GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad

Affiliated

Government Engineering College,Rajkot

A Report On

MOBILE DIAGNOSTIC APP

Under subject of

DESIGN ENGINEERING-I B(2140002)

B. E. II, Semester – IV

(Computer Engineering)

Submitted by

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2.	Rahul Hinsu	170200107038
3.	Happy Manvar	170200107066
4.	Hiral Bhojani	170200107006

Guided by	Prof. C. S. Thaker
(Prof. S.M Gambhir)	(Head of the Department)

Academic year

(2018-2019)

CANDIDATE'S

We hereby declare that the work presented in this project entitled **"Mobile Diagnostic App"** submitted towards completion of project in **Fourth Semester** of B.E. (Computer) is an authentic record of my original work carried out under the guidance of "**Prof. S.M. Gambhir"**.

We have not submitted the matter embodied in this project for the award of any other degree.

Semester: 4th
Place : Rajkot

Signature :

GOVERNMENT ENGINEERING COLLEGE
RAJKOT

CERTIFICATE

Date:

This is to certify that the "**Mobile Diagnostic App**" has been carried out by **Neil Javiya** my guidance in fulfillment of the subject Design Engineering-1B (2140002) in COMPUTER ENGINEERING (4th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2018-19.

GUIDE: Prof. C. S. Thaker

Prof. S.M. Gambhir **(Head of The Department)**

GOVERNMENT ENGINEERING COLLEGE
RAJKOT

CERTIFICATE

Date:

This is to certify that the "**Mobile Diagnostic App**" has been carried out by **Rahul Hinsu** my guidance in fulfillment of the subject Design Engineering-1B (2140002) in COMPUTER ENGINEERING (4th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2018-19.

GUIDE: Prof. C. S. Thaker

Prof. S.M.Gambhir **(Head of The Department)**

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This is to certify that the "**Mobile Diagnostic App**" has been carried out by **Happy Manvar** my guidance in fulfillment of the subject Design Engineering-1B (2140002) in COMPUTER ENGINEERING (4th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2018-19.

GUIDE: Prof. C. S. Thaker

Prof. S.M.Gambhir **(Head of The Department)**

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CERTIFICATE

Date:

This is to certify that the "**Mobile Diagnostic App**" has been carried out by **Hiral Bhojani** my guidance in fulfillment of the subject Design Engineering-1B (2140002) in COMPUTER ENGINEERING (4th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2018-19.

GUIDE: Prof. C. S. Thaker

Prof. S.M.Gambhir **(Head of The Department)**

ACKNOWLEDGEMENT

We have taken many efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. We would like to extend my sincere thanks to all of them.

We are highly indebted to ***"Prof. S.M. Gambhir"*** Sir for their guidance and constant supervision as well as for providing necessary information regarding the Design Engineering Project Titled **"Mobile Diagnostic App".** We would like to express my gratitude towards staff members of Computer Engineering Department, Government Engineering College Rajkot for their kind cooperation and encouragement which helped us in completion of this project.

We even thank and appreciate to our colleague in developing the project and people who have willingly helped us out with their abilities.

Member-1 Javiya Neil
Member-2 Rahul Hinsu
Member-3 Happy Manvar
Member-4 Hiral Bhojani

List of FIGURES:

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1) INTRODUCTION TO DESIGN THINKING

1.1 DESIGN THINKING PROCESS

Design Thinking is a design methodology that provides a solution-based approach to solving problems. It's extremely useful in tackling complex problems that are ill-defined or unknown, by understanding the human needs involved, by re-framing the problem in human-centric ways, by creating many ideas in brainstorming sessions, and by adopting a hands-on approach in prototyping and testing. Understanding these five stages of Design Thinking will empower anyone to apply the Design Thinking methods in order to solve complex problems that occur around us — in our companies, in our countries, and even on the scale of our planet.

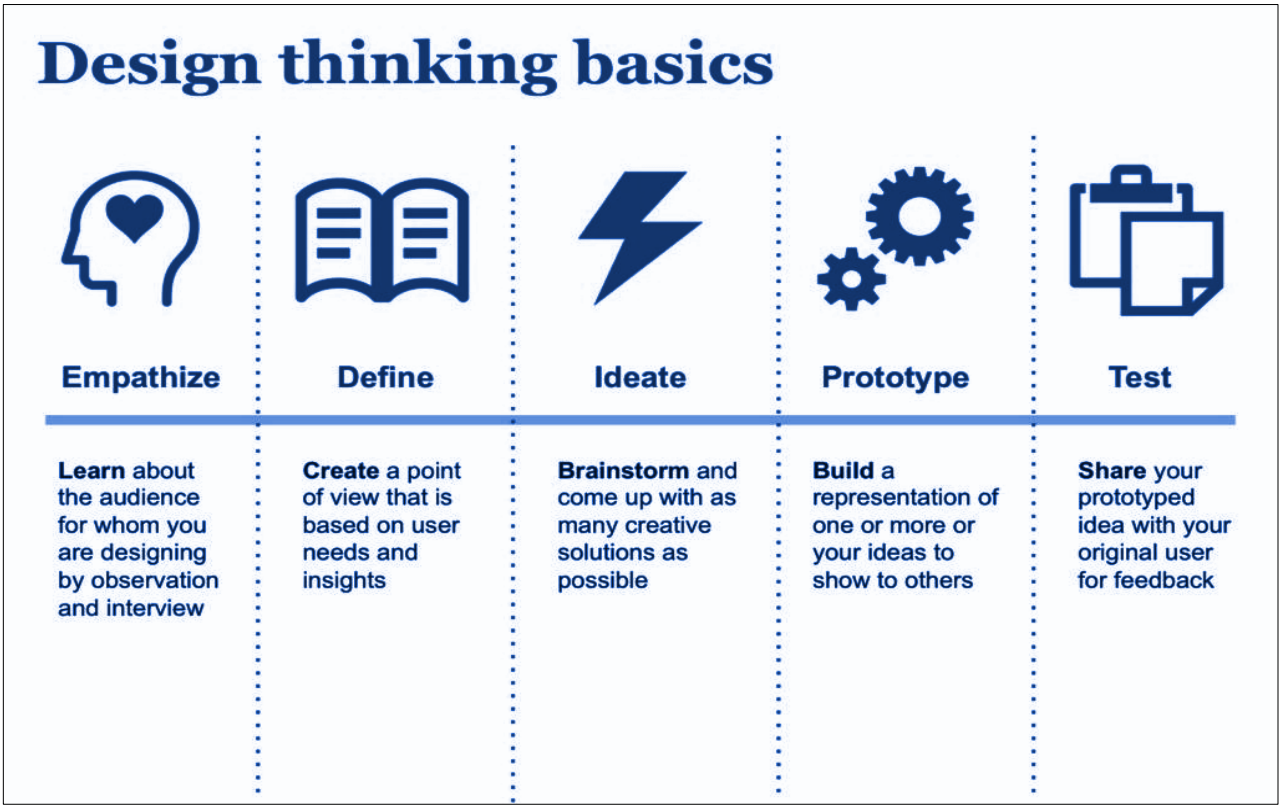


Figure 1

1.2 Introduction to Domain:

MOBILE DIAGNOSTIC APP

Figure 2

In today's world of digitalization Mobiles has become basic necessity of one. It is also important to maintain good health of device to have better access. It is very difficult to find out defect or bug in mobile by one's self. It can only detected by Service centers. One can easily detect any fault happened to device with the help of this app and can get price approximation by sending bug report through app to the service centers.

1) Empathization phase:

2.1 AEIOU FRAMEWORK:

AEIOU is a heuristic to help interpret observations gathered by ethnographic practice in industry. Its two primary functions are to code data, and to develop building blocks of models that will ultimately address the objectives and issues of a client.

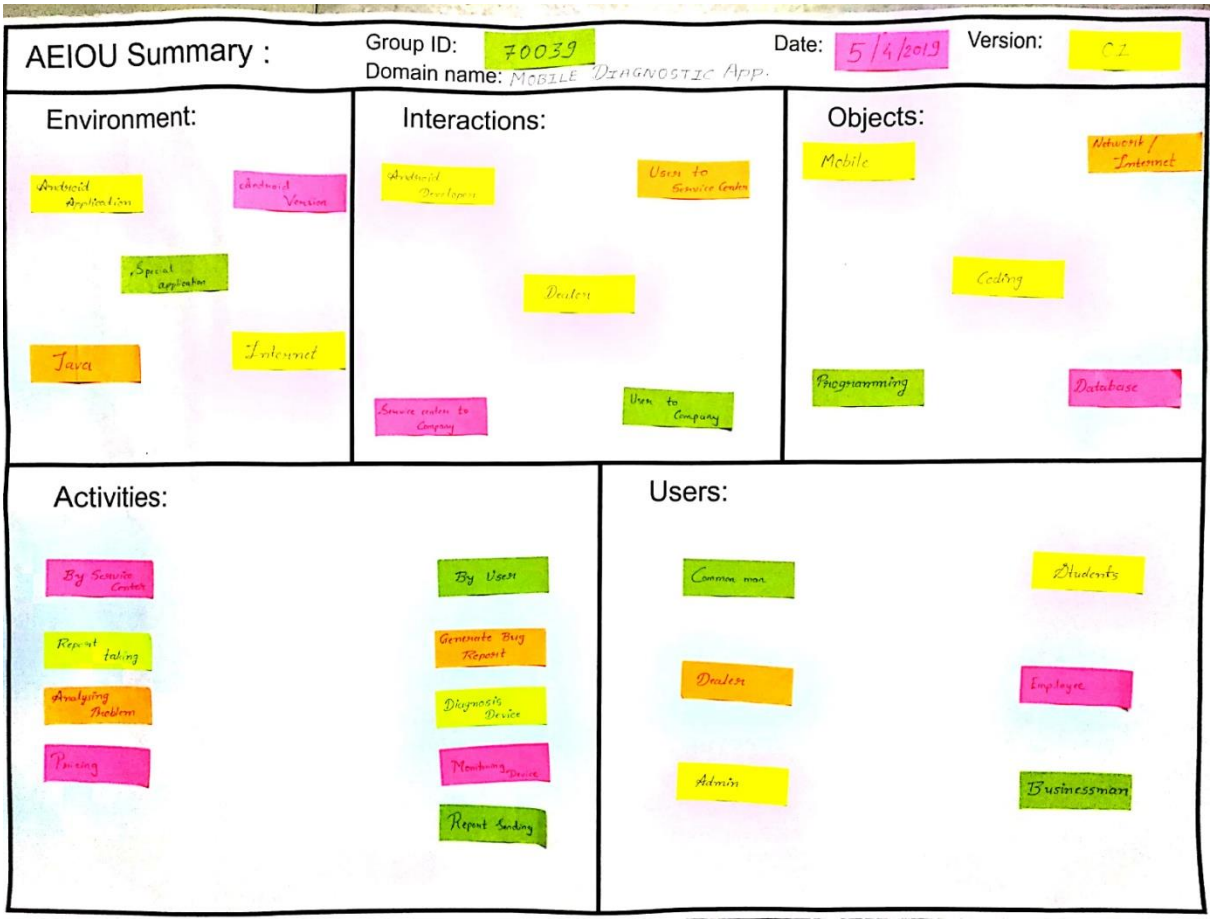
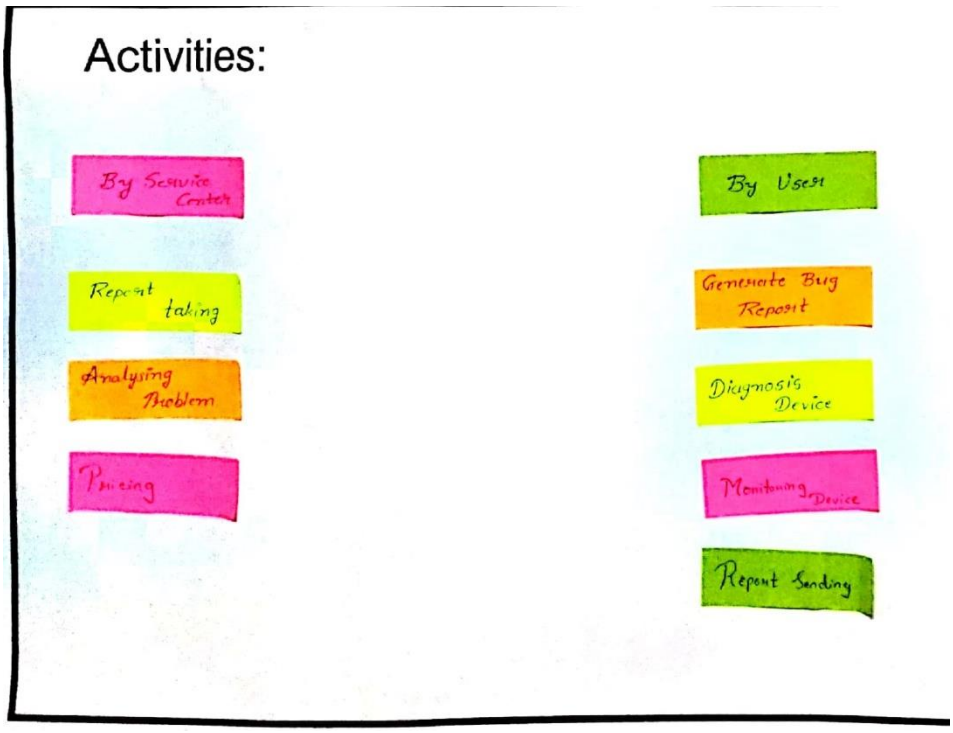


Figure 3

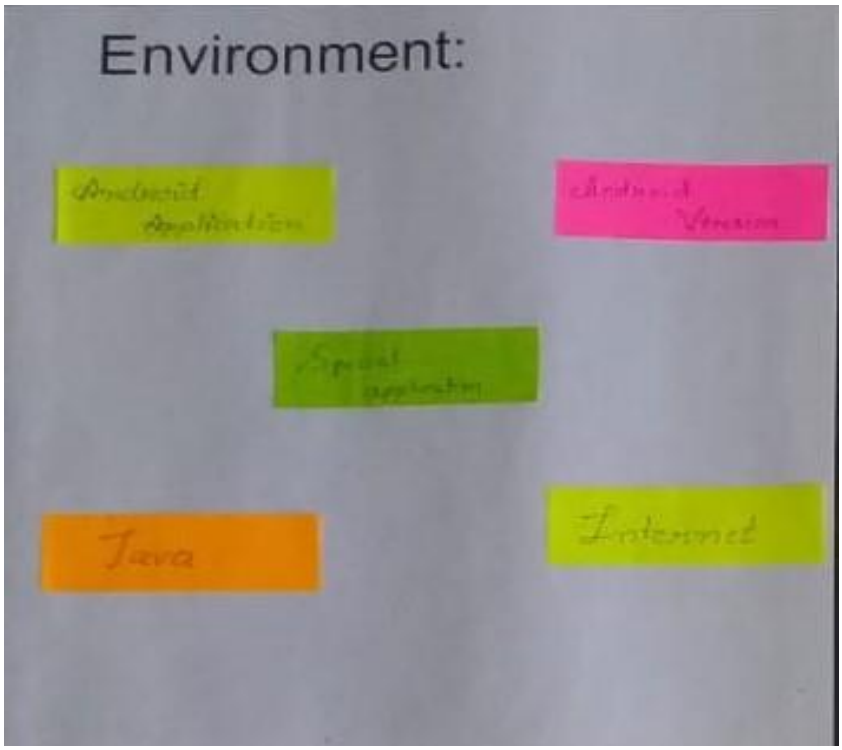
2.1.1 SUMMARY OF AEIOU CANVAS AND ITS OBSERVATIONS:

The AEIOU canvas contains the Activities, Environment, Interactions, Objects and Users fields.

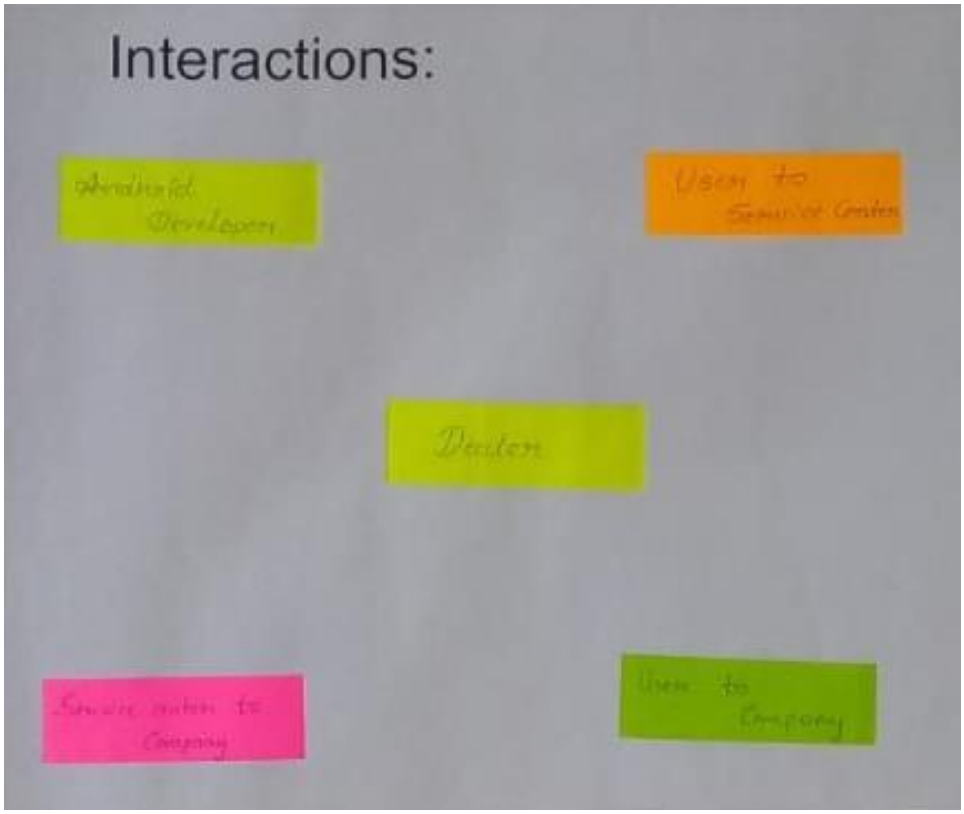
1) **Activities**: In the Activities section a brief introduction to the working of the project is given. In our project of 'Mobile Diagnostic App' we have the following basic activities involved: report generating, diagnostic, pricing, analyzing problem.



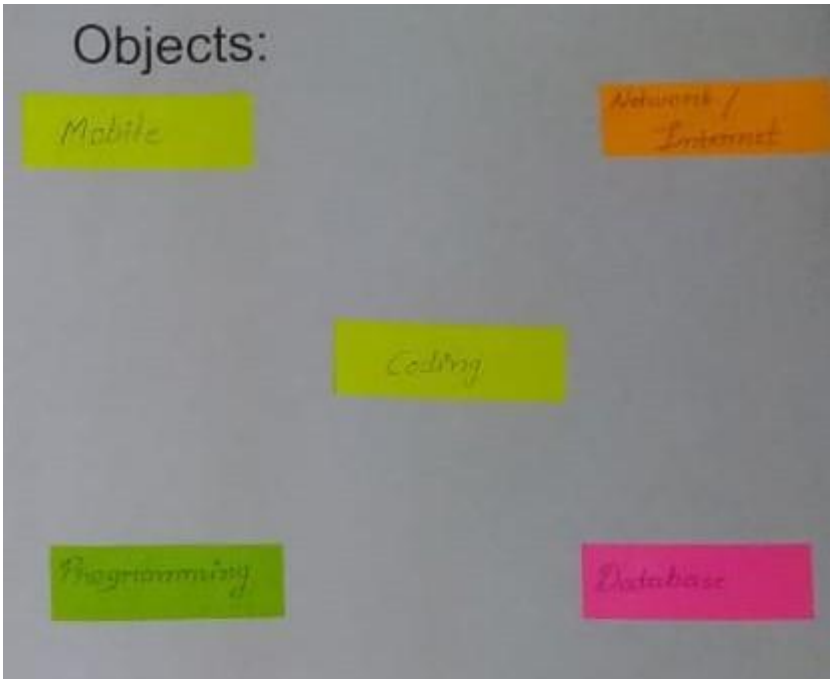
2) **Environment**: In this section of the canvas we have described the environmental conditions in which our project will be fully operational.
Here our project will work perfectly if device have specifications above or same as required to run the application.



3) **Interactions**: In this part the most basic functions that are going to run when the system is operational. In our project these are user to service center for pricing, service center to company for parts and mobile dealers and android developers also take part inn interactions.



4) **Objects**: Here the ‘Objects’ field specifies the hardware used in the project. In our project mobile, internet, database, programming etcare used.



5) **Users**: Users are those who are directly or indirectly using and being benefited by this system. By our project people such as common peoples, businessmen, students, employees are being benefited.

2.2) Mind Mapping:

2.2.1) Outcomes of Mind Mapping:

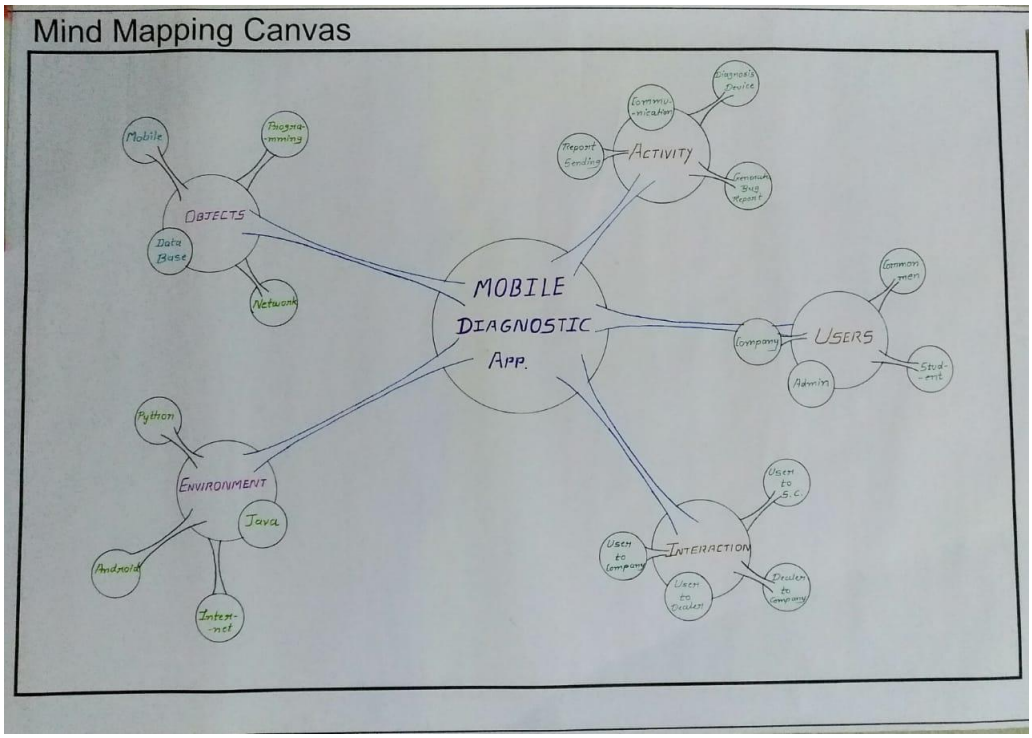


Figure 4

1) **TOOLS :**C++,python,java.
2) **PROCESSESS:**Report Generating,Pricings.
3) **STATICTICS/PROBBLITY:**Data Transfer
4) **ADVANTAGES:**Time Saving, Automatic, Ease of access
5) **DISADVANTAGES:**Bug in Report Analysis

2.3 EMPATHY PHASE:

The Empathy Canvas is a great powerful tool that helps putting yourself inside the head of a person you might be looking at as a prospective customer or product user. It allows you to quickly grasp their experience and where they are coming from.

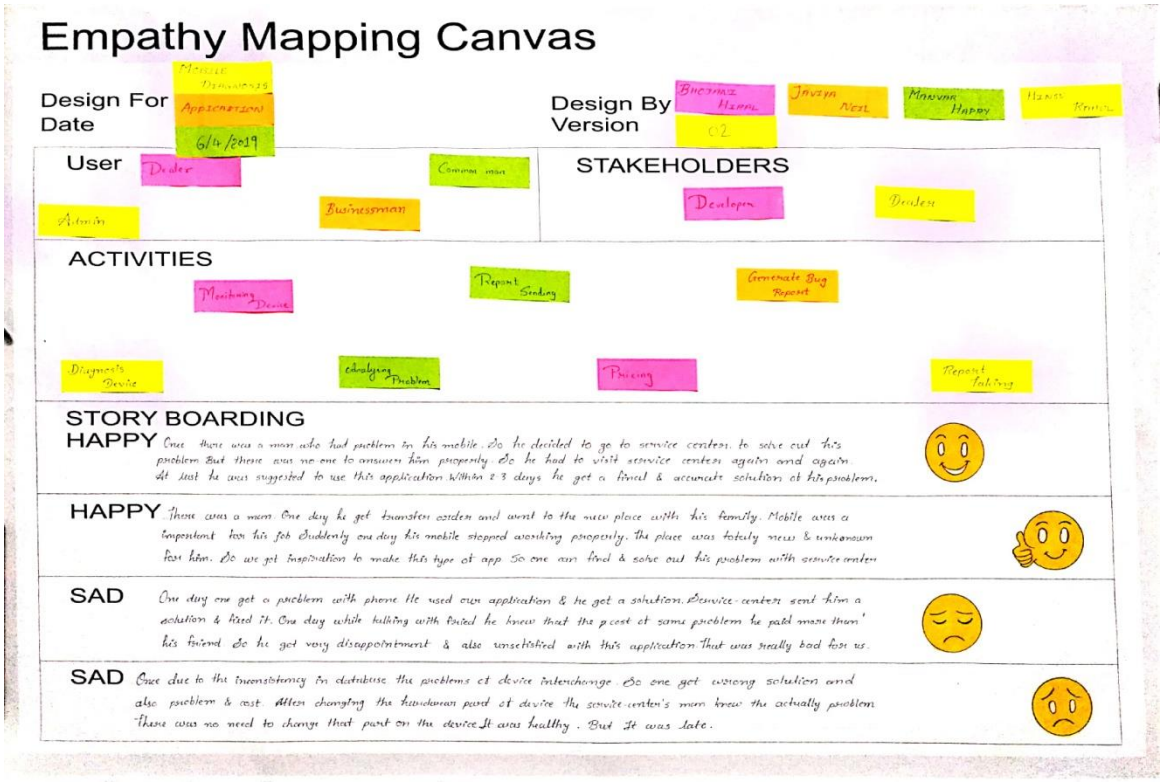


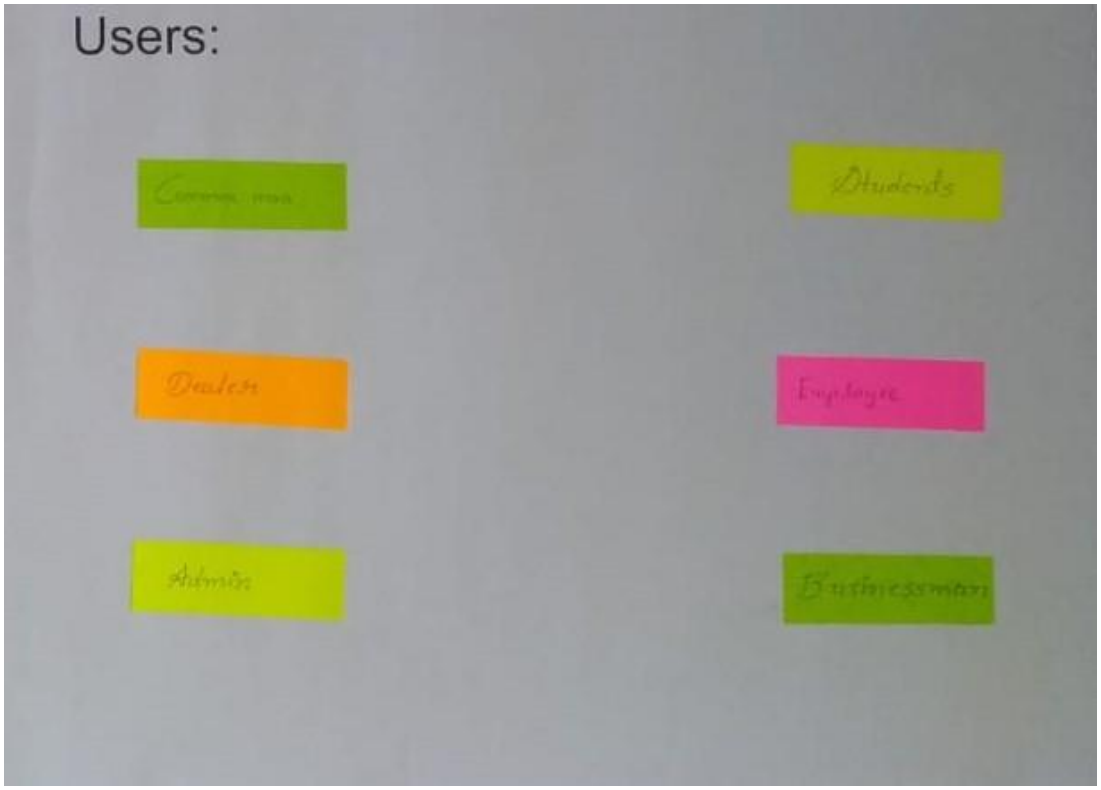
Figure 5

2.3.1 Summary of Empathy Canvas and Its Observations:

The empathy canvas contains the fields as enlisted:

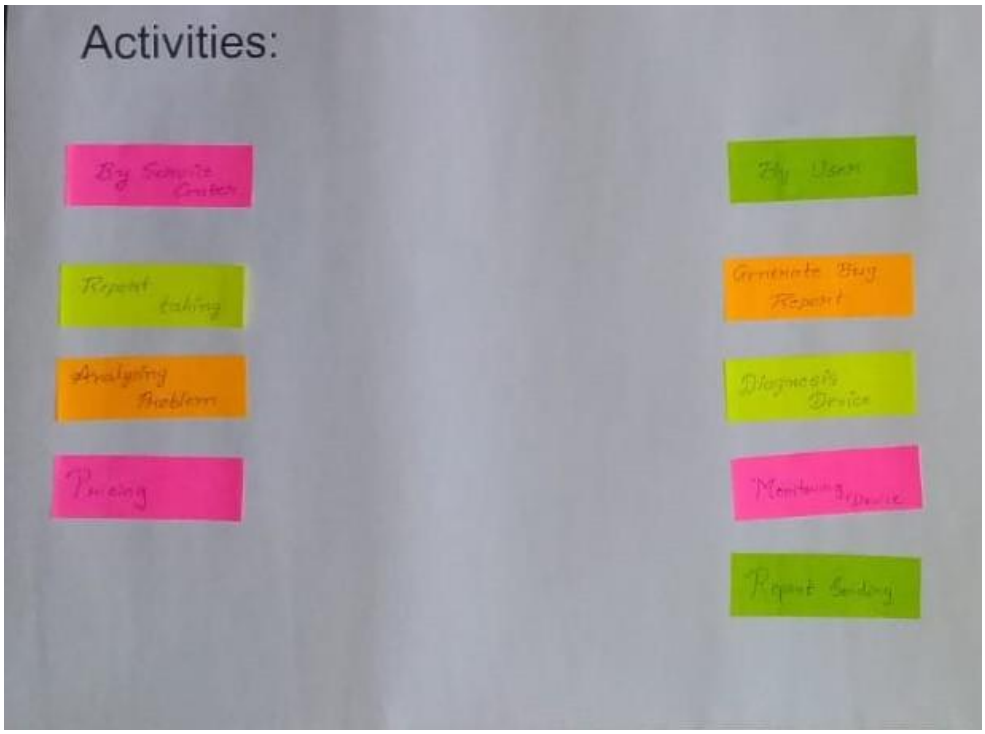
- User
- Activities
- Stakeholders
- Storyboarding

1) **Users**: Users are those who are directly or indirectly using and being benefited by this system. By our project people such as common peoples, businessmen, students, employees are being benefited.



2) Stakeholders: The stakeholders are those people or those companies who invest in the development of the project. In our project the stakeholders could be Developers & Dealers.

3) **Activities**: In the Activities section a brief introduction to the working of the project is given. In our project of 'Mobile Diagnostic App' we have the following basic activities involved: report generating, diagnostic, pricing, analyzing problem.



4) **Storyboarding:** This section includes two parts:

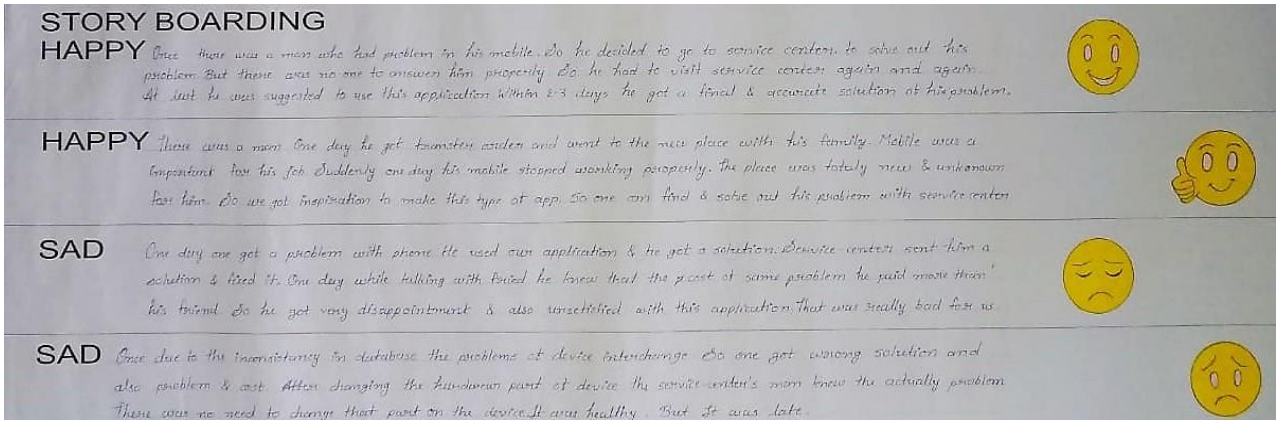
1) Happy
2) Sad

Happy: Once there was a man who had a problem in his mobile. So he decided to go to service center to solve out his problem. But there was no one to answer him properly. So, he had to visit service center again and again. At last he was also suggested to use this application within 2 to 3 days he got a final and accurate solution of his problem.

Happy: There was a man. One day, he get transfer order and went to new place with his family. Mobile was a very important for his job. Suddenly one day his mobile stopped working properly. The place was totally new and unknown for him. So, we got inspiration to make this type of application. So, one can find and fix his/her problem with service center.

Sad: One day one got a problem with phone. He used our application and he got a solution. Service center sent him a solution and fixed it. One day while talking with friend he knew that the cost of same problem he paid more than his friend. So, he got very disappointment and also unsatisfied with this application. That was really bad for us.

Sad: Once due to the consistency in database the problem of devices interchange so one get wrong solution and also problem and cost. After changing the hardware part of device, the service center's man gets the actual problem. There was no need to change that part on the device. It was healthy. But it was too late.



2.4 Problem Definition by Prior art Search

During the Define stage, we put together the information we have created and gathered during the Empathize stage. This is where we will analyze our observations and synthesize them in order to define the core problems that our team have identified up to this point. We should seek to define the problem as a problem statement in a human-centered manner.

2.4.1) Diachronic and Synchronic Analysis:

1. Synchronic Analysis:

A synchronic vision takes into account the reciprocal positions of the objects at a certain moment without considering their movement.

2. Diachronic Analysis:

The task of describing project structures only on the basis of the relationships active in a certain present time.

2.5) INTRODUCTION TO IDEATION CANVAS:

At this stage we'll identify the problems user may face by analyzing and studying all the variations of his activities. Often normal activities done under different situations lead to problems. We'll identify such problems at this stage.

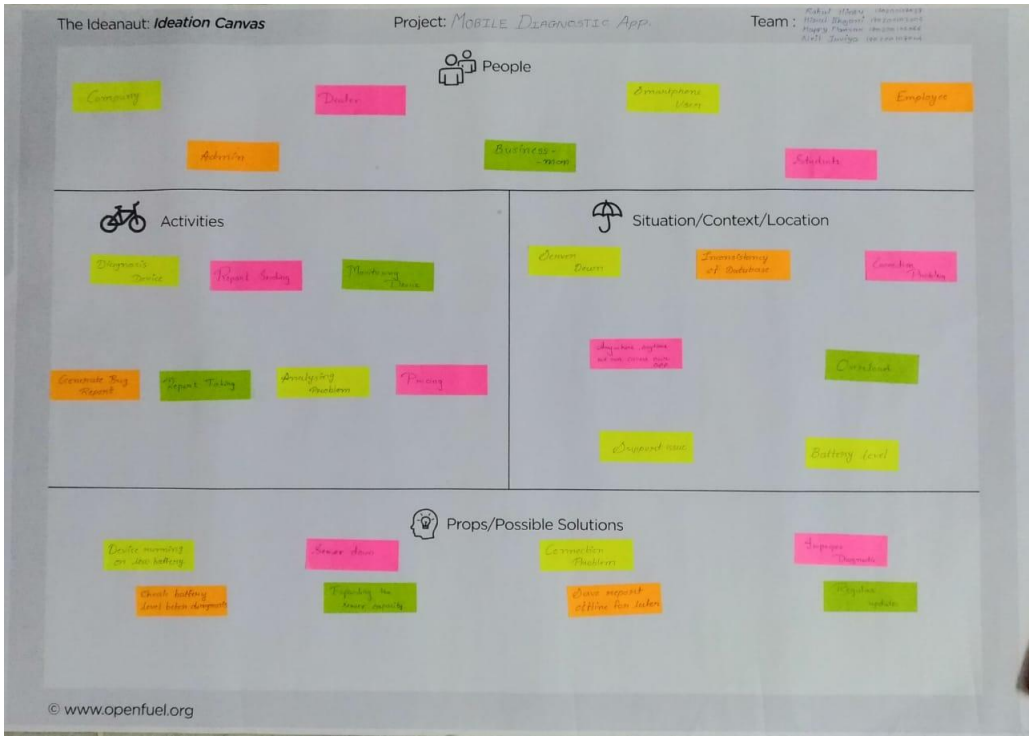


Figure 6

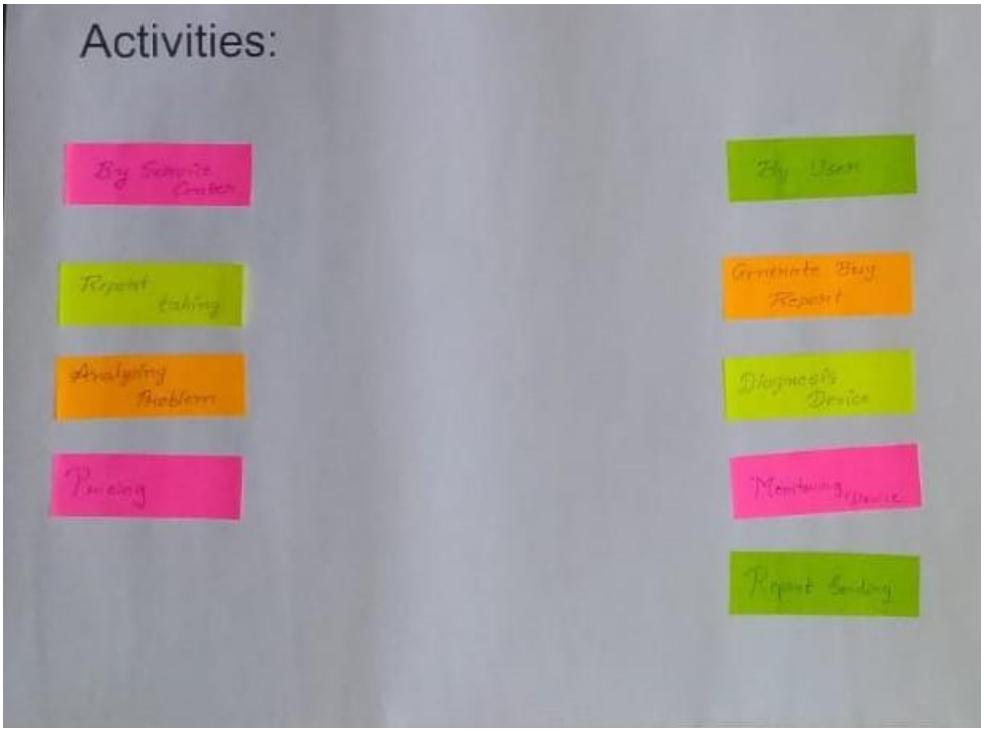
2.5.1) Summary of Ideation Canvas and Their Observations:

This canvas includes 4 sections as under:

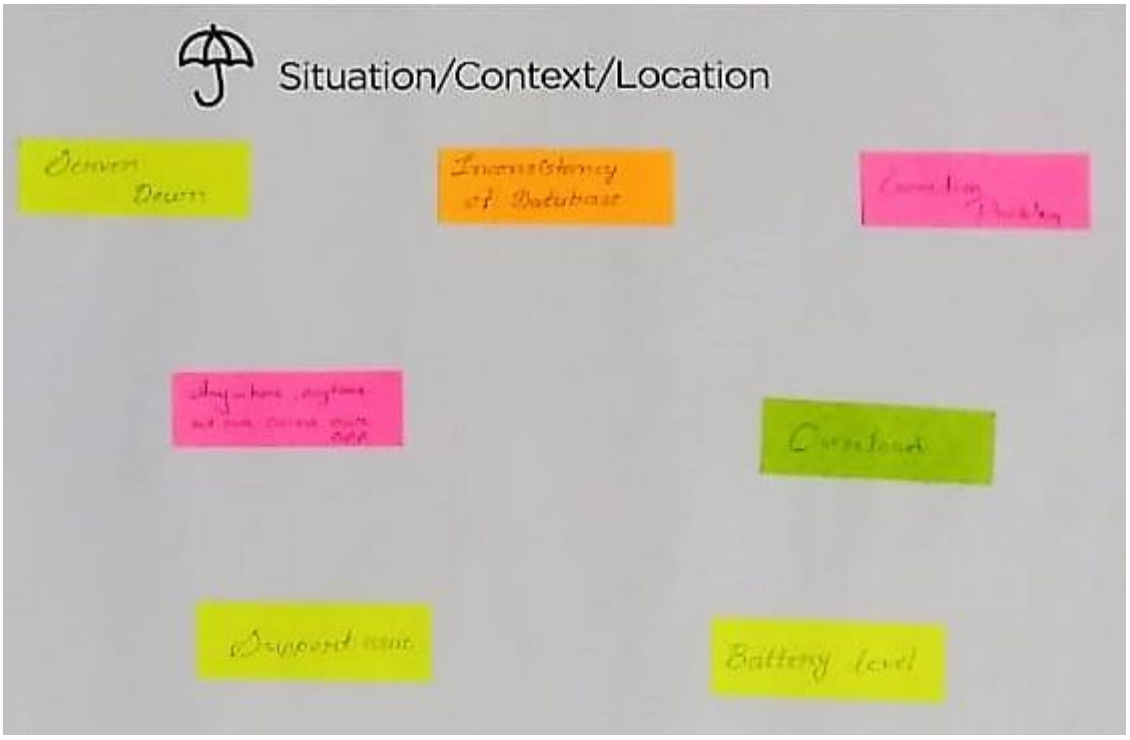
1) People
2) Activities
3) Situation/Context/Location
4) Props/Possible Solutions

1) **People:** These are the people related directly or indirectly with the project. For the Mobile Diagnostic App project these people can be common people, mobile companies, dealers and students.

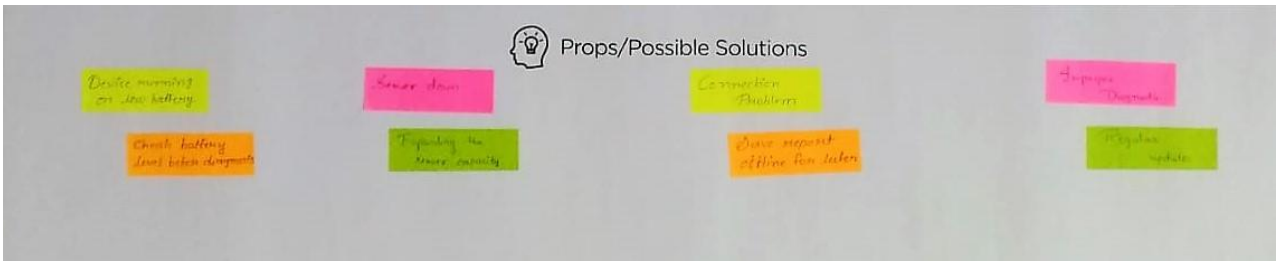
2) **Activities:** In the Activities section a brief introduction to the working of the project is given. In our project of 'Mobile Diagnostic App' we have the following basic activities involved: report generating, diagnostic, pricing, analyzing problem.



3) **Situation:** These are the areas where this project can be operational. For our project such locations can be main roads, unmanned surveillance, remote areas, excess crossroads, overwhelming traffic areas etc.



4) **Possible Solutions:** These are basically the advantages or the solutions to problems prior to these projects. Some of them include:



2.6) Product Development Phase:

2.6.1) Introduction to Product Development Canvas:

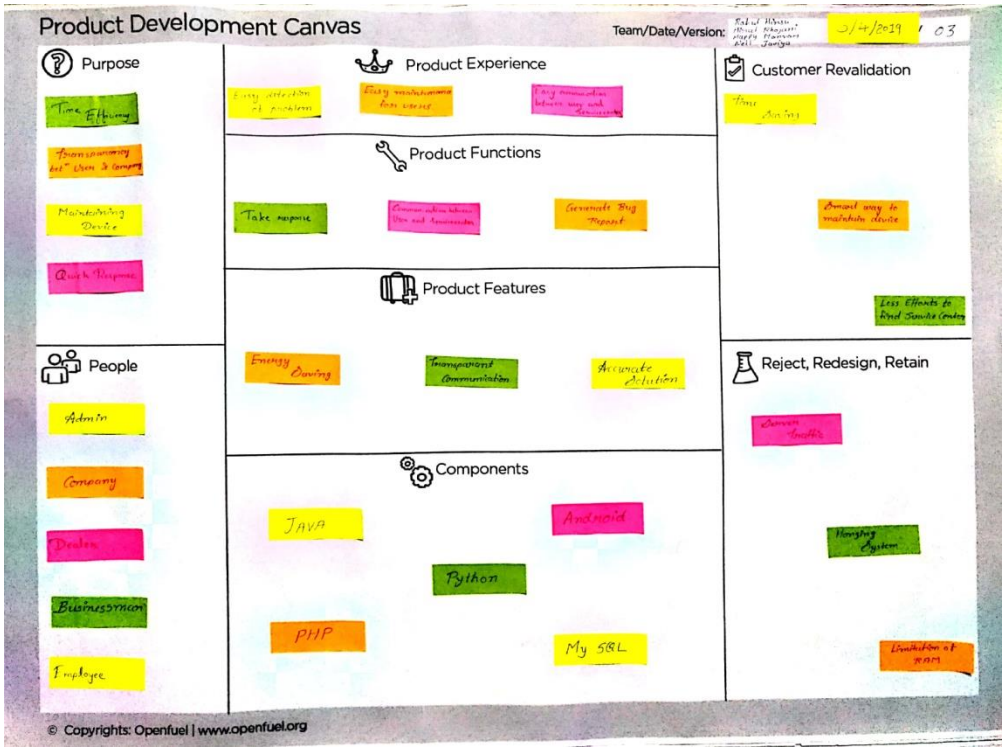


Figure 7

1) Purpose:

- The main purpose of this project was to reduce human effort and automate the process of mobile diagnostic.
- It provides better mobile diagnostic.
- It is both time saving and Cost efficient.

2) People:

- As this is a large-scale project it will have a tremendous effect on day to day lives of various peoples.
- This project will affect a lot of people like;
    1. Common people
    2. Businessmen
    3. Students
    4. Office people

3) Product Experience:

- As the product is completely automatic it is easy to maintain and operate.
- It is low Cost.

4) Product Functions:

- It is a multifunction project.
- Fully Automated.
- It also has wireless operation thus saving a lot of cost.

5) Product Features:

- The product is completely automatic.
- It is cost efficient.

6) Components:

- We are using;
- Android studio.
- Database maintaining system.
- Different type of programming languages.

7) Customer Revalidation:

- As the product makes the lives of common people easy,
  The product has been heavily revalidated by the Customers.

8) Reject, Redesign and Retain:

- Due to excess Server traffic the app may not work efficiently.
  A bug in the report may result in faulty report causing problems for the customers.

3) Feedback Analysis with the user

After completing the rough prototype, we got feedback from the various test users from our college. We used the feedback in the refinement of our project in the following ways:

1. We created a simple and easy to use User Interface.
2. Our main focus was on the User Experience. The user should be able to move through the website easily.
3. Some new tests were added.

4) DETAIL DESIGN CALCULATIONS/DATA

4.1) Design for Performance, Safety and Reliability

Our product makes use of the Android platform. In this era of smartphones, most of the smart phones run on Android which makes our product to be available for huge number of users. Android is very powerful open source platform & apps based on android are very easy to use.

Ridiculously Fast

Development on android is very easy and app performance can also be greatly increased by optimizing the code.

Reassuringly secure

It takes security seriously and helps developers avoid many common security mistakes and it also asks user for necessary permissions at the time of installation.

4.2) Design for Ergonomics and Aesthetics

We are using a custom color scheme to make the application more attractive and aesthetically pleasing. Our product employs a simple user interface that is easy to use. Our main focus is on the user experience. We have tried to make the product as simple as possible.

4.3) Design for Cost and Environment

Since we are using open source technologies, the technological cost of the product is very less. Only small cost will occur if no. of users exceeds after some limit as Firebase allows only no. of users at a time

5) SOFTWARE MODELING DETAILS

5.1) Iteration 1:

For the first iteration of our product we just worked on how to get users phone tested using our application. We wanted the user to test his/her phone from one of the two options quick or custom scan. According to user's selection test will be performed.

5.2) Iteration 2:

For the second iteration we added how to locate nearby service centers to user. The user will get contact detail of the service center he/she wants. We created sign up and login page procedures.

5.3) Iteration 3:

For the third iteration we improved our user interface and worked on the user experience. We added extra feature like price estimation of user's problem.

6) TESTING OF FINAL MODEL

6.1) Testing /User feedback results

After so many iterations we tested the final project. Here are some key points from the user feedback,

1. The project has a good User Interaction and an overall good feature.

2. Few additional functionalities can be added like saving bug reports to the database for future reference.

3. Can improve User Interface, so user can easily understand.

7) References:

Internet Websites:

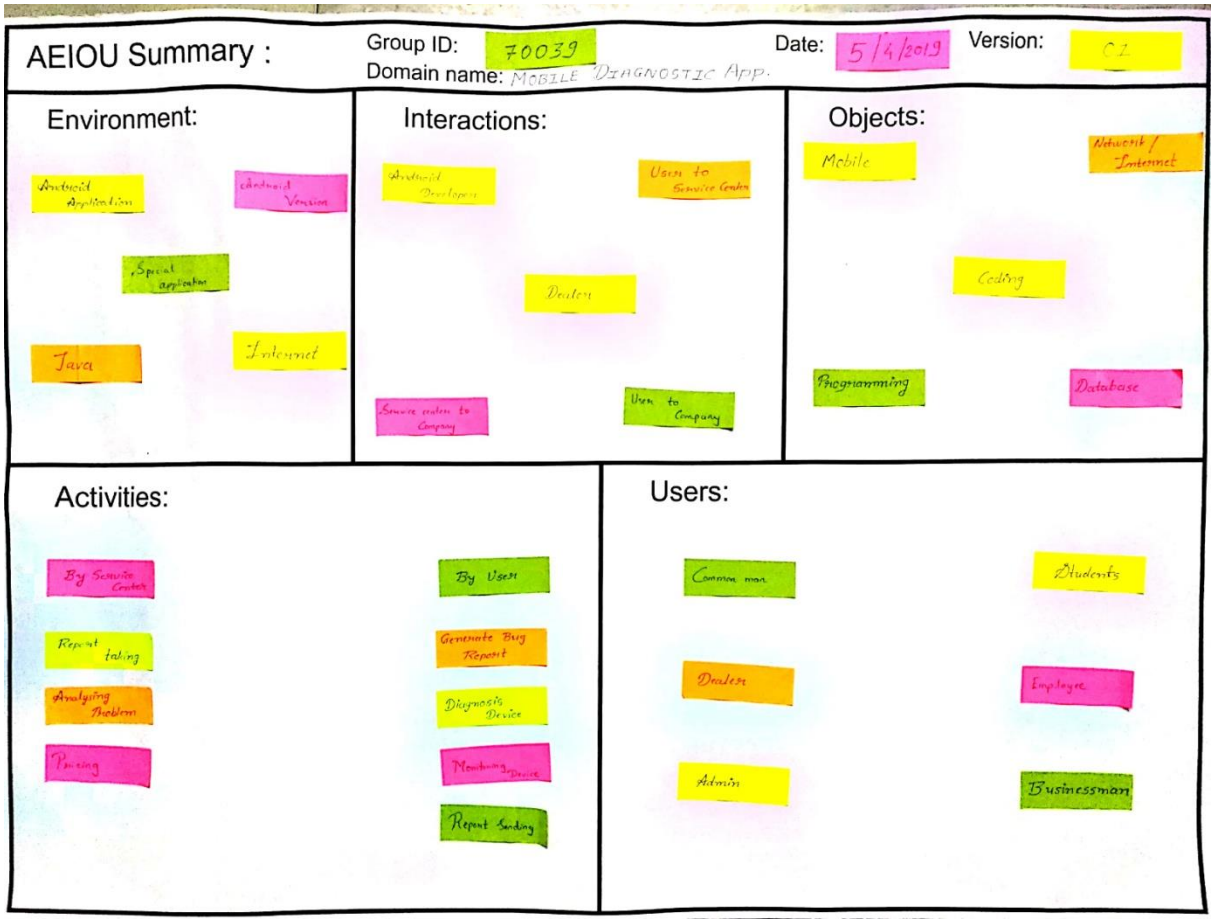
1. https://www.w3schools.in/java-tutorial/intro/
2. https://www.tutorialspoint.com/php/
3. https://github.com/neiljaviya
4. https://developer.android.com/guide/

E-books:

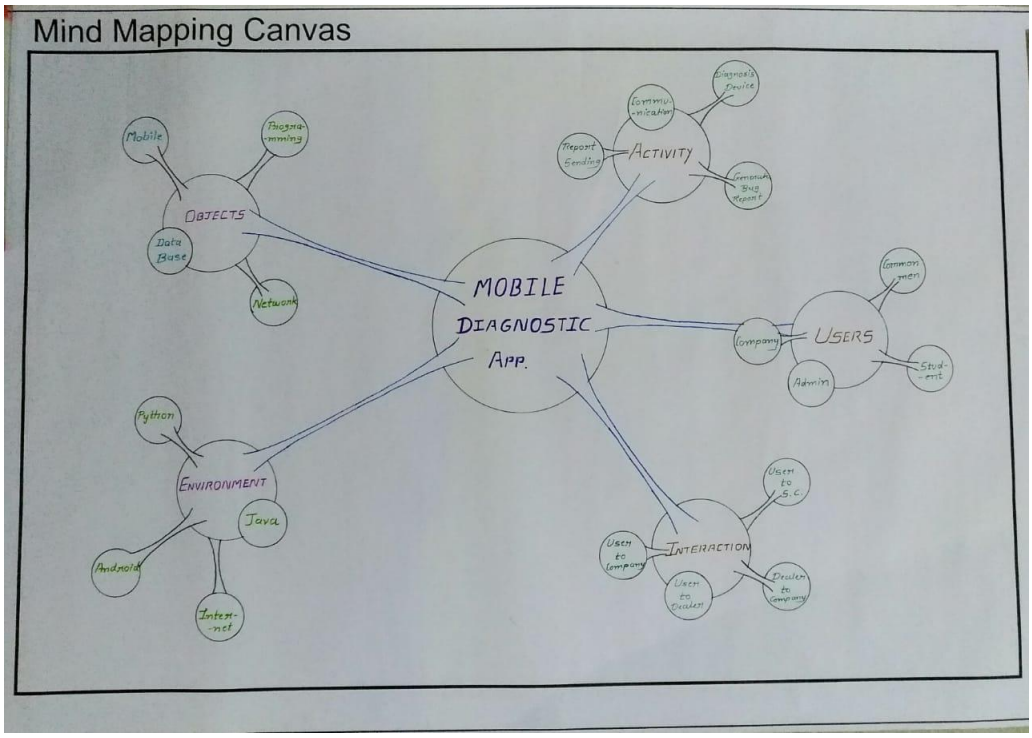
1. Android Studio 3.2 Development Essentials - Java Edition
2. Firebase Essentials - Android Edition
3. Android Studio Development Essentials - Android 6 Edition

8) Appendix-A:

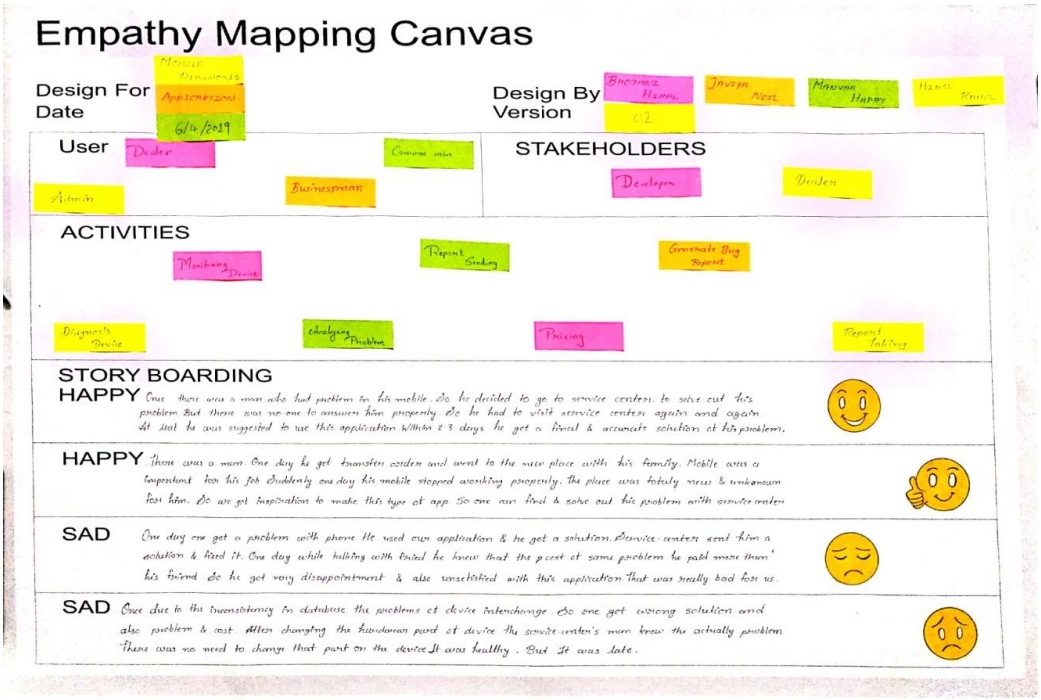
AEIOU Canvas:



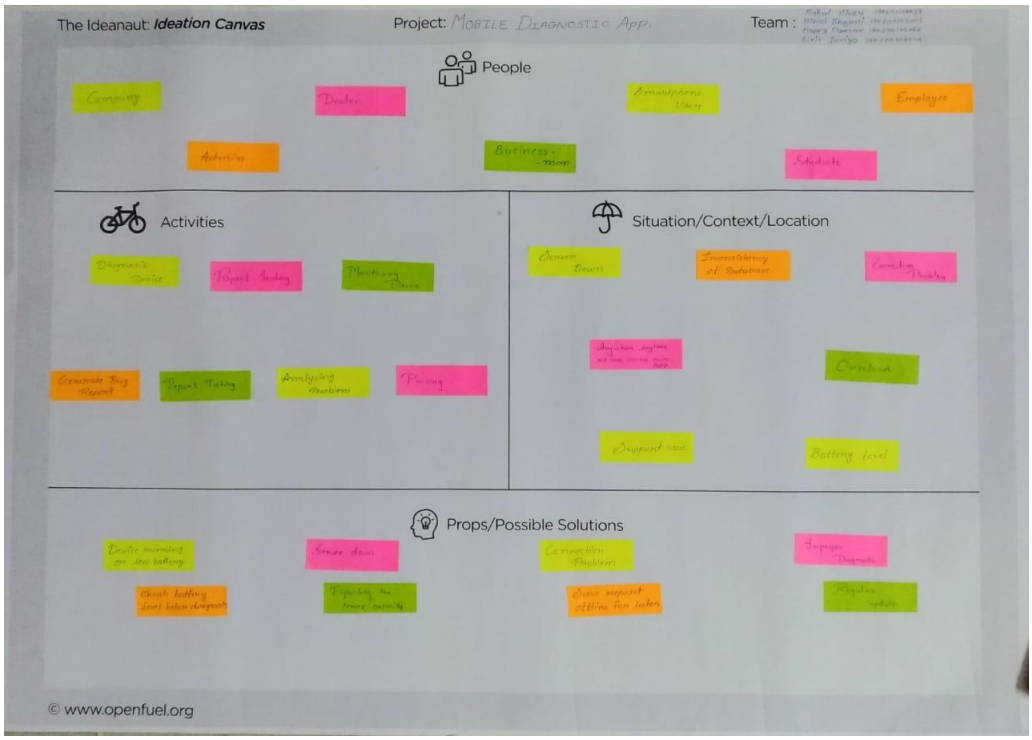
Mind Mapping Canvas:



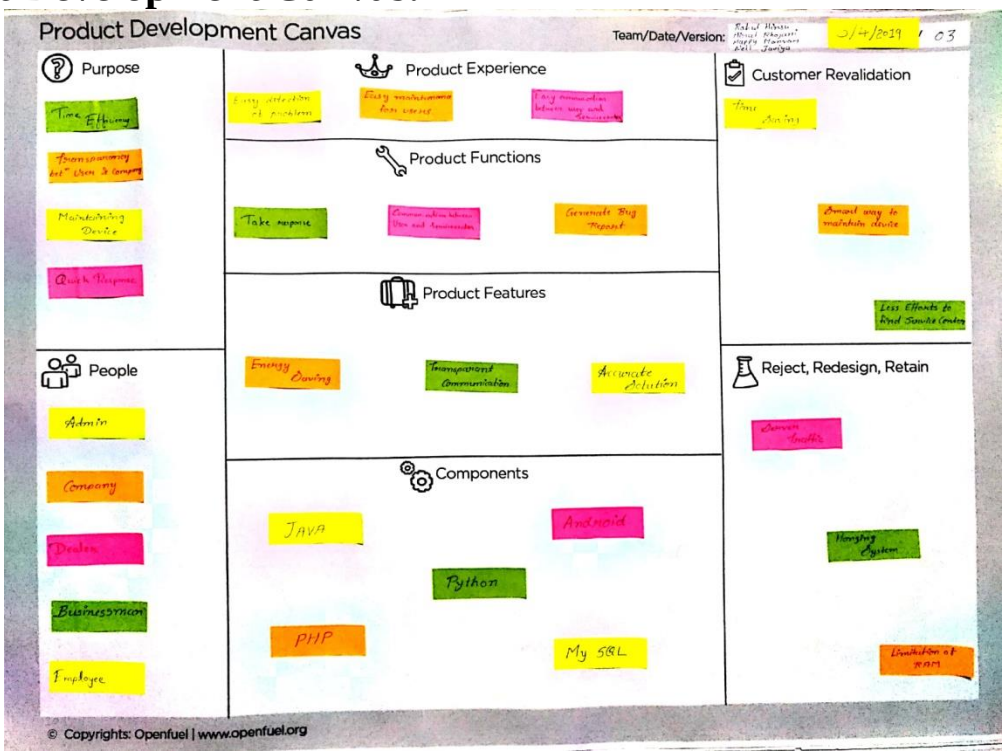
Empathy Canvas:



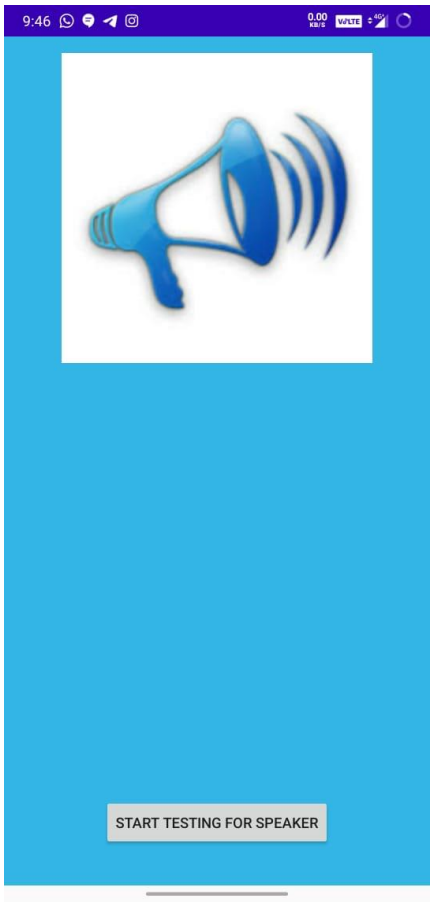
Ideation Canvas:



Product Development Canvas:



Prototype: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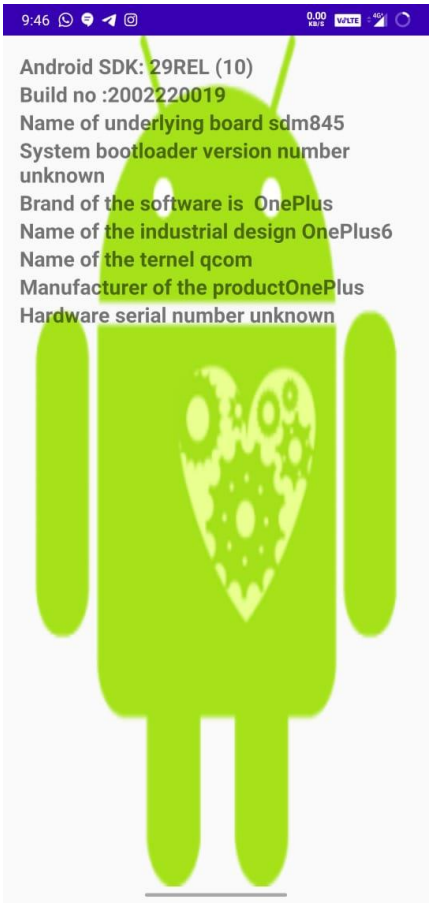
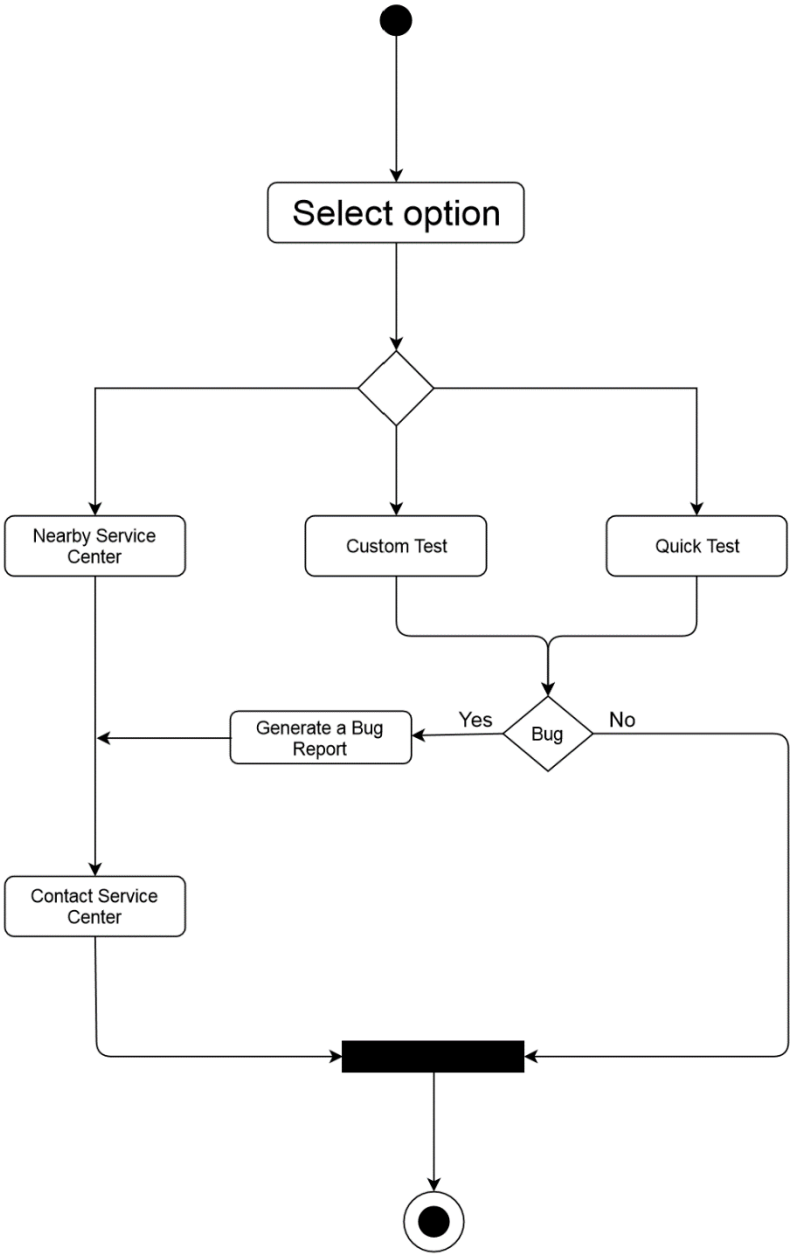
START TESTING FOR SPEAKER

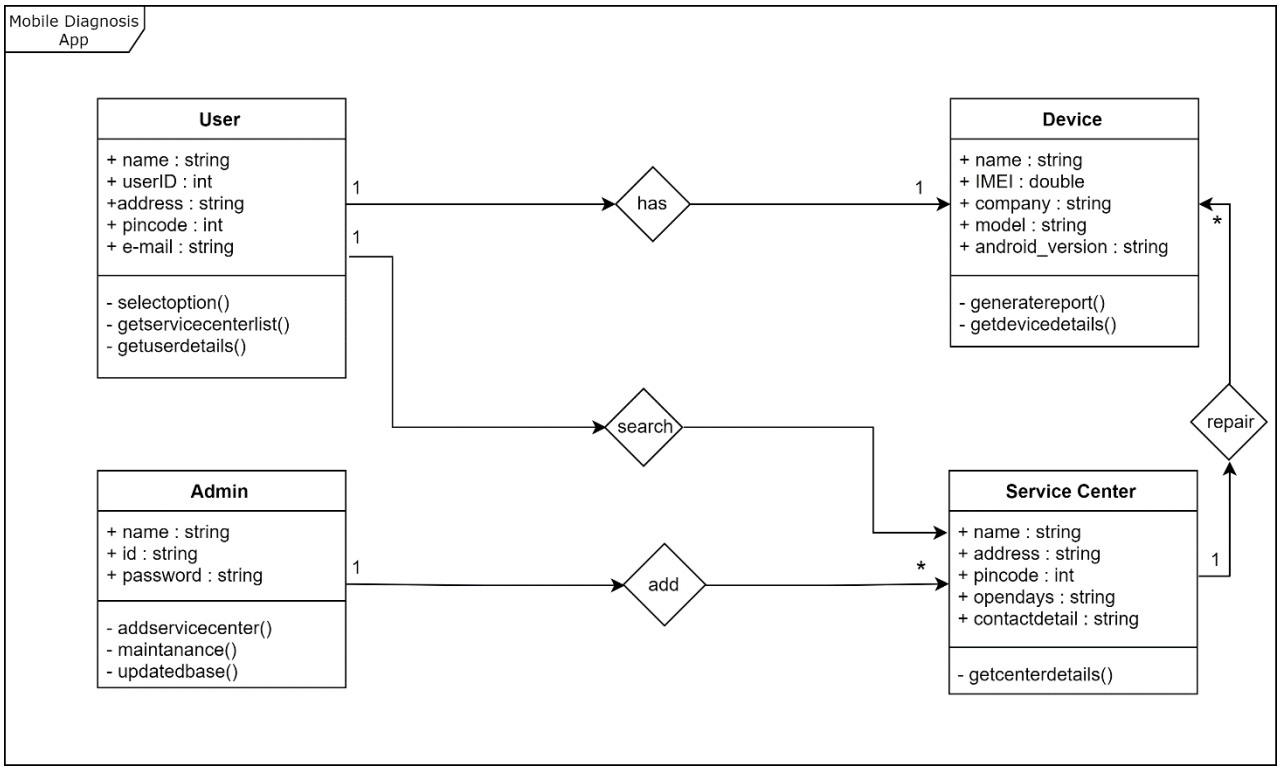

9:46
Android SDK: 29REL (10)
Build no :2002220019
Name of underlying board sdm845
System bootloader version number unknown
Brand of the software is OnePlus
Name of the industrial design OnePlus6
Name of the ternel qcom
Manufacturer of the productOnePlus
Hardware serial number unknown

9) Appendix-B:

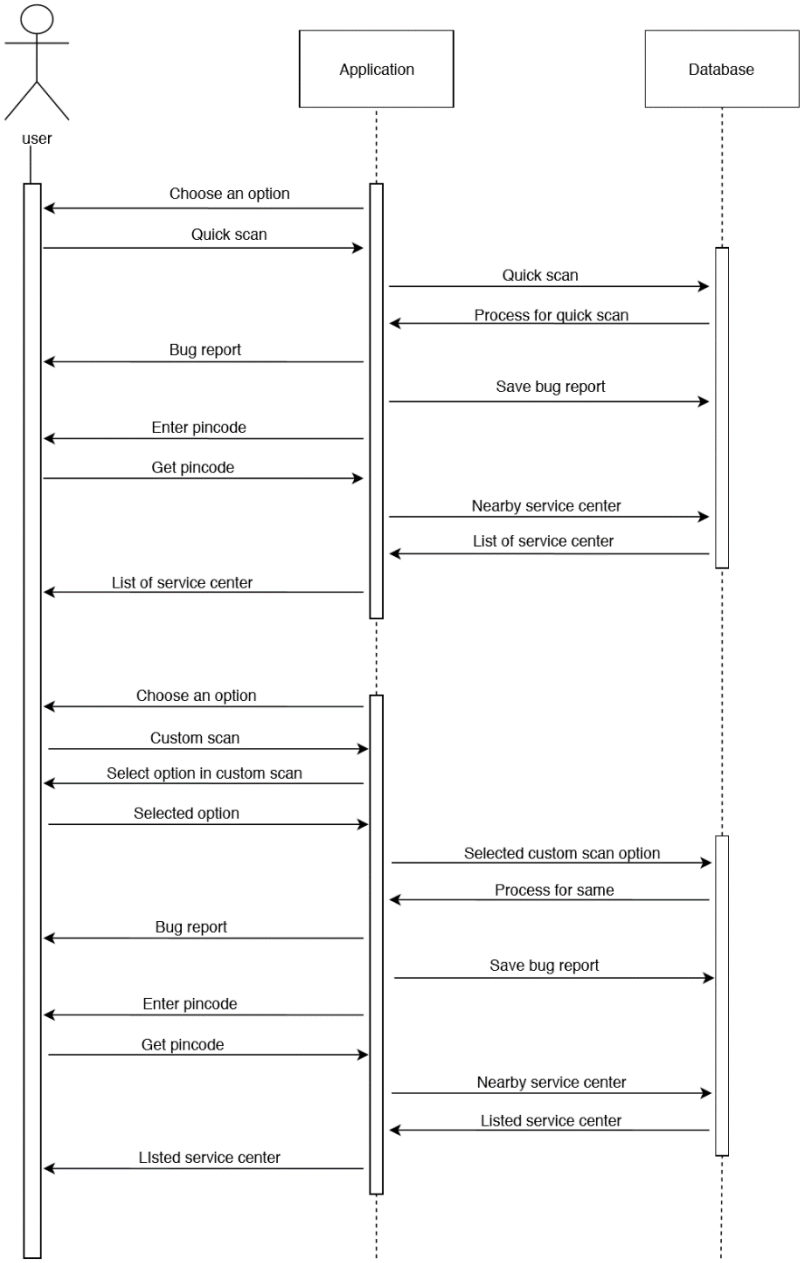
Activity Diagram:



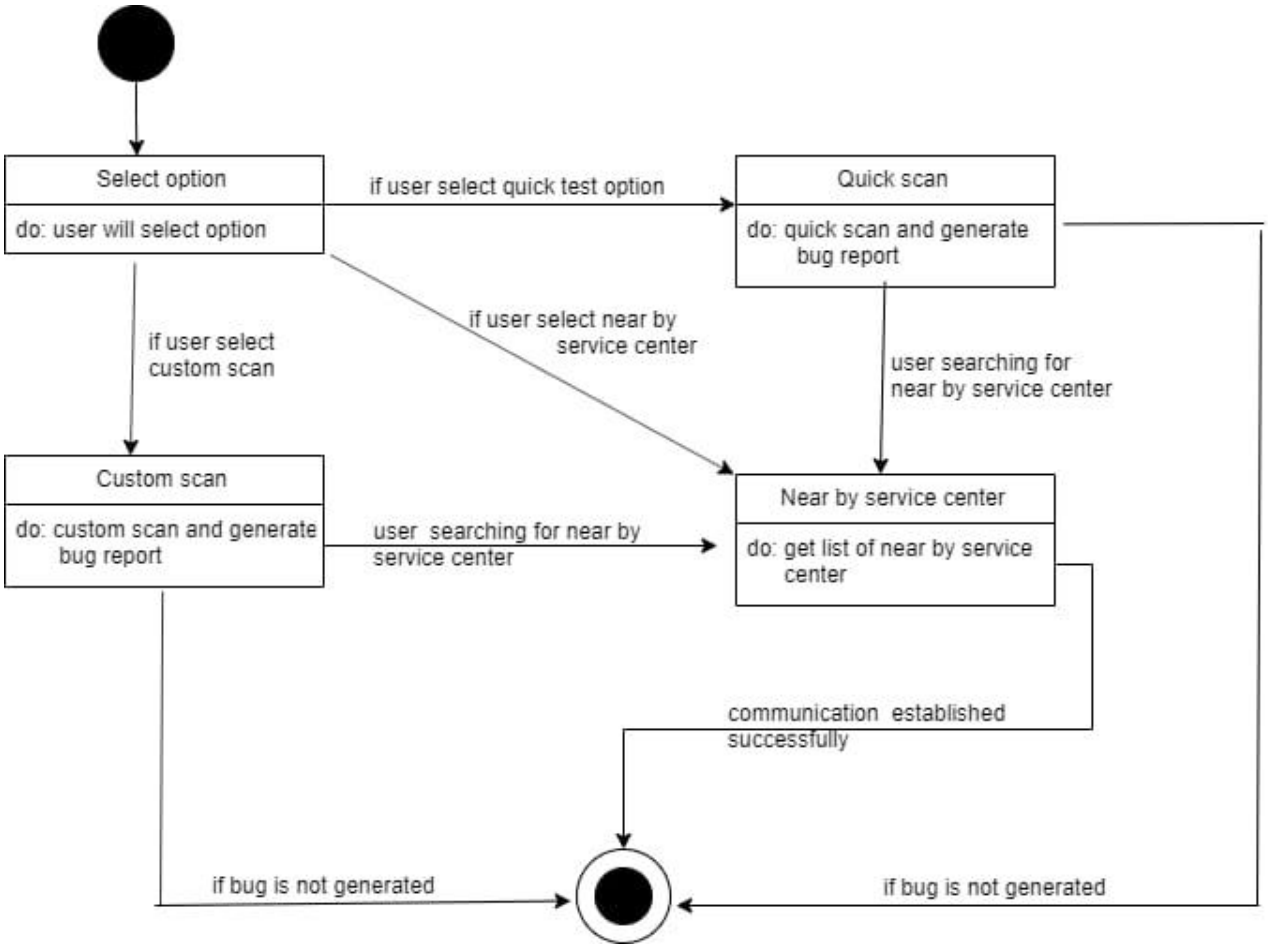
Class Diagram:



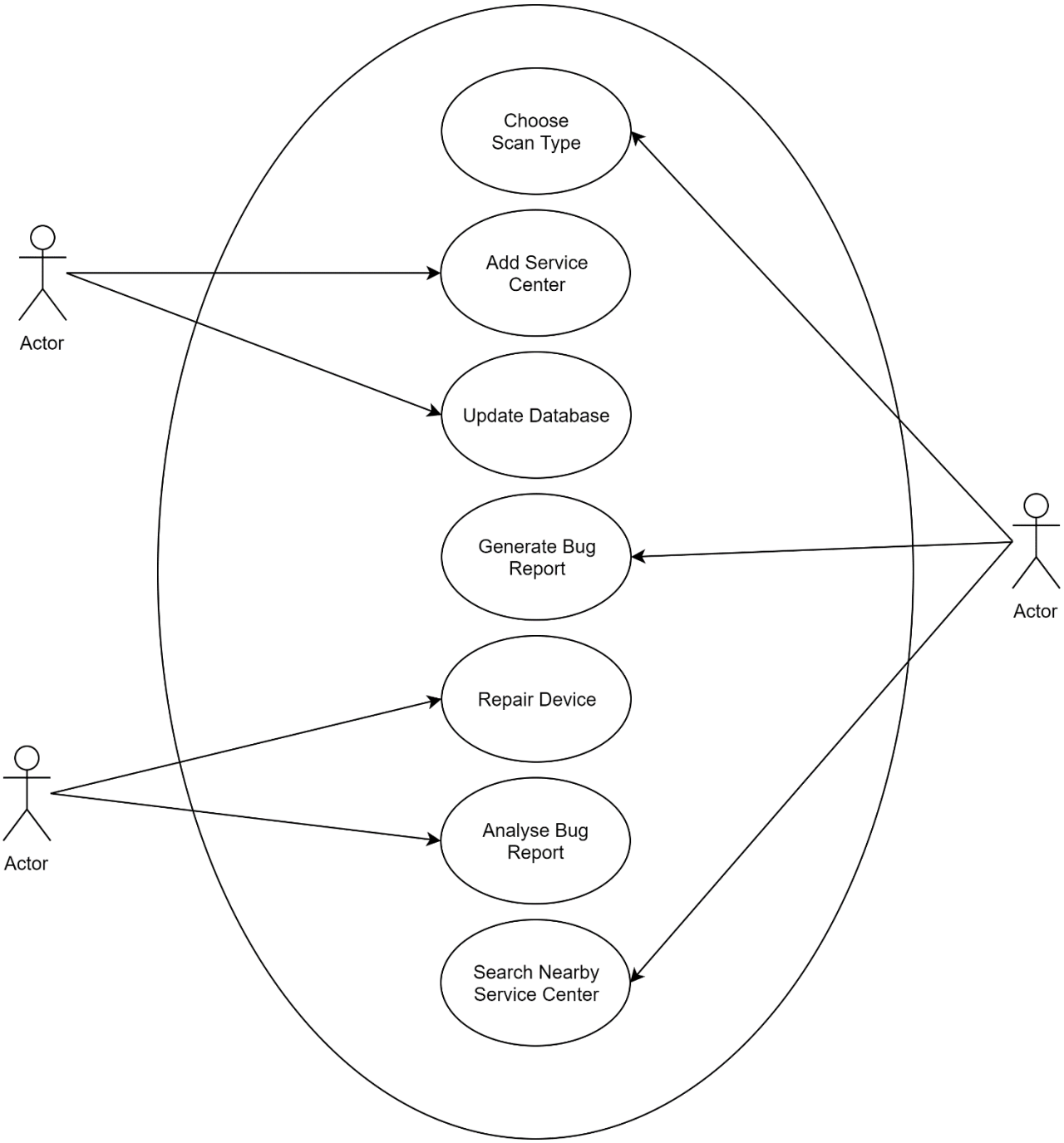
Sequence Diagram:



State Diagram:



Usecase Diagram:



10) Appendix-C:

Youtube Link: