SYSTEM ANALYSIS & DESIGN

QUICKFIX

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1. Introduction

Nowadays people are so busy with their jobs and responsibilities, a minor obstruction in their day-to-day work will affect the entire schedule. These obstructions can be of any types. The

most common of those types are household problems or household needs such as thermostat failure, wiring issues in the house, baby proofing the entire house, plumbing issues and etc. These obstructions need to be addressed immediately for bring people's lives back on track. Solving household issues needs a good handyman or service provider who has decent workmanship, who is an expertise in the area, trustworthy, good communicator and charging a reasonable fare for fixing the problem. Finding a handyman of these qualities is difficult, we cannot just pick a number from the phonebook and call the first handyman in the list and expect him to be the best one for fixing a certain problem. So, to solve this problem and make it easier for people to find the right person, we came up with new a solution called QuickFix. The one stop application for fixing the day-to-day household problems.

2. Business/Organization description

QuickFix is going to be an application for mobile phones, especially for platforms iOS and Android. As the name suggests, the idea here is to make an application that is going to help users to quickly fix their day-to-day problems, related to their electric wirings, taps, tiles etc. The goal of our product is to minimize the cost of service providing and seeking process and maximize the benefits and profits on both sides. This service can also be expanded to all over the America since it is so useful to everyone. But, we mostly concentrate on Bay Area and see how the people use this application. Although, a few applications such as Angieslist exist in market, those are paid applications. Our product is going to be free of cost for all users, with some nominal fee to service provider users like electricians, plumbers etc.

Delving further in the description of application, it is going to be service software for people. However, users would be both service providers like Plumbers, Electricians and regular users like us. Using the application the user can look for service providers in their area or within a certain range of miles or from certain locations, as selected in the application. Also, there is going to be a Google map integration, which will help users and service providers to see and share each others' location, also media sharing and e-transaction to keep user free from hassles of cash exchange Service providers are going to have their hours and days of work listed, which

can be seen by the user. Users can also put their preference time on the application. In addition, user can see the minimum cost of service from the service provider.

3. Business Requirements

1. Robust platform for service provider, which would be easy to use because of powerful GUI(graphical user interface)
2. QuickFix would pre approve the identification of service providers with certificates and other licenses.
3. Easy and efficient communication between customer and service provider, with the help of chat messaging feature.
4. The application would allow users to upload unlimited images and videos, as well as audio and text.
5. QuickFix would send reminders to service providers when an appointment is fixed.
6. QuickFix will automatically calculate the service fees with tax included based on the sales tax laws.
7. Transparency of payments, like every time a payment is made, a notification mail would be sent to service provider and customer.
8. Users of QuickFix can access the service 24/7.
9. QuickFix will allow users to give feedback to the service providers and service providers can also give feedback to users.
10. We need to be able to respond customers' claims within 24 hours.

4. System Description

Platforms: Currently only for two most popular mobile platforms, namely iOS and Android. iOS coding would be in swift language, which was released by apple a couple of years back. Android uses java code for application development.

OS versions: at least 5.0 for iOS and 4.0 for Android.
Database: We need a cloud-based database; in our case it is parse.com.
Server side code: parse.com cloud code, which would be written in JavaScript.
Internet network: 2G or above.
Web services: REST based services for fetching data and making queries.

5. System Analysis and Design Specification

5.1 Functional Requirements

Process Oriented:

1. The system allows customer to select a type of service provider from different types available.
2. The system allows customer to select a service provider based on location, minimum wage, rating etc.
3. Once selected the system allows user to fix an appointment with service provider,
4. The system allows customer to send the picture, video, audio and instant message to describe the problem
5. The system allows service provider to cancel the appointment if the issue is unclear or cannot be repaired.
6. Once the appointment is fixed the user can only cancel 3 hours prior to his appointment. If the appointment is canceled within 3 hours of the appointment then the user charged with minimum wage.
7. The system automatically starts the timer when the service provider reaches to the customer house.

8. The system doesn’t charge any amount to the customer if the service provider doesn’t show up after 30mins of the appointment time.

9. The system automatically charges the amount when the issues have been fixed (upon agreeing from both parties).

10. The system allows customer or service provider to make a complaint if they are not satisfied with amount charged.

11. The service provider has also customer privileges for using the system.

12. The system allows customer to select payment mode (Card, PayPal) before charging the amount.

Information Oriented

1. The system allows customer and service provider to see all his/her appointments fixed using the system.

2. The system allows customer and service provider to update his/her information (address, phone no, card details etc.)

3. The system allows customer and service provider to see all his/her completed appointments.

4. The system allows administrator to see the list of active complaints.

5. The system allows customers to see details of the completed work.

6. The system will allow the customer to view their previous ratings and feedback of service providers.

5.2 Nonfunctional Requirements

Operational:

The system can run on handle devices.

The system should be able to store the history data.

Performance:

It should not take users more than 2 seconds to access the app.

The system should be available 24/7, 365 days a year.

The system can support more than 1000 users, at a specific region, to use at the same time.

The system should send information between users and providers within 2 seconds.

The system should be able to send video within 1 minute.

Google map will provide the exact location of service user and provide on our app.

The app provides the available time of service provider.

Users can see the minimum fee of each service provider

Security:

Only the data manager of the app can see the confidential information of the users of our app.

Only the customers with the password can access their account.

Application will be McAfee verified to avoid spyware and other viruses.

Cultural and Political:

App will provide services for people in this region regardless of their country of origin.

Personal information is protected in compliance with the data protection act.

5.3 Major Use cases:

Use case 1:

Use Case Name: Customer makes an appointment	ID: _1_	Importance Level: High
Primary Actor: Customer		
Short Description: This describes how customer makes an appointment using QuickFix application		
Trigger: When customer logs into the system for fixing his household problems Type: **External**		

Major Inputs:		Major Outputs:	
Description	Source	Description	Destination
User Credentials	Customer	Account access	Customer
Validating user credentials	Customer DB	List of Service Providers	Customer
Types of Service providers	Service Provider DB	Request for appointment	Service Provider
		Media files of issue/problem	Service Provider
List of Service providers	Service Provider DB	Generating Appointment id acceptance from service provider	Appointment DB
Request for appointment	Customer		
Media files of the issue/problem	Customer	Media files of issue/problem w/r to appointment ID	Appointment DB
Accept/Reject the appointment	Service Provider		
		Rejected appointment notification	Customer

Major Steps Performed	Information for Steps
	User Credentials

Use Case Name: Fixing the problem	ID: 2	Importance Level: High

1.Customer logs into his account using his credentials	Validating user credentials
2.Customer selects the type of service provider for fixing issue	Types of Service Providers
3.Customer selects a service provider from the list of service providers available	List of service providers Request for appointment
4.Once the customer selects a service provider the system then send a notification or request for fixing an appointment	Media files of the issue/problem
5. Upon receiving a request or before confirming the appointment the customer describes the problem/issue in the form of media (audio, video, and picture) and even as a text message.	Appointment ID
6. Once the problem has been understood or clarified by the service provider. He accepts appointment request and the appointment ID is generated by the system.	Appointment Details
7. If the service provider rejects the appointment a notification will be sent to the customer that the selected service provider has rejected the appointment.	Rejected appointment notification

Use Case 2:

Primary Actor: Service provider	
Short Description: This describes how the service providers fix the customers' problem	
Trigger: Service provider receives a request from customer to fix a problem Type: **External**	
Major Inputs: Description Source Problem info and appointment ID Appointment data store List of appointments Appointment data store Attending the appointment Service provider Acknowledgement of work done Customers	Major Outputs: Description Destination Problem info Service provider List of appointment Service provider
Major Steps Performed 1.When the service provider received the list of appointments, the service provider fetches the problem info and appointment ID. 2. After getting the detail of the problem and the time and location of the appointment, the service provider would attend the appointment. 3. After the work is done, the customer would confirm that the work that has been complete.	Information for Steps Problem info and appointment ID List of appointment Problem info Attending the appointment Acknowledgement of work done

Use case 3:

<table>
<tr><td colspan="2">Use Case Name: Processing the payment</td><td>ID: 3</td><td colspan="2">Importance Level: High</td></tr>
<tr><td colspan="5">Primary Actor: Customer</td></tr>
<tr><td colspan="5">Short Description: This describes how a payment is processed after the work is done</td></tr>
<tr><td colspan="5">Trigger: The problem is fixed and the payment is initiated
Type: External</td></tr>
<tr><td colspan="3">Major Inputs:
Description — Source
Credit card details — Customer Data
Accepts/denies the payment — Customer
Confirmation of Validity — Credit card clearing house</td><td colspan="2">Major Outputs:
Description — Destination
Total amount — Customer
Card information to third party — Credit card clearing house</td></tr>
<tr><td colspan="3">Major Steps Performed
1. Amount is charged to the customer
2. Customer accepts or denies based on his satisfaction
3. If customer accepts then his card details are fetched
4. Card details are given to credit card clearinghouse for validation.
5. If the card is validated, payment is processed.
6. If the payment is denied then creating a complaint</td><td colspan="2">Information for Steps
Type of work and work hours
Type of work done
Customer Data
Credit card details</td></tr>
</table>

process is initiated.	Credit card clearing house

Use case 4:

Use Case Name: Customer makes a complaint	ID: 4	Importance Level: High
Primary Actor: Customer Care Executive		
Short Description: This describes how a new complaint is registered.		
Trigger: Customer calls to customer care for complaining about the service. Type: **External**		

Major Inputs:

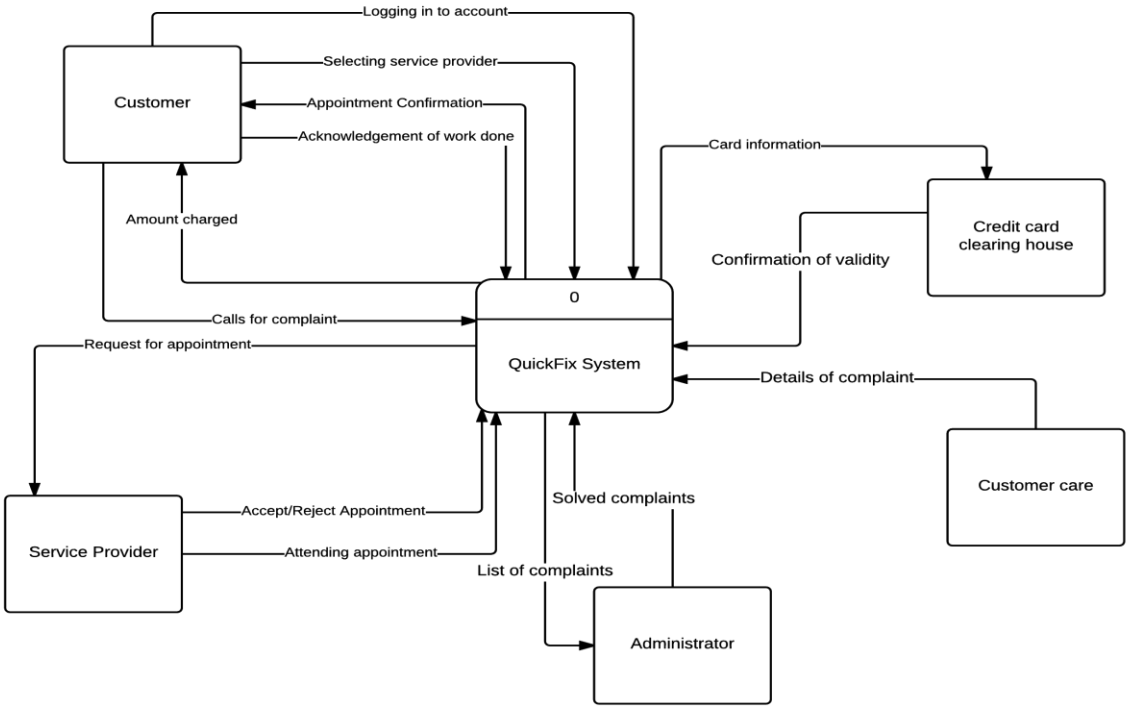
Description	Source
Details of complaint	Customer care
Appointment ID	Works completed data store
Customer details	Customer
Making complaint	Customer
Solved Complaints	Administrator
List of Complaints	Issue log data store
Complain ID	Issue log data store

Major Outputs:

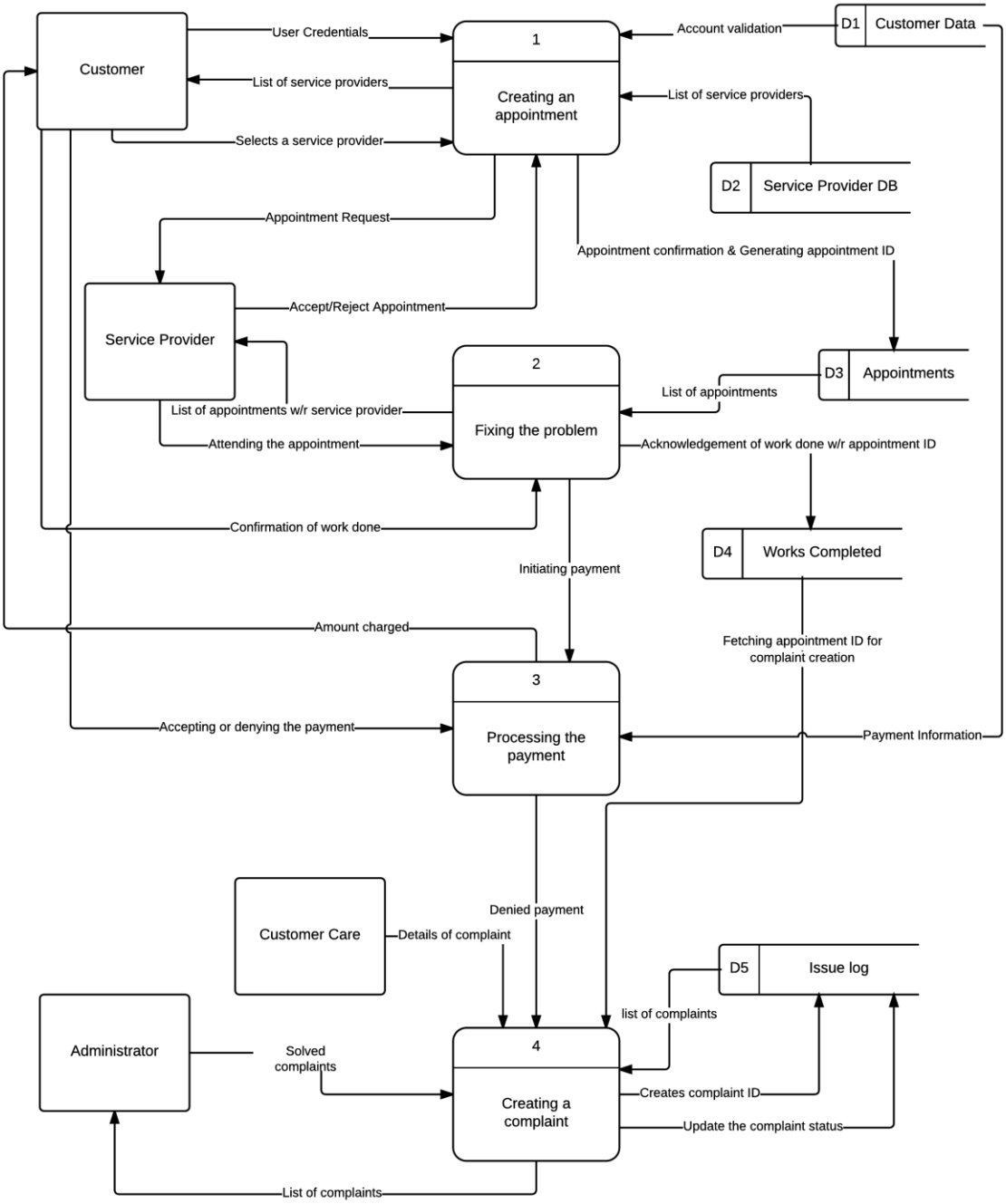
Description	Destination
Complaint ID	issue log data store
Add/ Update complaint	issue log data store
Update complaint status	issue log data store
Acknowledgement of Complain	customer
Complaint info	customer care
List of complaints	Administrator

5.4 Data Flow Diagrams

Context Diagram:

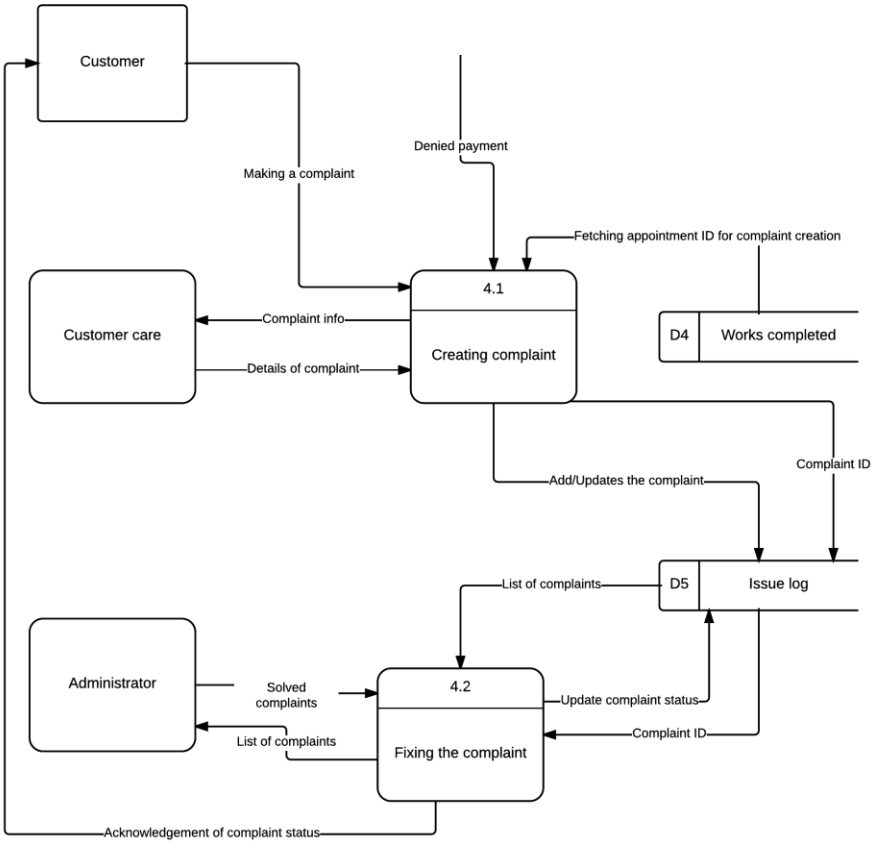


Level 0 Diagram:

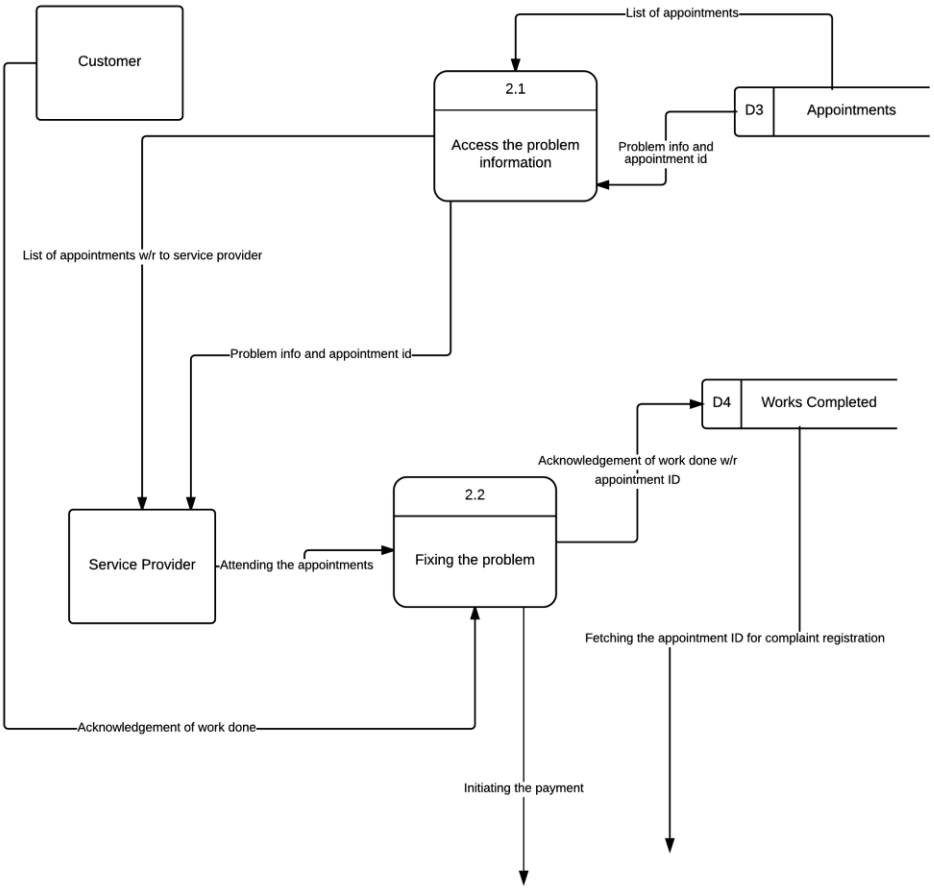


Level 1 Diagram:

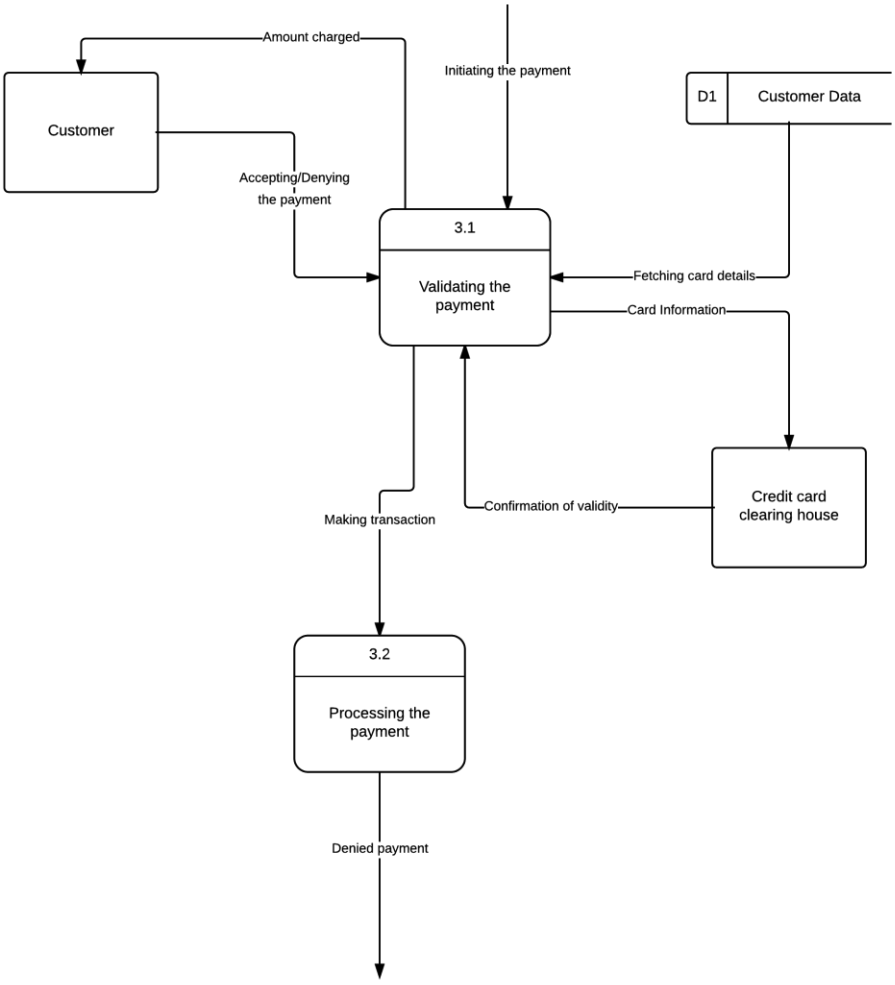
Use Case 1:



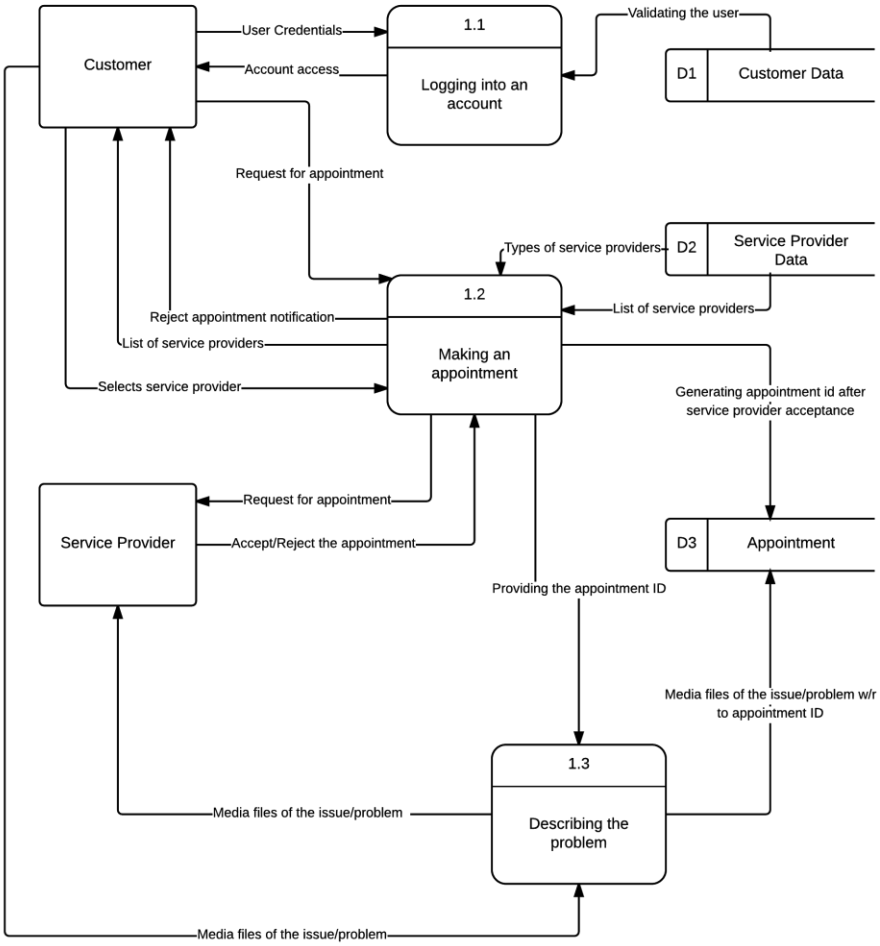
Use case 2:


Customer
List of appointments
2.1
Access the problem information
D3
Appointments
Problem info and appointment id
List of appointments w/r to service provider
Problem info and appointment id
D4
Works Completed
Acknowledgement of work done w/r appointment ID
2.2
Service Provider
Attending the appointments
Fixing the problem
Fetching the appointment ID for complaint registration
Acknowledgement of work done
Initiating the payment

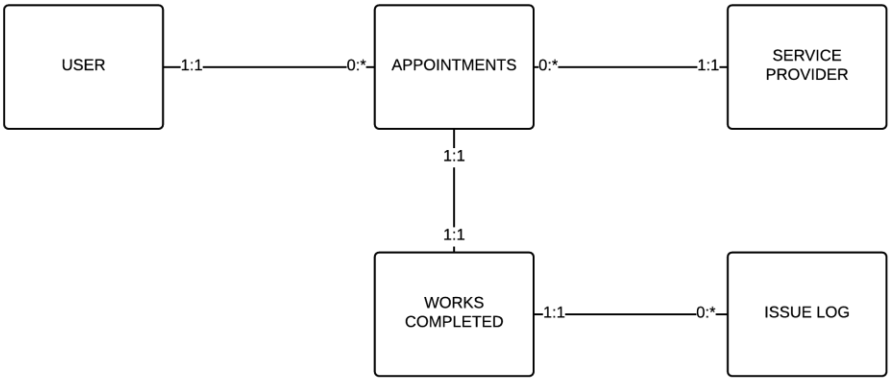
Use case 3:


Amount charged
Initiating the payment
D1
Customer Data
Customer
Accepting/Denying
the payment
3.1
Validating the
payment
Fetching card details
Card Information
Credit card
clearing house
Confirmation of validity
Making transaction
3.2
Processing the
payment
Denied payment

Use case 4:


Customer
User Credentials
Account access
1.1
Logging into an account
Validating the user
D1
Customer Data
Request for appointment
Types of service providers
D2
Service Provider Data
1.2
Making an appointment
List of service providers
Reject appointment notification
List of service providers
Selects service provider
Generating appointment id after service provider acceptance
Service Provider
Request for appointment
Accept/Reject the appointment
D3
Appointment
Providing the appointment ID
Media files of the issue/problem w/r to appointment ID
1.3
Describing the problem
Media files of the issue/problem
Media files of the issue/problem

Data Cardinalities:



5.5 Data Dictionary:

SERVICE_PROVIDER		
PRIMARY	SID	VARCHAR
Key	NAME	VARCHAR
Key	DOB	DATE
Key	ADDRESS	VARCHAR
Key	CITY	VARCHAR
Key	ZIP	INT
Key	STATE	VARCHAR
Key	PHONE_NUMBER	VARCHAR
Key	EMAIL_ID	VARCHAR
Key	MINIMUM_WAGE_IN_USD	INT
Key	WORKING_HOURS	VARCHAR
Key	WORKING_DAYS	VARCHAR
Key	AREA_OF_EXPERTISE	VARCHAR

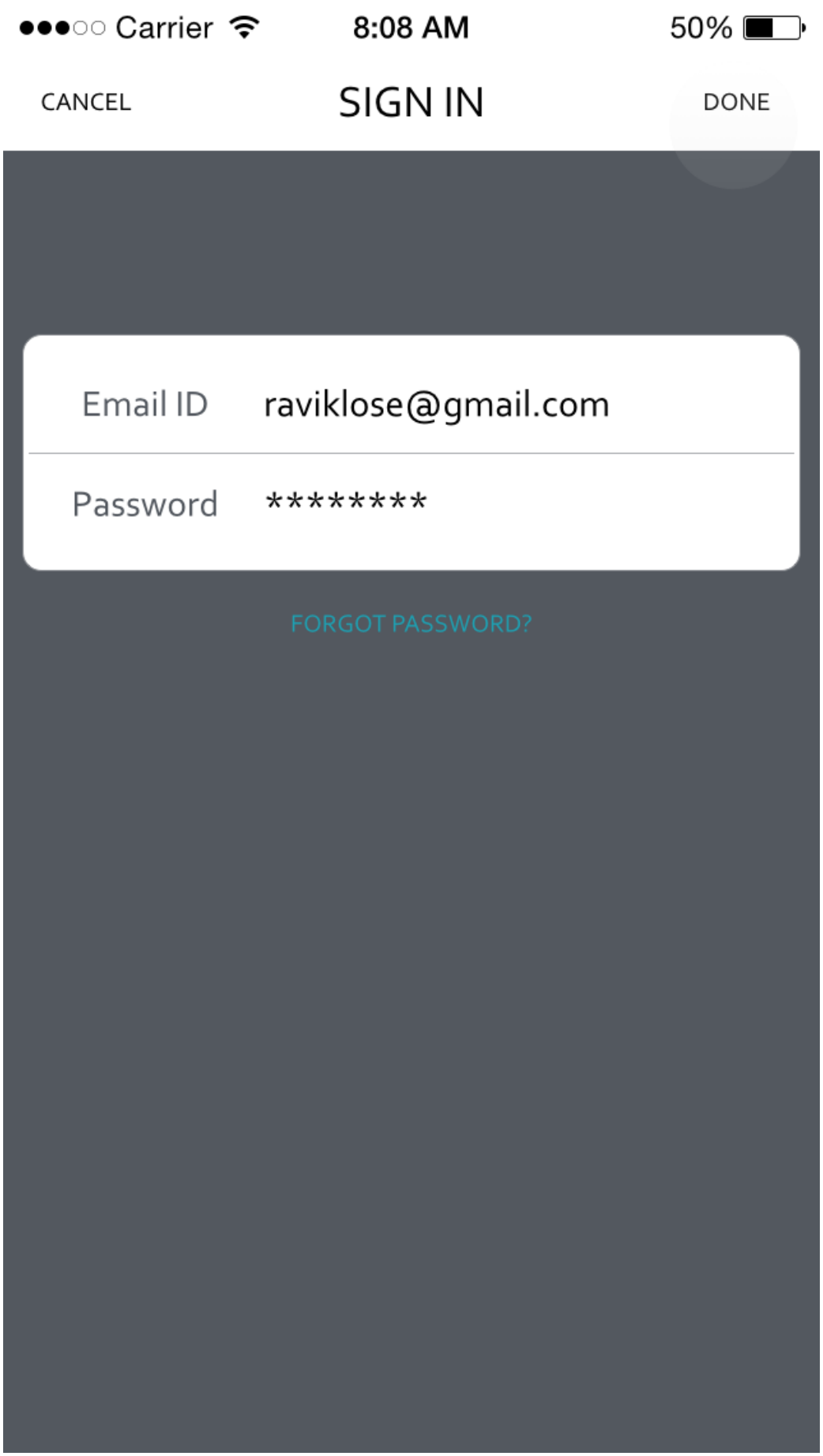
CUSTOMER		
Primary	CID	VARCHAR
Key	NAME	VARCHAR
Key	DOB	DATE
Key	ADDRESS	VARCHAR
Key	CITY	VARCHAR
Key	ZIP	INT
Key	STATE	VARCHAR
Key	PHONE_NUMBER	VARCHAR
Key	EMAIL_ID	VARCHAR
Key	CARD_NO	INT
Key	EXP_DATE	DATE

APPOINTMENT		
FOREIGN(SERVICE_PROVIDER)	SID	VARCHAR
PRIMARY	APT_ID	VARCHAR
Key	DATE	DATE
Key	TIME_FROM	TIME
Key	TIME_TO	TIME
FOREIGN(CUSTOMER)	CID	VARCHAR

WORKS		
FOREIGN(APPOINTMENT)	APT_ID	VARCHAR
PRIMARY	PAYMENT_ID	VARCHAR
Key	AMT_CHARGED	INT
Key	SERVICE_RATING(1-5)	INT
Key	FEEDBACK	VARCHAR
Key	STATUS	VARCHAR

ISSUE_LOG		
PRIMARY	COMPLAINT_ID	VARCHAR
FOREIGN(APPOINTMENT)	APT_ID	VARCHAR
Key	COMPLAINT_TYPE	VARCHAR
Key	COMPLAINT	VARCHAR
Key	CS_FEEDBACK(1-5)	INT
Key	STATUS	VARCHAR
Key	COMPLAINT_DATE	DATE

5.6 UI Design


●●●○○ Carrier
8:08 AM
50%
CANCEL
SIGN IN
DONE
Email ID
raviklose@gmail.com
Password
****
FORGOT PASSWORD?

●●●○○ Carrier 8:08 AM 50%

QUICKFIX

Search a service provider

Select by type of service provider

TOTAL TURF SOLUTIONS

Ian Klingenberger
Owner / Operator
ph: {920} 393 - TURF
/totalturfsolutions1

Call for a free estimate

Total Turf Solutions is a turf and landscape management and installation company based in Neenah, WI.
Total Turf Solutions is committed to finding the best solution for all of our customers' needs.

- **Weekly Lawn Maintenance**
- **Spring & Fall Clean-up**
- **Aeration**
- **Mulch Installation**
- **Bed Maintenance**
- **And So Much More!**

Your previous contacts

Michael Mendoza
Electrician
★★★★☆

Matt Murdock
Plumber
★★★★★

Ben Pearson
Locksmith
★★★★☆

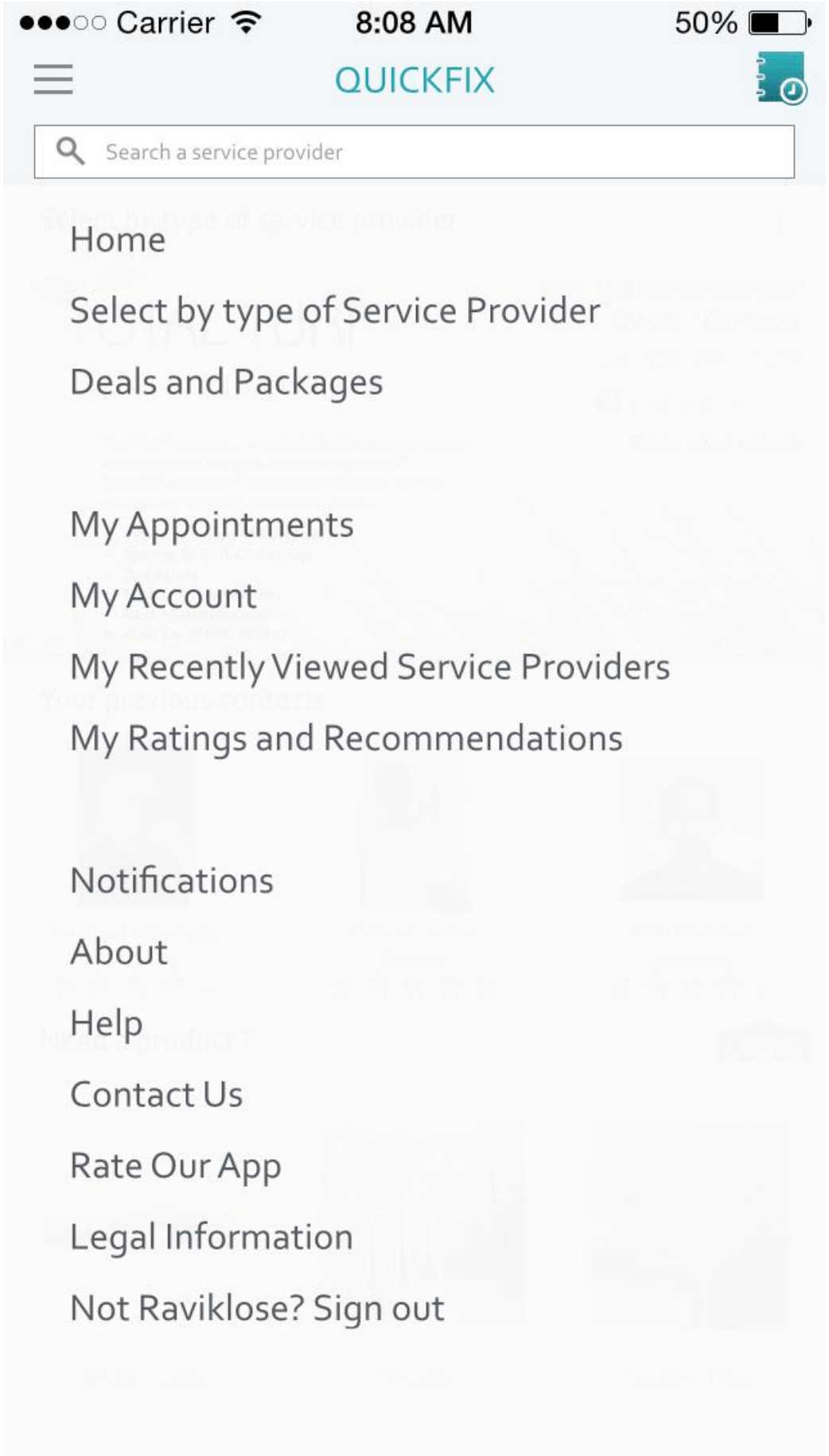
Need a product ?

LOWE'S

Electric wires

Faucets

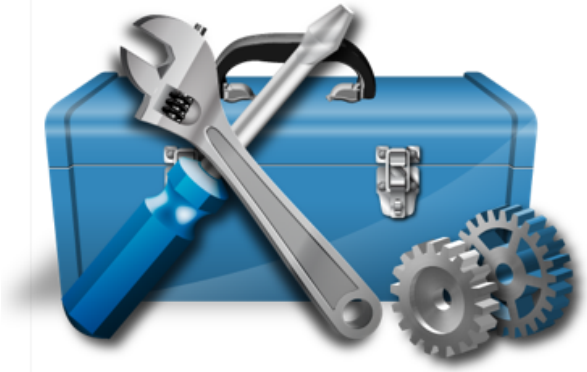
Counter Tops


Carrier
8:08 AM
50%
QUICKFIX
Search a service provider
Home
Select by type of Service Provider
Deals and Packages
My Appointments
My Account
My Recently Viewed Service Providers
My Ratings and Recommendations
Notifications
About
Help
Contact Us
Rate Our App
Legal Information
Not Raviklose? Sign out

●●●○○ Carrier 8:08 AM 50%

QUICKFIX

Search a service provider



Type of Service Providers

- Electricians
- Carpenters
- Plumbers
- Locksmith
- HVAC Experts
- Exterminators
- Landscapers
- All Purpose Handyman
- Others

●●●○○ Carrier 8:08 AM 50%

QUICKFIX

FILTER

Search a plumber

Top rated plumbers

Richard Parker
Plumber
★★★★★

Matt Murdock
Plumber
★★★★★

Noah Centino
Plumber
★★★★★

Tony Abbott
Plumber
★★★★½
1254 Benton Street
Santa Clara, CA
0.7 miles

Noah Centino
Plumber
★★★★★
9024 Lewis Street
Santa Clara, CA
1.7 miles

Matt Murdock
Plumber
★★★★★
123 Fourth Street
San Jose, CA
3.7 miles

Noah centino
Plumber
★★★★★
256 Evans Street
Milpitas, CA
11.8 miles

Eric Cantona
Plumber
★★★★½
708 San Antonio Road
Mountain View, CA
15.7 miles

Aron Ramsey
25 miles

●●●○○ Carrier 8:08 AM 50%

SEARCH QUICKFIX •••

Matt Murdock

★★★★★ 108 reviews

Plumbing

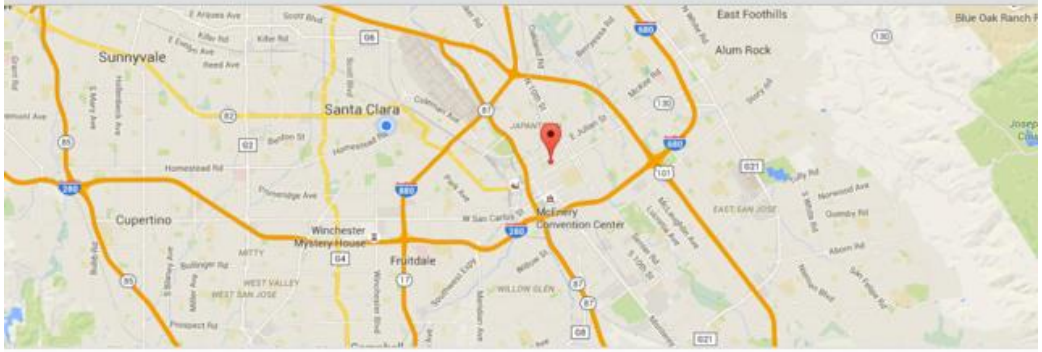
On Duty

3.7 miles

$150/hr

Photo or Video | Chat | Fix an Appointment

★ Like my Work?



123 Fourth Street, San Jose, CA >

(408) 849-6883 >

••• More Info >

Reviews

Vivek B. 5 days ago

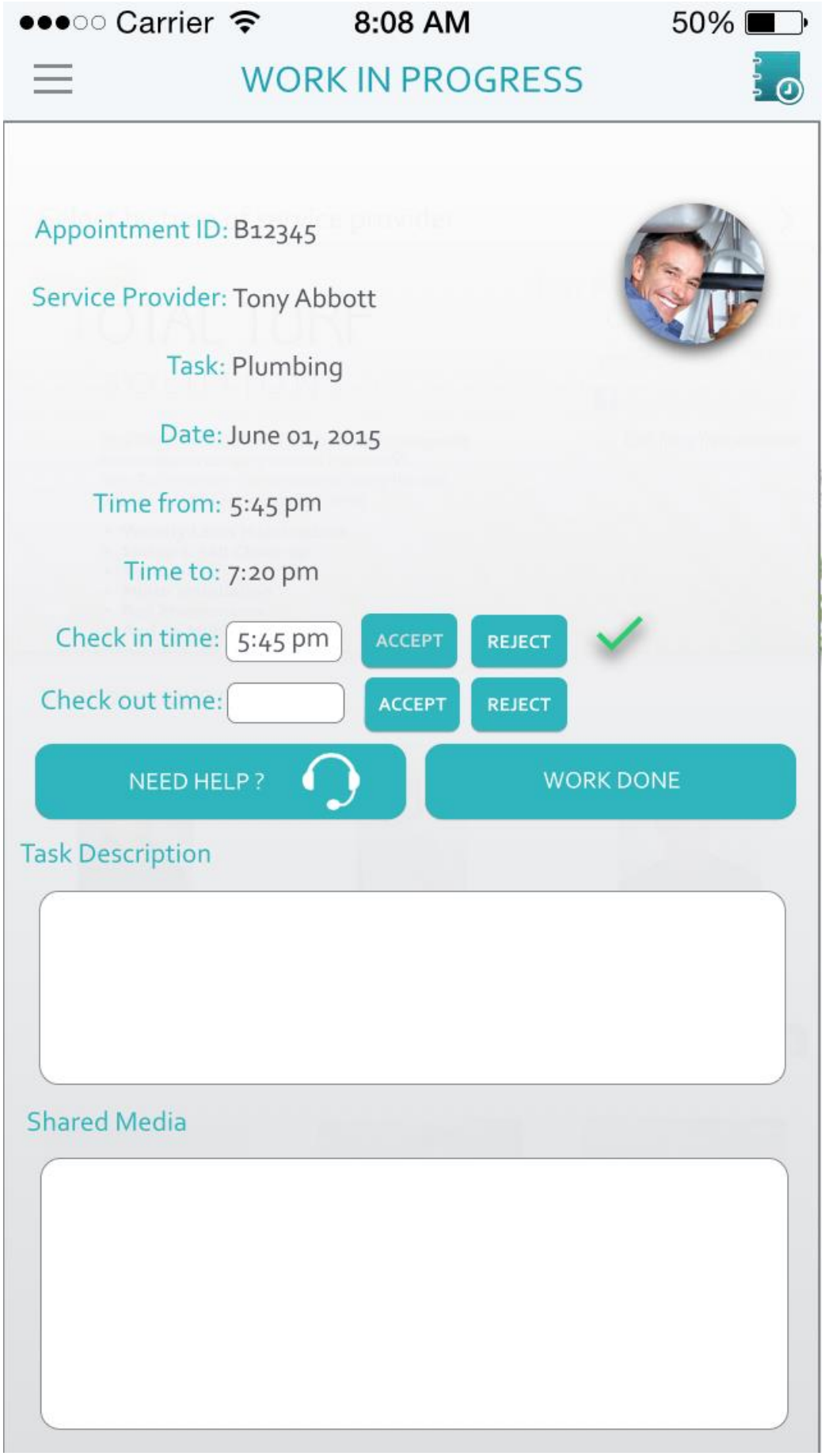
★ 10

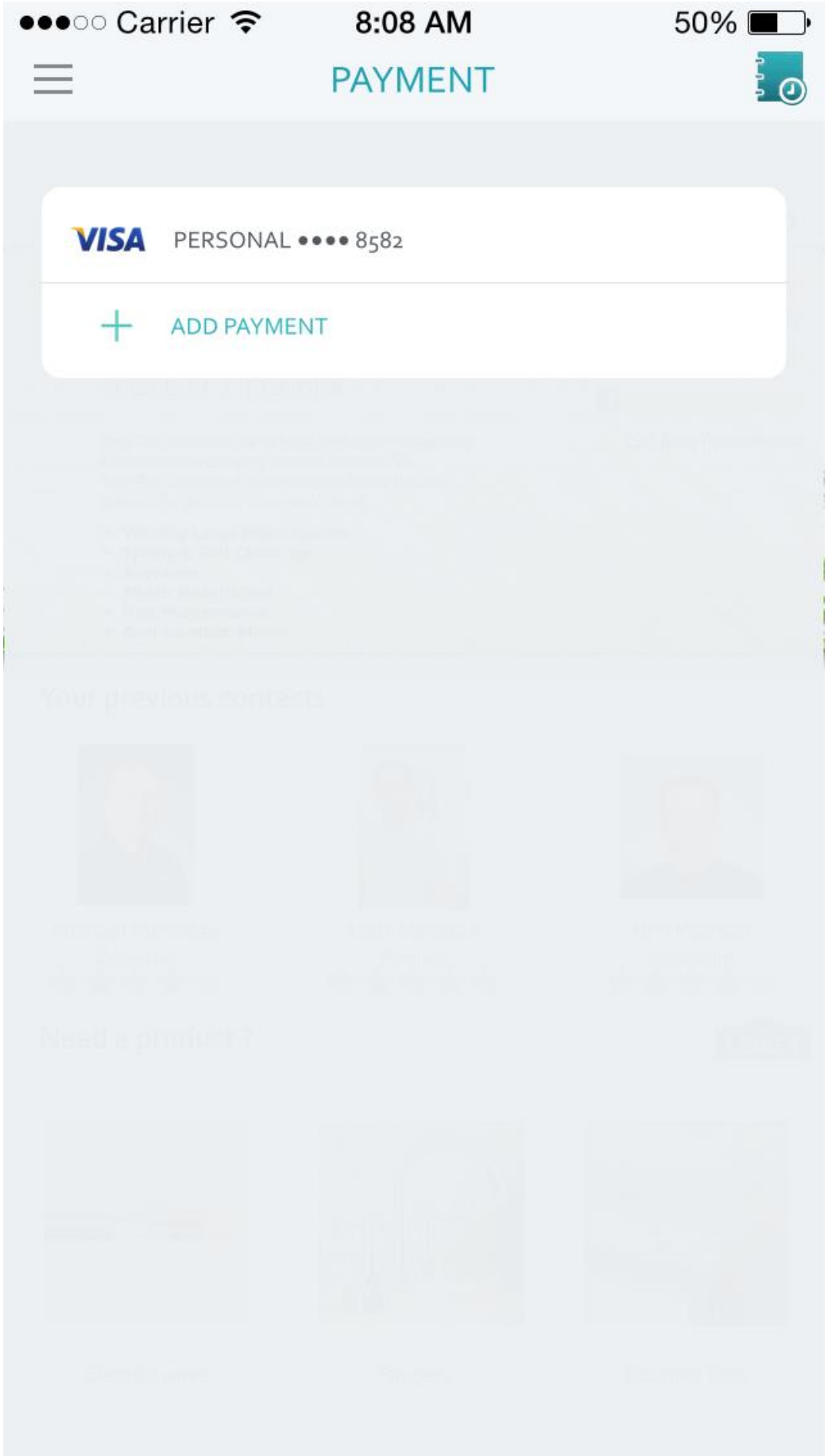
We called Matt in the morning and was able to schedule an afternoon appointment. Matt came to the rescue and was able to remove all the waste in less than an hour. He was very professional and knew his sh*t. Definitely will recommend him, and hopefully won't have to call him again (lesson-learned, ha!)

Harsith B. 10 days ago

★ 21

I was installing a water softener and needed a hard water copper line run to the backyard outlet and


Carrier
8:08 AM
50%
WORK IN PROGRESS
Appointment ID: B12345
Service Provider: Tony Abbott
Task: Plumbing
Date: June 01, 2015
Time from: 5:45 pm
Time to: 7:20 pm
Check in time: 5:45 pm
ACCEPT
REJECT
Check out time:
ACCEPT
REJECT
NEED HELP ?
WORK DONE
Task Description
Shared Media


Carrier
8:08 AM
50%
PAYMENT
VISA
PERSONAL •••• 8582
ADD PAYMENT

●●●○○ Carrier 8:08 AM 50%

PAYMENT

JUNE 01, 2015 AT 07:20 PM

$ 180.19

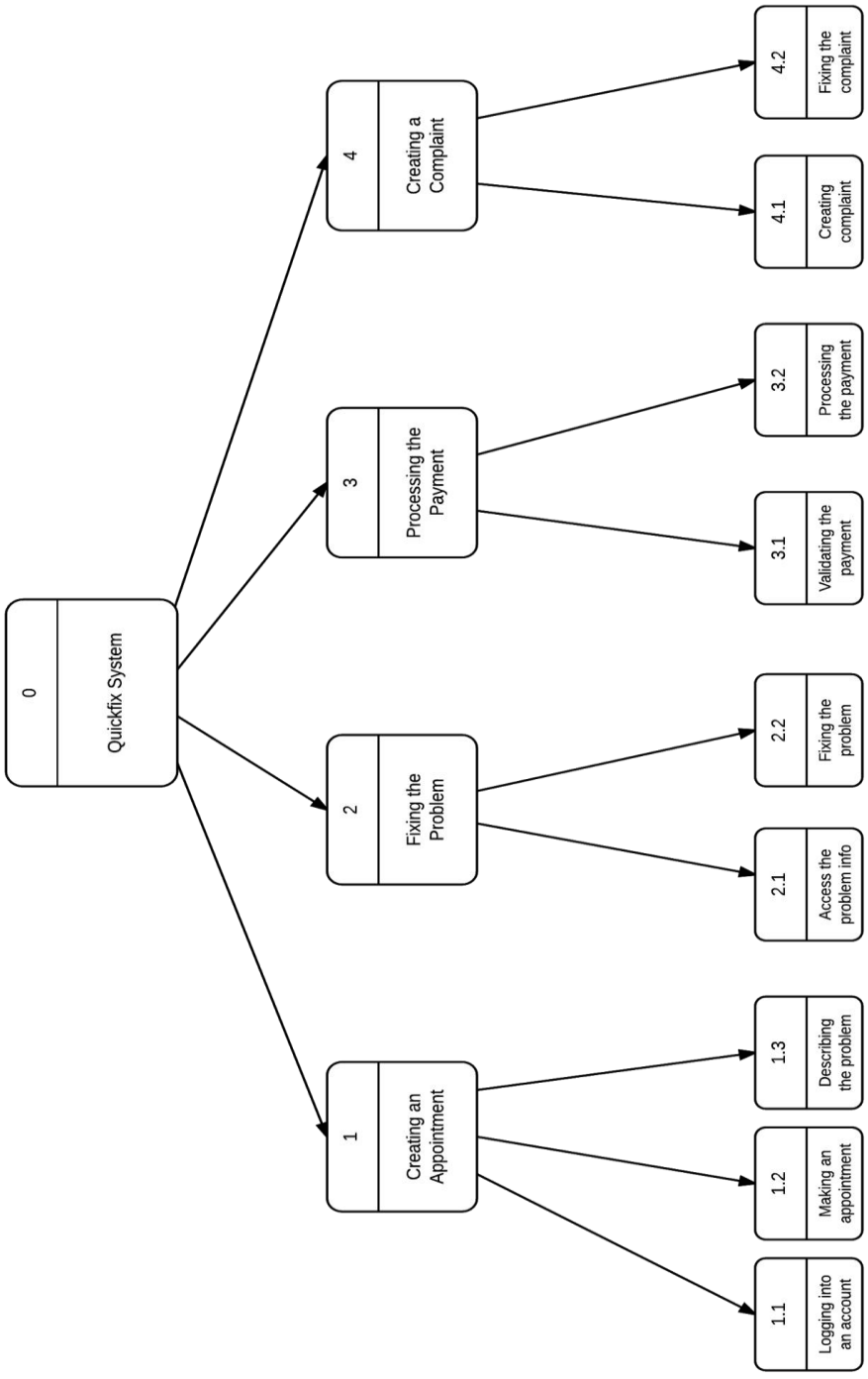
WORK SUMMARY


FEEDBACK

NEED HELP ?

★★★★★

5.7. Program Structure:



6. Limitations of the system:

1. There may not be any service person located in the desired radius.

There could be a case when a user is looking for service person in a desired radius, for example, a user named John could be looking for service provider in the radius of 5 miles, however it is very much possible that no such service person is located or available in 5 miles. In that case the user is forced to increase the radius for search of service person.

2. Service person may not accept the request

Although, a service person is available, he might not accept the user request. In that case a user will have to make a new request to another service person. A log would be generated for this to keep a track of efficiency of a service person's work.

3. User cancels the request for job while service person reaches destination.

User cancels the registered request before service person reaches respective user's place. There could be a circumstance where service person would be on his way to user's place and user cancels request for service. Although, minimum fees would be charged to user if the cancel request has been made after service provider has left for users place, it is still going to be waste of time for service provider.

4. Service provider cancels request.

Service provider cancels the request after accepting or leaves the work half done. This is going to be a problem for user and he again need to make a new request to new service provider. Service provider would have to provide a genuine reason for the problem to team quick fix.

5. Currently only in English.

Currently the application is available only in English language. So, it's mandatory for service provider and user to understand the language well.

6. Dependent on the internet

This application is completely dependent on the availability of internet. If internet is not available, a user can't make an appointment, and service provider won't be able to use it.

7. Mobile Battery life dependent

For working of an application mobile device should have ample battery life. A scene may occur, when just after a request is made, mobile phone turns off. This case would lead to confusion at both the ends, as user and service provider wouldn't be able to communicate with each other.

8. Dependent on third party for transactions

Our service is dependent on third party frameworks. We would use parse.com, a cloud database for storing all the data from and to the application. If parse.com server is down, or is encountered with some technical issue, QuickFix application wouldn't work properly. Also, we have got google map integration in our application, so if the google maps don't display location properly, we wouldn't be able to show accurate data of location. Customer and service provider may turn off GPS, which would again lead to a problem for obtaining current latitude and longitude. We have e-payment system which would be using pay-pal application programming interface (API), because of which our reliability of payment is dependent on them.

9. Debit / Credit card users only

For making a payment we need a credit card to be integrated with application. If user doesn't have a credit/ debit card, he would not be able to use our service.

10. No quality check for mechanism as of now.

A long existing service person would have more reviews and appreciations than new ones. However, new service providers could be as good as old ones. We foresee our product as an equal opportunity platform for all, but there is no such quality check mechanism as of now.

11. iOS and Android only

Our application is only for iOS and Android mobile phone users. It's mandatory for our users and service providers to have one of the either phones.

12. Continuous improvement necessary.

With new version releases of mobile operating systems, we need to upgrade our application to keep up to the standards of market and continuously improve the performance of system.

7. Future scope of system:

Currently the application is limited to United States of America and especially bay area and in state of California. In future, we would like to make our application open to other markets as well, especially growing economies like India and China, neighboring countries like Canada, Mexico and European markets as well.

Other than this, we would make our application available in other languages potentially in Chinese, Spanish, French, and Hindi etc.

We will provide feature of cash payment as well. Not everyone owns a credit card and some don't want to register with credit card for e-payments. We would make our application available in offline mode. Some people may not have internet access at all the times, so for that we would make major features of our application available using SMS service. At present we are limited to iOS and Android platform, in future we would grow to other major platforms, especially blackberry and windows. In addition a website based service would be available for people who prefer using computer over phones. We would have quality check mechanism to keep the relevance of application and to improvise the scope of our application. At present we are dependent on the services of parse.com for our cloud based data storage as well as cloud code. In future we would host our database as well as cloud code on our own server instead of parse.com.

8. Conclusion:

Our application is for everyone who wants to get their day-to-day problems fixed without taking hazel of searching for desired handyman using Google, yelp, craigslist and other applications. We are different from Google, and yelp, as we are very domain specific. This leads our system to be better performing than those because of reduced load on server and faster query operations. Although, there are applications that exist in market, they are not free for users. Our application is entirely free for users with a minimum cost to service provider depending on the number of jobs he fetches via our application. Also, we have inbuilt chat messaging feature for quick communication using text and audio messages. Also, user can share image and video of a problem with service provider. With e-payment system user doesn't need to have cash in hand and it is convenient for both user and service provider.