

**A**  
**Project Report**  
**On**  
**"Vendy – A Street Vendor Positioning & Navigation System"**

(CE345 – Software Group Project-2)



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**Under the Supervision of**  
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**Submitted to**  
Charotar University of Science & Technology (CHARUSAT)  
for the Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Technology (B.Tech.)  
in Computer Engineering (CE)  
for 5<sup>th</sup> semester B.Tech.

**Submitted at**



**U & P U. PATEL DEPARTMENT OF COMPUTER ENGINEERING**  
**(NBA Accredited)**

**Chandubhai S. Patel Institute of Technology (CSPIT)**  
**Faculty of Technology & Engineering (FTE), CHARUSAT**  
**At: Changa, Dist: Anand, Pin: 388421.**

**October, 2019**

## **DECLARATION BY THE CANDIDATES**

We hereby declare that the project report entitled “**VENDY**” submitted by us to Chandubhai S. Patel Institute of Technology, Changa in partial fulfilment of the requirement for the award of the degree of **B.Tech** in Computer Engineering, from U & P U. Patel Department of Computer Engineering, CSPIT/FTE, is a record of bonafide CE345 Software Group Project-2 (project work) carried out by us under the guidance of **Prof. Mayuri Popat**. We further declare that the work carried out and documented in this project report has not been submitted anywhere else either in part or in full and it is the original work, for the award of any other degree or diploma in this institute or any other institute or university.

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## CERTIFICATE

This is to certify that the report entitled “**VENDY**” is a bonafied work carried out by Ms. Mayuri Sakhiya (D18CE156), Mr. Rushvil Patel (D18CE157), Mr. Akrit Khanna (D18CE159), Mr. Darsh Ambaliya (D18CE161), Mr. Gaurang Ganatra (D18CE164), Ms. Yukta Khatsuria (D18CE167) under the guidance and supervision of **Prof. Mayuri Popat** for the subject **Software Group Project-2 (CE345)** of 5<sup>th</sup> Semester of Bachelor of Technology in **Computer Engineering** at Chandubhai S. Patel Institute of Technology (CSPIT), Faculty of Technology & Engineering (FTE) – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate themselves, has duly been completed, and fulfills the Partial requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred by the examiner(s).

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## **ABSTRACT**

This is a report of project allocated as a part of Software Group Project - II at Chandubhai S. Patel Institute of Technology – CHARUSAT University located in Changa, Gujarat. The proposed project is a street vendor positioning and navigation system, which will create digital presence of small scale and moving businesses by creating their profile and placing them on map. The project will allow users to explore their nearby street vendors to fulfill their day-to-day needs and navigate to them on basis of live location of vendors. Vendy is an android application that can be used by people to explore their nearby street vendors as per their needs. Users can see the live location of moving vendors or food trucks and can reach to them. Vendy makes it convenient for users to check out status of the food carts they want to approach and also view the rate card of the products and services provided by the vendors. Vendy can help street vendors and other small scale businesses to attract new customers by creating a free business profile. Vendy makes it easy to create and update their business profile - so they can stand out, and bring customers in.

## **ACKNOWLEDGEMENT**

It gives us a great pleasure to extend our sincere gratitude to Dr. Ritesh Patel (*Head of Computer Engineering Department at Chandubhai S. Patel Institute of Technology & Science*) for his kind and impartial attitude towards us.

We are highly obliged and thankful to all faculty members of Computer Engineering for their valuable technical guidance during the development and testing of this project.

We would like to extend our heartiest gratitude to our project guide – Prof. Mayuri Popat (*Assistant Professor at U & PU Patel Department of Computer Science*) for his invaluable guidance inspirations and timely suggestions which facilitated the entire process of bringing out this project entitled “Vendy” possible and for making the valuable information available on time and for her kind and supportive nature towards us.

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# 1. Overview

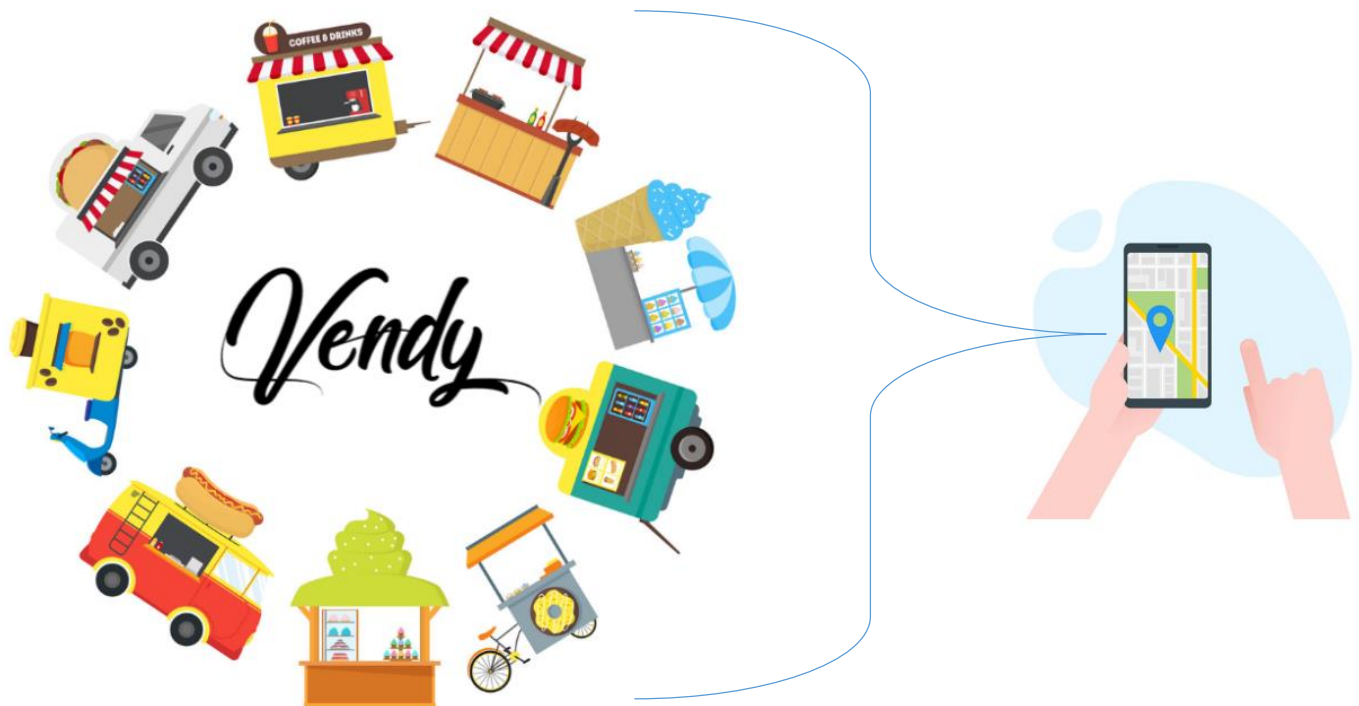
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## 1.1 Project Summary

Vendy is an android application that can be used by people to explore their nearby street vendors as per their needs. Users can see the live location of moving vendors or food trucks and can reach to them. Vendy makes it convenient for users to check out status of the food carts they want to approach and also view the rate card of the products and services provided by the vendors.

Vendy can help street vendors and other small scale businesses to attract new customers by creating a free business profile. Vendy makes it easy to create and update their business profile - so they can stand out, and bring customers in.

The complete overview of the system is as shown in the overview diagram below:



**Figure 1. Overview Diagram**

The product to be developed has interactions with the general users and street vendors that include food trucks and cart wheel vendors, also other small scale services like tailoring, laundry, and shoe repair etc. The product has to interact with other systems like: Internet, GPS and Google Maps.

## 1.2 Purpose

The purpose of the proposed project is to create a platform that will allow the street vendors to build their digital presence by placing them on maps, so the users can conveniently find them as per their needs.

## 1.3 Scope

The goal and scope of our project is to develop an application that helps street vendors grow their business by pinning them on digital map and gives users a convenient option to find street vendors on map. The project will allow users to explore their nearby street vendors to fulfill their day-to-day needs and navigate to them on basis of live location of vendors.

## 1.4 Objectives

The application is supposed to have the following features.

- The system is an Android Application.
- The system is supported on Android Lollipop and more.
- The system includes street vendors and other small scale businesses & services.
- The system registers the vendor by taking various details like vendor name, business name, mobile number, business category, password and other optional parameters.
- The system allows vendors to create a profile with business description, photos, service timings, a permanent location/area of business etc.
- The system allows the vendor to login through registered mobile number and password.
- The system allows vendors to view and update its profile.
- The system allows vendors to change its registration details.
- The system allows vendors to turn on/off its service and perform live location sharing accordingly.
- The system allows users to explore & search for different categories of vendors.
- The system allows users to explore & navigate the registered vendors, business and other services nearby on map.
- The system displays the live location of vendor to users, if the vendor belongs to moving business category.
- The system allows users to view the public profile of vendors.
- The system allows users to search for other vendors on basis of vendor/business name, area of service and city.
- The system allows users to rate & report vendors.

The features that are described in this document are used in the future phases of the software development cycle. The features described here meet the needs of all the users. The success criteria for the system is based in the level up to which the features described in this document are implemented in the system.

## 2. Project Management

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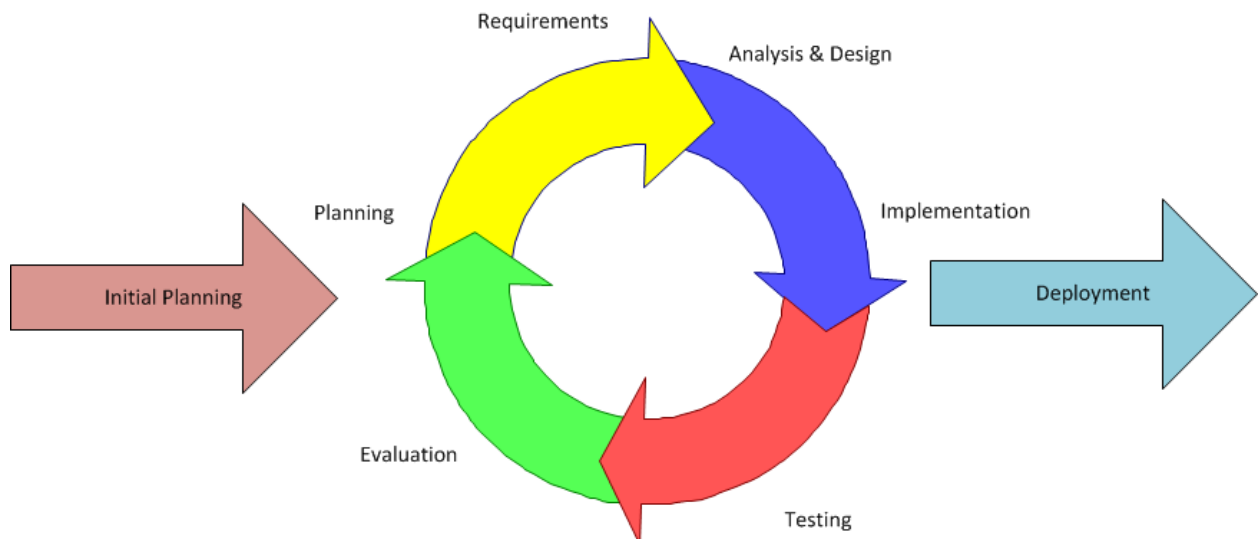
### 2.1 Project Planning

#### 2.1.1 Project Development Approach and Justification

A Project process model specifies a general process, usually as set of stages in which a project should be divided, stages should be executed and final product is delivered.

As “VENDY” is a user defined project a set of requirements are already defined by the developer, but new requirements appear at later stages of development and also design requirements need to be changed accordingly. So, to handle this process flow properly, it requires an activity to be repeated till accuracy is achieved before moving to the next activity.

This process flow model is called Iterative Model, it executes one or more activity repetitively to get accuracy before starting the next activity.



**Figure 2. Process Model**

An Iterative Life Cycle Model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which can then be reviewed in order to identify further requirements. This process is then repeated, producing a new version of the software for each cycle of the model.

### 2.1.2 Project Effort & Time, Cost Estimation

The beginning of a project, it is difficult to predict. This report is the first design of SPMP, we cannot expect an adequate data. Using the following function points, we will predict our estimation plan.

**Table 1. Unadjusted Function Point Calculation**

		Weighting factor			Count
		Simple	Average	Complex	
Inputs	Vendor Login	3	4	6	4*4=16
	Vendor Registration	3	4	6	
	Vendor Profile Account	3	4	6	
	Search	3	4	6	
Outputs	Login Confirmation	4	5	7	4*5=20
	Registration	4	5	7	
	Account	4	5	7	
	Search	4	5	7	
Inquiries	New Vendor	3	4	6	
	Validate Vendor information	3	4	6	
	Navigate	3	4	6	3*4=12
Files	User data	7	10	15	2*10=20
	Services	7	10	15	
Interfaces	Application to server database	5	7	10	2*7=14
	User to application database	5	7	10	

Total UFP				88
-----------	--	--	--	----

Calculation of Total complexity adjustment value

**Table 2. Complexity Adjustment Value**

No.	Characteristic	Count
1	Data Communication	5
2	Distributed data processing	4
3	Performance	5
4	Heavily used configuration	3
5	Transaction rate	3
6	Online data entry	4
7	End user efficiency	4
8	Online updating	3
9	Complex processing	2
10	Reusability	2
11	Installation ease	0
12	Operational ease	4
13	Multiple sites	0
14	Facilitate change	3
Total		42

$$\begin{aligned} \text{PCA} &= 0.65 + 0.01 * 42 \\ &= 1.07 \end{aligned}$$

$$\begin{aligned} \text{Adjustment Function point} &= 1.07 * 82 \\ &= 88 \end{aligned}$$

Assuming that the 1 FP is equal to 50 lines of Java code then,

$$\begin{aligned} \text{LOC (Lines of code)} &= 50 * 88 \\ &= 4400 \end{aligned}$$

$$\begin{aligned} \text{Then KLOC} &= 4.4 \end{aligned}$$

Effort of the project is  $E = a * (KLOC)^b$

For the Organic project the value of a is 3.2 and value of b is 1.05.

Therefore value of effort is  $= 3.2 * (7)^{1.05}$ .

$= 15$  person-month

Duration of the project is  $M = a * (E)^b$

$a = 2.5$   $b = 0.38$

$M = 2.5 * (15)^{0.38}$

$= 7$  months

Suppose the average monthly salary of each software developer is Rs. 20,000.

Cost of the project is  $= 30000 * 15$

$= \text{Rs } 4,50,000.00$  .

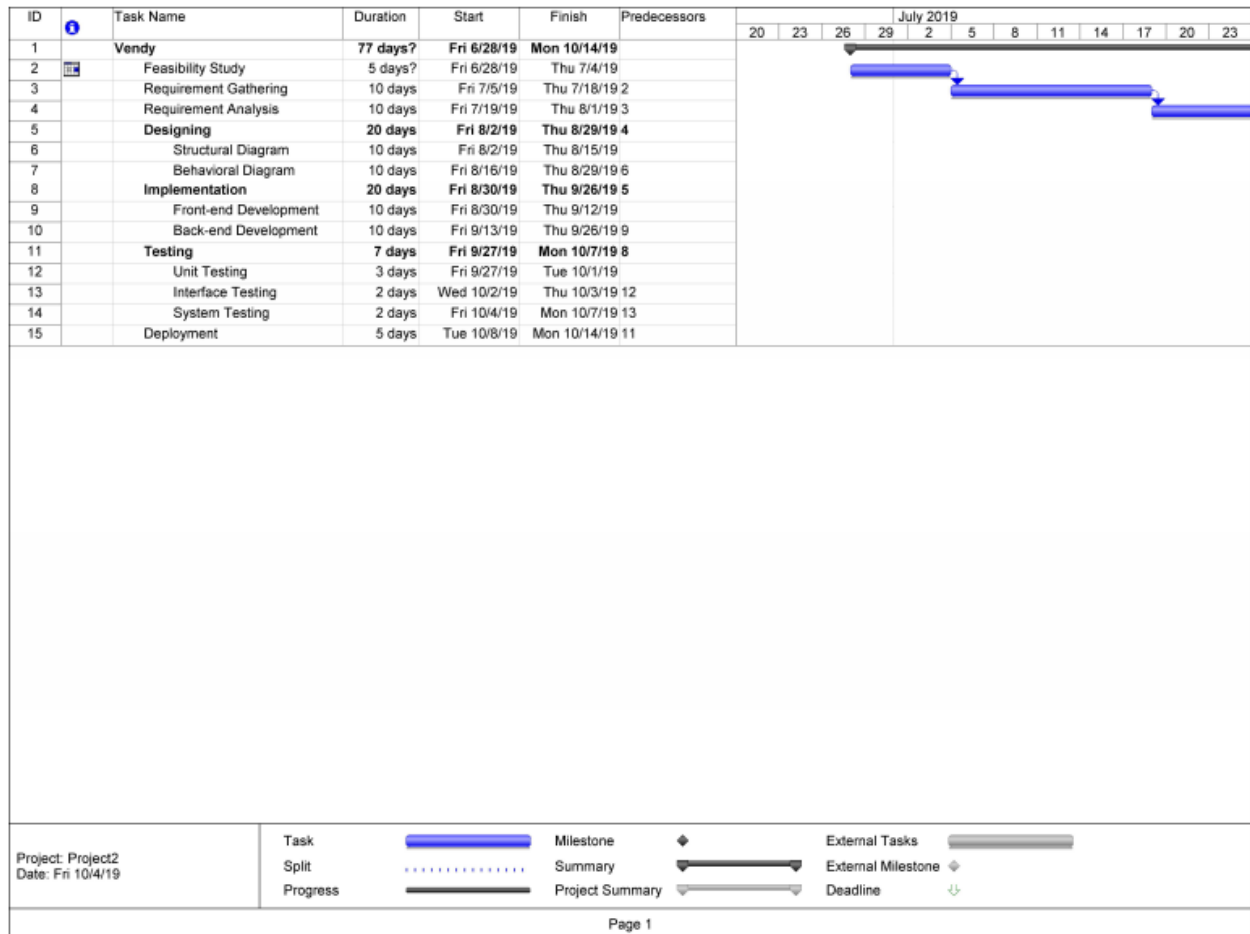
### 2.1.3 Roles & Responsibilities

**Table 3. Project Responsibilities**

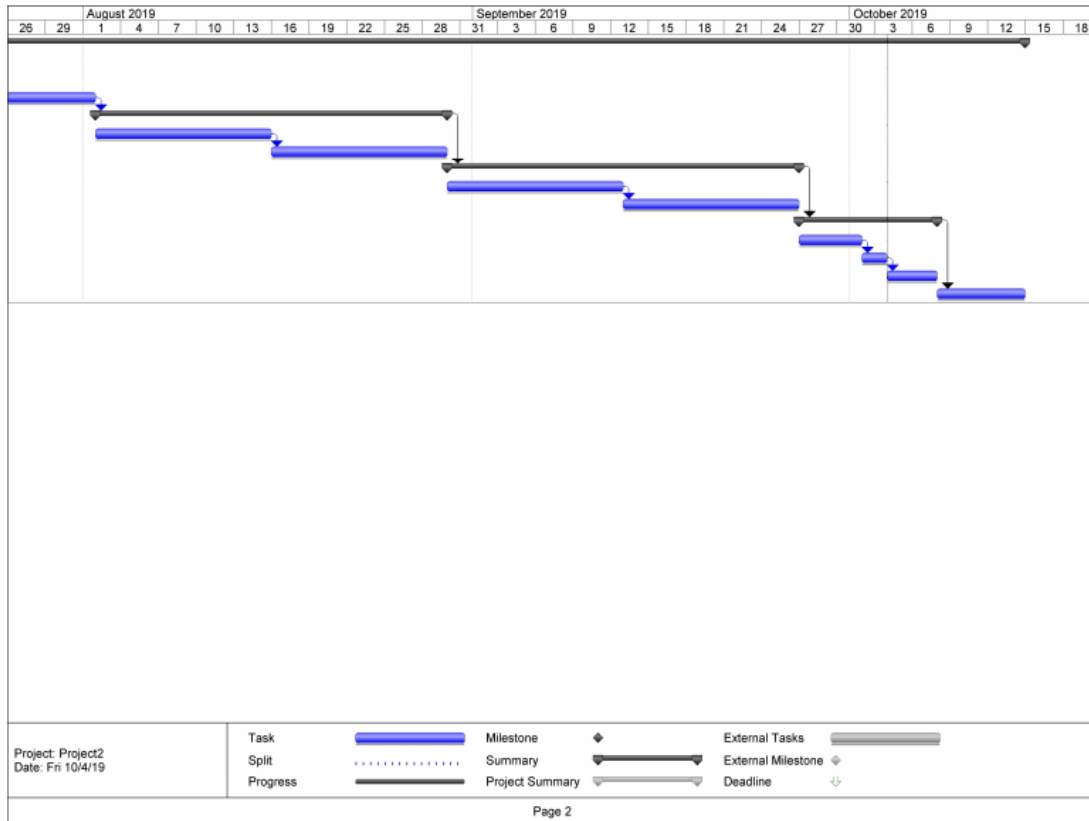
Member Name	Responsibility	E-mail
Darsh Ambaliya	Project Manager / Business Analyst	<a href="mailto:d18ce161@charusat.edu.in">d18ce161@charusat.edu.in</a>
Rushvil Patel	UI/UX Designer	<a href="mailto:d18ce157@charusat.edu.in">d18ce157@charusat.edu.in</a>
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## 2.2 Project Scheduling

The following figure shows the Work plan, Gantt Chart and Network Diagram that describes the schedule allocation of the project.



**Figure 3. Work Plan**

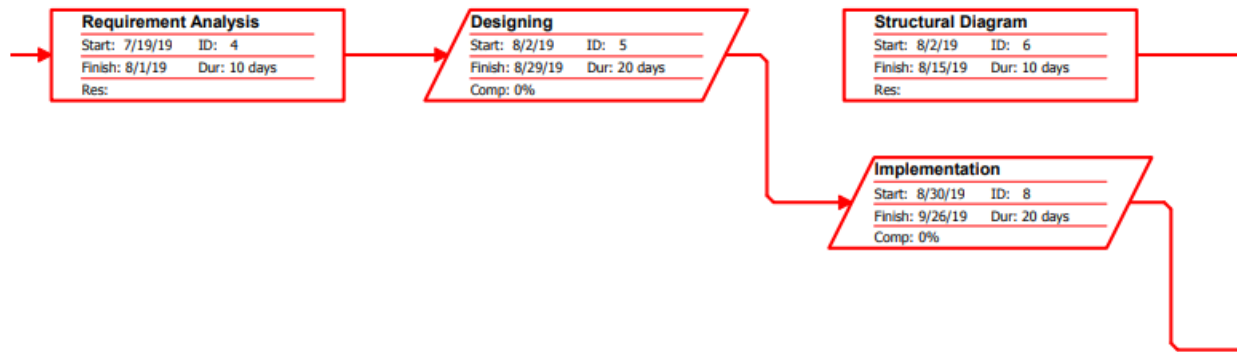


**Figure 4. Gantt Chart**

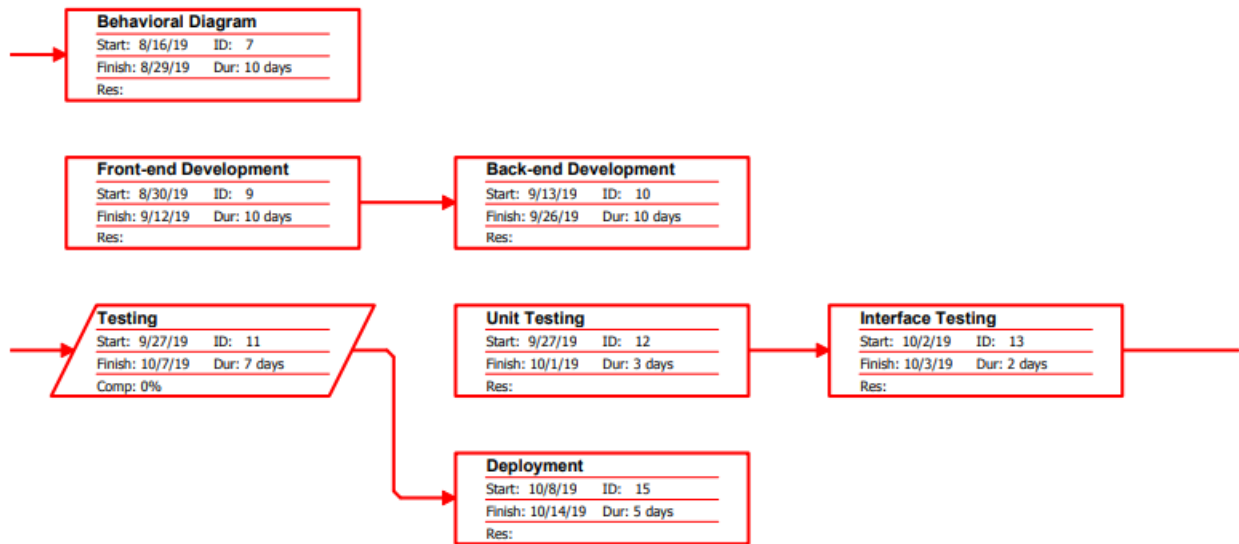




**Figure 5. Network Chart**

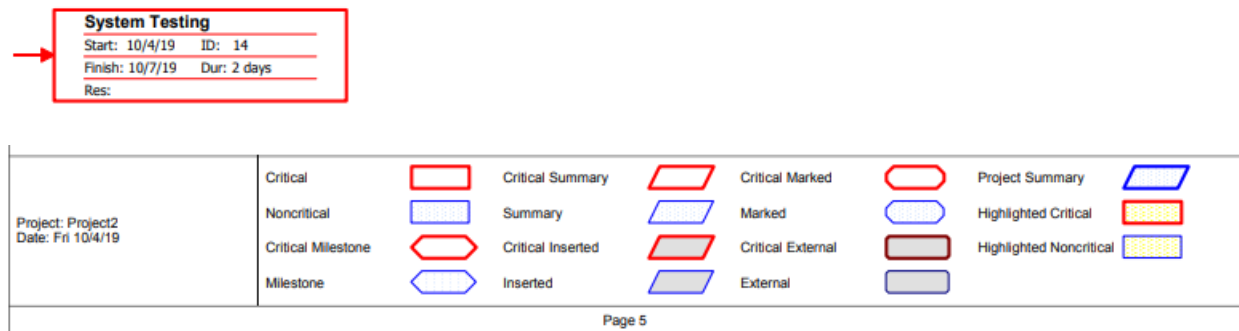


**Figure 6. Network Chart**



Page 3

Figure 7. Network Chart



Page 5

Figure 8. Network Chart

## 3. Systems Requirement Study

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### 3.1 User Characteristics

The users of the application are the vendors and merchants, the general public and the administrators who maintain the system. The vendors and general users are assumed to have basic knowledge of using android phone and apps, internet and browsing. The administrators of the system to have more knowledge of the internals of the system and is able to rectify the small problems that may arise due to disk crashes, power failures and other catastrophes to maintain the system. The proper user interface, user manual, online help and the guide to install and maintain the application must be sufficient to educate the users on how to use the application without any problems.

### 3.2 Hardware & Software Requirements

Considering the average hardware requirements for the application development team, the resources will be acquisitioned. The average hardware resources necessary for our project are as follow:

- Processor – Intel i5
- RAM – 8 GB
- HDD – 500 MB
- Network Interface Card (NIC)
- 2 GB Graphics Card

Hence, a PC or laptop that fulfills the above mentioned resources and an android phone with lollipop+ are required for the development team.

In addition to these HW requirements also the following SW requirements should be satisfied:

- Android Software Development Kit
- Adobe XD
- MS Project
- MS Visio
- MS Office
- Chrome Browser

For users of the application an android phone with lollipop+, 2GB RAM and 5.0+ inch display is required.

### 3.3 Assumptions & Dependencies

- The users must have an android phone with lollipop or more.
- The users have sufficient knowledge to use android phone and other browsing capabilities.
- The user's phone must be GPS enabled and have stable internet connection.
- The users know the English language, as the user interface will be provided in English.
- The application is connected with Google Maps and works according to the availability of Google Maps.

## 4. System Analysis

---

### 4.1 Study of Current System

Today there are various business listing sites available in market. Every business owner is eager to list his/her business in this online directories and perform digital marketing to increase the customer base of the business. The most popular system available in market is Google My Business that allows business owners to create their digital presence by creating a free profile and then it will place them on Google Maps which allows users to find them easily and navigate to them. Almost all the systems currently available in market has strong policies and review plans for business listings and only allow big and well settled businesses that has fixed locations.

### 4.2 Weakness of Current System

From all the systems currently available in market it can be concluded that they only allow big and well settled businesses and has strong policies for claiming the businesses. They don't allow any small street vendors and other small services. Also the current systems lack the functionality of tracking moving businesses i.e. food trucks, cart wheels etc. All the current systems available in market is only focused on mapping the fixed location services.

### 4.3 Requirements of New System

This section describes in detail all the functional and non-functional requirements, the expected interfaces and other supporting information.

#### 4.3.1 Functional Requirements

##### R1. Vendor Registration

- Input: Vendor name, mobile number, password, OTP verification.
- Output: Successful registration.

##### R2. Profile Creation/Update

- Input: Business name, business category, business description, photos, service timings, a permanent location/area of business.
- Output: Profile created/updated successfully. Visible to users.

**R3. Vendor Login**

- Input: Mobile number, password.
- Output: Logged in to vendor side of application.

**R4. Vendor Interaction**

- Input: Turn on/off service
- Output: Vendor's availability on map and can occur in user's search.

**R5. Browse**

- Explore through available categories.
- Explore the list of sub-categories to specifically choose the required option.

**R6. Search**

- Input: Vendor/business name, area of service and city.
- Output: Nearby vendors will be displayed on map.

**R7. Vendor's Profile display**

- Input: Click the pin on map.
- Output: Vendor name, business name, category, description, live location, service timings, permanent address, rate card, photos, ratings.

**R8. Navigate**

- Input: Click the Navigate button.
- Output: Opens the Google map and displays the navigation details.

**R9. User Ratings**

- Input: Fill the stars out of 5
- Output: Total and average of overall ratings are shown on vendor's profile.

**R10. User Report**

- Input: Click the report option
- Processing: Admin verification
- Output: Vendor's account gets blocked.

**4.3.2 Non-functional Requirements**

R1. The system shall be developed using Android.

R2. The system shall be available 24x7.

R3. The graphical user interface of the application must have user-friendly and have consistent look & feel.

R4. Vendor module of application must be protected by log-in.

R5. Vendor login shall be verified within 5 seconds.

R6. The registered data of the system must be secured.

R7. Vendor registration must be verified by OTP.

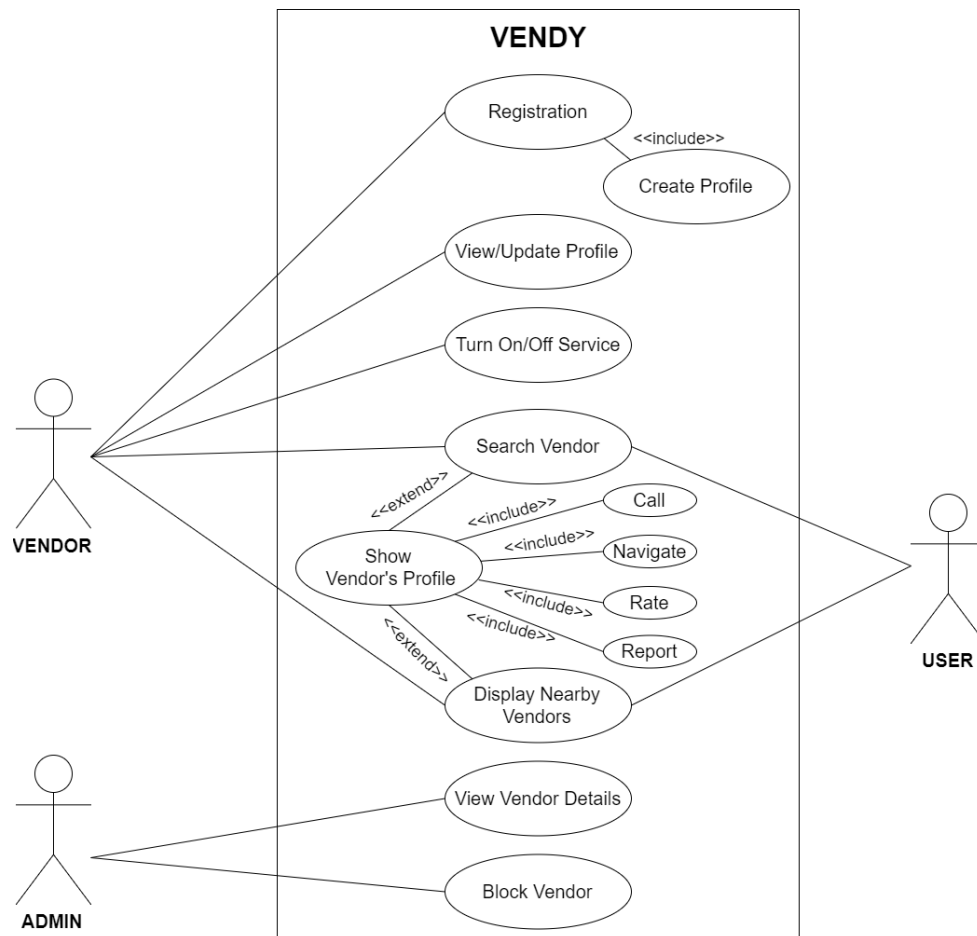
R8. Live location of moving vendors shall be updated every 5 seconds.

R9. Fixed positioning of vendors must be shown exact & accurate to users.

R10. The user's report on vendor shall be subjected to personal verification.

R11. User's search must be responded within 5-10 seconds.

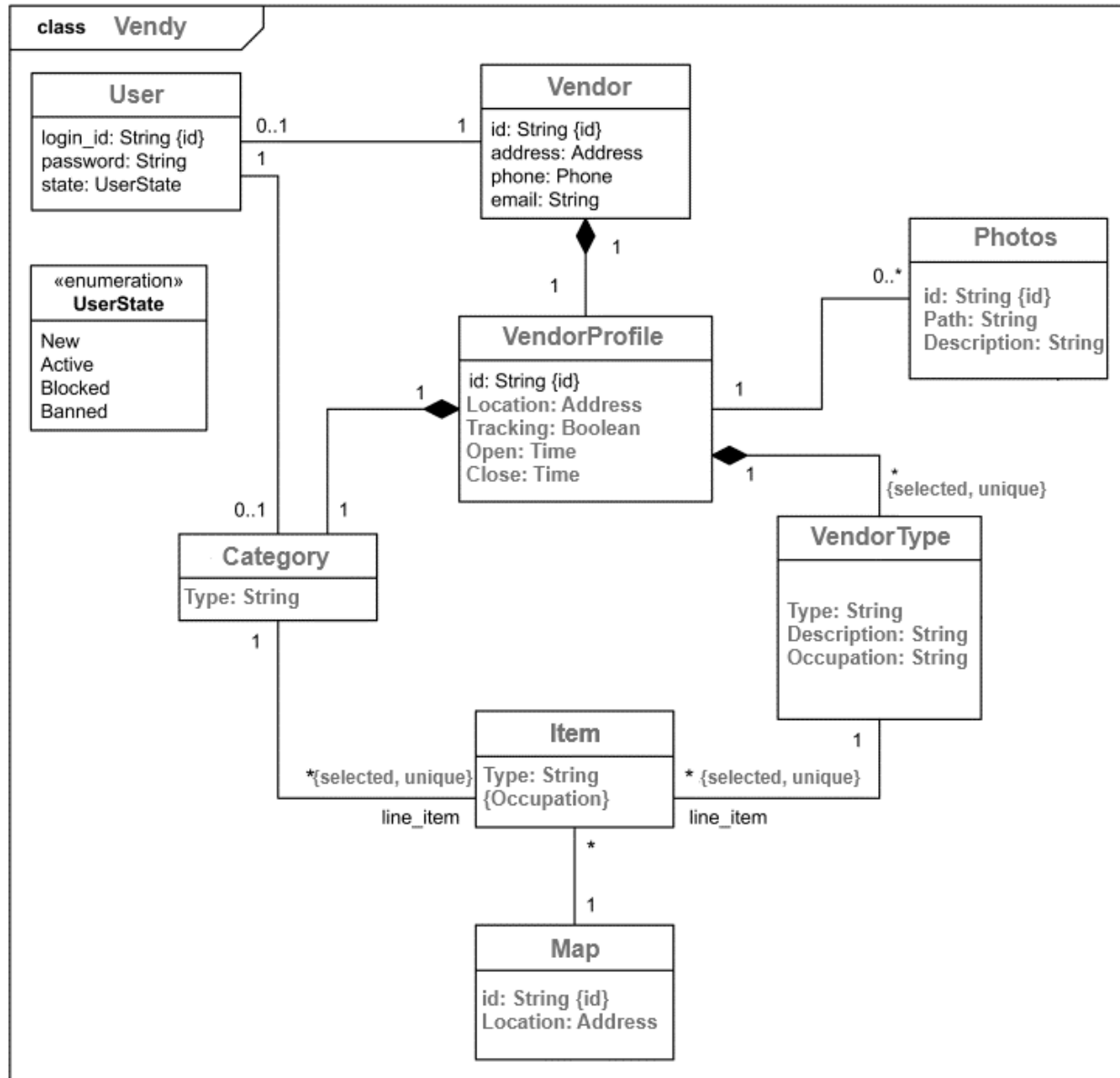
#### 4.4 Use-case Diagram



**Figure 9. Use-case Diagram**



## 4.5 Class Diagram



### Figure 10. Class Diagram

## 4.6 Sequence Diagram

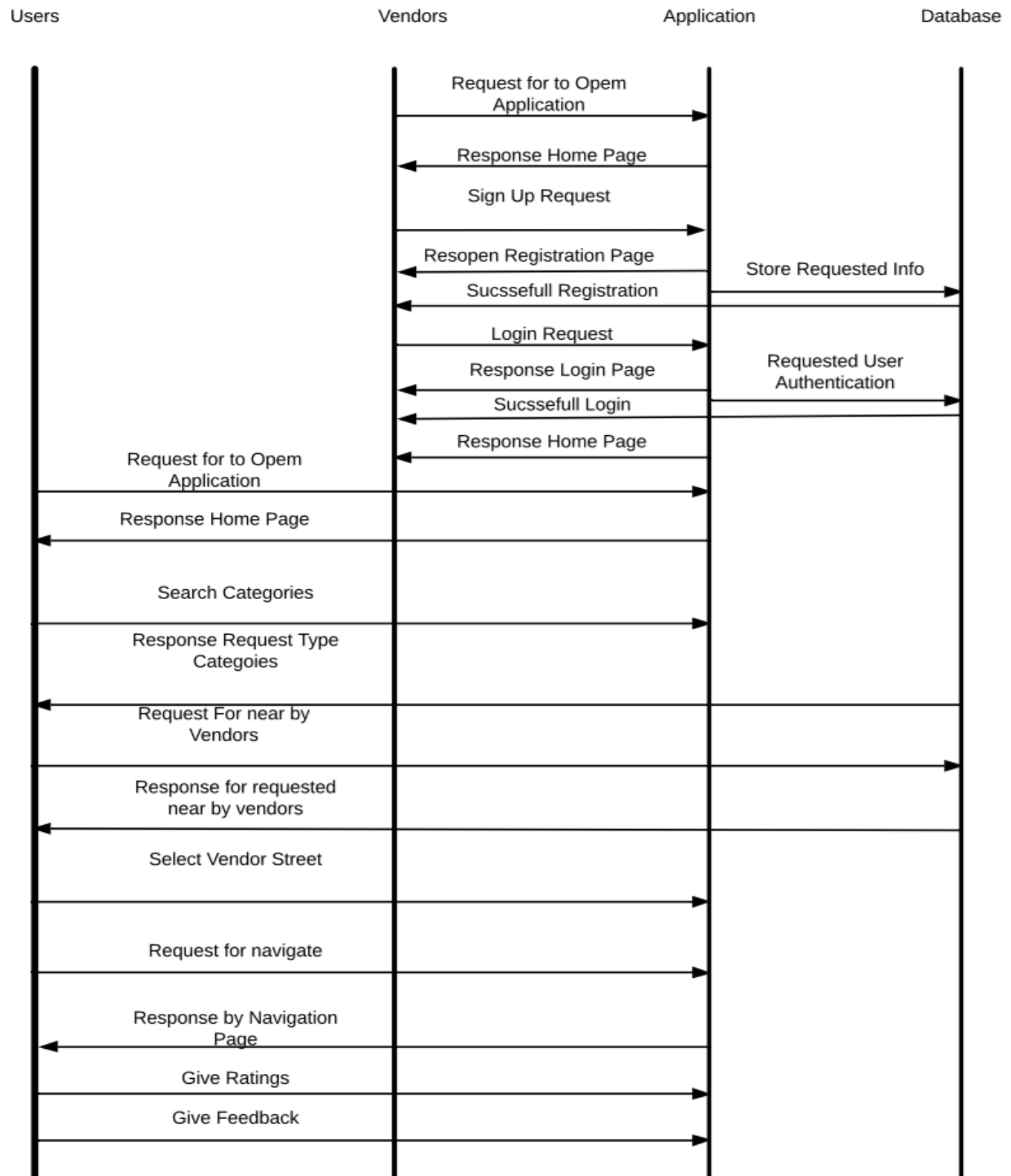
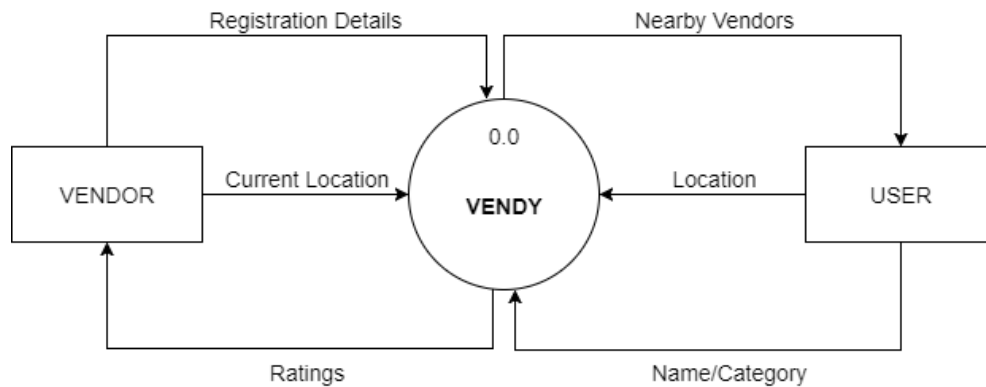


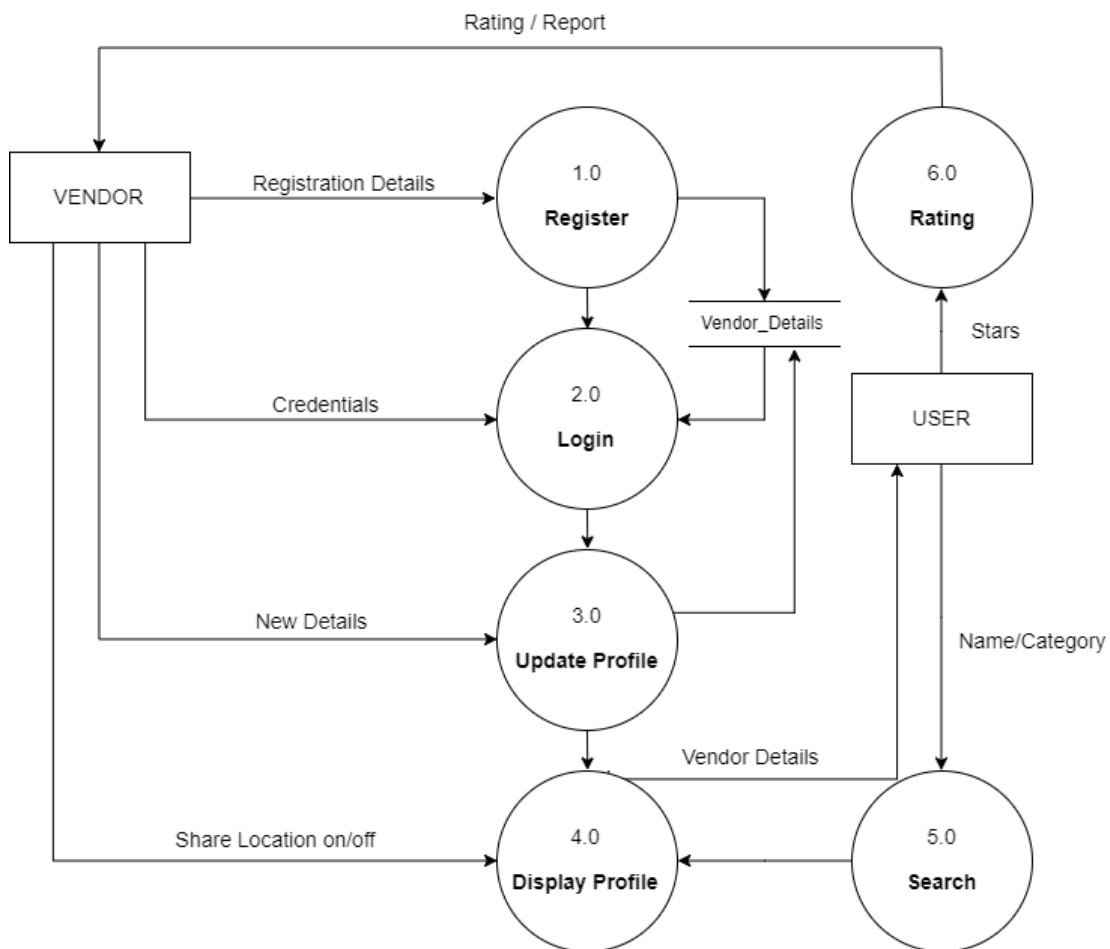
Figure 11. Sequence Diagram

## 4.7 Context Diagram



**Figure 12. Context Diagram**

## 4.8 Data flow Diagram



**Figure 13. Data flow Diagram**

## 4.9 Data Modeling

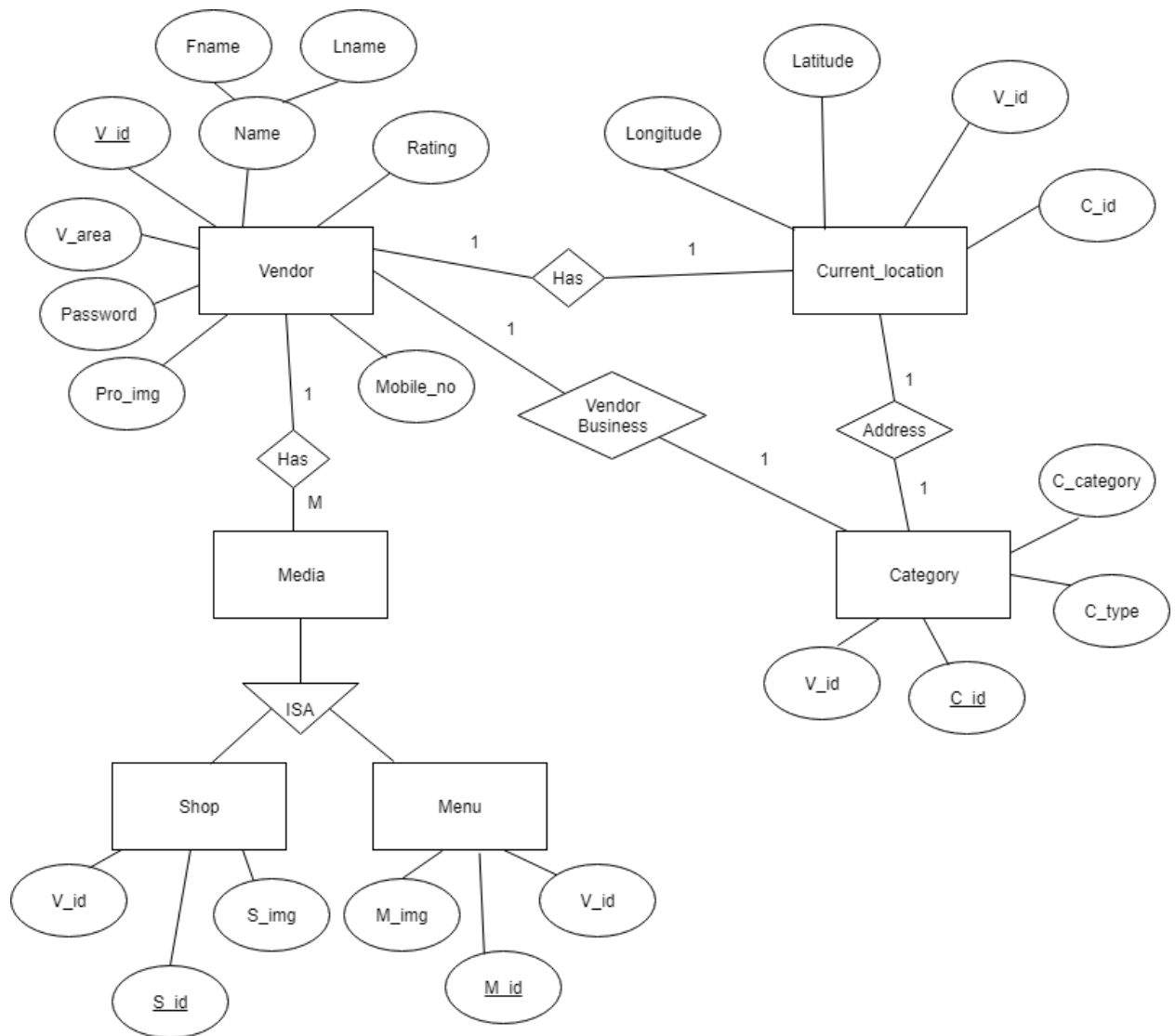
### 4.9.1 Data Dictionary

**Table 4. Data Dictionary**

Data Dictionary			
Vendor			
Field	Data type (Size)	Constraints	Description
v_id	Number (5)	Primary key	Vendor Id
mobile_no	Varchar (14)	Not null	Vendor mobile no.
password	Number (20)	Not null	Password
rating	Number (5,2)		Vendor Rating
fname	Varchar (20)	Not null	Vendor First Name
lname	Varchar (20)	Not null	Vendor Last Name
v_img	Varchar (30)		Profile Image
Category			
Field	Data type (Size)	Constraints	Description
v_id	Number (5)	Foreign key	Vendor Id
c_id	Number (5)	Primary key	Category Id
c_name	Varchar (20)	Not null	Category name
c_type	Varchar (20)		Category Type
Location			
Field	Data type (Size)	Constraints	Description
v_id	Number (5)	Foreign key	Vendor Id
c_id	Number (5)	Foreign key	Category Id
l_id	Number (5)	Primary key	Location Id

latitude	Number (5,10)	Not null	Latitude
longitude	Number (5,10)	Not null	Longitude
<b>Shop_media</b>			
Field	Data type (Size)	Constraints	Description
v_id	Number (5)	Foreign key	Vendor Id
sm_id	Number (5)	Primary key	Shop Image Id
s_img	Varchar (30)		Shop Image
<b>Menu_media</b>			
Field	Data type (Size)	Constraints	Description
v_id	Number (5)	Foreign key	Vendor Id
m_id	Number (5)	Primary key	Menu Image Id
m_img	Varchar (30)		Menu Image

### 4.9.2 ER Diagram



**Figure 14. ER Diagram**

## 5. System Design

### 5.1 State Transition Diagram

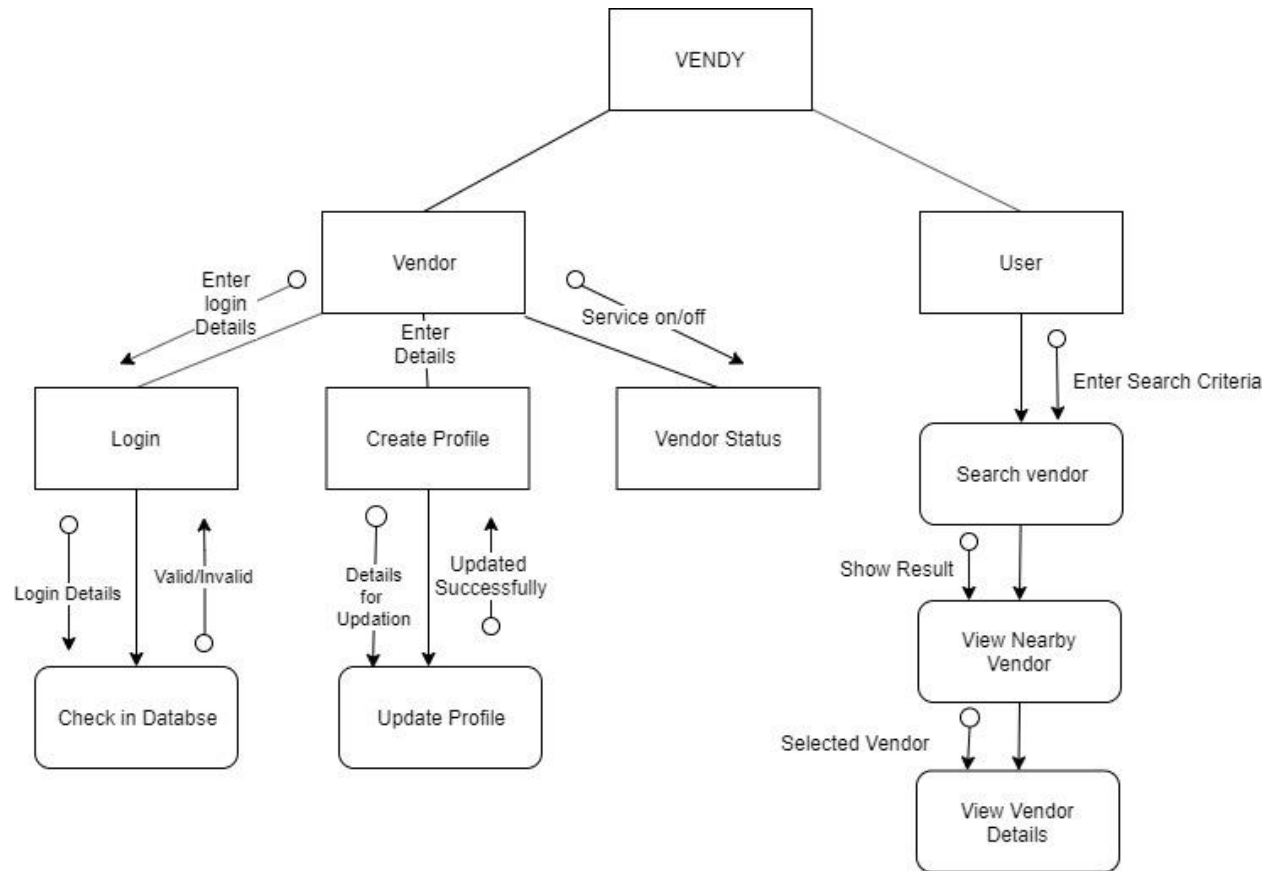


Figure 15. State Diagram

## 5.2 Samples of Forms, Report and Interface

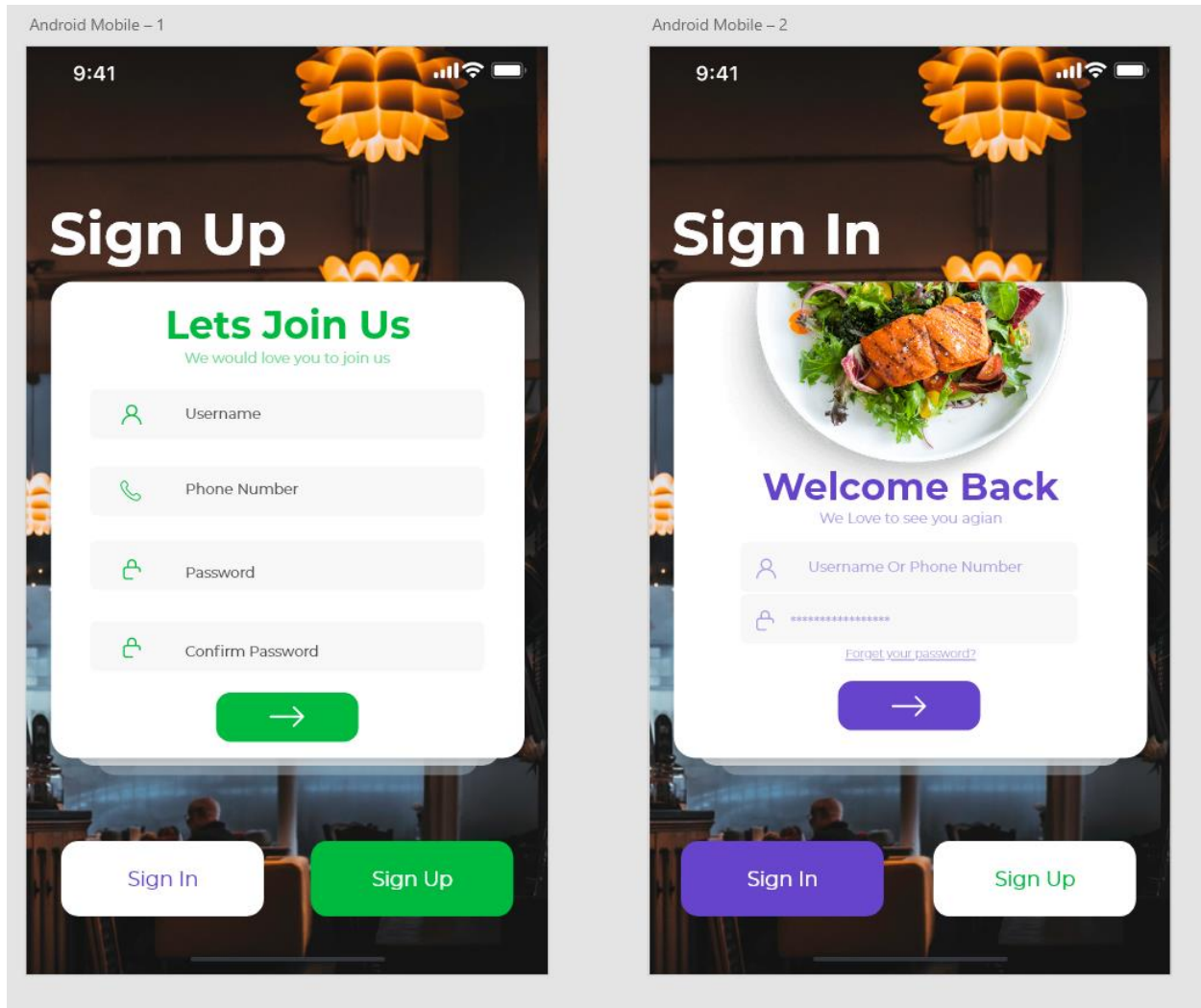
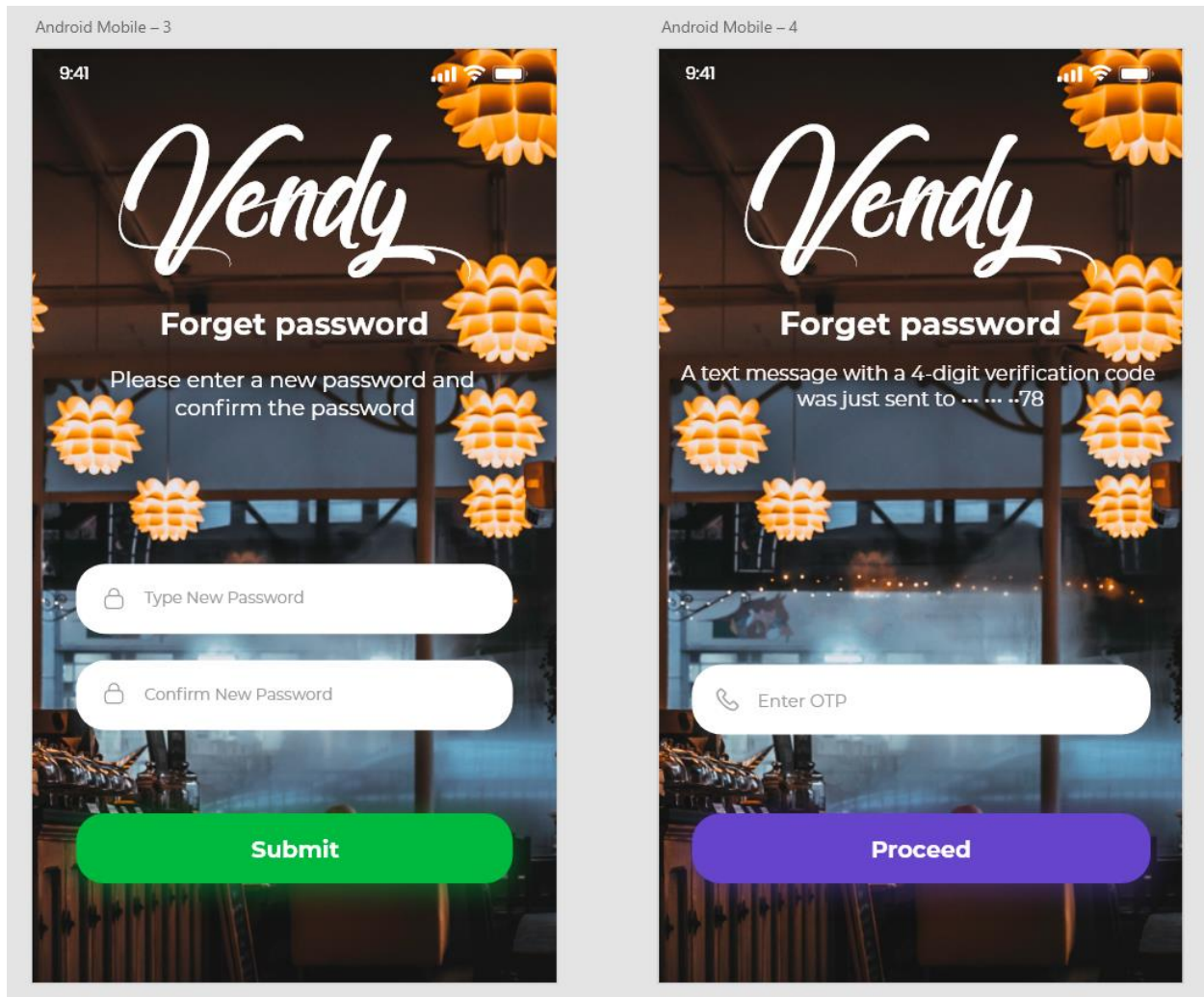
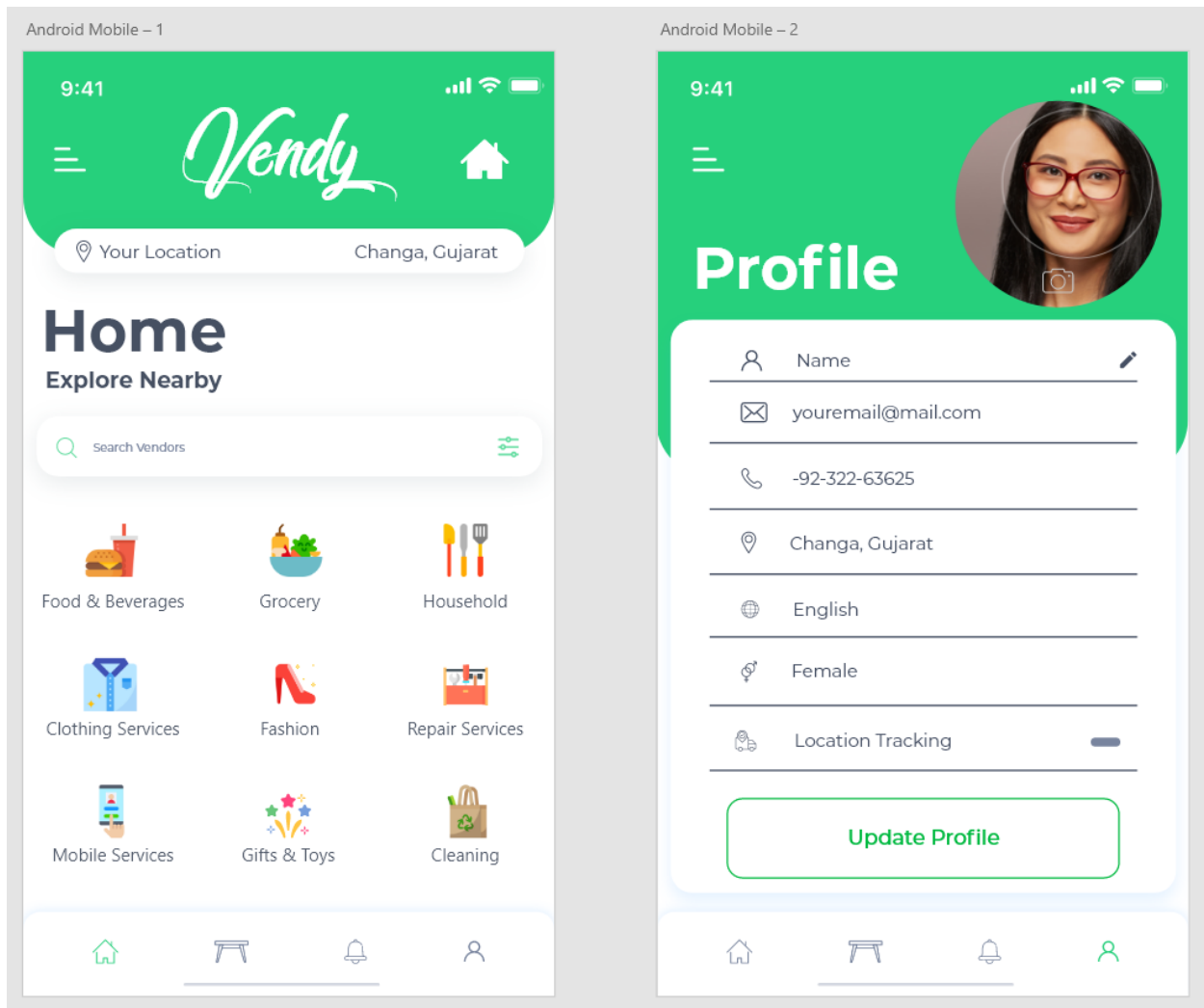


Figure 16. Login/SignUp Module





**Figure 17. Password Recovery**



**Figure 18. Homepage and Profile**

## 6. Testing

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### 6.1 Testing Plan

Testing is a process of exercising or evaluating a system or system component by manual or automated to verify that it satisfies specified requirements. It is also a process of executing a program or system with the intent of finding errors.

Testing is a set of activities with the objective of identifying failures in a software or system and to evaluate its level of quality, to obtain user satisfaction. It is a set of tasks with clearly defined goals. It also provides an objective, independent view of the software to allow the business to appreciate and understand the risk of software implementation.

Following are the various types of testing to be carried out for this application:

- **Unit testing** to confirm that the component or subsystem is correctly coded and carries out the intended functionality.
- **Integration testing** to confirm that various modules of the system are correctly configured and connected and gives intended output.
- **System testing** to confirm that overall system works correctly and all the requirements specified in SRS are met.

### 6.2 Testing Strategy

#### a. White Box Testing

White-box testing (also known as clear box testing, glass box testing, and transparent box testing, and structural testing) is a testing technique, that examines the program structure and derives test data from the program logic/code. The other names of glass box testing are clear box testing, open box testing, logic driven testing or path driven testing or structural testing.

While white-box testing can be applied at the unit, integration and system levels of the software testing process, it is usually done at the unit level. Using it, our developers, tested the paths within a unit, paths between units during integration, and between subsystems during a system-level test. Though this method of test design, the developers uncovered many errors or problems, still it might not detect unimplemented parts of the specification or missing requirements.

We can test paths within a unit, paths between units during integration, and between subsystems during a system-level test. Though this method of test design, we can uncover many errors or problems, still this plan has the potential to miss unimplemented parts of the specification or missing requirements.

**White-Box Test of Vendi Included:**

- Control flow testing
- Data flow testing
- Branch testing
- Statement coverage
- Decision coverage
- Modified condition/decision coverage
- Prime path testing
- Path testing

**b. Black Box Testing**

Black-box testing is a method of software testing that examines the functionality of an application based on the specifications. It is also known as Specifications based testing. Independent Testing Team usually performs this type of testing during the software testing life cycle.

This method was applied to each and every level of software testing such as unit, integration, system and acceptance testing by our testers.

Main focus in black box testing is on functionality of the system as a whole. The term “behavioral testing” is also used for black box testing and white box testing is also sometimes called “structural testing”. Behavioral test design is slightly different from black-box test design because the use of internal knowledge isn’t strictly forbidden, but it’s still discouraged.

Our testers performed the black box testing and ensured that all the requirements specified in SRS are met. Still each testing method has its own advantages and disadvantages. There are some bugs that cannot be found using only black box or only white box. Majority of the application was tested

by black box testing method. We covered majority of test cases so that most of the bugs get discovered by black box testing.

The various bugs uncovered in black box testing were related to form validations, UI responsiveness, activity connectivity which were corrected and resolved.

## 6.3. Testing Strategy

### 6.3.1 Test Cases

Project Name: Vendy

Module Name: Login

Date of Creation: 4/10/2019

Test Case No	Test Scenario	Pre-Condition	Test Steps	Test Case	Test Data	Expected Result	Actual Result	Post Condition	Status
1	Verify Login	Account needs to be registered first	Enter User Name, Enter Password, Click on login button	Enter valid username and valid password	<Valid Username> <Valid Password>	Successful Login	Successful Login	Vendor Dashboard is shown	Pass
				Enter valid username and invalid password	<Valid Username> <Invalid Password>	Invalid username or password	Invalid username or password	Login page is shown	Pass
				Enter invalid username and valid password	<Invalid Username> <Valid Password>	Invalid username or password	Invalid username or password	Login page is shown	Pass
				Enter invalid username and invalid password	<Invalid Username> <Invalid Password>	Invalid username or password	Invalid username or password	Login page is shown	Pass

**Figure 19. Login Testing**

Project Name: Vendy

Module Name: Map activity

Date of Creation: 4/10/2019

Test Case No	Test Scenario	Pre-Condition	Test Steps	Test Case	Test Data	Expected Result	Actual Result	Post Condition	Status
1	Map Activity	User needs to turned on his/her location  Vendor Needs to turned on his/her service	User search for nearby vendor	Enter category	<Valid Category>	Nearby vendor is displayed	Nearby vendor is displayed	Markers are displayed on map	Pass
					<Service on>				
				Enter category	<Invalid Category >	Invalid category name	Invalid category name	Message of invalid category is toast	Pass
					<Service on>				
				Enter category	<Valid Category>	No nearby vendor	No nearby vendor	No nearby vendor message is toast	Pass
					<Service off>				
				Enter category	<Invalid Category >	Invalid category name	Invalid category name	Message of invalid category is toast	Pass
					<Service off>				

**Figure 20. Map Activity Testing**

## 7. Conclusion and Discussion

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### 7.1 Self Analysis of Project Viabilities

The proposed project has certain dependencies like Internet connection and GPS. The function of this application is totally dependent on these dependencies hence the functionality of the system seems failing during the low latency of network and in low network coverage areas.

The system targets a class of users that may possess very low level knowledge of technology and English language hence there may be difficulty of understanding and using the application seamlessly. Also the system lacks to display the exact live location of the moving street vendors.

### 7.2 Problem Encountered and Possible Solutions

Some of the problems encountered in the system and discussed above like lack of knowledge in user can be solved by doing training programs for vendors who want to join this platform. Also the UI/UX designing of the application can be done in such a way that users can find it easy to use and have seamless user experience.

The problems encountered while fetching live locations can be solved by investing in high configuration servers, real time database and creating personalized APIs for Maps.

### 7.3 Summary of Project Work

The proposed project is a street vendor positioning and navigation system, which will create digital presence of small scale and moving businesses by creating their profile and placing them on map. The project will allow users to explore their nearby street vendors to fulfill their day-to-day needs and navigate to them on basis of live location of vendors.

Vendy provides users to find various information related to nearby street vendors. The Product functions are more or less the same as described in the product perspective. The functions of the application include the system providing different type of services based on the type of users [Vendors/General users].

- The vendors can register themselves by providing details like vendor name, business name, mobile number, business category, password and other optional parameters.
- The vendors can create a profile with business description, photos, service timings, a permanent location/area of business etc.
- The vendors can login through their registered mobile number and password.
- The vendors can view and update their profile.
- The vendors can change their registration details.
- The vendors can turn on/off their service and perform live location sharing accordingly.

- The users can explore & search for different categories of vendors.
- The users can explore & navigate the registered vendors, business and other services nearby on map.
- The users can view the live location of vendor, if the vendor belongs to moving business category.
- The users can view the public profile of vendors.
- The users can search for other vendors on basis of vendor/business name, area of service and city.
- The users can rate & report vendors.



## 8. Limitations & Future Enhancements

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As already discussed above, the proposed project has certain dependencies like Internet connection and GPS. The function of this application is totally dependent on these dependencies hence the functionality of the system seems failing during the low latency of network and in low network coverage areas.

The system targets a class of users that may possess very low level knowledge of technology and English language hence there may be difficulty of understanding and using the application seamlessly. Also the system lacks to display the exact live location of the moving street vendors.

The possible future enhancements include:

- Better UI/UX design for the application.
- Adding push notifications to notify users when preferred vendor is nearby.
- Making vendor profile better, so users can get more information about vendors.
- Adding Live search feature.
- Adding user reviews to vendor.
- Listing vendor to multiple categories
- Making Google map more personalized as per the requirement of the application.

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