INTRODUCTION

Currently there are several research works undergoing in the country to prevent covid -19 cases from rising. Previously our country was importing medical kits like PPE ,mask from outside,but now it has been successful in developing these kits.Along with taking initiatives to fight this disease, our country has also taken steps to make people aware of the disease. The news and media have a greet part in creating this awareness among the people to carry out all the preventive measures can immensely help to reduce spread of the virus.The country has created containment zones throughout the cities wherever covid-19 cases have been reported to prevent further spread of the virus. These containment zones have been kept isolated from the outside public to ensure no contamination occurs outside. In this paper, we focus on developing a mobile based application to provide information regarding the covid-19 containment zones. The application further tracks the user's location and provides notification alert if the user has entered a containment zone. The application also provides daily covid-19 case statistics to the users to keep them updated.The application is developed on Android SDk and uses firebase cloud firestore to store the location data.Android's geofencing client is used to create geofencing client is used to create geofencing client is used to create geofences around the containment zones and notification manager is used to provide notification.

Project Overview

This application is intended to provide information about containment zones ina a particular region by alerting people, through continuous monitoring of an individuals location. Key benefits of the application are monitoring peoples activity and alerting them to their safety movements.

Purpose

The project aims at building an application that providers information about the containment zones of a particular region by continuously monitoring an individuals location. The location of the individual must be stored in the database.Alert are sent using the notification service.

Literature Survey

What is literature survey? "A systematic and through search of all types of published literature as well as other sources including dissertation ,these in order to identify as many items as possible that are relevant to a particular topic". Significance of literature survey:

- To discover what information exists in our topic of interest.
- To form a starting point for our own work.
- To give scholarly authority to our work.
- To make effective use of our time by focusing on appropriate resources.
- To avoid duplication.
- Literature survey is time consuming and cumbersome process.

Ideation phase

Empathy map

An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers.Much like a user personal an empathy map can represent a group of users, such as a customer segment.The empathy map was originally created by Dave Gray and has gained much popularity within the agile community.

Parts of Empathy Map

Traditional empathy maps are split into 4 quadrants

- Says
- Thinks
- Does
- Feels

With the user or persona in the middle.Empathy maps provide a glance into whoa user is as a whole and are not chronological or sequential.

Says

The says quadrant contains what the user says out loud in an interview orsome other usability study.Ideally,it contains verbatim and direct.

Thinks

The thinks quadrant captures what the user is thinking throughout theexperience.

Does

The does quadrant enclose the actions the user takes.

Feels

The feels quadrant is the user's emotional state often represented as anadjective plus a short sentence for context.

Proposed solution

1. The android application shows the location the containment zones to the users.

2. It also notifies the users when he or she trespasses the boundary of a containment zone.

3. It says the containment zones.

4. This android application updates the location of the areas in a google map which are identified to be the containment zones.

Problem solution fit

This occurs when you have evidence that customers care about certain jobs, pains, and gains. At this stage you've proved the existence of a problem and have designed a value proposition that addresses your customers' jobs, pains and gains.

How do you find the problem solution fit

1. Do they have a problem worth pursuing? Are there enough people that have it
2. Is it one that we claim to be solving
3. Do they care to solve it
4. Are they willing to pay for it
5. Does a case of not solving the problem cost them in time or money

Components of a problem-solution fit

The Problem-Solution canvas is based on the principles of Lean Start up, LUM (Lazy User Model) and User Experience design.

- Customer state fit.
- Problem – Behaviour fit.
- Communication - Channel fit
- Solution guess / Problem - Solution.

Steps in problem solving

- 7 Steps for Effective Problem Solving.
- Step 1: Identifying the Problem.
- Step 2: Defining Goals.
- Step 3: Brainstorming.
- Step 4: Assessing Alternatives.
- Step 5: Choosing the Solution.
- Step 6: Active Execution of the Chosen Solution.
- Step 7: Evaluation.

Functional Requirements

The objec4ve of the APP STOP COVID19 CAT and the COVID19Xat is to offer the user a self assessment test on the symptoms of COVID-19. In this way, the user provides informa4on about the symptomatology and receives advice depending on the result. In case of a possible COVID-19 case, the digital tools store the ci4zen’s data in order for the health services to be able to monitor his/her

progress. The health services will assess the need to re-classify, monitor, or alert the emergency services in case they're needed.

Data:

The STOPCOVID19 and COVID19Xat tools are voluntary tools. As it is described later on, both tools require the Personal Iden4fica4on Code (CIP), which is a code that can be found on any Individual Health Card. Alterna4vely, the user can provide their ID or Passport. List of recorded data:

1. Iden4fica4on data: CIP, ID or Passport.

2. Contact details: telephone number and/or address and alterna4ve telephone number.

3. Health data: the user's answers about the symptomatology.

4. Loca4on data: the longitude and la4tude coordinates of the loca4on from where the user is answering the test, data obtained automa4cally with the user's prior consent (through the same APP or the browser in case of Chatbot).

Geolocalisation

With the objec4ve of facilita4ng healthcare in rela4on to the evolu4on of COVID-19, the use of localisa4on and iden4fica4on tools are necessary within the app and Chatbot. The geolocalisa4on tools used are the following: App: the app geolocates the loca4on of the user through the handset (once the user has accepted to ac4vate the localisa4on services). Chatbot: The chatbot geolocates the loca4on of the user through the acceptance of the geolocalisa4on op4on in the browser. The informa4on provided by these systems is relevant in case emergency services need to be alerted and is also important for eventual test deliveries or other necessary health materials to ci4zens' homes. Geolocalisa4on also allows for the crea4on of a heat map that iden4fies the areas with a greater density of cases, so the resources available can be assigned according to the necessi4es of each area or areaspecific containment measures can be adopted.

Case of usage: The Coronavirus SARS CoV-2 symptoms monitoring and tracing Test works as follows: It outlines four ini4al ques4ons that allow the iden4fica4on of users' symptoms that indicate the need to complete the self-assessment test. The ques4ons are: a. Do you have a fever? b. Do you suffer from shortness of breath c. Do you have a persistent cough? d. Do you have a sense of general unrest? If the user answers NO to ALL of the ques4ons above, it will not be necessary to con4nue with the test. The person is considered to be asymptoma4c and they will be referred to the protec4on measures and health advice that can be found in the official informa4on sources. If the user answers YES to one of the ques4ons above, it will be necessary to con4nue with the self-assessment test to iden4fy more details:

a. Age and gender

b. Illnesses or basic details that allow to iden4fy the poten4al risk of the user

c. Specific symptoms:

i. Exacttemperature

ii. Level of discomfort (in a scale of 1 to 4)

iii. Level of shortness of breath (in a scale of 1 to 4) 6

d. Current condi4on, specifying whether or not the user is experiencing difficul4es to carry out ordinary ac4vi4es (taking a shower, gemng up, ea4ng, etc.) With the combina4on of the symptoms, the risks, the current condi4on and the age of the user, the algorithm bounded to the test establishes a classifica4on of the cases according to the following criteria:

Level 1: Severe symptoms and associated risk: The emergency services are alerted. The emergency services contact the user for monitoring purposes and ac4vate the resources if needed.

Level 2: Severe symptoms but no associated risk: The user is urged to stay home and to self-assess the symptoms experienced twice a day during 14 days. The case is reported to the primary care services, which will aid with the monitoring.

Level 3: Mild symptoms and associated risk: The user is urged to stay home and to self-assess the symptoms experienced twice a day during 14 days. The case is reported to the primary care services, which will aid with the monitoring

Level 4: Severe symptoms and no associated risk: The user is urged to stay home and to self-assess the symptoms experienced twice a day during 14 days. The case is reported to the primary care services.

Non-functional requirements

The non-func4onal requirements are those related to the characteris4cs that in one way or another can limit the system. They describe a restric4on on the system that limits our choice in finding a solu4on. The non-func4onal requirements of the applica4ons are the following:

• Application compatble with mobile devices: the compa4bility with Chrome, Internet Edge and Firefox

• Mul.language: it needs to allow the configura4on of the different screens in several languages, allowing changing language when needed.

• Hos.ng: in suppliers of the corporate plaporm of the Health Department.

• Increasing ability: the increasing ability both with regards to the number of users as well as data processing should be taken into account.

• Extensibility: a solu4on to add new func4ons should be considered.

Coding & Solutioning

app.py

from flask import Flask,render_template,request,session,logging,url_for,redirect,flash from sqlalchemy import create_engine from sqlalchemy.orm import scoped_session,sessionmaker

from passlib.hash import sha256_crypt engine = create_engine("mysql+pymysql://root:sabi@localhost/register") #(mysql+pysql://username:password@localhost/databasename)

db=scoped_session(sessionmaker(bind=engine)) app=Flask(__name__) @app.route("/") def home(): return render_template("home.html") #register form @app.route("/register",methods=["GET","POST"]) def register(): if request.method == "POST": name= request.form.get("name") email =request.form.get("email") password=request.form.get("password") confirm=request.form.get("confirm") secure_password = sha256_crypt.encrypt(str(password)) if password == confirm: db.execute("Insert into users(name,email,password) values(:name,:email,:password)",{"name":name,"email":email,"password":secure_password}) db.commit() flash("you are registered and can login","Success") return redirect(url_for('login')) else: flash("password does not match","danger") return render_template("register.htm") return render_template("register.htm") #login @app.route("/login",methods=["GET","POST"]) def login(): if request.method == "POST": name = request.form.get("name") password = request.form.get("password") namedata = db.execute("SELECT name FROM users WHERE name=:name",{"name":name}).fetchone() passwordata = db.execute("SELECT password FROM users WHERE name=:name",{"name":name}).fetchone() if namedata is None: flash("No username","danger") return render_template("login.htm") else: for passwor_data in passwordata: if sha256_crypt.verify(password,passwor_data): session["log"] = True flash("You are now login","success") return redirect(url_for('photo')) else: flash("incorrect password","danger") return render_template("login.htm") return render_template("login.htm") #photo @app.route("/photo") def photo(): return render_template("photo.htm") #logout @app.route("/logout") def logout(): session.clear() flash("You are now logger out","Success") return redirect(url_for('login')) Home.html {% extends "layout.html"%} {% block body%}

Welcome to our page

{% endblock %} layout.html
register.htm {% extends "layout.html"%} {% block body%}

Register

Submit
{% endblock %} login.htm {% extends "layout.html"%} {% block body%}

Login

Submit
{% endblock %} photo.htm {% extends "layout.html"%} {% block body%}

Welcome to photo

{% endblock %} _message.htm {% with messages = get_flashed_messages(with_categories=true) %} {% if messages %}

{% for category, message in messages %}

{{ message }}

{% endfor %}

{% endif %} {% endwith %} Home

- PhotoLogoutRegistrationLoginAdd Containment ZonesDisplay all Containment Zones{% include "includes/_message.htm"%} {% block body%} {% endblock %}

if __name__ == "__main__": app.secret_key="sabiwebcoding" app.run(debug=True)

Features

7 simple attribute of good code. If comes down to one programming principle. That is The code must be readable.

The code must be scalable.

The code must be testable.

The code does what is asked for. The code fails gracefully.

The code is easy to extend.

The code is reusable.

Benefits of coding

Coding can help you understand technology.

It can enhance problem solving skills.

Coding can be applied to data visualization.

Coding can complement creativity.

Coding is a universal language.

Database Schema A database schema is the skeleton structure that represents the logical view of the entire database.

It defines how the data is organized and how the relations among them are associated.

It formulates all the constraints that are to be applied on the data.

Project Planning & Sheduling

Sprint planning & estimation

The sprint planning session kicks off the sprint by setting the agenda and focus it also creates an environment where the team is motivated, challenged, and can be successful. The development team plans the work necessary to deliver the sprint goal. The development team needs to understand how they can or cannot deliver that goal. If either is missing from this event it makes planning the sprint almost impossible.

Sprint delivery schedule

It should be one single schedule to avoid confusion and keep projects a sprint schedule is a document that outlines sprint planning from end to end. It's one of the first steps in the agile sprint planning process—and something that requires adequate research, planning, and communication. A product backlog typically contains a variety of requests or user stories from stakeholders like customers, partners, and team members. Team often run into trouble when they create more than one schedule.

Reports from JIRA

Jira Software has a range of reports that you can use to show information about your project, versions, epics, sprints, and issues. Areas in red show periods where more issues were created than resolved. Areas in green show periods where more were resolved than created.

1.Navigate to the project you want to report on.

2.From the project sidebar, select Reports. The reports overview page displays.

3.Select a report from the overview or from the project sidebar to begin generating the report.

Advandages & Disadvantages

ADVANTAGE

- Disaster recovery
- Low cost
- Scalability
- Security
- Access your data anywhere

DISADVANTAGE

- Lack of total control
- Difficult to migrate
- Requires internet
- Security and privacy have been an issue
- Fixed contracts can be a problem

CONCLUSION

To achieve the golden balance between lock-down as well as keeping the industries / business running together it is recommended that the Data Science techniques such as K-means can be adapted to define the micro-level demarcation of containment zones and manage them effectively. The clusters formed based on COVID-19 patient's locational data using Data Science techniques (specifically K-means) will be agile, unbiased, accurate, visible, economic and easy to apply.

FUTURE SCOPE

The application provides an efficient way of showing the identified Covid-19 containment zones to the users in a Google map. With the alarming increase of Covid-19 affected cases throughout the world, this developed application can be employed as a tool for creating further social awareness among the people. This application further tracks the user's location and checks whether it is present in the list of identified containment zones. It sends separate notification alerts to the user on entering. The developed android application further extracts the IMEI Number of the trespasser in the containment zones which can be useful to the local police to track and identify people who are frequently trespassing the containment zones. Thereby this application identifies the containment zones and highlights the need for taking further precautionary measures for combating Covid-19. The application has been tested in various locations and has been found to yield accurate results.

The application can be further used for many purposes like maritime and forest safety to prevent users from entering restricted areas.