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Master of Information Systems

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Digital Contact Tracing to Slow Down Disease Transmission

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This Special Project titled

Digital Contact Tracing to Slow Down Disease Transmission

is hereby accepted by the Faculty of Information and Communication Studies in partial fulfillment of the requirements for the Master of Information Systems.

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ABSTRACT

This Covid-19 pandemic has severely affected everyone around the world. During its infancy, no one thought that it would grow in this magnitude. Although there are a few countries that have now managed its spread, most of the countries are still struggling to contain it and flatten the curve. This is not the first time that a pandemic like this has happened and it definitely would not be the last. Aside from awareness of the disease and following strict self-quarantine, contact tracing is an important part of the strategy to minimize the risk of spreading the infection.

The objective of this project is to improve the methods for contact tracing and quicker data analysis for better decision-making when it comes to containing the disease. An important aspect to consider as well is the quick dissemination of information from a reliable and trusted source. The output is a web application that allows establishments to track the public who visits their establishments while health facilities are responsible for updating the public's status when it comes to having the disease. This then allows the administrators to have the information they need for contact tracing such as a possible disease carrier's whereabouts and trace those who may have been exposed.

The development of the project started with analysis of the current situation such as how contact tracing is done, who is trying to solve the problem and what are the alternatives available to solve this problem. A design was made based on the problems identified. During the development stage, each module was built and tested separately and as a whole. Automated testing was done for functionalities while usability was tested by asking a group of test users to try the application and answer some questions and rate their experience. Evaluation of feedback from test users show that the application is simple to use even for non-technical people and that features available for them are working properly. Future work for this project will be to automate notifications for users who gets exposed and to add GIS features for better data analysis.

ACKNOWLEDGMENTS

I would like to acknowledge everyone who played a role in my academic accomplishments starting with all my professors who have shared their knowledge for me to get to this point. I would also like to thank my friends and family for the support that they have given me. Lastly, I would like to thank my adviser for the guidance in the whole research and design process.

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Chapter I

INTRODUCTION

The recent Covid-19 pandemic has affected a lot of industries. Many businesses have closed down which resulted in a huge job loss. The economy went into a standstill as the number of cases was increasing at a very alarming level and hospitals were working at full capacity so restrictions and lockdowns were enforced to contain it and flatten the curve. Contact tracing is one process that could help in reducing the spread of the virus because knowing the people who may have been exposed as well as informing those people and putting them in quarantine will help contain it from spreading further. The problem is that our country does not have an effective way of doing contact tracing and has been forced to do it manually which is asking the patient for places they may have visited for a certain time.

The objective of this project is to use current digital technologies that can provide data as soon as possible and have a more efficient way of tracking down the whereabouts of those who may have been exposed. Information dissemination is key as well so that those who were exposed may start right away with their self-quarantine. Trends on where it is spreading and analytics gathered from data can further supplement the decision-making of government agencies or divisions involved.

It was evident how Covid-19 is not just your everyday problem. If we try to look at even the most advanced countries, everyone had a difficult time handling the situation. No one was prepared for this kind of event and even if this is not the first time that a pandemic such as this happened, we can see that no one prepares for this.

Now that we have seen how this can severely impact the whole world, it is now time to use whatever technologies we have to ensure that we can handle the situation better. This epidemic will happen again and hopefully, we have learned from our current experience. Having a more efficient way of doing contact tracing will not guarantee a sudden stop in the growth of cases but the probability of flattening the curve sooner is bigger if a system such as this exists.

The scope of the project included a progressive web application for visitors of establishments to use whenever they enter their premises. A progressive web application allows a regular web application to have the look and feel of a native mobile application [9]. It has an icon so that a user will just have to click it and launch the application. Users of the application only need to register their information once and the application will generate a unique QR code. The application also has an admin interface that may be operated and headed by a selected agency of the government. This gives them the ability to allow establishments to create an account and give them access to enter the information of a visitor by just scanning their QR code. Hospitals are allowed to create accounts as well and use this to update the status of a person who has been diagnosed. The admin may then use data analysis to see which places the diagnosed person visited and see those who were also at the places around the time the diagnosed patient was there. It also has push notification features to allow any subscribed user to be informed about any important notices related to places that may have been exposed to a confirmed case. The app also allows the admin to publish posts such as information about the disease so that users get information only from reliable sources.

Chapter II

REVIEW OF EXISTING ALTERNATIVES

Before technology was utilized, the majority of establishments had a sheet of paper where visitors of their place log in their details such as personal information and time of entry. This leads to risk as pens are shared most of the time whenever visitors try to log in their details. At the same time, establishments had to deal with data on paper, and having all the information there made it harder to do data analysis. Add to that the fact that establishments may have just recorded visits but did not have any useful information such as whether the patient had been diagnosed or could have been a suspected carrier. There was also no way for establishments to inform the proper authorities in real-time whenever they encountered possible suspected carriers or whether the visitor was still under quarantine. Some establishments tried using QR codes to record their visitors but there was no clear and standard way of handling all this information that may be used by the government for contact tracing efforts.

As of this writing, most establishments are now using technology to record visitor entries for recording information that can be used for contact tracing. There is a mobile application named StaySafe.ph [6] whose objective is to make contact tracing easier. This is proprietary and they are the ones who hold the data of users which makes it different from the proposed application where only the concerned government agencies should have access to all data. Another application named Traze.ph [7] by the Philippine Ports Authority (PPA) has the same situation as StaySafe.ph where there is a company that stores the data for them. It also serves ads based on user data as mentioned in their privacy policy. There is JotForm [15] which allows you to make online forms but the problem is establishments who used this gets access to the

data of the users. There are a few establishments who have their customized web application and is meant for their use only. It is now also common for some establishments to be using free online tools such as Google or Microsoft forms. One problem with these free tools is repeating the same information every time you enter an establishment and this leads to data entry errors as well.

Using the proper technologies, the task of collating this data and retrieving valuable information for contact tracing in almost real-time is now much easier. For one, almost everyone carries a mobile phone with them so that alone may be used as a way to record information whenever they visit establishments. There will be almost no need for anyone to share pens anymore and capturing information has been made simple by just scanning the QR code of the visitor. The visitor's information is stored in an online database so there is no need for the visitor to keep on entering their information every time they visit an establishment. Since it is online, information is gathered immediately by the administrator and any updates on the status of a person reflect in all establishments.

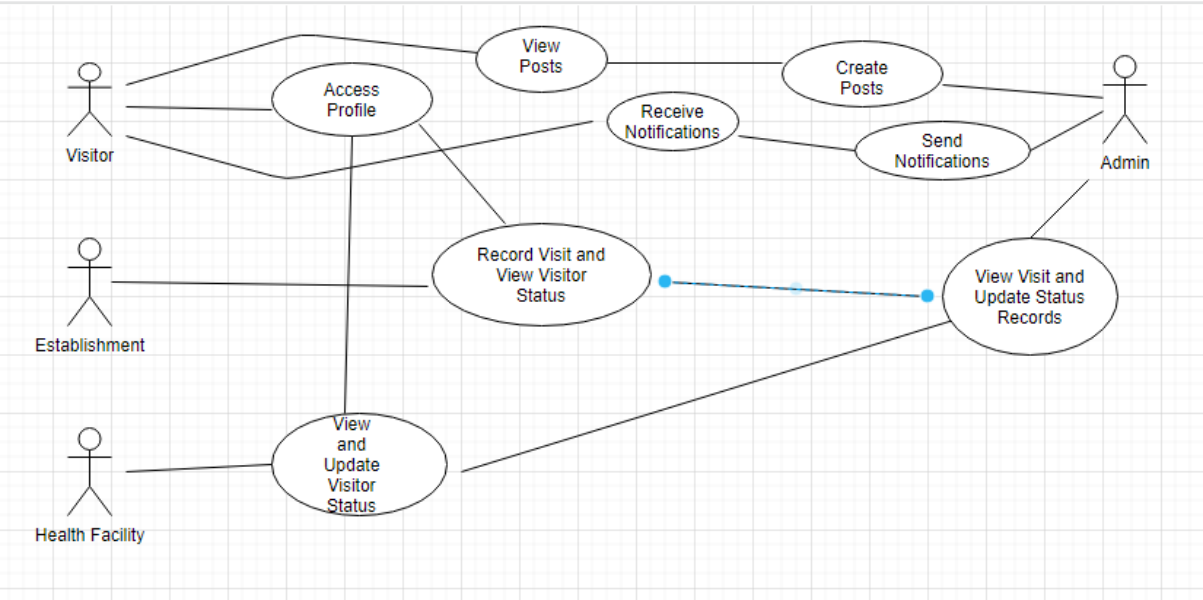
Chapter III

PROJECT DETAILS

A. Overview

The scope of the project included a progressive web application for visitors of establishments to use whenever they enter their premises. A progressive web application allows a regular web application to have the look and feel of a native mobile application. It will have an icon so that a user will just have to click it and launch the application. Users of the application only need to register their information once and the application will generate a unique QR code. The application also has an admin interface that may be operated and headed by a selected agency of the government. That agency can allow establishments to create an account and give them access to enter the information of a visitor by just scanning their QR code. Hospitals are allowed to create accounts as well and use this to update the status of a person who has been diagnosed. The admin may then use data analysis to see which places the diagnosed person visited and see those who were also at those places around the time the diagnosed patient was there. It also has push notification features to allow any subscribed user to be informed about any important notices related to places that may have been exposed to a confirmed case. The app also allows the admin to publish posts such as information about the disease so that users get information only from reliable sources.

Use Case Diagram



B. Theoretical Framework

Data Modelling was used to describe the different objects that interact within the database and show what are its attributes and relationships to each other. Use Case Diagram was used to illustrate how the different actors in the system interact with each other and show the flow of the various functions of the system and their dependencies. Process Modelling was utilized to show how the process of the development of the application took place and what various stages were necessary to proceed to the next stage. Project Wireframes were drawn to illustrate how the different user interfaces look like. For managing project timelines, Gantt Chart was used to track the status of the project and determine whether the development was on schedule or was way behind. Software Requirement Specification outlined the details and functionalities of the project. Features Set documented the different features of the application while the Use Case Suite referenced the Features Set to outline the different scenarios that have been tested.

Relational database such as MySQL was used as the design for the database for production while SQLite was used for development purposes. Object Relational-Mapping was used to easily migrate from the development database to the production database. The system used Django [8] as the web framework which follows the Model-View-Template framework. The application was designed according to Progressive Web Application (PWA) requirements. A REST API was implemented as well for other applications to interact with the system. A testing library was used to automate the testing process for most of the functionalities.

C. Technologies Used

Programming languages used

Python – server-side scripting language

Javascript – frontend scripting language / Progressive Web Application

HTML / CSS – frontend / UI tools

Python was used for the server-side scripting language as it is the language used in the web framework selected. HTML and CSS provided the user interface of the application. Javascript was used for scripts needed for the front-end such as turning the application into a Progressive Web Application where pseudo-installation is possible for mobile devices.

Database

MySQL – for production stage

SQLite – for development stage

SQLite was the database used as it is lightweight and ready to use with the web framework. Migrating to MySQL was not difficult as the web framework provides ORM for easy transitions between different database engines.

Frameworks

Django – web framework for Python which uses the MVT (Model-View-Template) framework

djangorestframework – REST API services

Django makes web development so much easy that is why it was chosen as the web framework. It has a built-in admin interface so that only modifications were made to it and not built from scratch making development faster. Djangorestframework was the library used to provide APIs so that other applications may interact with the data.

Version Control System

Git

Bitbucket – online repository

Git was used to keep track of the versions of the application and Bitbucket was used to host this so that the application can be easily updated by making a pull request from the server.

Hosting

Pythonanywhere – host source-code and static files

Pythonanywhere makes it easy to deploy Django applications since you do not need to worry about the server architecture anymore.

Notification Services

OneSignal is a service provider that allows an application to send push notifications to subscribers of the application.

OneSignal provided an easy way to do push notifications with just a simple Javascript code.

Progressive Web Application design

This allowed a web application to have the look and feel of a native mobile application with an icon for launching it. This means that the application itself does not need to go through the approval process of the two most popular mobile application stores. Navigating to the website allows the user to pseudo-install it as an app using your regular web browser.

Aside from the hosting, all technologies are open-source and free to use with a big community of users. Hosting may be done on the organization's server as well and would only require the installation of dependencies needed in order to run the application.

D. System Design

a. System Features

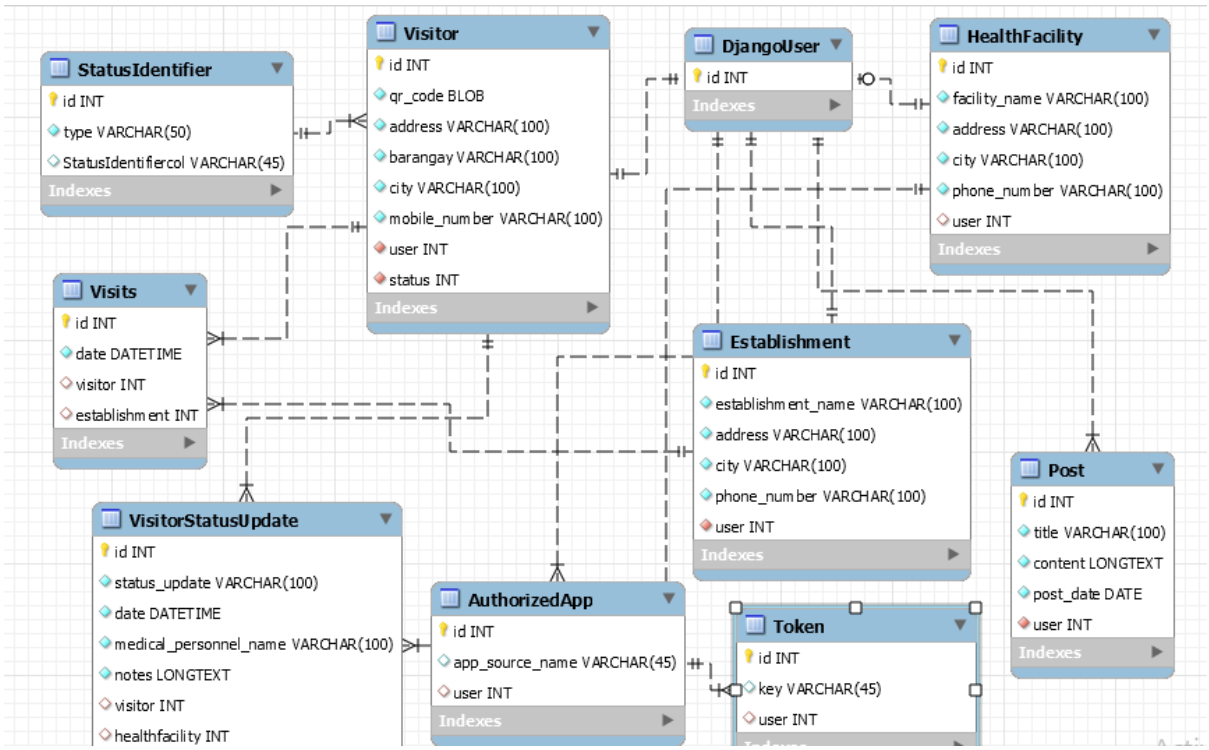
- The system is accessible online with the use of any web browser.
- The system has different login access for the Visitor, Establishment, Health Facility, and Administrator user.
- The system has a signup page for the Visitor user.
- The system has a profile page for the Visitor and Establishment user for updating.
- The system generates a personal QR code under the profile page of a Visitor user upon signing up.
- The system provides a list of posts paginated on the home page which is accessible to anyone without authentication
- The system has a detailed view of a single post which is accessible from the list of posts.
- The system provides restricted access to authenticated users only for specific pages.
- The system allows authenticated Visitor users only for their profile page.
- The system allows authenticated Establishment users only for their profile page.
- The system allows authenticated Establishment users only to record Visits.
- The system allows authenticated Health Facility users only to update a Visitor user's status.
- The system allows authenticated Administrator users only to access the admin pages.

- The system redirects authenticated users if pages being accessed do not have any permissions to access the page.
- The system contains a URL for the Visitor's auto-generated QR code which will be used to record Visits.
- The system allows mobile pseudo-installation which will appear as an icon for both iOS and Android users using the latest Chrome, Firefox, or Safari web browser.
- The system has the native look and feel of a mobile app without the web browser address bar showing if installed.
- The system allows authenticated Administrators to add, edit, view, filter or delete Users, Visitors, Establishments, Health Facilities, and Posts.
- The system allows authenticated Administrators to add other Administrator users with full or limited access.
- The system allows authenticated Administrators to export data as a CSV file.
- The system allows authenticated Administrators only to register an Establishment and Health Facility user.
- The system provides validation and verification for all forms that are accessible online.
- The system has a mobile-friendly user interface.
- The system can provide reports such as:
    - Users based on their status (Suspected, Confirmed, etc)
    - Establishments where users have been for a specified date range
    - Other users who have been to the establishment at a specified date range
    - Health Facilities that have updated the status of a user

b. Database Design

Entity Relationship Diagram

*DjangoUser model is provided by the Django web framework



E. Implementation

For the system's backend, Python was used for the programming language and Django will be the web framework. The frontend used HTML, CSS, and Javascript. Code was deployed to Pythonanywhere hosting using Bitbucket. Details on how to deploy the application can be found in the appendix. An account was created with OneSignal [10] to utilize their push notification services.

Chapter IV

PROJECT ASSESSMENT

A. User Testing

Testing was done at different stages of the development. Every module completed had its unit testing. Integration testing happened as every module was completed. These were all automated and included as part of the codebase. This helped narrow down test users in testing for functionalities of the program and focused on its usability. Questionnaires were given out to users to report any bugs that they found during their testing and rated the overall usability of the system using a System Usability Scale [11]. These included their feedback on the interface. Testing was done remotely and each test user was provided a link to use the system with instructions on what they were supposed to do. The questionnaire was also sent to them so they may answer it while testing the system and ensure that no parts about their testing would be forgotten in the feedback. The success of the project was based on having a 100% passing rate for all the functions and at least a 90% rating from the users regarding its usability.

Automated unit tests were done using Django's built-in testing suite. Testing was categorized into three which are for models, URLs, and views. Models are the objects or tables in the database and testing was done to ensure that an instance of the model is successfully created without any errors. Testing the URLs ensured that each route or URL is accessible. The views concentrated on the different functions of the code to make sure that each function goes to the right URL, displays the right template or interface, and redirects if it needs to such as unauthenticated users. A single command on the terminal was all that was needed to test each category.

B. Testing Results

In summary, the results of the test got a 100% passing rate for all its functionalities and features while getting more than 90% for its usability. For the usability survey, questions were given and users had to rank whether they strongly agree or strongly disagree. Out of 10 respondents, any user who has rated the question as 2 or below out of 5 for questions where the highest is 5 will be considered as one response that did not pass the usability test. There were also questions where 1 would be the highest and so any rating from 4 to 5 would mean it did not pass those criteria. There were a total of 10 questions for each of the 10 users and to pass, there should be no more than 10 questions out of the 100 questions getting a low rating. Overall, there was only 1 user who has given a low rating for 1 question. The question was whether they found the system unnecessarily complex and the user gave a rating of 5 or “strongly agree” while the rest of the users gave a rating of 1 which is “strongly disagree”. This is an outlier from the results and a possible reason for this could be misinterpreting the ratings or the question since giving a low rating for this should have reflected at least a low rating for another question that was related. The majority or 70% of the users consider themselves as Professional level when it comes to the technical proficiency and 70% have given an Excellent rating when it comes to the user-friendliness of the application. 80% of the users rated the interface design as very good. The results of the automated and manual tests done internally (Internal Test Results) as well the functional tests for Visitor users (Visitor Test Results) and usability (Usability Test Results) can all be found in the appendix.

Chapter V

DISCUSSIONS

As of this writing, there is still no standard contact tracing application used by our country. There have been 2 major applications being endorsed by government agencies and both of these are independent companies where they are the custodians of data collected. According to Lorayes' article in Inquirer [12], one problem with the major application endorsed by our government is requiring a more recent version of the mobile operating system for their mobile devices. If you are using an old one, then this will be a problem and the majority of the citizens share this dilemma. This project aims to present another option using Progressive Web App (PWA) technology wherein the application can either have a native-like app icon in their device yet still run on a web browser which is present in every device and does not require very high or recent specifications. The greatest challenge that I see is the adoption of the application by the target users. A factor that may be considered to get a higher adoption rate of usage is to make it as simple as possible for any user to use it.

The challenge in this project is that since it is still a web application and not a native mobile application, it does not have access to some of the functionalities of the mobile device which could further improve the system. For iOS devices, web push notification is still not possible and this can only be achieved if the application is a native application. Nevertheless, once this feature becomes available in the platform, then real-time notifications will not be a problem for this popular platform. Another interesting thing is that the web allows for getting someone's location and therefore functionalities such as detecting whether a user is near someone who is a confirmed case can be added to its features.

Maintenance Plan

This project is open for everyone to scrutinize and may use its foundation to create a better version. To maintain this project, one must ensure that all dependencies are updated as required by the web framework used. If any of the existing technologies are to be updated, these versions should be compatible with each other. An online repository of the different versions of the application will be maintained so that it would be easy to revert to a working version in case a new version fails because of updates to one or more of its dependencies.

For server maintenance, it runs on a platform–as-a-service provider and so the burden of maintaining servers and all its applications are with the provider. Migrating this application to popular cloud service providers is an option as well as it gives more flexibility. However, with more control over the architecture comes more responsibility for maintaining it.

Chapter VI

CONCLUSION

I have presented here another option of designing a contact tracing application that may allow wider adoption of usage since it addresses the problems of the major application that is being pushed by the government. Progressive Web App is still a young technology but I can see that it has potential. If the two leaders in the mobile operating system support its development, then it would provide web developers options to create mobile apps and launch faster with one code base for multiple platforms. This pandemic has caught everyone unprepared and hopefully, applications such as these would be easy to modify for a different situation in case we encounter something like this in the future. Due to the different applications being used for contact tracing, this application was designed to provide an API that other software can use to share valuable data. The clear problem we have right now is how to make people use these applications and ensure that even old devices are capable of running them so simplicity is a major factor.

I have presented here another option of designing a contact tracing application that is platform-independent and whose requirements are mostly present in all mobile devices. I hope that its process for usage can address the limitations of the major contact tracing applications out there and provide an alternative. My recommendation is that whichever contact tracing application is used, it is important that no private entity must become the custodian of the data as privacy issues has been one of the barriers for people to use them. This application is designed to be used by a government agency and whoever gets designated to be in charge should be the only one with access to its data.

Chapter VII

FUTURE WORK

In the future, I would like to add more functionalities to this application such as using Geographic Information Systems (GIS) technology for better data analysis. It is also my hope that iOS would support web push notifications in the future since real-time updates are vital in managing and controlling the spread of the disease. I would also like to plan for disaster recovery and resilience of the application should the need arise and would consider having it run in one of the major cloud service providers.

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APPENDICES

Appendix A: Internal Test Results

Visitor Module

Test Case	Expected Outcome	Result
Registration of new user	User should be redirected to the login page	Pass
Login of newly registered user	User should be redirected to the home page as a logged-in user. Profile menu should be visible.	Pass
View profile of user	User should be redirected to the profile page where a personalized QR code is visible	Pass
Edit profile of user	User should be notified that the profile has been updated and details edited persists.	Pass

Establishment Module

Test Case	Expected Outcome	Result
Login of establishment user	User should be redirected to the profile page	Pass
Access QR code link of visitor	It should redirect to a page showing the ID of the visitor and the status	Pass
Record visit	Notification should show that visit has been recorded and record should be added to the database	Pass
View profile of user	User should see their profile details	Pass
Edit profile of user	User should see a notification that their account has been updated and that changes have persisted.	Pass

HealthFacility Module

Test Case	Expected Outcome	Result
Login of health facility user	User should be redirected to the visitor search page	Pass
Search for a visitor ID that does not exist	Notification should show that ID does not exist	Pass

Search for a visitor ID that exists	Visitor status update form should show with details of the visitor	Pass
Update a status of a visitor	Notification should show that the status of the visitor has been saved and that record in the database has been updated	Pass

Post Module

Test Case	**Expected Outcome**	**Result**
Creation of posts by admin	Post should be seen in the homepage as the latest post	Pass
Posts should be paginated according to specified posts per page	Page of posts should have links to previous and next pages if there are.	Pass
Clicking of title of post in paginated view	It should redirect to the detail view of the post with its full text.	Pass

Progressive Web Application features

Test Case	**Expected Outcome**	**Result**
Option to install icon in home screen for mobile devices for iOS and Android platform	Icon should appear in home screen that will launch the application	Pass

Push Notification features (for Android users only)

Test Case	**Expected Outcome**	**Result**
Send a push notification from OneSignal admin	Message should popup if a user is subscribed	Pass
Subscription to notifications	Message should popup asking user if they want to subscribe to notifications	Pass

Automated tests

Models

Test Case	**Expected Outcome**	**Result**
Creation of Visitor instance	Visitor instance successfully created with attributes being accessible	Pass

Creation of Establishment instance	Establishment instance successfully created with attributes being accessible	Pass
Creation of HealthFacility instance	HealthFacility instance successfully created with attributes being accessible	Pass
Creation of StatusIdentifier instance	StatusIdentifier instance successfully created with attributes being accessible	Pass
Creation of Visit instance	Visit instance successfully created with attributes being accessible	Pass
Creation of VisitorStatusUpdate instance	VisitorStatusUpdate instance successfully created with attributes being accessible	Pass

URLs

Test Case	**Expected Outcome**	**Result**
Accessibility of login url for visitors from function	Related function should lead to URL	Pass
Accessibility of login url for establishments from function	Related function should lead to URL	Pass
Accessibility of login url for health facilities from function	Related function should lead to URL	Pass
Accessibility of registration url for visitors from function	Related function should lead to URL	Pass
Accessibility of profile url for visitors from function	Related function should lead to URL	Pass
Accessibility of profile url for establishment from function	Related function should lead to URL	Pass
Accessibility of visitor search url for health facility from function	Related function should lead to URL	Pass
Accessibility of updating visitor status url for health facilities from function	Related function should lead to URL	Pass
Accessibility of recording visit url for establishments from function	Related function should lead to URL	Pass

Views

Test Case	**Expected Outcome**	**Result**
Visitor is able to go to login page	Server response status of 200 and template rendered is correct	Pass
Establishment is able to go to their login page	Server response status of 200 and template rendered is correct	Pass
Health Facility is able to go to their login page	Server response status of 200 and template rendered is correct	Pass

Visitor is able to go to the registration page	Server response status of 200 and template rendered is correct	Pass
Accessing profile view without being authenticated should be redirected	Redirect to login page	Pass
Accessing profile view when authenticated	Server response status of 200 and template rendered is correct	Pass
Accessing establishment profile view without being authenticated should be redirected	Redirect to establishment login page	Pass
Accessing establishment profile view when authenticated	Server response status of 200 and template rendered is correct	Pass
Accessing search view for health facilities when unauthenticated	Redirect to health facility login page	Pass
Accessing search view for health facilities when authenticated	Server response status of 200 and template rendered is correct	Pass
Accessing update status view for health facilities when unauthenticated	Redirect to health facility login page	Pass
Accessing update status view for health facilities when authenticated and visitor id number is invalid	Redirect to search page for visitor	Pass
Accessing recording of visit view for establishments when unauthenticated	Redirect to establishment login page	Pass
Accessing recording of visit view for establishments when authenticated	Server response status of 200 and template rendered is correct	Pass

Admin (These are built-in to Django and have been tested. Only their presence or activation is required to make sure they are available)

Test Case	**Result**
Visibility of all models for Create, Edit, View and Delete mode	Pass
Filter users by city and status	Pass
Filter establishments by city	Pass
Filter health facilities by city	Pass
Filter visits by date	Pass
Filter visit status updates by date and status update	Pass

API views

Test Case	Result
Data is accessible to authenticated applications	Pass
Data is inaccessible to unauthenticated applications	Pass

Appendix B: Visitor Test Results

Test Scenario 1 - Registration

Register as a user

Steps

1. Go to the homepage at https://mikeupou.pythonanywhere.com/
2. Click Register which can be found by clicking the 3-bar icon at the top right of the page.
3. Enter data for all required fields
4. Click Submit

Expected Results: You should be redirected to the login page

Test Scenario 1 Remarks - Registration

6 responses

Na
Very easy to register.
Done
Easy
easy to register

Test Scenario 2 - Login

Login as a user

Steps

1. After registration, you should be redirected to the login page. If not, please access the page at https://mikeupou.pythonanywhere.com/login/

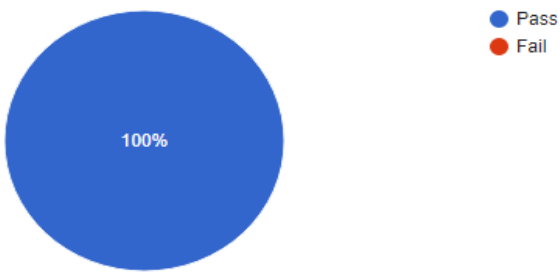
2. Enter your username and password. Both fields are case sensitive.

3. Click Login

Expected Results: You should be redirected to the homepage as a logged-in user with a Profile as an option on the menu. If you are using a mobile device, click the 3-bar icon at the top right of the page.

Test Scenario 2 Results - Login

10 responses



Test Scenario 2 Remarks - Login

6 responses

Na
Yes, I was directed to the login page.
Logged in
Easy with Face ID feature of mobile phone
no problems with login

Test Scenario 3 - View Profile

View profile as a user

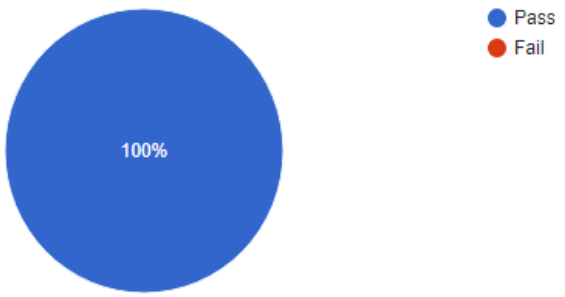
Steps

1. From the homepage as a logged-in user, click Profile which can be found by clicking the 3-bar icon at the top right of the page to see the Profile link.

Expected Results: You should be able to see your personalized QR code as well as your profile details.

Test Scenario 3 Results - View Profile

10 responses



Test Scenario 3 Remarks - View Profile

5 responses

Na
Yes, profile was easily accessible.
Done
Having own QR code for contact tracing is cool. And creating one with ease is very helpful.

Test Scenario 4 - Edit Profile

Edit profile as a user

Steps

1. From the homepage as a logged-in user, click Profile which can be found by clicking the 3-bar icon at the top right of the page to see the Profile link.

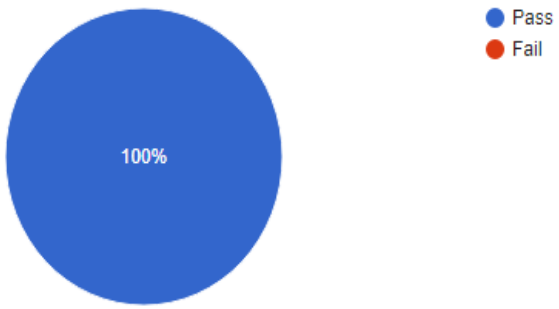
2. Edit the address that you entered in the profile

3. Click Update

Expected Results: You should see a notification that your account has been updated. Please check that the new information is showing after the page refreshes.

Test Scenario 4 Results - Edit Profile

10 responses



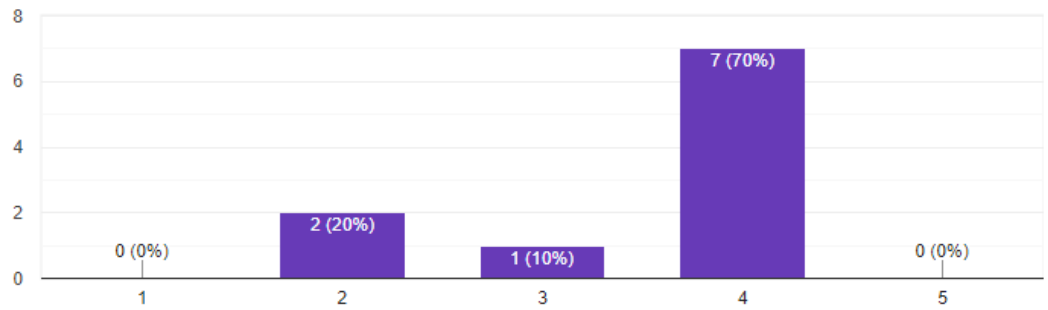
Test Scenario 4 Remarks - Edit Profile

5 responses

Na
Yes, profile was fairly easy to edit.
Done
Easy

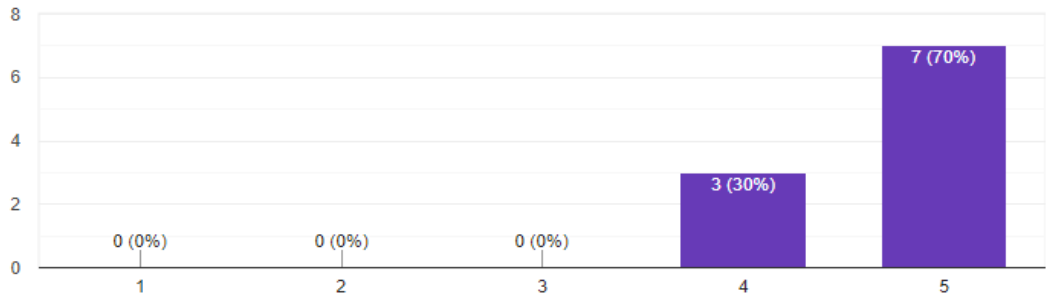
How would your rate your TECHNICAL PROFICIENCY?(1 - Minimal exposure ; 2 - Normal ; 3 - Academic ; 4 - Professional. ; 5 - Specialist.)

10 responses



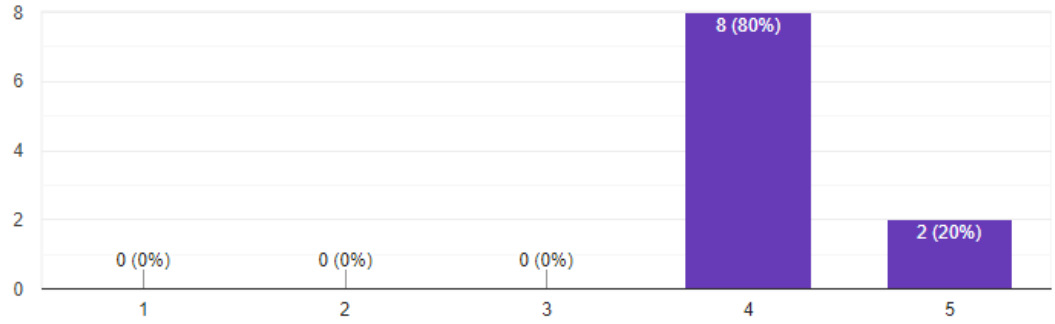
How would you rate the system's USER FRIENDLINESS?(1 - Needs Improvement ; 2 - Neutral ; 3 - Good ; 4 - Very Good. ; 5 - Excellent.)

10 responses



How would you rate the system's INTERFACE DESIGN?(1 - Needs Improvement ; 2 - Neutral ; 3 - Good ; 4 - Very Good. ; 5 - Excellent.)

10 responses



Any suggestions or other comments?

5 responses

Na

Not much. Program was fairly simple and easy to use.

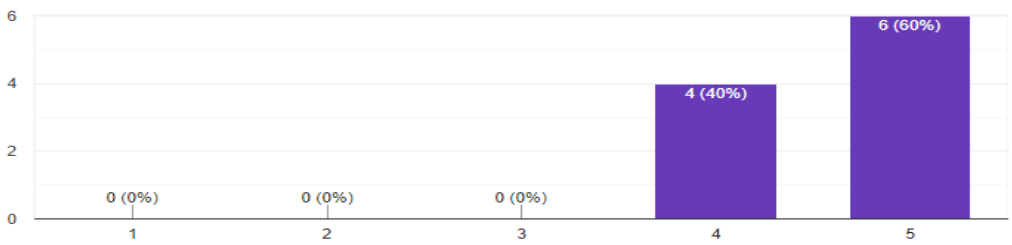
Add picture in profile. Maybe a map of baranggays that shows the number of positive cases will also help. Reminder of basic safety protocols upon logging in and logging out. Access to camera for scanning of QR code of places you visit. Log sheet report of the places you have been to.

Interface can be improved

Appendix C: Usability Test Results

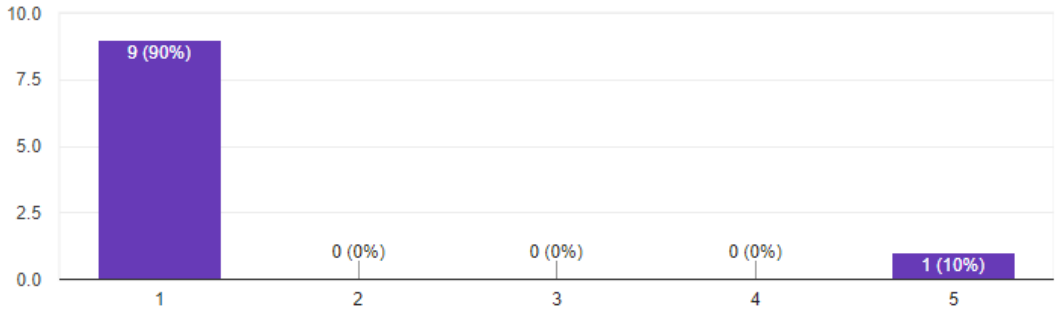
I think that I would like to use this system frequently.

10 responses



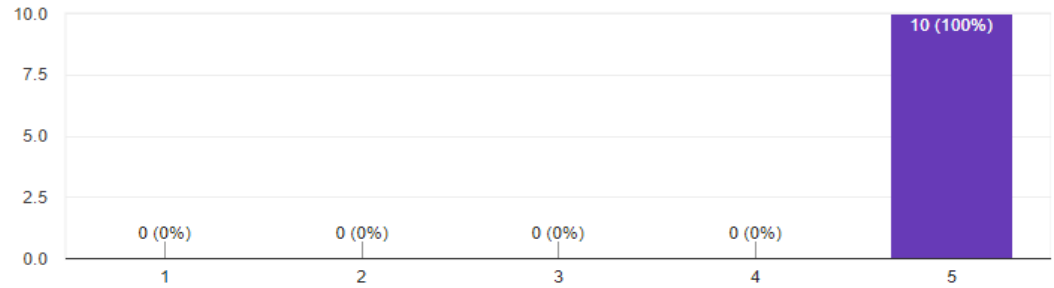
I found the system unnecessarily complex.

10 responses



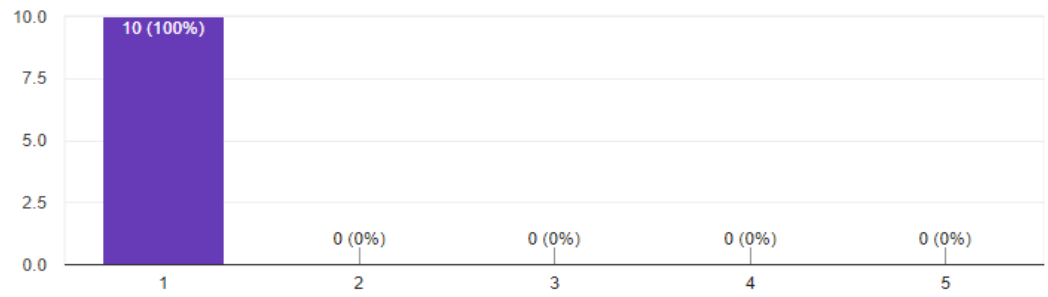
I thought the system was easy to use.

10 responses



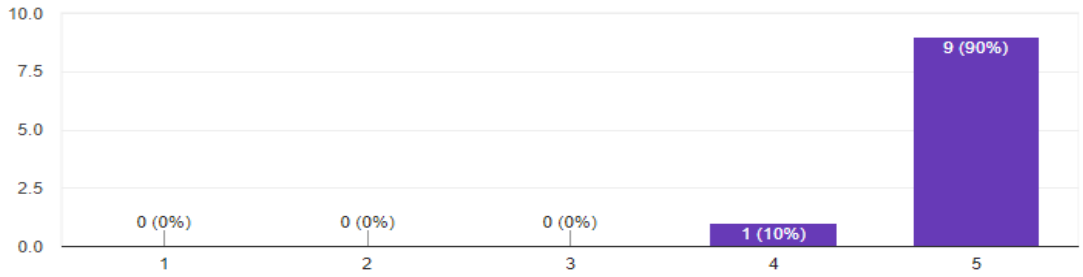
I think that I would need the support of a technical person to be able to use this system.

10 responses



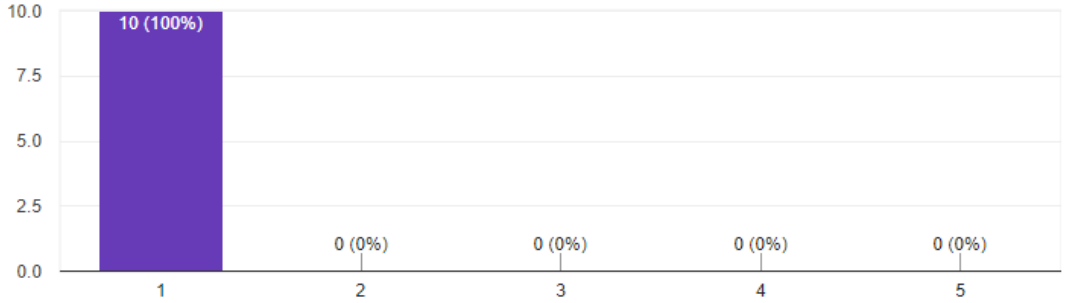
I found the various functions in this system were well integrated.

10 responses



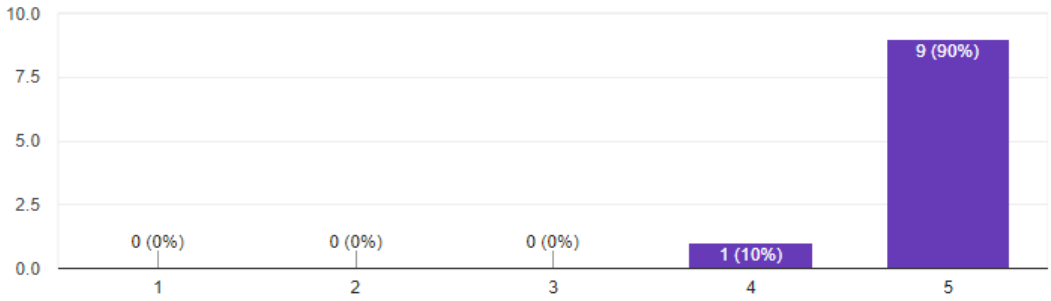
I thought there was too much inconsistency in this system.

10 responses



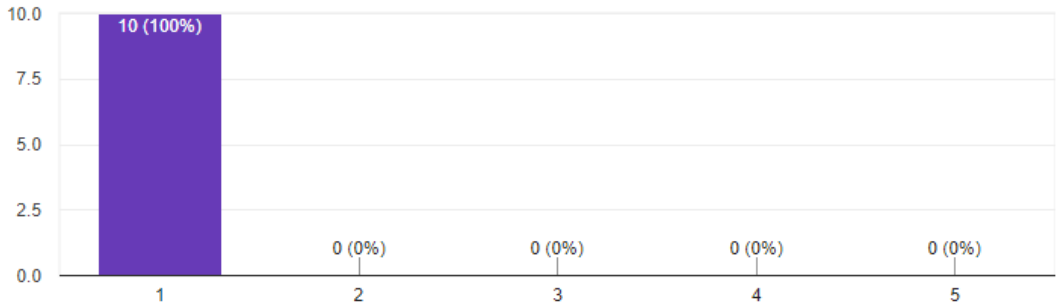
I would imagine that most people would learn to use this system very quickly.

10 responses



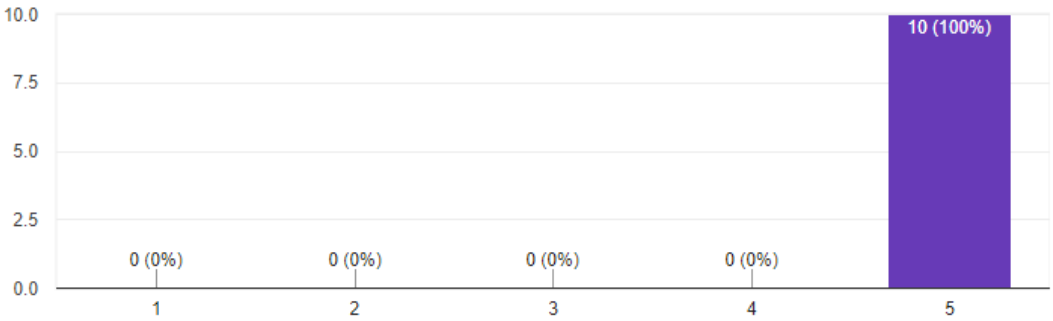
I found the system very cumbersome to use.

10 responses



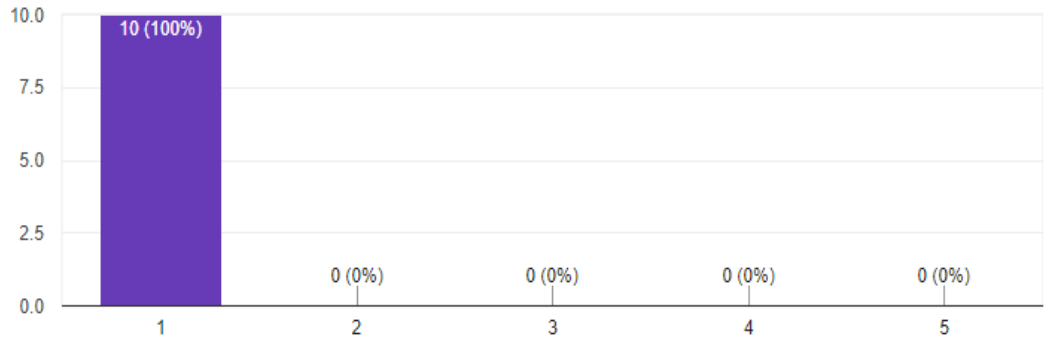
I felt very confident using the system.

10 responses



I needed to learn a lot of things before I could get going with this system.

10 responses

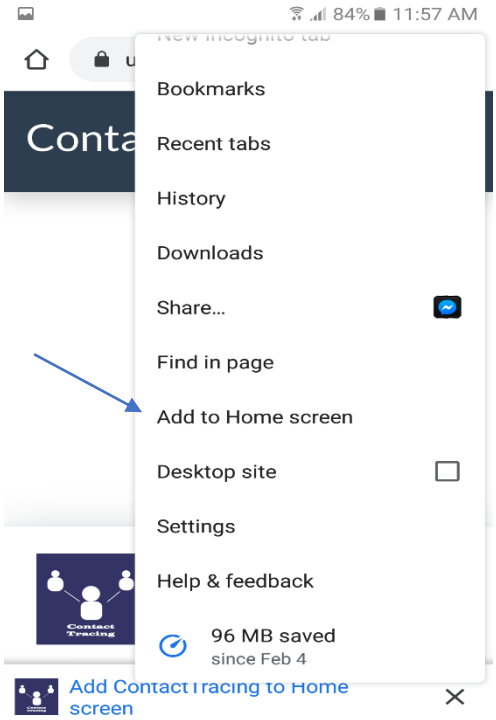


Appendix D: How to Install Application

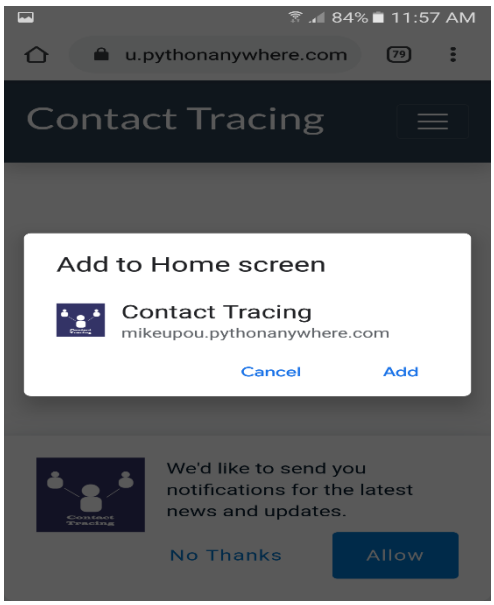
Android

1 Go to the website using a web browser (Chrome web browser in image)

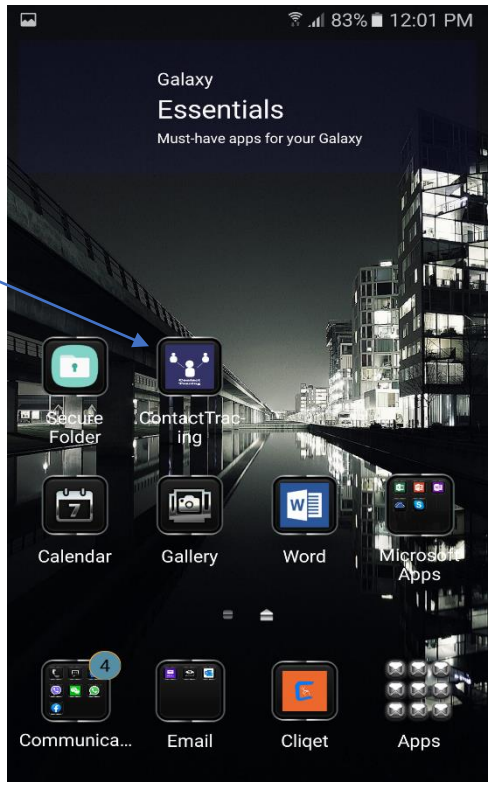
2 Go to menu of web browser and choose Add to Home Screen



3 Select Add



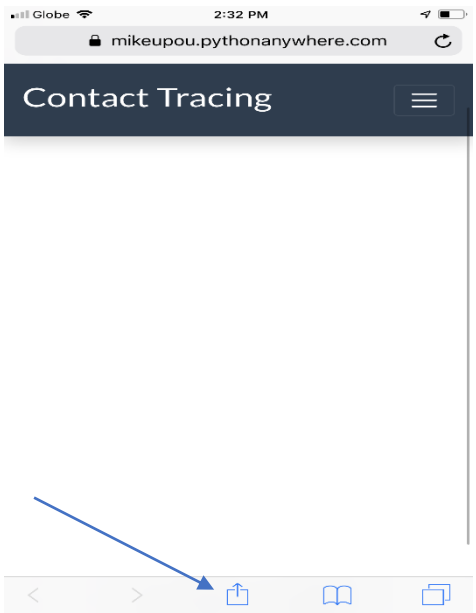
4 Icon should now appear in home screen



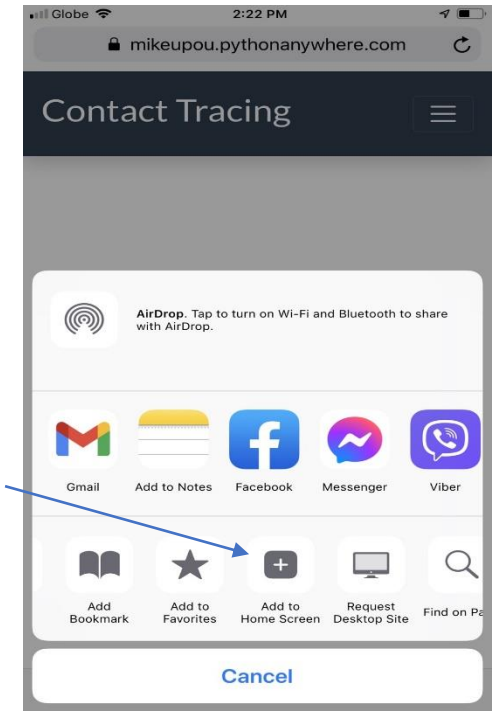
iOS

1 Go to the website using a web browser (Safari web browser in image)

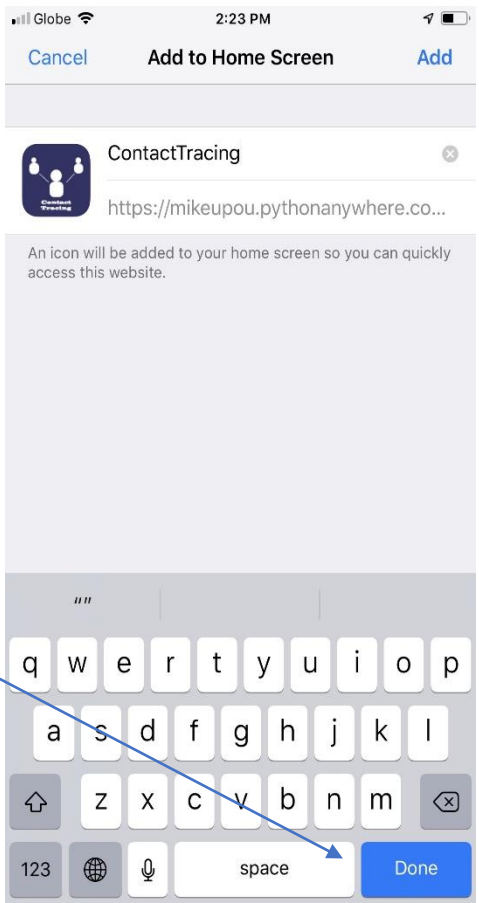
2 Click icon with arrow pointing up



3 Slide sideways until you see option to Add to Home screen and click

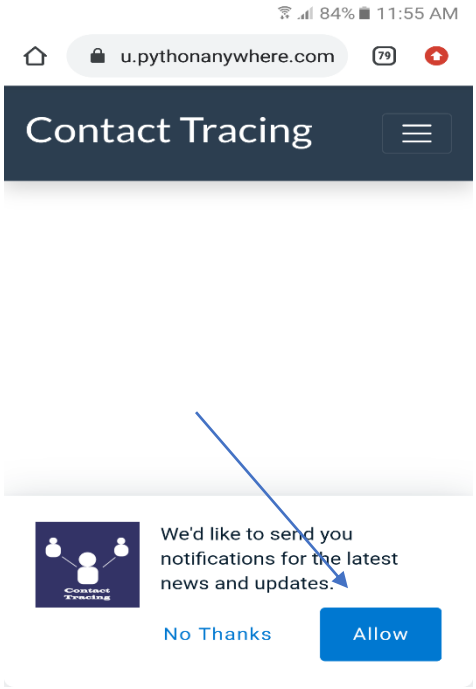


4 Click Done

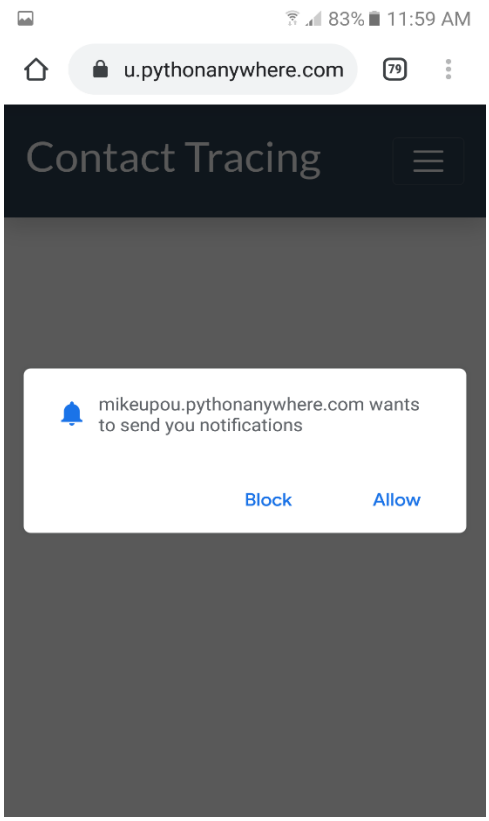


Appendix E: Subscribe for Notifications (Android only)

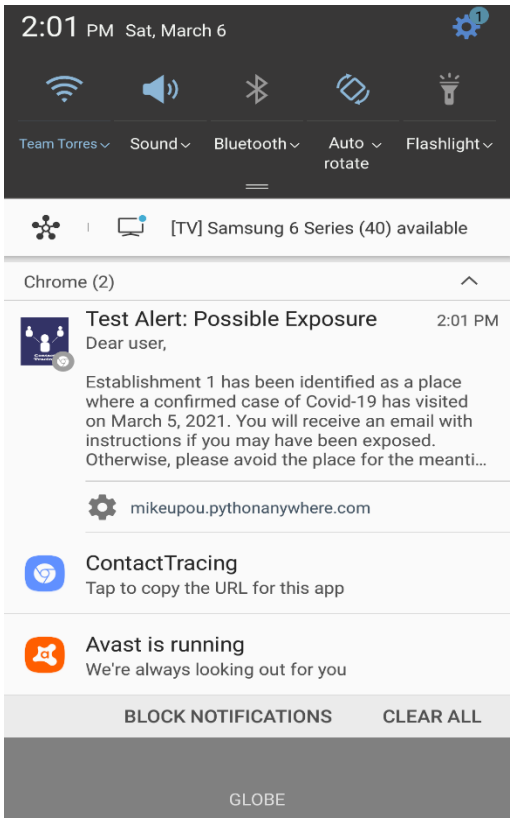
1 When visiting the website, a popup will appear asking the user to allow notifications. Click Allow.



2 Click Allow



Sample Push Notification



Appendix E: How to deploy application in Pythonanywhere

1 Push code from local repository to online repository (e.g. Bitbucket)
2 Create an account with Pythonanywhere
3 Go to Bash console and create a virtual environment and specify version of Python
4 Pull code from online repository
5 Navigate to requirements.txt file and install all dependencies
6 Go to Web section and create a new app using manual configuration
7 Go to Web section of Pythonanywhere and edit WSGI config file
8 In Bash, navigate to where manage.py file is and run collectstatic Django command
9 In Web section, set the path of static and media files
10 Reload app and go to URL to check accessibility

Appendix F: Setting up the admin

1 In Bash, activate virtual environment
2 Navigate to directory where manage.py is located
3 Create superuser using Django command and set up credentials
4 Access the admin by going to https://<domain_name>/admin
5 Login using superuser credentials

Appendix G: How to access API for other apps

1 Inside the admin, create a User for the authorized app
2 Create an Authorized App and assign it to the user
3 Create a Token and assign it to the user
4 Any request to the API must have token with it

API routes

api/v1/visitors/ - access visitors data
api/v1/establishments/ - access establishments data
api/v1/healthfacilities/ - access health facilities data
api/v1/visits/ - access visits data
api/v1/visitor_status_updates/ - access visitor status updates data

Appendix H: How to record visits for Establishments

1 Establishment needs to login first at https://<domain_name>/establishment/login/
2 Using any mobile QR code scanner, scan QR code of Visitor

Appendix I: How to update status of Visitor for Health Facilities

1 Health Facility needs to login first at https://<domain_name>/healthfacility/login/
2 Search for Visitor ID number
3 Update status and save

Appendix J: How to send push notifications

1 Create account at https://onesignal.com/
2 Create new app / website, choose web push and configure platform
3 Go to created app
4 Create new push notification and send to subscribed users