

# COS 301 HighTech Team - SRS Document

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# 1 Introduction

In the modern plumbing industry, a continuous source of inconvenience arises for plumbers to log information on the geysers and components installed on various jobs by means of written material on a day-to-day basis. Considering this the goal of this project is to design a new database application system that greatly reduces the inconvenience of having to log information about installed geysers by taking advantage of the prevalence of mobile devices in the modern world. In order to do this, we will shift the logging of details from the paper-based method itself to a mobile application, detailed below.

## 1.1 Definitions, Acronyms

This section provides definitions of all items, acronyms and abbreviations to interpret the SRS document properly.

1. Certificate of Compliance - A certificate to prove that the geyser installation complies with regulation standards.
2. App - Application

# 2 User Characteristics

## 2.1 Intended users

There are different kinds of users that will be interacting with our system. The intended users of the software are:

### Plumber- Geyser Installers

The most interactive part of the app consists of what the installer will be doing. The installer would be a user that is installing the geyser and associated parts, they require a fast and easy way to compile all related information files and images onto a database in order to streamline future adjustments and insurance claims.

### Admin

The admin will be the one who will be adding a new case ( request to install or repair a geyser), closing the cases, adding and deleting new employee. They are the core of this system since they perform most of the data processing.

### Homeowners

Homeowner characteristics include the need for streamlining between manufacturer of the geyser, insurance companies, and plumbers. This also includes ease of access to geyser information when combined with easily accessed plumbers who can advise if the homeowner seeks to find an issue with the geyser or repair it.

## **3 Technology and Constraint**

### **3.1 Technology Decisions**

#### **3.1.1 Ionic Framework**

We chose Ionic Framework because it is a free open source mobile development framework that allows us to create cross-platform applications that are native to the platform. Ionic allows us to create applications with Javascript/Typescript, HTML and CSS. We wanted that functionality because it would allow us to not only port our application into a web-app, but also a desktop environment using Electron Framework all using a single codebase.

#### **3.1.2 Typescript**

Typescript is a typed superset of Javascript that compiles into plain Javascript. We choose this language because it integrates well with Ionic, and it allows us to write typed code which helps us catch errors at compile time, and also helps us debug our application much easier than a dynamic language. Typescript is also free and open source with a large community that would help us get libraries and help that we might need.

#### **3.1.3 Github**

We chose to use Github because it is a free centralized area where we can all collaborate using the Git Work-Flow that allows us all to work on the same project effectively and with as less conflict as possible. It has many different tools that allow us to review each others work, and also help.

### **3.2 Constraints**

#### **3.2.1 Android API levels**

We are limited to only working with Android devices and because android devices each all have different API levels that allow for different features and functionality, we had to make sure that our application was limited to only using the API level of the lowest common android.

#### **3.2.2 Open Source / Free**

We are limited in only using open source or free software and framework to build our application, propriety software would be too expensive, or a limitation should this application wish to do something that is against their software policies.

## 4 Function Requirements

### 4.1 Use-case

- UC1** The plumber login with its credentials.
- UC2** The plumber scans the barcode that is placed on the geyser.
- UC3** The plumber uploads hot water system images.
- UC4** The plumber uploads images of the house where the geyser is being installed.
- UC5** The plumber uploads the Certificate of Compliance.
- UC6** The plumber updates the details if repairs are done on the geyser.
- UC7** The admin login with his/her credentials.
- UC8** The admin signup if he/she is a new employee.
- UC9** The admin enters caller's details .
- UC10** The admin enters case details.
- UC11** The admin closes the cases that are completed.
- UC12** The admin can view statistics on number of cases handled per month.
- UC13** The admin can view statistics of the geysers that are mostly preferred or installed.
- UC14** The admin adds new employee .
- UC15** The admin deletes an old employee.
- UC16** The admin can search for a specific plumber and view the cases that he has worked on.
- UC17** The admin can search for a specific geyser details.
- UC18** The admin can search for a specific case number.
- UC19** The plumber can view his/her "to-do" list.
- UC20** The plumber updates the case status from pending to complete upon completing his/her work at a site.
- UC21** The admin then reviews all completed cases and changes the case status from complete to closed.
- UC22** The user gives feedback on the service provided to them.

## **4.2 Functional requirements**

### **Authentication subsystem**

**1** The app shall provide authentication functionality.

**1.1** The app should allow the users to scan barcode on the geyser in order to proceed.

**1.2** The app should differentiate between the different types of users (admin and plumber).

### **Data Capturing subsystem**

**2** The app and the website shall allow various details to be captured.

**2.1** The website must capture employee's detail.

**2.2** The app must allow the plumber to enter the Geyser Details.

**2.3** The website must capture the callers details.

**2.4** The website must capture the case details.

**2.5** The app must allow the plumber to upload installation related images.

**2.5.1** The app must allow the plumber to upload Hot water system images.

**2.5.2** The app must allow the plumber to upload Certificate of Compliance.

**2.5.3** The app must allow the plumber to upload images of the house where the installation of geyser was done.

### **Report subsystem**

**3** The website shall generate a report for various users.

**3.1** The website should generate a report based on the details captured for the administrator.

**3.2** The website should generate a report based on the details captured for the home owner.

**3.3** The website should generate a report based on the number of cases handled per month.

## 5 Traceability Matrix

	Authentication	Data Capture	Report	Notification
Functional				
1.1	X	X		X
1.2	X			X
2.1		X		
2.2		X		
2.3		X		
2.3.1		X		
2.3.2		X		
2.3.3		X		
2.4		X		
2.5		X		
3.1			X	
3.2			X	
3.3			X	
Quality				
QR1		X	X	
QR2		X		
QR3	X			X
QR4	X	X	X	
QR5		X	X	
QR6	X	X		
QR7			X	
QR8		X		

## 6 Quality Requirements

### QR1: Performance

- (a) - The app shall check how many geysers are installed a day. This allows the app to update the heat map with additions of new geysers.
- (b) -The app should upload the information to the database within 20 seconds of being connected to the internet.

### QR2: Reliability

- (a) -The information will be stored locally on the phone until it is uploaded to the database on the server where it will have the ability to be accessed.
- (b) -The database shall keep all information of every geyser(CRUD), in case of a server failure, all the information should also be duplicated to another storage area for redundancy.

### QR3:Security

- (a) -Since information stored on the database needs to be confidential and comply with the popi act the database needs to be secured by password access to ensure security.

- (b) -Incorrect credentials entered need to alert the admin(by sending notification) that someone is trying to access the application without permission.
- (c) -Access permissions for particular system information shall only be changed by the system administrator.

**QR4: Scalability**

- (a) -The app server must be able to scale the amount of computing power it uses depending on the amount of devices currently connected, so it must be able to make more processing power available if the number of connected users rise above a certain.

**QR5: Availability**

- (a) -The app shall allow users the enter data from any location and upload whenever they have internet signal
- (b) -The app shall show users the locations of geysers with the corresponding filter options on a heatmap to show certain geysers of various attributes for example manufacturer of the geyser, model,size etc.
- (c) -The system shall be available for 99 percent of the time.

**QR6: Maintainability**

- (a)- The database will allow an admin user to maintain all information on the database incase changes need to made.
- (b)- The app will be created in a modular fashion to allow changes to be made to modules without affecting the whole app.

**QR7: Monitorability**

- (a) -The app will make use of multiple heat map views to display different details of geysers in the area.

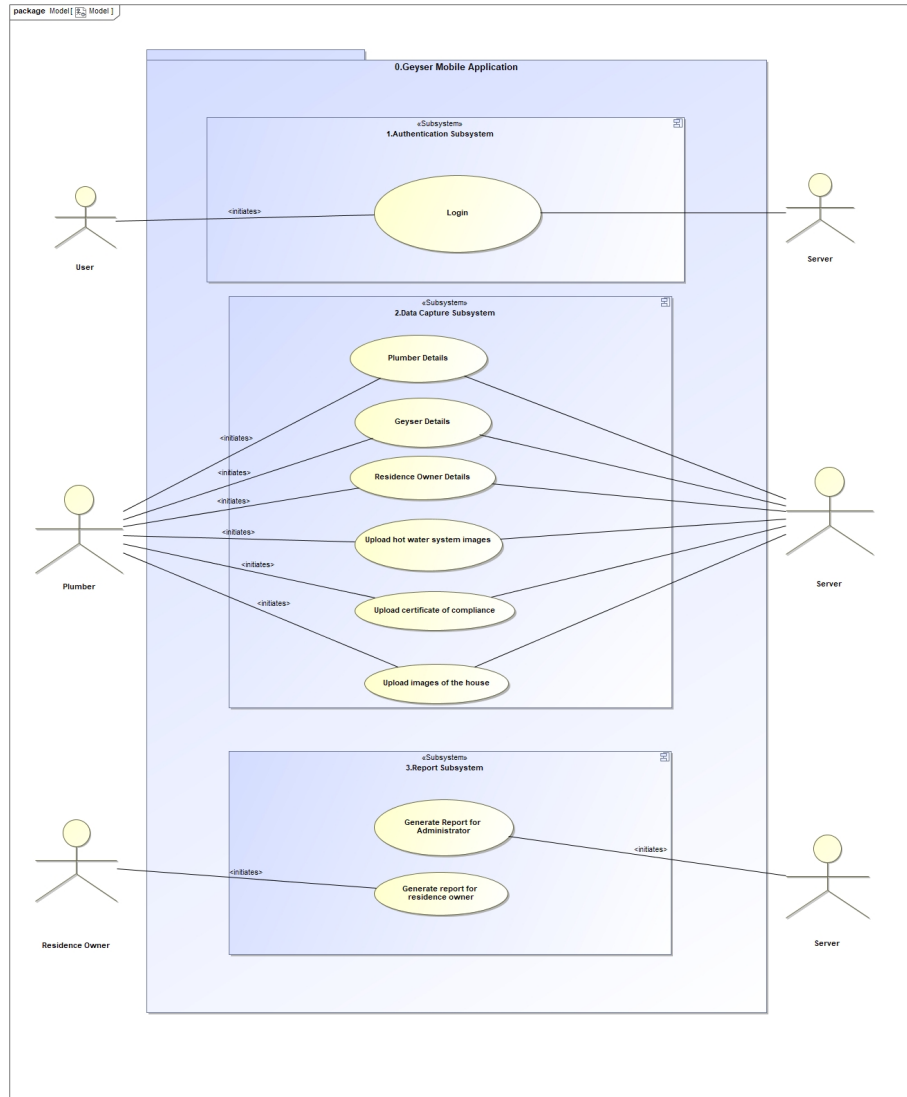
**QR8: Usability**

- (a) -App users who want to enter information or edit information shall be able quickly and easily to to accomplish any task. -the app shall process actions in less than 30 seconds

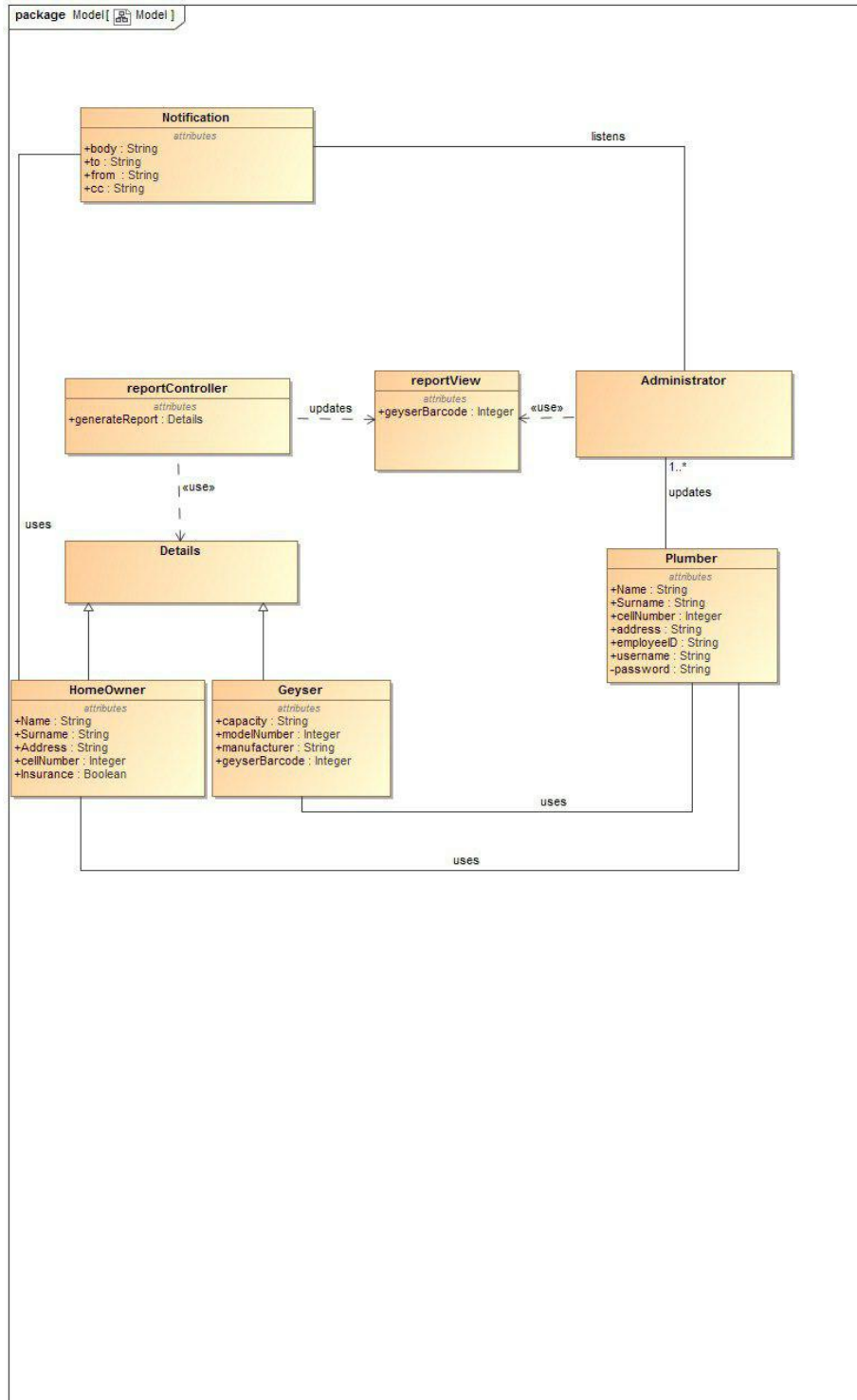


## 7 Diagrams

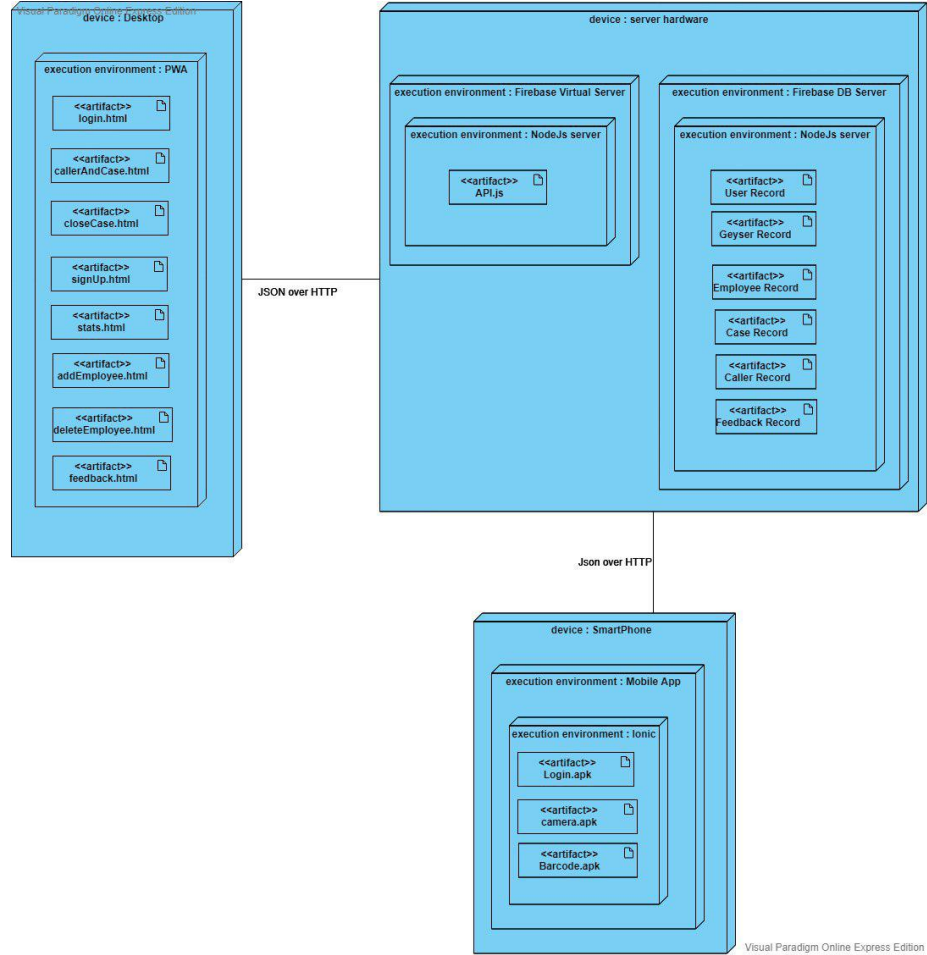
### 7.1 UML use case diagrams



## 7.2 Domain Model



### 7.3 Deployment Diagram



## 8 Conclusion

The new way of loading geyser installation details need to comply with the current direction in which reporting is done all over the country - into the mobile, portable, personal sphere. With the system specified in this document, the same old logging functionality is shifted into this new sphere - as well as gaining some improvements.

In conclusion the proposed system will change the way plumbers interact with the logging of information. More specifically it will focus on evolving the way plumbers and homeowners submit their information by moving towards a more mobile approach allowing users to upload images and type out legible data. Interfaces will be created on Geyser24(mobile app) and will speed

up the process of uploading of info and allowing a user to simply enter their geyser number and display the generated report with all major details included.

In turn the process times will greatly be reduced as well as increasing security by encrypting important data. Geyser24 will also allow users to log queries about their geyser to receive help faster. Geyser24 will change the plumbing industry as well as the household as it will provide the fastest and easiest way to log issues and keep track of geyser information.

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