Real Time Covid-19 Tracker

Department of Computer Science and Engineering

Bangladesh University of Business and Technology
Dhaka-1216

Covid-19 Tracker

A project

Submitted to the department of Computer Science and Engineering

In partial fulfilment of the requirements

for

Software Development IV

BY

Md. Mahedi Hasan	17182103278
MD. Hasibur Rahman	17182103280
Tahmid Ahmed	17182103311
Md. Aminul Islam	17182103319
Alhaj Hossen	17182103335

**Supervised By
Md. Mamunur Rashid**

Lecturer

Department of Computer Science and Engineering

(CSE)

Bangladesh University of Business and Technology

(BUBT)

Table of Contents

Chapter 1
Introduction

1.1   Introduction

While the novel coronavirus is a singular challenge that has caused a pandemic of unprecedented scale, responses of governments worldwide have to be multidimensional, dynamic and context-sensitive. Interventions must be stringent enough to attack the virus and protect citizens but not so stringent that the spillover consequences are unacceptable, for example that the economy cannot recover; what governments ask of their citizens must not strain the social contract to the point that the government becomes unviable. Balancing trade-offs in policymaking is nothing new, but it rarely takes place under the conditions of such extreme pressure and urgency. Governments everywhere have turned to the advice of various types of expert, formally or informally, domestic or international. The World Health Organization (WHO) has declared the coronavirus disease 2019 (COVID-19) a pandemic. A global coordinated effort is needed to stop the further spread of the virus. A pandemic is defined as "occurring over a wide geographic area and affecting an exceptionally high proportion of the population." The last pandemic reported in the world was the H1N1 flu pandemic in 2009. On 31 December 2019, a cluster of cases of pneumonia of unknown cause, in the city of Wuhan, Hubei province in China, was reported to the World Health Organization. In January 2020, a previously unknown new virus was identified, subsequently named the 2019 novel coronavirus, and samples obtained from cases and analysis of the virus' genetics indicated that this was the cause of the outbreak. This novel coronavirus was named Coronavirus Disease 2019 (COVID-19) by WHO in February 2020. The virus is referred to as SARS-CoV-2 and the associated disease is COVID-19.

1.2 Objective to Covid-19 Tracker

- Information on various topics such as symptoms, what to do in case of suspected infection, etc.
- Locating nearby health and testing units.
- In case of a suspected infection, the citizen can check if the symptoms are compatible with COVID-19's, and if so, they will be instructed
- Official news area of the government for viewing the latest statistics on the

pandemic
- To reduce time consumption
- Easy to get corona updates information

1.3 Goals

- To ensure accuracy of covid-19 tracker system
  - To keep detailed information about covid-19 tracker.
  - To show the all record with API.
  - To update information about covid-19 tracker.
- To manage planning
  - Will be easily get an idea about the symptoms of corona
  - Will be able to know about the corona update of home country
  - Will be search option for all country
- To ensure user satisfaction.
  - Update information of world case & today case available data
  - Update information of home country
  - Can be find the affected country
  - Corona Symptoms layout facility
  - Will be able to know about the corona update of All world country
  - Will be known how many affected or deaths

1.4 Development Tools

Covid-19 tracker app is a specific code of corona update information system, integrated with API. In Android basically we use two languages JAVA and XML. XML For layout and JAVA Used for coding. This page control all the elements of xml with time. You can give default attributes values for different elements in xml, which will be used (for that particular element) in Activity(app) until you change that attribute in corresponding JAVA file for that particular element. To change attributes one must first define an id to the element and use that id in JAVA file to change its attributes. Extensible Markup Language (XML) is a meta-language for defining new languages. Its impact on the modern and emerging web technologies has been (and will be) incredible and it has represented the foundation of a multitude of applications.

Technology

> ➢ Android studio

Language

> ➢ XML
> ➢ JAVA

1.5 The Purpose of the System

By using this app, we will be able to know the constant updates of Corona of all countries of the world including our own country from the own house. We can get updated information about the number of victims, the number of deaths, etc. on a regular basis. We can be known about the number of coronavirus infections in home country, the number of deaths, the number of recoveries and other important information. The main purpose of this project is to raise public awareness about corona symptoms and to update corona regularly.

CHAPTER 2
System Evaluation

2.1 Introduction

The medicine reminder app is divided into several components, each of which is designed and built separately (known as a build). We have been able to create a complete medicine reminder app for each ingredient. It urges patients to take their medication at the right time and prevents them from taking the wrong medication. This model of development together facilitates the traumatic effect of introducing a completely new system.

2.2 Methodology
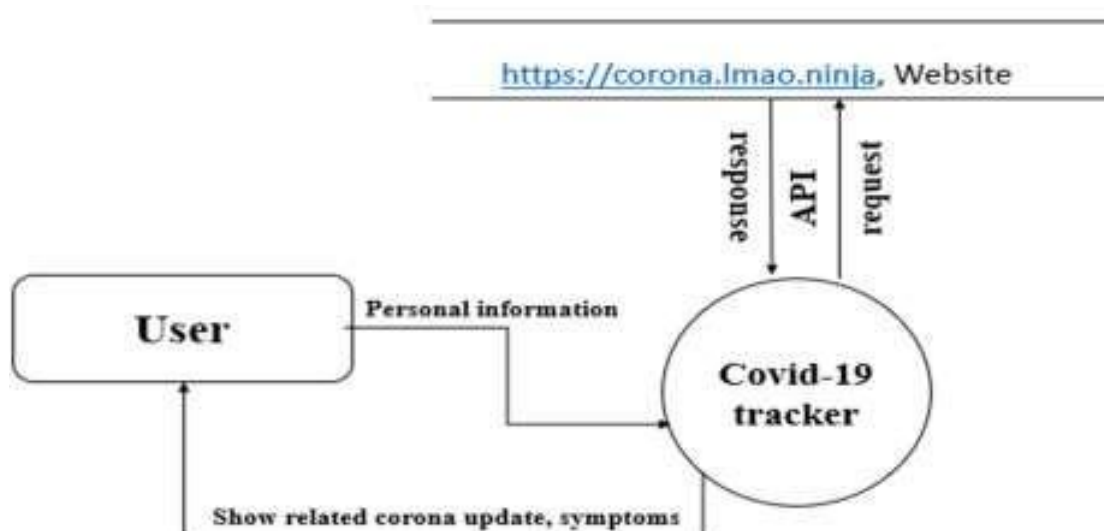
Fig 2.1: Context Level DFD of Covid-19 Tracker System

The incremental build model is a method of software development where the model is designed, implemented and tested incrementally (a little more is added each time) until the covid-19 updated is finished. It involves both development and maintenance. The covid-19 tracker is defined as finished when it satisfies all of its requirements. This model combines the elements of the waterfall model with the iterative philosophy of prototyping.

The covid-19 tracker is decomposed into a number of components, each of which are designed and built separately (termed as builds). It is possible to know about corona update through each component. This allows partial utilization of corona update information and avoids a long development time. This model of development also helps ease the traumatic effect of introducing completely new system all at once.
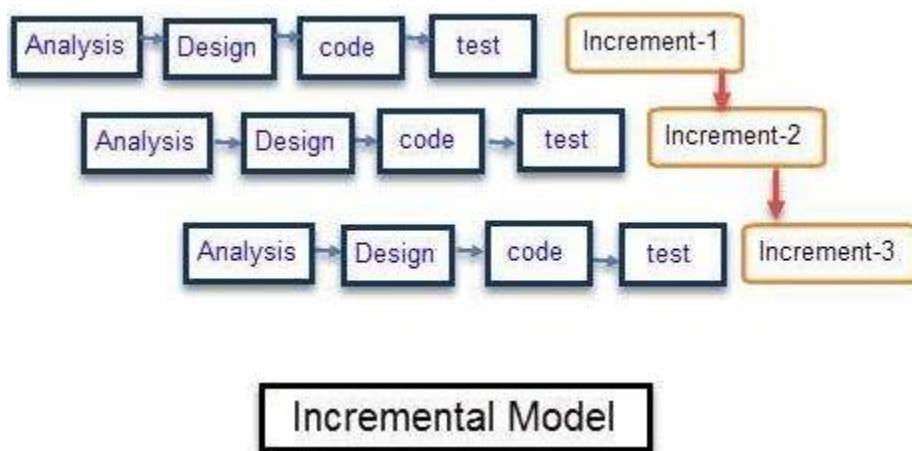
Incremental Model

2.3 When to use Incremental Model

In incremental model, the whole requirement is divided into various into various builds. Multiple development cycles take place here, making the life cycle a "multi-waterfall" cycle. Cycles are divided up into smaller, more easily managed modules. Incremental model is a type of software development model like V-model, Agile model etc. In this model, each module phase through the requirements , design, implementation and testing phases. A working version of software is produced during the first module, so you have working software early on during the software life cycle. Each subsequent release of the module adds function to the previous release . The process continues till the complete system is achieved.

- This model can be used when the requirements of the complete systems are clearly defined and understood.
- Major requirements must be defined. Some details can evolve with time.
- There is a need to get a covid-19 update information early.
- A new technology is being used.
- Resources with needed skill set are not available.
- There are some high risk features and goals.

2.4 Incremental Model Advantages

- Generates working software quickly and early during the software life cycle.
- This model is more flexible-less costly to change and requirements.
- It's is easier to test and debug during a smaller iteration.
- In this model user can respond to each built.
- Lowers initial delivery cost.
- Easier to manage risk because risky pieces are identified and handled during it'd iteration.
- Throughout the development stages changes can be done.

2.5 Incremental Model Disadvantages

- It requires a good planning and design.
- Needs a clear and complete definition of the whole system before it can be broken down and built incrementally.
- Total cost is higher than "waterfall".
- Each iteration phase is rigid and does not overlap each other.
- Consumes a rectifying a problem in out unit requires correction in all the units and lot of time.

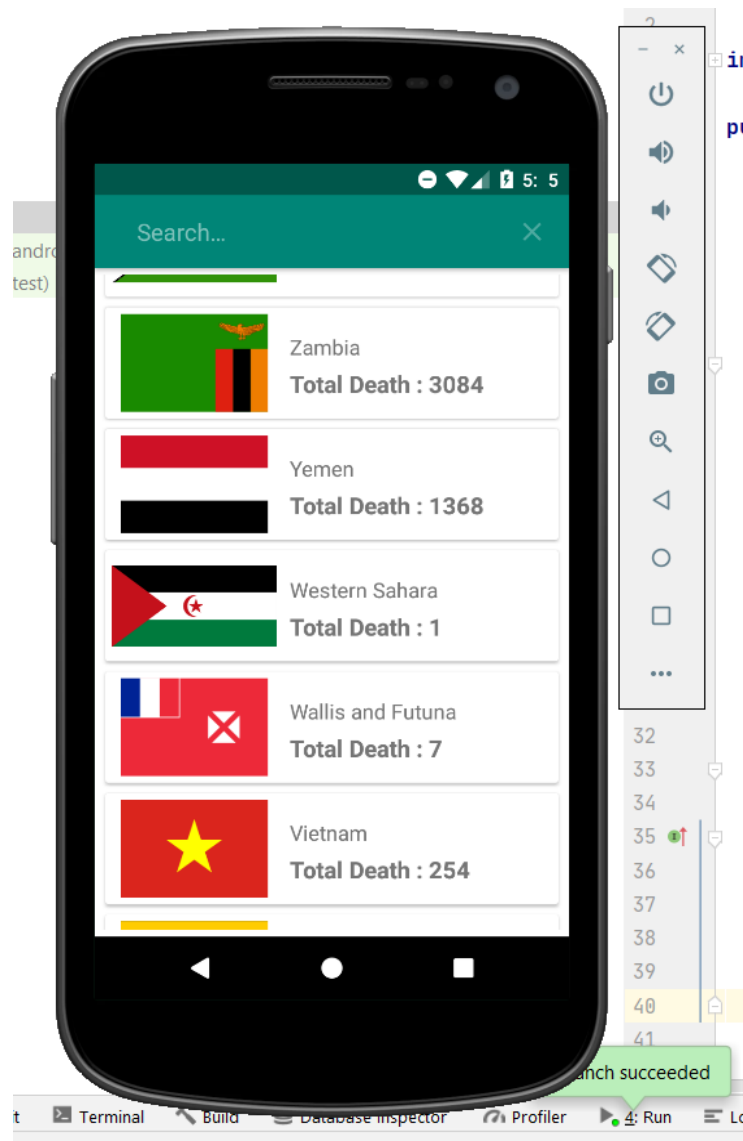# Chapter 3
Design & Implementation

3.1 Splash Screen

Fig 3.1: Splash Screen Page

3.2 Splash Screen Backend

```java
        @Override
        public boolean areContentsTheSame(int oldItemPosition, int newItemPosition) {

            CountriesResponse newMovie = CountryAdapter.this.countriesList.get(oldItemPosition);

            CountriesResponse oldMovie = countriesList.get(newItemPosition);

            return newMovie.getCountry() == oldMovie.getCountry();
        }
    });
    this.countriesList = countriesList;
    this.countriesListed = countriesList;
    result.dispatchUpdatesTo( adapter: this);
    }
}


@Override
public CountryHolder onCreateViewHolder(ViewGroup parent,
                                        int viewType) {
    View view = LayoutInflater.from(parent.getContext()).inflate(R.layout.country_row, parent, attachToRoot: false);
    return new CountryHolder(view);
}


@Override
public void onBindViewHolder(CountryHolder holder, final int position) {
    holder.countryTitle.setText("Total Death : " + countriesListed.get(position).getDeaths());
    holder.countryName.setText(countriesListed.get(position).getCountry());
    Picasso.with(context).load(countriesListed.get(position).getCountryInfo().getFlag()).into(holder.image);
```

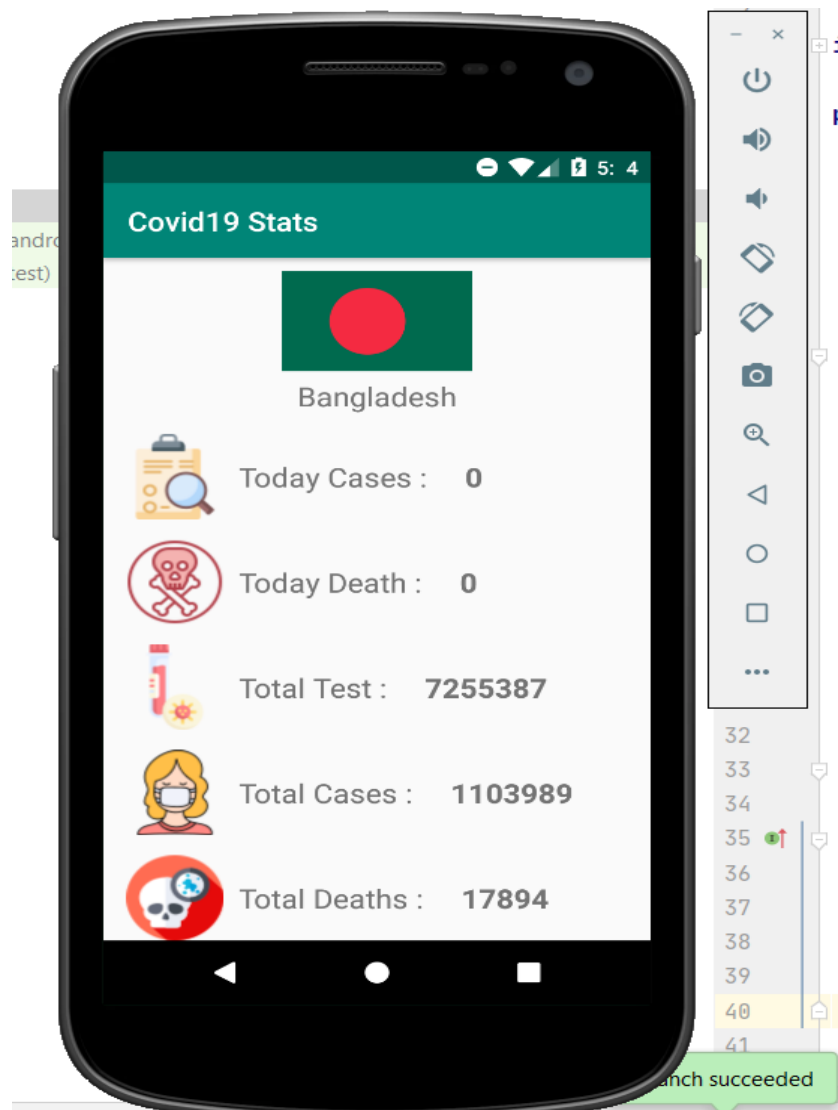Fig 3.2: Splash Screen Source Code

3.3 Home: Country Page

Fig 3.3: Country Page

3.4 Home Country Page Backend

```java
@Override
public void onClick(View view) {


    CoronaService coronaService =
            CoronaApi.getRetrofitInstance().create(CoronaService.class);



    Call<CountriesResponse> call = coronaService.getCountryInfo(countriesListed.get(position).getCountry());
    call.enqueue(new Callback<CountriesResponse>() {
        @Override
        public void onResponse(Call<CountriesResponse> call, Response<CountriesResponse> response) {



            //System.out.println("response size : "+responseList.size());



            Intent intent = new Intent(view.getContext(), DetailActivity.class);

            if (response.body() != null) {
                intent.putExtra( name: "country", response.body().getCountry());
                intent.putExtra( name: "todayCase", response.body().getTodayCases());
                intent.putExtra( name: "todayDeath", response.body().getTodayDeaths());
                intent.putExtra( name: "flag", response.body().getCountryInfo().getFlag());
                intent.putExtra( name: "cases", response.body().getCases());
                intent.putExtra( name: "deaths", response.body().getDeaths());
                intent.putExtra( name: "tests", response.body().getTests());
                intent.putExtra( name: "recovered", response.body().getRecovered());
            }



            view.getContext().startActivity(intent);
```

Fig 3.4: Country Page Backend

Chapter 4
Materials and Methods

4.1 Study Area

Given China's proximity and a large migrant population living in extensive-outbreak countries like Italy, the Bangladeshi Ministry of Health and Family Welfare should have taken preventive measures when the Chinese government first spread the word about the deadly virus. Unfortunately, valuable time was wasted. However, after a slow start, the government has begun to show signs of urgency by improving the overall facilities for dealing with COVID-19. Notably, the government has imposed social distancing and emergency lockdown, and the local administrations have been told to punish violators of the home quarantine rules in line with Section 269 of the Penal Code. The testing facilities have been slowly established in other locations across the country. It should be kept in mind that the country has a considerable number of governance issues, such as lack of coordination, accountability, healthy decision-making and command protocols. Besides, the poor monetary support, irregularities in distribution, and inadequate preparedness in the health sector, as well as poor health infrastructure together may shape the overall COVID-19 situation in Bangladesh. Ultimately, the global COVID-19 pandemic has tested the health systems in the world's wealthiest to developing countries. However, the damages and losses in developing and emerging countries, like Bangladesh, due to the timely implementation of preventing measures are unimaginable. Particularly, the majority of Bangladeshi citizens depend on daily wages and are served by a weak public health system, and, therefore, they are economically too weak to spend money on purchasing COVID-19-related safety equipment, such as masks, sanitizers, etc. Thus, they may be extremely vulnerable under the condition of the uncontrolled spread of COVID-19. Therefore, testing facilities need to be made available across both public and private medical centers, and the government should commit to identifying the community spread of COVID-19 by increasing the number of testing facilities. Thus, the larger the total population, the larger the number of testing centers that should be set up at the district level. This paper has made clearer that Bangladesh's response to the threat of COVID-

19, particularly for testing support, is inadequate. Therefore, the government should strengthen its preparation for testing, screening, isolation, and medical facilities in order to provide better services for tackling COVID-19 as well as future pandemic situations. However, challenges exist in the form of policies and programs; motivating diverse citizens in understanding the context; ensuring social/physical distances, self-isolation, and self or family quarantine; and supplying relief aid to several communities in dire need. Moreover, with a small amount of resources available to be dispatched, local government organizations started to employ policy strategies in order to prevent community spread and decrease the number of affected people through awareness programs. In order to ensure quality services in healthcare, Bangladesh requires advanced technical assistance in hospitals, and the government should follow the health management practices of developed countries in the health sector. However, the demand for exerting pressure due to COVID-19 pandemic has urged the health sector to respond to diverse challenges right now. A recent study claims that until 26 March, 2020 the Institute of Epidemiology, Disease Control and Research (IEDCR) was the sole institute in Bangladesh with the testing facilities for COVID-19, and this single and under- resourced institute was unable to tackle the wave of suspected COVID-19 patients. Due to such limited resources, timely testing of symptomatic patients was not possible, and the government has still not sought to limit community transmission from primary cases proactively. However, with a population of 161 million and a total of 1169 intensive care unit (ICU) beds, this inadequate strategy could potentially devastate Bangladesh's health system with multiple outbreaks. Thus, this study considers testing facilities and its spatial distribution in the country in order to assess what other facilities need to be ensured for tackling the COVID-19 pandemic in Bangladesh.

4.2 Data and Analysis

We opted to use qualitative, quantitative, and geographic information systems (GIS) data in order to obtain results. Issues of social opportunity can be easily presented through a combination of geographical and social information. As a result, the geographically unequal distribution of services is accurately represented, and equality may be ensured during future infrastructure and service planning. However, we understood the limitations of the expected data because of the pandemic and its unique characteristics in Bangladesh. Despite these facts, we highly relied on authentic sources of information, and scientifically utilized the data by considering the types and sources in the following subsections.

4.3 COVID-19-Related Quantitative Data

The data relevant to COVID-19 were initially obtained from several reliable government websites. The number of cases was regularly updated in the Coronavirus Covid-19 Dashboard 2020, the site maintained by the government of Bangladesh. Moreover, data related to the number of testing centers, the number of medical staff, the number of infected people per day, and the number of death per day were obtained from several websites. Note that we crosschecked most of the data utilizing several sources, e.g., newspapers, print media, social media, and websites of international organizations such as John Hopkins University's dashboard and the WHO. Consequently, we reviewed contemporary literature (i.e., published and unpublished), newspaper articles, internet blogs, opinion pieces, and local newsletters in order to obtain information with particular emphasis on Bangladesh.

4.4 Qualitative Information

Under this pandemic, it was challenging to meet professionals and managers working at the field level in COVID-19 testing centers. However, we prepared a list of possible contact persons in several district-level offices who were engaged in the testing systems. Once we prepared the list, we then collected the telephone numbers of the people we were interested in contacting. Afterwards, we contacted the relevant persons to talk over the phone (on average for 15 min). Note that, because of some ethical agreements before consulting over the phone, we were not in a position to ask questions outside of our research topics, although a wide range of information was collected. Consequently, we collected qualitative information from the "talk-shows" regularly organized in the television media, emphasizing the testing capabilities and capacities of centers/labs situated across the country. However, these unstructured phone conversations mainly attempted to capture information related to the number of tests per centers and associated official procedures.
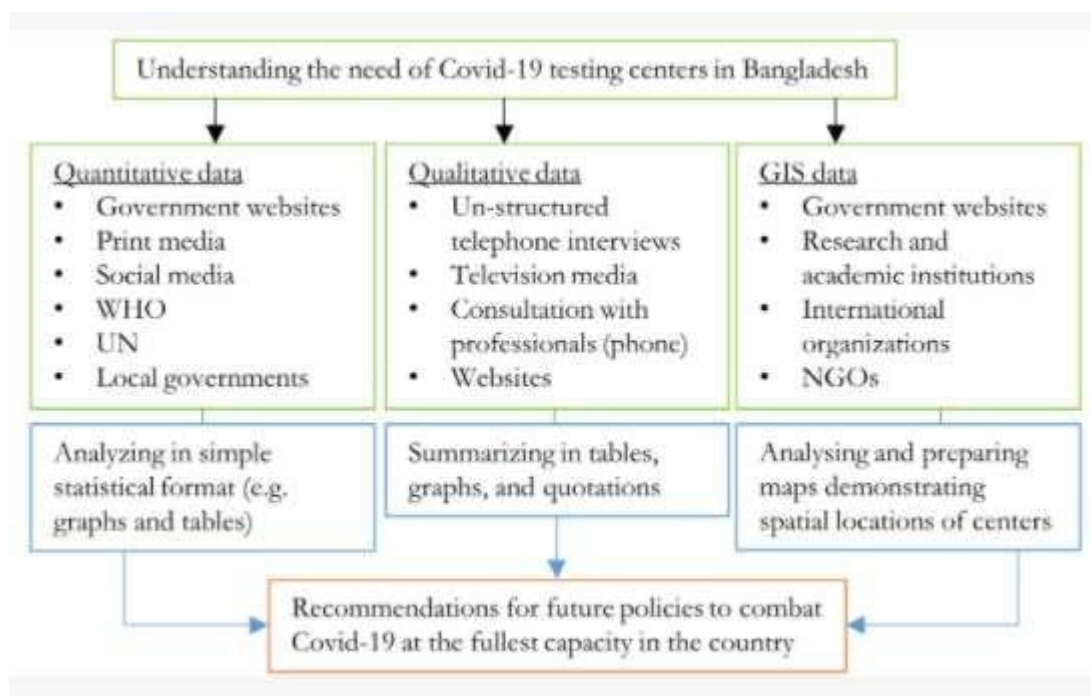
Schematic diagram of the study

Exhibits the schematic diagram of the methods adopted in this study. Note that the recommendations were made after the critical evaluation of the available information.

4.5 GIS Data

We collected the GIS datasets from different sources including but not limited to the following: government websites; GIS labs from academic and research institutions (i.e., universities); non-government organizations (NGOs); and international organizations' webpages (e.g., United Nations). Note that the necessary data were projected appropriately. Hence, we opted to clean the obtained datasets (i.e., *.shp, *.dbf files) and projected the data using WGS84 reference ellipsoid systems. Moreover, we plugged the COVID-19-related database in the GIS systems to obtain locations of testing centers in the country. In addition, we used ArcGIS software (developed and licensed by Environmental Systems Research Inc.) in order to analyze information and to generate the maps.

Chapter 5
User Manual

5.1 Introduction

This chapter describes about what we needed to complete this work.

5.2 System Requirements

This system requires some hardware, software, and source.

5.3 H/W Requirements

To complete this project, we needed some hardware like Mobile, laptop, computer.

5.4 S/W Requirements

The tools and technologies used in this application are Android Studio 4.0 and API Concepts.

5.5 User Interface

The user interface was perceived positively overall. The color scheme is instantly recognizable as part of the government's COVID-19 communication strategy and the app has a professional look and feel. The user will first see a splash screen. Then he will see the information of world case, there users will know about world case & today case. At the bottom there are five buttons, such as world case, Home Country, All Country, Symptoms, Info Button. When the user presses the button he/she will know about the information. You will be able to know the corona update of your country in home country. All countries have the option to search and find out about the Corona situation. At the symptoms page, we learn about corona symptoms and precautions. At the info page, We can set up personal information and view it.
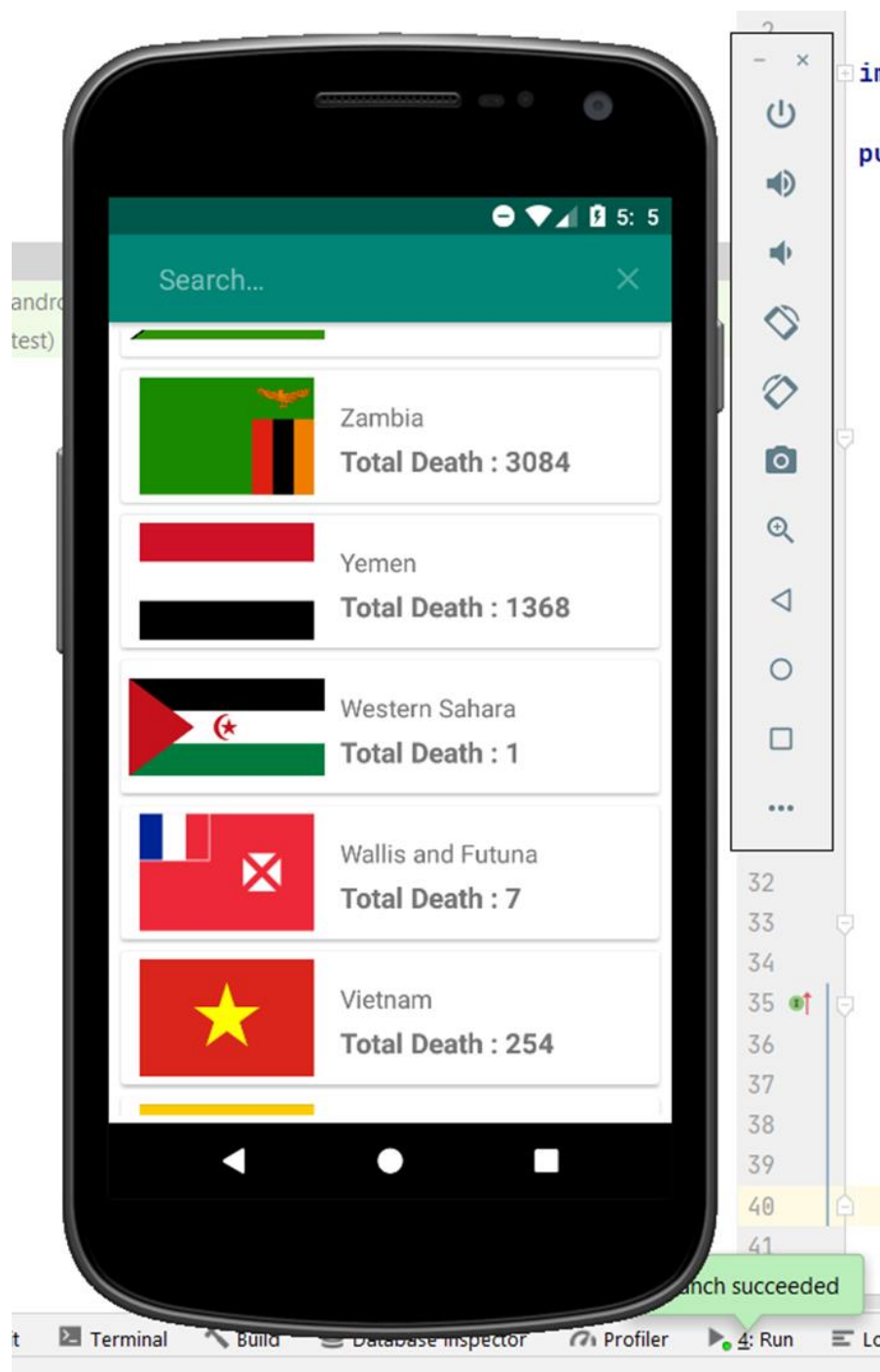
Chapter 6
Conclusion and Future works

6.1 Conclusion

By using this app, we will be able to know the constant updates of Corona of all countries of the world including our own country from the our own house. The main purpose of this project is to raise public awareness about corona symptoms and to update corona regularly.

Implementation of this application gave us a good learning experience and exposure to the technologies which we have used in this project android studio, API.

6.2 Outcomes

- Update information of world case & today case available data
- Update information of home country
- Instant update data
- All countries update data available
- Can be find the affected country
- Corona Symptoms layout facility
- Update Personal information activity
- Will be get the benefit of visiting developers

6.3 Current Limitations

- Improve the system's quality and performance.
- Google map is not available yet.
- User cannot feedbacks as comments.
- Not store date in firebase

6.4 Future works

- Multiple Language Support
- User Authentication Method
- Using Firebase database
- Corona Help Center Facility
- Data Recovery method
- Adding the google mapping system.
- Adding rating option for covid-19 tracker app.
- Adding users comment system