2	Block or approve users	● Block ● Ban ● Approve	● Admin can block, unblock and approve users
3	Check all the documents	● NID ● Certificate	● Admin can check the documents of technicians before confirming their registration
4	Analyze user feedback	● Rating ● Feedback	● Admin can analyze rating and reviews of users

5	Create offer and discounts	● Coupon Code: ● Discount: ○ In Percentage (%) OR ○ In Amount ● Valid From: ● Valid Till: ● Minimum Purchase Amount:(Optional) ● Maximum Discount Amount: ● Add Coupon ● Cancel	● Admin can add a new coupon, voucher or discount code.

Features for Customer:

Serial	Function	Field	Description
1	View or edit personal profile	● Name ● Address ● E-mail ● Phone Number	Customer can view and edit their profile
2	Search for technician	● Search By Category ● Search By Service	Customer can search for a specific category of technician or a service (Example: Repair circuit board)
3	Hire service	● Select Category ● Select Service ● Select Quantity	Customer can hire technician by selecting the category, service and quantity (Example: Electrician→ Fan installation → 2)
4	Schedule Time	● Select Date ● Select Time	Customer can choose date and time for service (Example: Sunday→ 4:00 pm)
5	Make payment	● Select Payment Method ● Confirm Payment ● View Payment history	Customer can choose method of their payment (Cash on Delivery or online payment)
6	Review service and provide feedback	● Provide Rating ● Write feedback	Customer can give feedback of the service provided by the technician

7	Report problem	● Write Complain ● Contact support	Customer can complain or contact support in case of any problem regarding the system or service

Features for Technician:

Serial	Function	Field	Description
1	View or edit personal profile	● Name ● Address ● E-mail ● Phone Number	Technician can view and edit their profile
2	Accept customer request	● View requested service ● View amount ● View Customer information ● Accept Request ● Reject Request	Technician can get job request from customer through system they can either accept it or reject, they can check customer request and can get customer information after accepting the request
3	Accept payment	● Receive Payment ● Check Balance ● Check Transaction history	Technician can receive payment through the app and see detailed information
4	Review Customer	● Provide Rating	Technician can review customer
5	Report problem	● Write Complain ● Contact support	Technician can complain or contact support in case of any problem regarding the system or service

Quality attribute or non-functional requirement:

1. Security
2. User friendly
3. Reliability
4. Availability
5. Portability

2.2 UML Diagrams

2.2.1 Use-case Diagram:

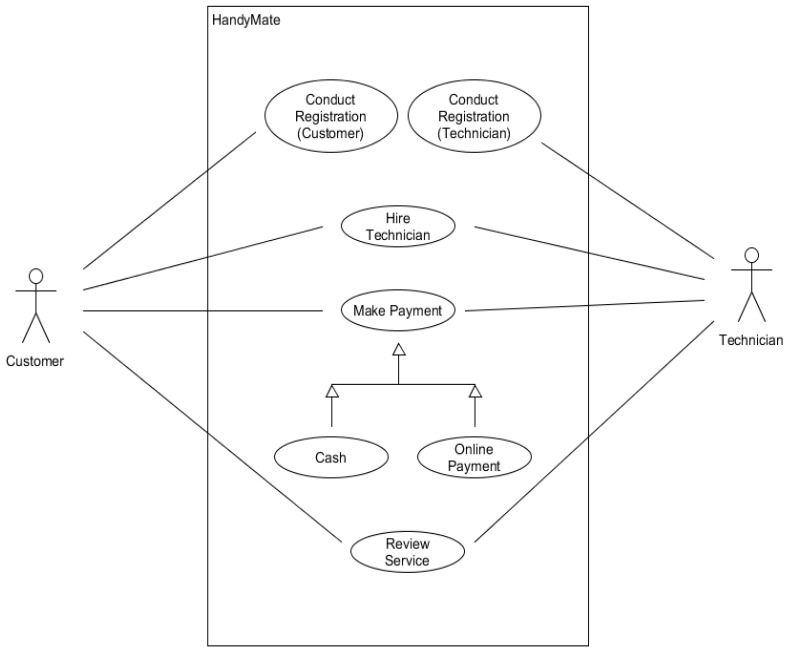


Figure: Use-case Diagram for HandyMate

Description: In the given Use-case diagram we can see both customer and technician need to conduct registration in order to use the system. Through the system the customer can hire technician and technician can accept the customer request. After the service has been provided the customer can pay the technician either with cash or via listed online payment. Finally, when the payment is processed customer can review and give feedback regarding the service provided and the technician.

2.2.2 Activity Diagrams:

2.2.2.1 Customer Registration:

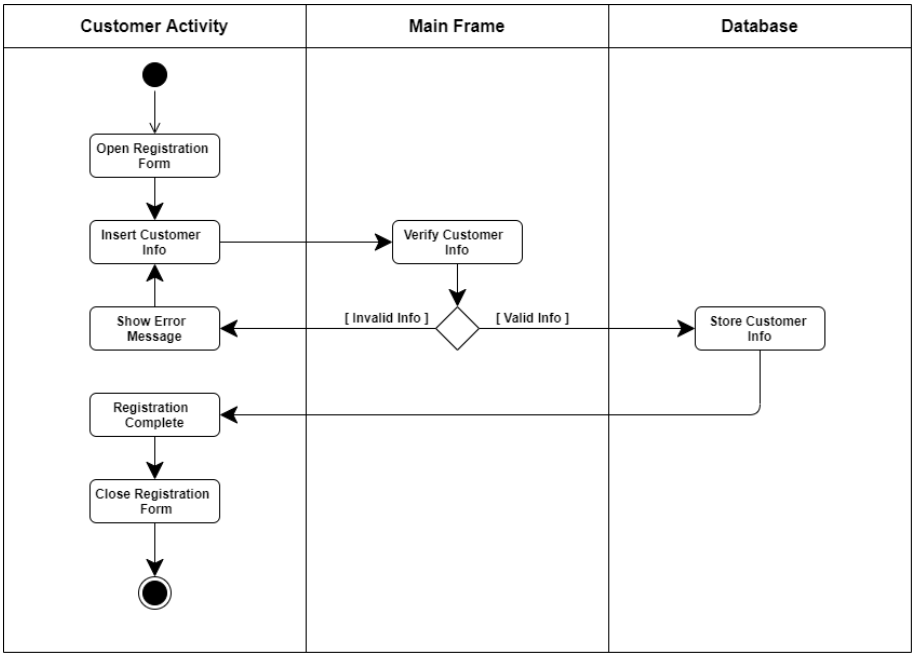


Figure: Activity diagram for customer registration

Description: Customers need to register into the system in order to use it. As soon as the customer press the register option it takes him to registration form, the customer needs to provide some information such as name, email, phone number and address. If the provided information is invalid the system shows an error message and ask to reinsert the correct information. When the customer provides accurate information, the information is store into the database and registration completed confirmation pops up.

2.2.2.2 Technician Registration:

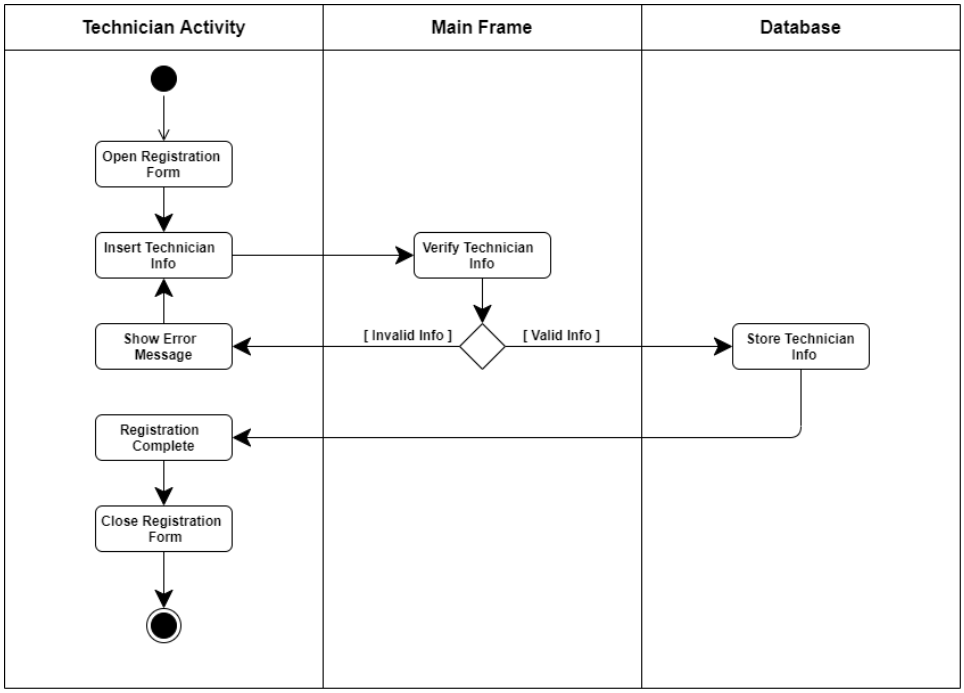


Figure: Activity diagram for Technician registration

Description: Technicians also need to register into the system in order to use it. As soon as the technician press the register option it takes him to registration form, the technician needs to provide some information such as name, email, phone number, NID card number, Experience information and address. If the provided information is invalid the system shows an error message and ask to reinsert the correct information. When the technician provides accurate information, the information is store into the database and registration completed confirmation pops up.

2.2.2.3 Hire Technician:

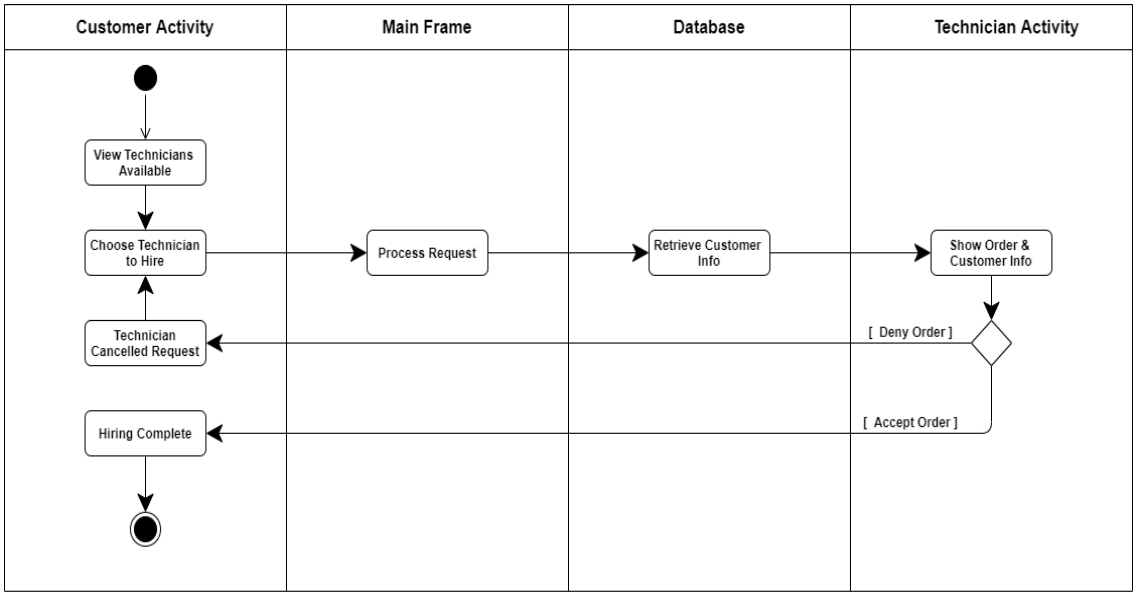


Figure: Activity diagram for hiring technician

Description: During hiring a technician a customer first selects a specific technician group then chose to hire them after selecting task that need to be performed by the technician. The system then forwards the request to available technician who can either accept the job or reject it. When a technician accepts the request customer gets the notification.

2.2.2.4 Payment:

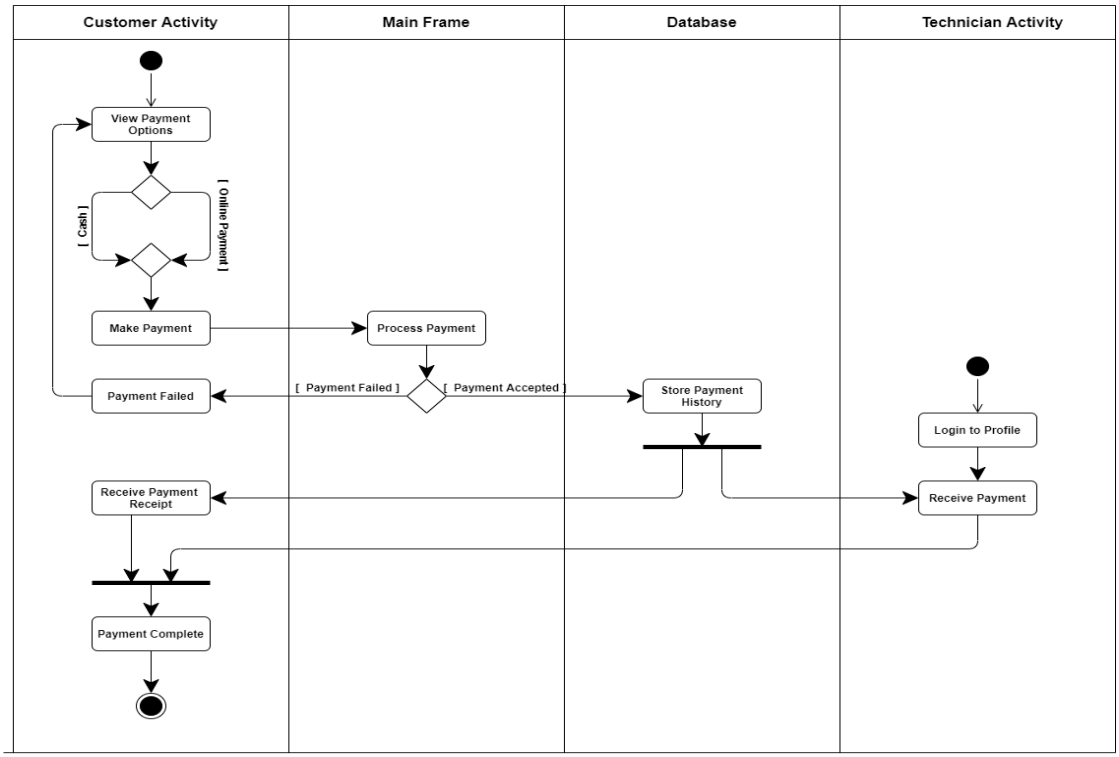


Figure: Activity diagram for payment

Description: For payment the customer selects the payment option and chose weather he wants to pay in cash or any listed online payment service. If the payment is failed the payment process restarts from the beginning. If the payment is through cash the technician takes the money and confirm the payment. If the payment is processed successfully it is stored in payment history and the customer is notified payment successful.

2.2.2.5 Review:

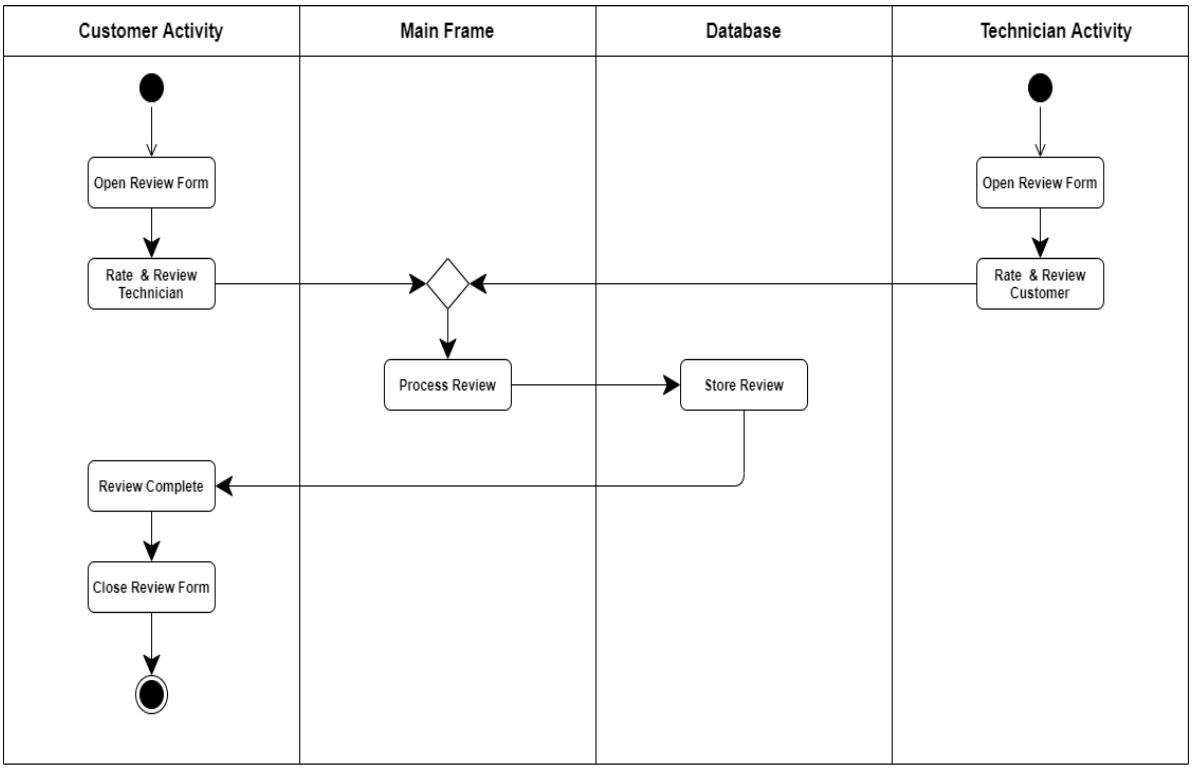


Figure: Activity diagram for review

Description: Once the payment is complete both customer and technician can rate and review each other through review pop up form, then the system process the review and store it to database which can used for further analysis.

2.2.3 Class Diagram:

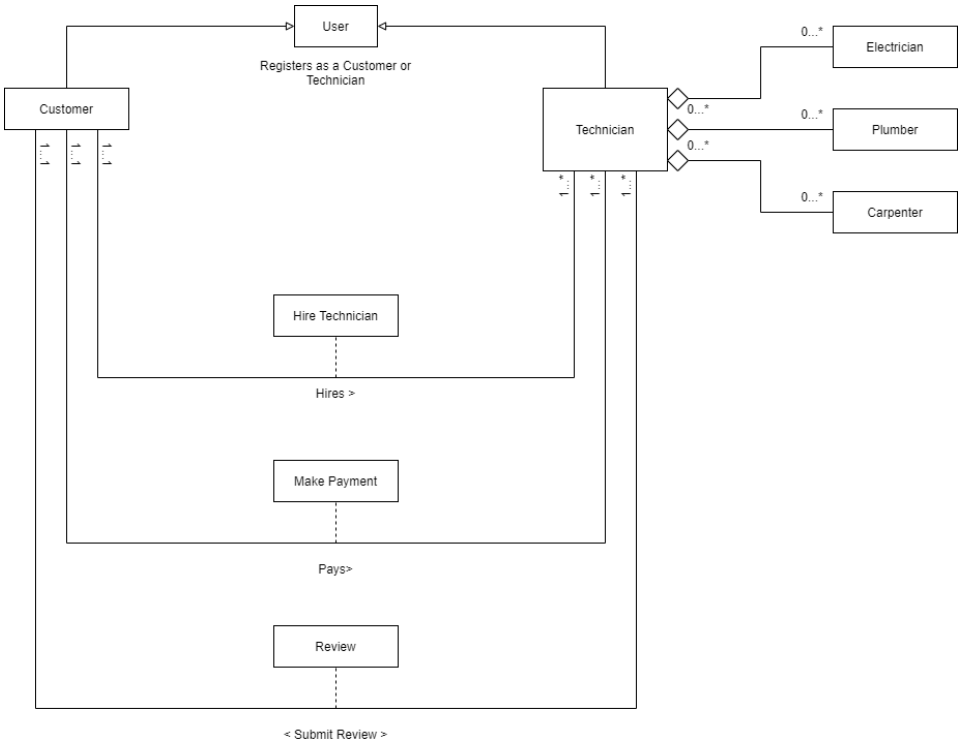


Figure: Class diagram for HandyMate

Description: Here from the class diagram, we can see both customer and technician are child class of user class. Electrician, Plumber and Carpenter are part of technician class which is represented through aggregation. The technician class can have relation with minimum of zero to maximum of many electricians, plumber, carpenter class. A customer can hire one technician at a time while a technician can server multiple customers same goes for payment and review.

3. SOCIAL IMPACT

The goal of our mobile app HandyMate is to provide customer with hassle free experience while getting repairing or renovation service. Customer can get the service with reasonable amount of payment and that too from a well experienced technician. Hiring services thorough phone makes the process more convenient and saves both time and money. Through this app we hope to improve the quality of life of the users. As well as for the technician they usually get work some times and sit idle for the rest of the day. Through this app without wondering in the market in search of work they can also get opportunity to get work and earn a decent amount of money. Many people with sufficient vocational and technical training can enhance their technical skill and earn money without relying on other. So, we can say our system might help to reduce unemployment. Thus, our app can help in the improvement of socio-economic condition of both customer and technician in the current prospective of Bangladesh.

4. DEVELOPMENT PLAN WITH PROJECT SCHEDULE

Task	Duration (days)
1. Requirement	20
2. Wireframing	20
3. Rapid Prototype	60
4. Design	30
5. Development & Iteration	220
6. Test	44
7. Deployment	10
Total	404

Table: Project Duration Time

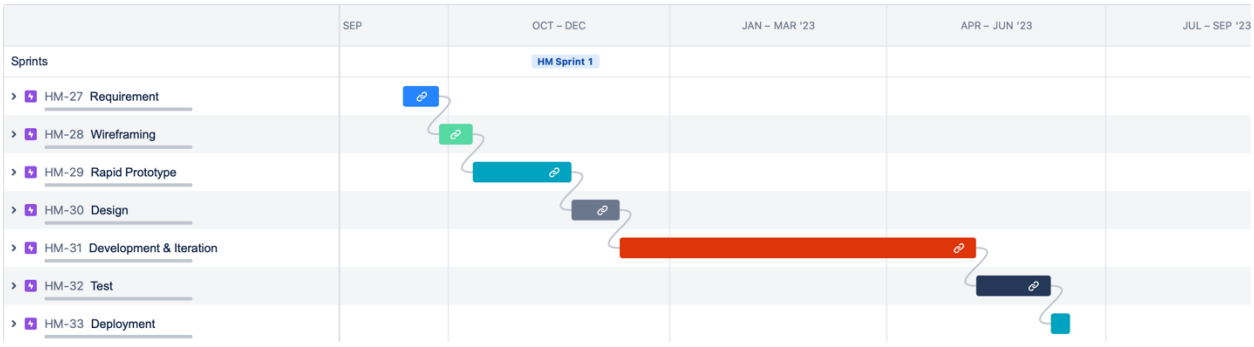


Figure: Roadmap

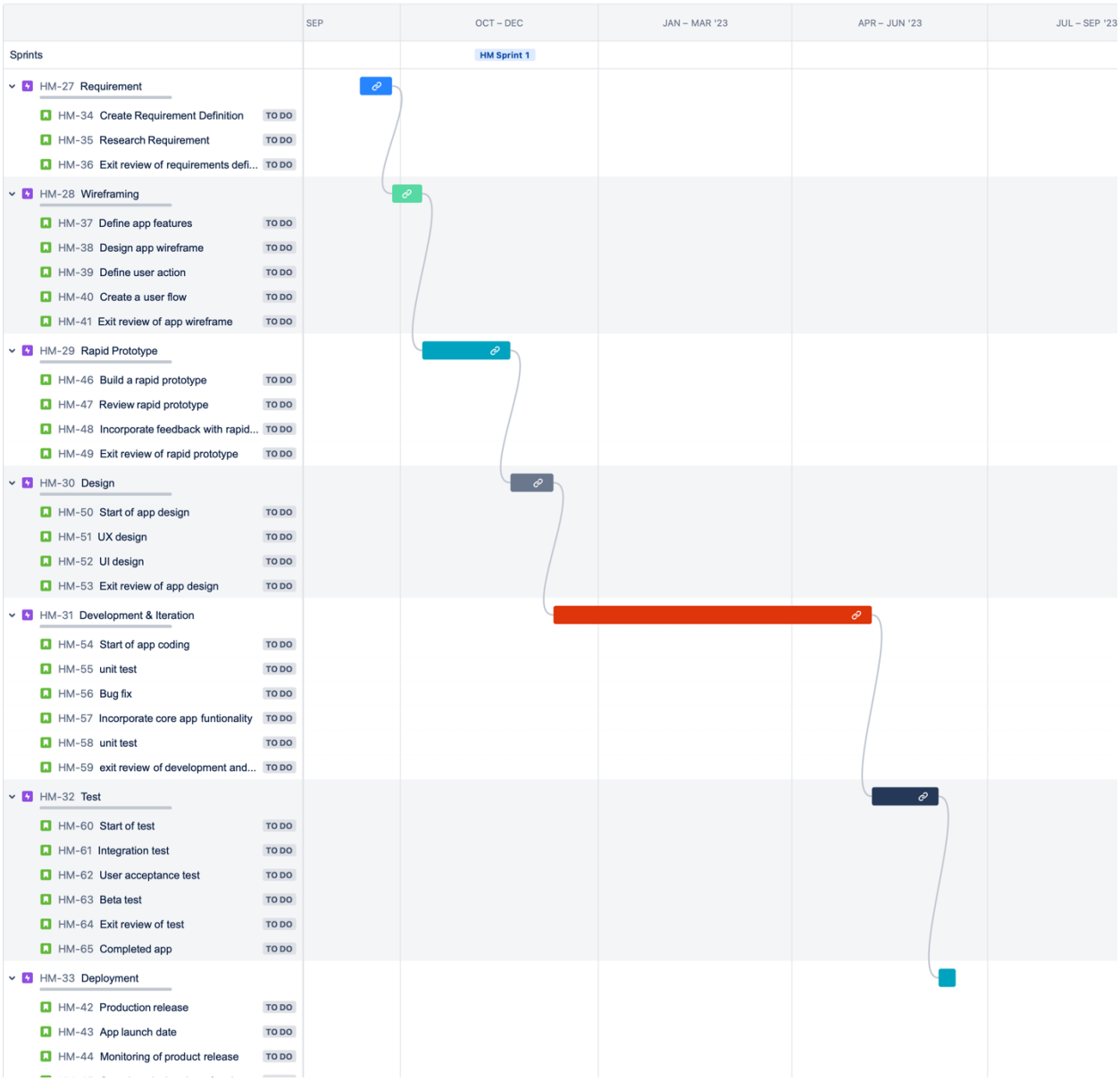


Figure: Detailed Roadmap

5.Marketing Plan

5.1 Short term Marketing Plan

Usually marketing for a period for less than a year is called short term marketing.

5.1.1 Price Promotion

Price promoting is the most important thing for short term Marketing Plan. Through this we can get very good results in a very short time. For example: 20% bonus for new users and vouchers on different occasion for old users. For example, if you place 10 orders, you will get 1 promo code.

5.1.2 TV Ad

Through advertising on TV, we can do marketing very quickly. Because many people in Bangladesh watch TV. Through advertisement on TV very easily people will know about our service activities and will be attracted towards it.

5.2 Long term Marketing Plan

Usually marketing for a period of 1 year or above is called long term marketing.

5.2.1 Social media marketing

Social media marketing is a long-term process. We can promote our organization with minimum cost through social media. You have to open pages on Facebook, Instagram and slowly add followers. This will increase awareness and usage of our apps.

5.2.2 Sponsorship marketing

Sponsorship can be another way promote our app. We can offer sponsorship through various means. We can do marketing by branding our apps in cricket, football, various dramas, movies and shows.

5.3 Continuous marketing plan

Continuous marketing is an ongoing marketing plan that is done throughout the year. Apps can always promote themselves through this sort of marketing.

5.3.1 Billboard

Billboard is a continuous marketing strategy. We can put our ads on billboards of major city points. As a result, user will see them and be curious about the apps and the number of users of the app will increase.

5.3.2 Review

Through review we can introduce our apps. For example, a person can give his opinion in the review option after taking the service through our apps. As a result, other customers can easily weigh the pros and cons of our apps.

6.Cost and Profit Analysis

Employee Salary Cost for Project:

Person	Salary (Per Month)	Days Need	Expense
Project Manager	120000	135	736363
SQA Engineer	50000	404	918181
Senior Developer	100000	404	1836363
Software Engineer	80000	55	200000
UI/UX Designer	50000	30	68181
Cyber Security Expert	100000	10	45454
Others			21821
		Total	3,000,000

Annual Maintenance Cost:

30% of Development Cost = **BDT 900,000**

Digital Marketing Cost (Monthly):

Service	Daily Cost (BDT)	Days	Total Cost (BDT)
TV Advertising	50000	3	150000
Social Media	1000	30	30000
Total Cost			180000

Total Cost for First Year:

Employee Salary Cost	BDT 3,000,000
Annual Maintenance Cost	BDT 900,000
Annual Marketing Cost	BDT 2,160,000
Total	BDT 6,060,000

Revenue:

Minimum cost of per service= BDT 220
Revenue from Per Service 20 % of Per Service= BDT 44

First quarter:

Minimum number of users per day	: 75 persons
Minimum cost per service	: BDT 220
Minimum Revenue per service	: BDT 44
Minimum Revenue per day	: BDT 3,300
Minimum Revenue per Month	: BDT 99,000
Minimum Revenue per quarter	: BDT 297,000

Second quarter:

Minimum number of users per day	: 150 people
Minimum cost per service	: BDT 220
Minimum Revenue per service	: BDT 44
Minimum Revenue per day	: BDT 6,600
Minimum Revenue per Month	: BDT 198,000
Minimum Revenue per quarter	: BDT 594,000

Third quarter:

Minimum number of users per day	: 200 persons
Minimum cost per service	: BDT 220
Minimum Revenue per service	: BDT 44
Minimum Revenue per day	: BDT 8,800
Minimum Revenue per Month	: BDT 264,000
Minimum Revenue per quarter	: BDT 792,000

Last quarter of the year:

Minimum number of users per day	: 250 persons
Minimum cost per service	: BDT 220
Minimum Revenue per service	: BDT 44
Minimum Revenue per day	: BDT 11,000
Minimum Revenue per Month	: BDT 330,000
Minimum Revenue per quarter	: BDT 990,000

First year total revenue = (297,000+594,000+792,000+ 990,000)

= BDT 2,673,000

First year Profit Analysis:

Loss = Total Revenue – Total Cost
= 2,673,000– 6,060,000
= BDT 3,387,000

Total Cost for second Year:

Annual Maintenance Cost	BDT 900,000
Annual Marketing Cost	BDT 2,160,000

Total	BDT 2,250,000
First year loss	BDT 3,387,000
Second year total cost	BDT 5,637,000

Second year revenue:

Minimum number of users per day	: 300 persons
Minimum cost per service	: BDT 220
Minimum Revenue per service	: BDT 44
Minimum Revenue per day	: BDT 13,200
Minimum Revenue per Month	: BDT 396,000
Minimum Revenue per quarter	: BDT 1,188,000

Second year total revenue = BDT 4,752,000

Second year Profit Analysis:

Loss = Total Revenue – Total Cost
= 4,752,000 – 5,637,000
= BDT 885,000

Total Cost for third Year:

Annual Maintenance and Support Cost	BDT 900,000
Annual Marketing Cost	BDT 2160000
Total	BDT 2,250,000
Second year loss	BDT 885,000
Third year total cost	BDT 3,135,000

Third year revenue:

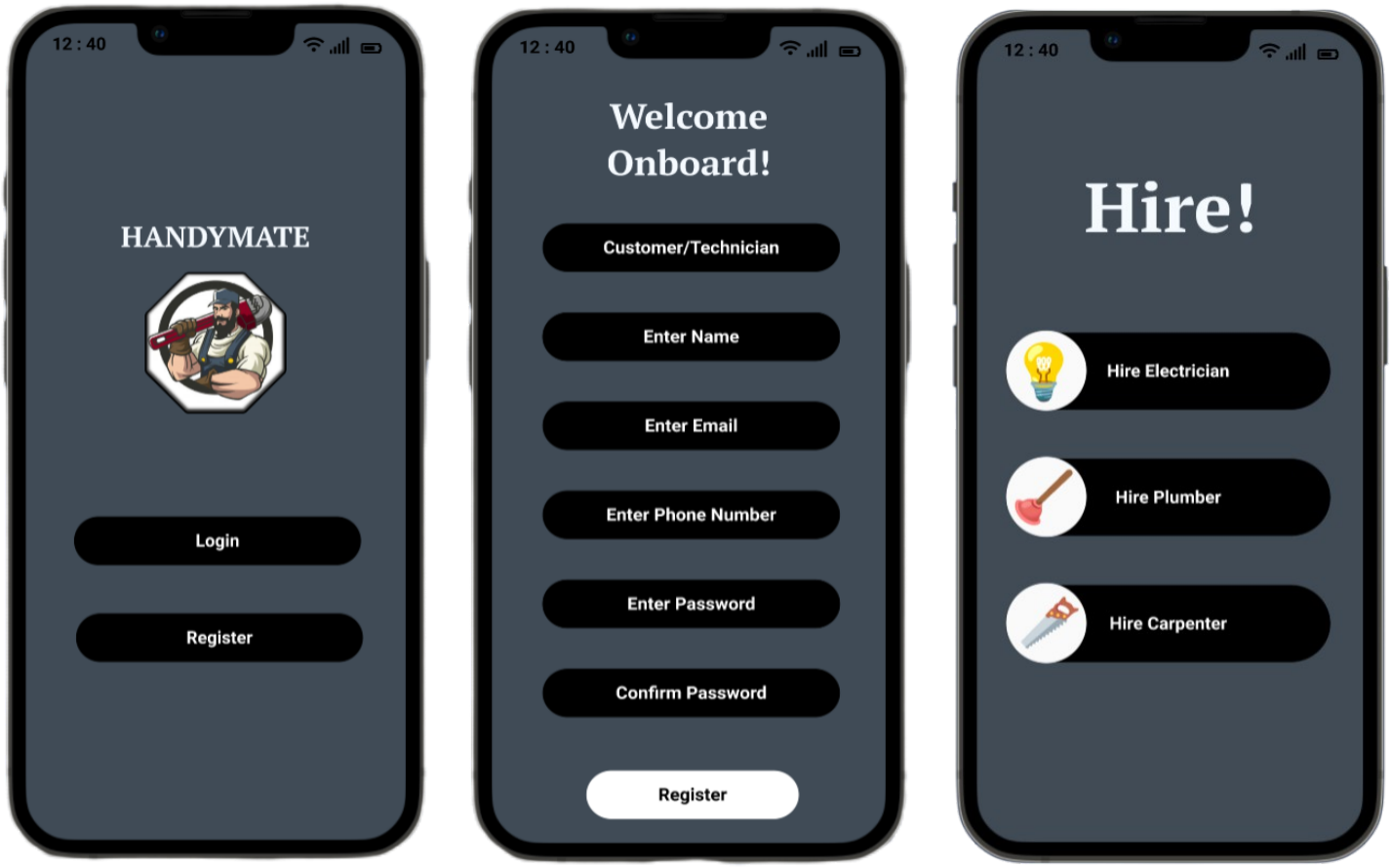
Minimum number of users per day	: 350 persons
Minimum cost per service	: BDT 220
Minimum Revenue per service	: BDT 44
Minimum Revenue per day	: BDT 15,400
Minimum Revenue per Month	: BDT 462,000
Minimum Revenue per quarter	: BDT 1,386,00
Third year total revenue	= BDT 5,544,000

Third year Profit Analysis:

Profit = Total Revenue – Total Cost
= 5,544,000 – 3,135,000
= BDT 2,409,000

After 3 years, the app will generate profit

7.Mockups



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