Fake Drugs Detector

Introduction:

The medications endorsed by the doctors to fix an individual's sickness are generally corrupted the greater part of the occasions. As per the World Health Organization (WHO), 35% of the fake medications sold all around the world comes from India and it involves the fake medication market of almost Rs 4,000 crore. 20% of the medications sold in India are counterfeit. Medications endorsed for cold and fever or a migraine are generally either phony or of low quality. A patient getting a real medication for his sickness has turned into a test nowadays. Not only these counterfeit drugs have serious health issues, but also waste the money consumer of by having them pay for it, with little to no medical value. Moreover, it displaces sales from legitimate pharmaceutical companies and they are always in loss due to it. Interestingly, the organization is generally mindful of all that is occurring. As per the information delivered by the Department of Food Safety and Drug Administration, in excess of 10% of the fake medications have been brought into the market and 38 percent of the medications are not viable as they are of inferior quality. Likewise a considerable lot of individuals sell the copy of drugs for cash. To determine this, a QR code based methodology is proposed to decide whether the medication is falsified or not.

The dangers of counterfeit pharmaceutical drugs to consumers -

- Side-effects from incorrect ingredients in medicine
- Failure to cure the existing health problem and prevent future disease
- It might contain the wrong dose and potentially lethal impurities
- Contributing to the progression of antimicrobial resistance and drug-resistant infections.
- Increases cost for patients when seeking additional professional medical care.
- And worse, death

Effects of substandard and falsified medical products to pharmaceutical industries -

- Loss of revenue
- Additional costs for protecting brands
- Loss of a company's integrity or reputation

Rising cases of fake medications during COVID-19 pandemic -

Here are some of the scams occurred during this pandemic:

- https://www.thehindu.com/news/national/telangana/3-held-for-administering-fake-remdesivir-injection/article34600541.ece
- https://www.indiatoday.in/coronavirus-outbreak/story/arrested-running-fake-remdesivir-injection-factory-in-uttarakhand-already-sold-2000-injections-delhi-police-1796597-2021-04-30
- https://timesofindia.indiatimes.com/city/noida/fake-medicines-used-in-covid-treatment-seized-in-greater-noida/articleshow/83363813.cms
- https://www.ft.com/content/1bb3c839-d796-46f8-a2cd-519122a5908c
- https://www.hindustantimes.com/cities/others/ten-including-2-doctors-held-for-manufacturing-black-marketing-covid-black-fungus-injections-101624213473993.html
- https://www.hindustantimes.com/india-news/odisha-police-arrest-drug-company-md-for-selling-fake-overpriced-covid-medicine-101624590533157.html

And many more…

Solution:

The Proposed System will work in the following manner:

1.First of all, the random keys with their corresponding QR codes will be generated.

2.The keys will be uploaded to the database.

3.And their corresponding QR codes will be applied on the label or packing of the medicine/drug.

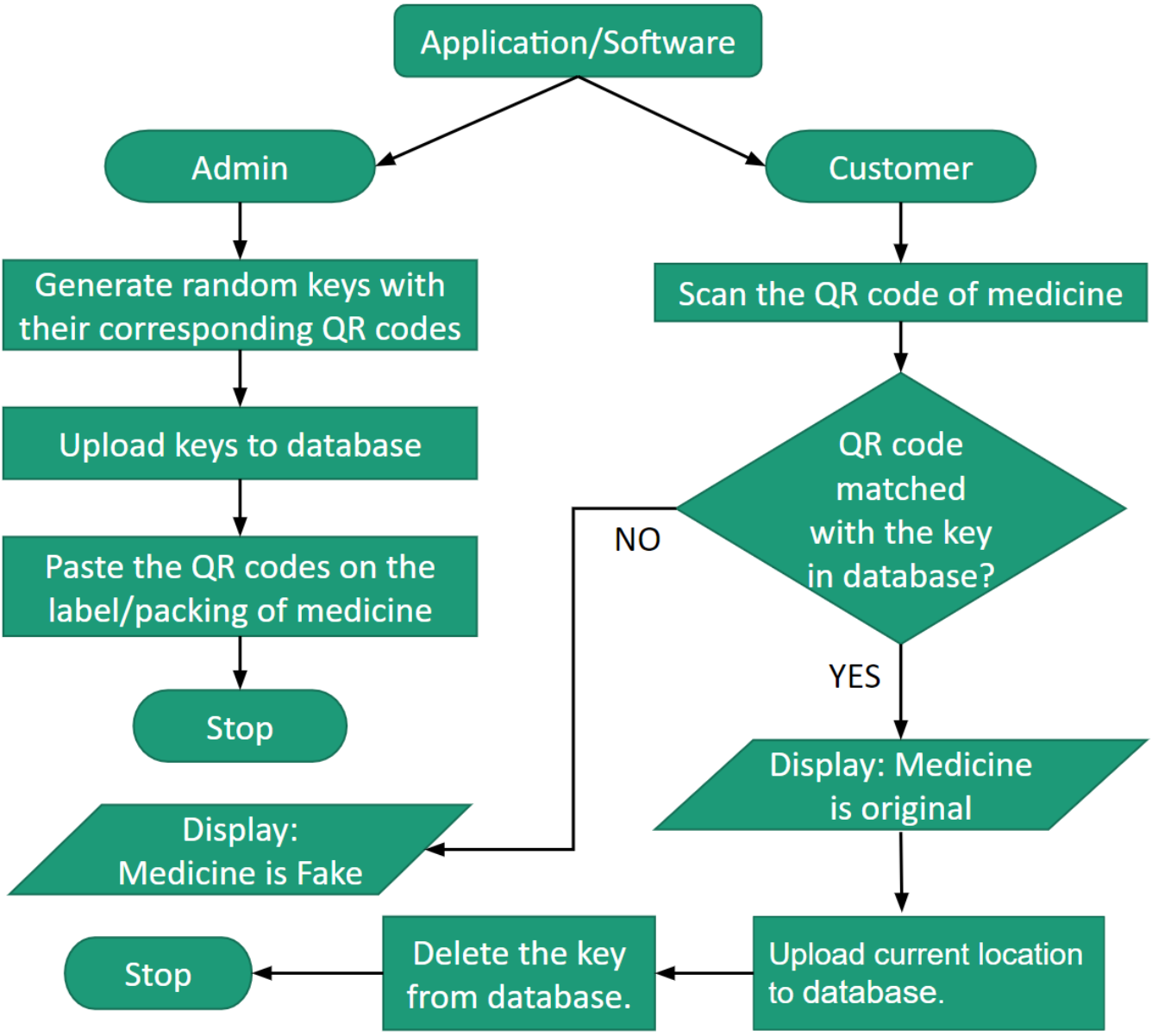
4.When the consumer will buy the medicine, he/she will scan the code on the label of it.

5.If the QR code matches with the key in the database, the app will throw the message that the medicine is safe to use. If the code does not get matched and the app ignores the code indicates that the medicine is fake or tampered.

6.The key in the database associated with the code will be deleted after scanning in order to prevent reuse, tampering or duplication. A consumer should take a note of it and scan only before use.

7,The current location of the user will be uploaded to the database along with a timestamp.

Flowchart:


Application/Software
Admin
Customer
Generate random keys with their corresponding QR codes
Upload keys to database
Paste the QR codes on the label/packing of medicine
Stop
Scan the QR code of medicine
QR code matched with the key in database?
NO
YES
Display: Medicine is original
Display: Medicine is Fake
Upload current location to database.
Delete the key from database.
Stop

Benefit To Business and Society:

- Some groups of people manufacture fake/duplicate medicine of the specific brand which spoils the reputation and prestige of the company. So by implementing so system, a company can prevent it and only their original products would be sold in the market.
- Health problems caused due to fake medicines will decrease drastically.
- Black Market of medicines will also decrease.

How is the solution Innovative?

- Very cost effective and have negligible cost as compared to other present systems in the market.
- Simple, secure and user friendly with negligible maintenance.
- Present system in the market include approaches like barcode scanning, OTP verification, validation using parameters like - date of manufacturing, expiry date, serial number, etc. But the major drawback of this system is that a person can make the identical copies of the packing label with above information and use it on fake medicines. Due to this, the above systems will treat fake medicines as original. Therefore, these system are not fool proof and secure.
- In our approach, as we are deleting the key corresponding to the QR code after scanning and validation by the customer, creating the identical copies of QR code will not work at all. So due to this our proposed system is fully secure and fool proof.
- We are also uploading current location of the user after scanning which will help the industry/company to do some useful analysis about their customer base.

Technology Used:

- Python (for server side app)
- React Native (for client side app development)
- Firebase (for hosting)
- Firebase Realtime Database (for managing data)

Previews:

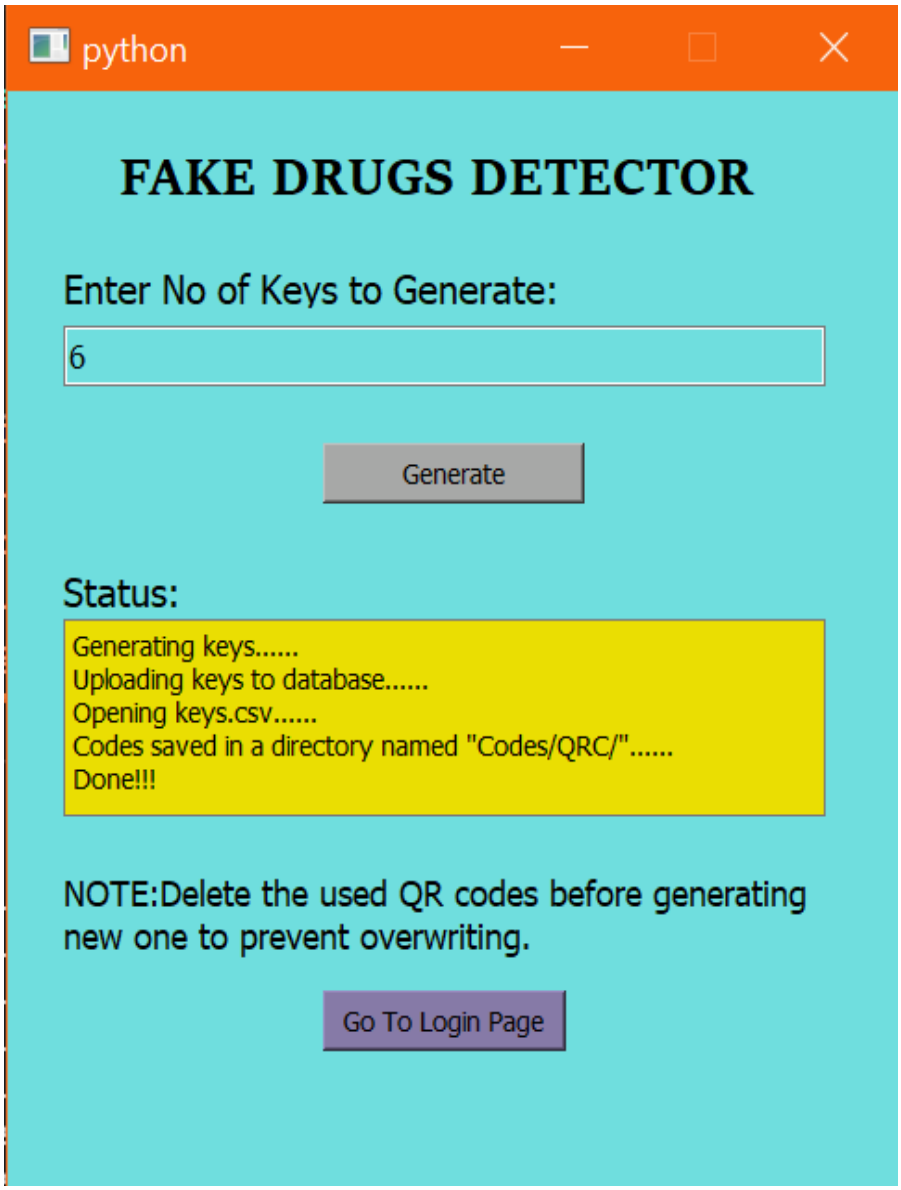


Fig 1. Random keys and QR code generator.

Fig.2 Generated codes.

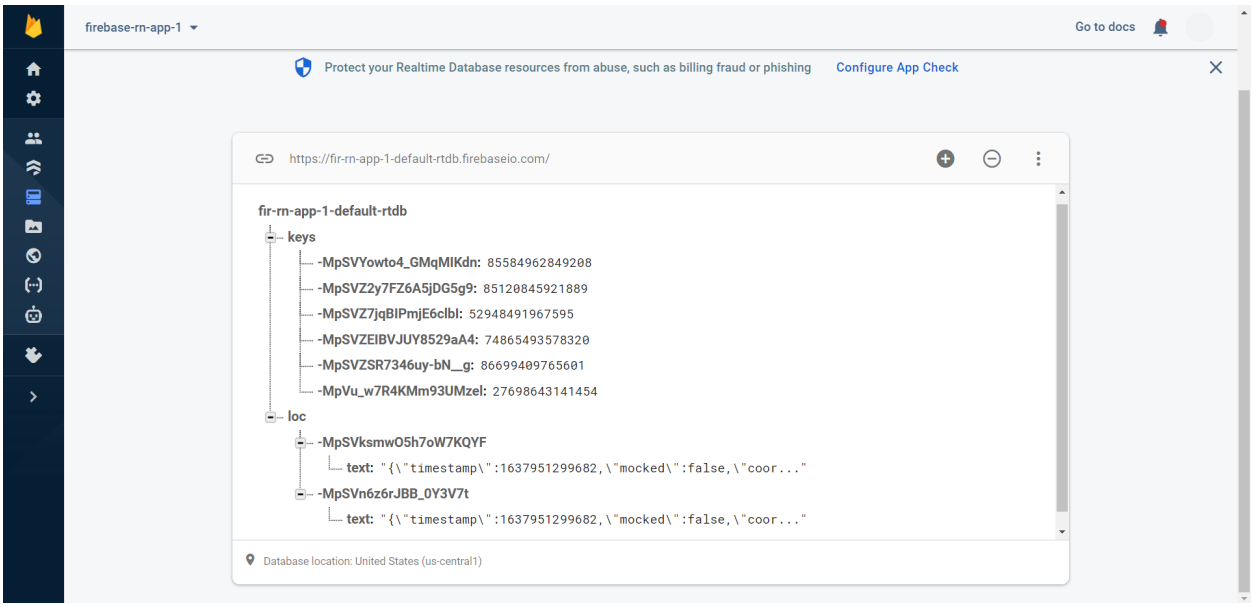


Fig 3. Database

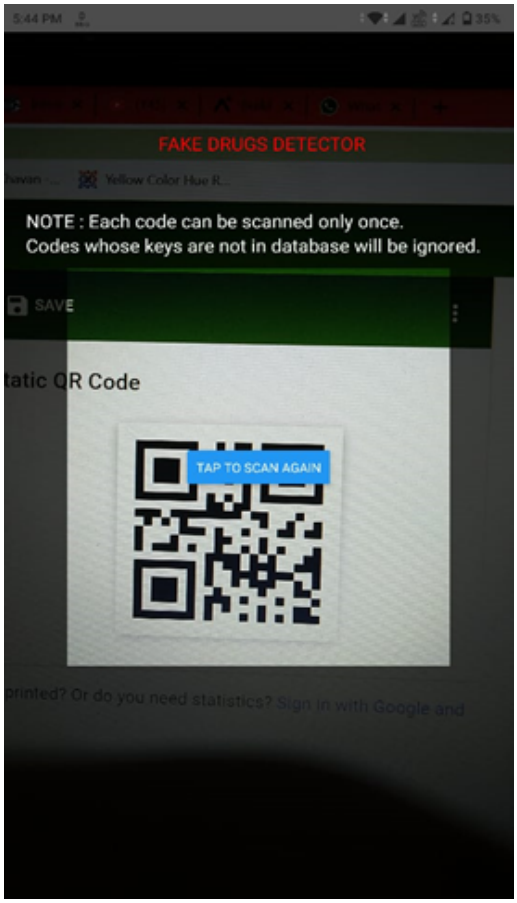


Fig 4.Client Side App

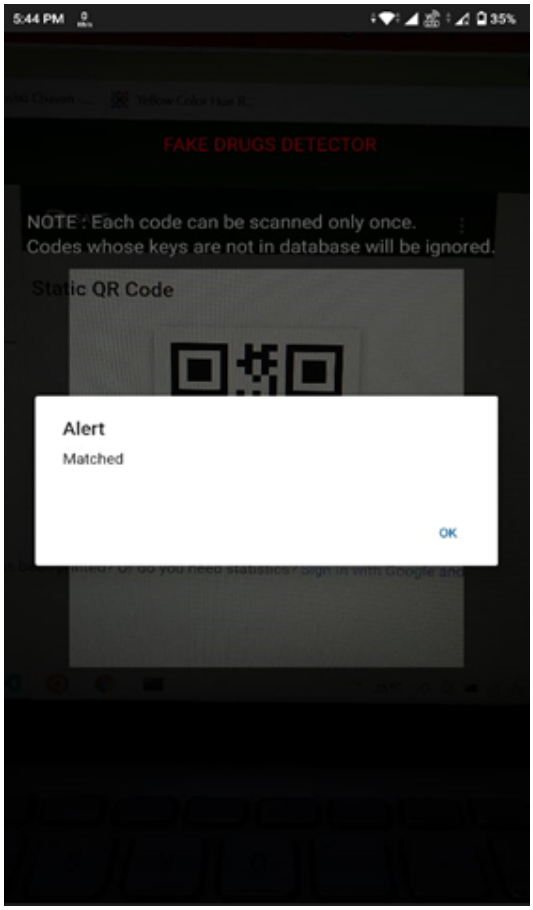


Fig 5.Output when the medicine is original