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# COVID – 19 TESTING DATABASE MANAGEMENT SYSTEM

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DONE BY : -

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## Introduction

The recent outbreak of the pandemic of COVID-19 has halted the lives of many people. The great efforts of health line workers, governments, techies, and essential workers have allowed some sense of normalcy in the lives of many. The number of COVID positive cases are stable, but with spikes of new positive cases that arise, an alarm of a foreseeable crisis of COVID-19 test kits (Real Time Statistics of Corona Cases, 2020).

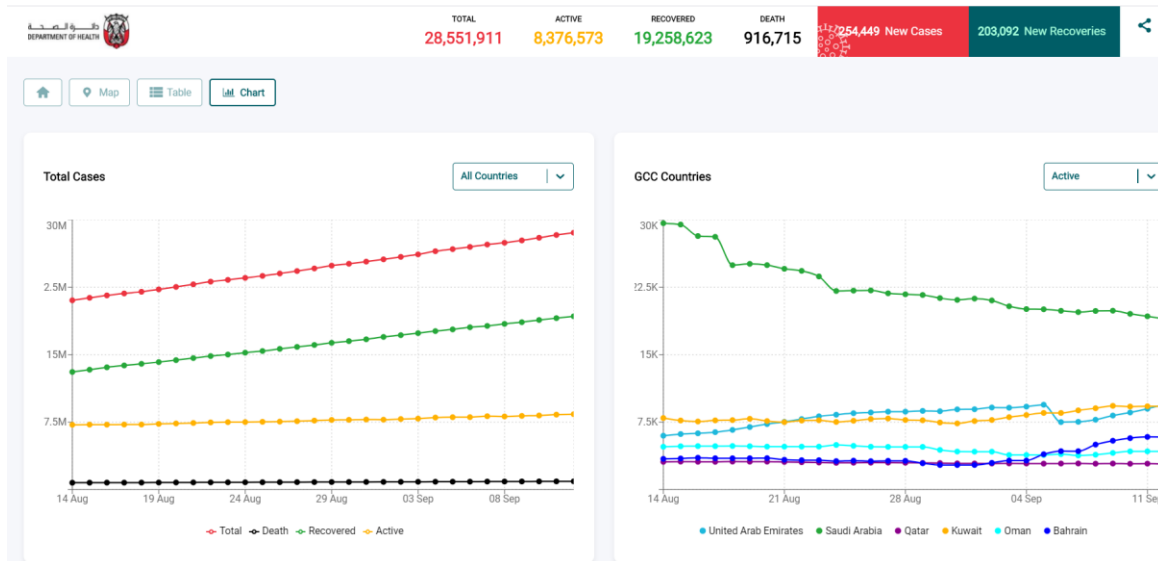


Figure 1 Total Number of Corona (Real Time Statistics of Corona Cases, 2020)

Figure 1 shows the graphical representation of the total number of Corona Cases. The graph prediction shows a slow but steady rise, which means more testing kits would be required. Rachel said, “At every point, I was told everywhere’s rammed to capacity.” (Schraer, 2020). This was caused due to the unprioritized free testing in England, which led to a shortage of COVID testing kits (Schraer, 2020).

## Current Issues

Due to the lack of prioritizing people who are more prone to contract the virus, the testing kits would not be used to target people who might have severe complications from the virus. As per WHO, people who are above the age of 60 or have health conditions like lung or heart disease, diabetes, or conditions that affect their immune system are at high risk of the damages caused by the virus (WHO, 2020). Various organizations, including Abu Dhabi University, have instructed their faculty, staff, and employees to get the right protection for people at high risk and also require a doctor’s advice on their medical fitness. The flaw in the demand of new HR policies is that everyone needs to be tested every 14 days, which cannot balance the supply of tests available because the time duration expected for this pandemic to last is uncertain and long. Therefore, we must prioritize and test sustainably by prioritizing the high-risk groups first. The current system in UAE is the AlHosn App, which is a systematic approach to calculate the exact statistics of the COVID positive cases in the UAE. The fact that everyone is being tested is a good thing, but since we do not know the duration of how long the pandemic will last, testing on low-risk people seems like a luxury which we cannot afford in terms of COVID testing kits; therefore, planned to prioritize of testing should be done.



Figure 2 Sample Screenshot of the AlHosn App of test result

### Proposed Solution

Since we have real-life databases of the COVID cases (AlHosn App), people who suffer from health conditions like lung or heart disease, diabetes, or conditions that affect their immune system (Ministry of Health and Hospital Databases) and people who are above the age of 60 or live near to a COVID positive person (Emirates ID Database) there would be no need to collect data if provided access to these databases. The database we have thought of is an integration of all the above-mentioned databases.

Priority Category	Priority Number
People suffering from lung or heart disease	10
People suffering from chronic diseases like Diabetes	10
People suffering from immunodeficiency diseases like Acquired Immunodeficiency Syndrome (AIDS)	10
People above the age of 60	10
Pregnant Women	10
People who are COVID positive	10
People living with the above-mentioned people	10
People who show symptoms of COVID-19	10
People who sanitize or clean buildings	7
Health Line Workers	7
Front desk employees	7
Physical School going children	7
Jobs which require to interact with people physically	7
People who have returned from other countries	5
People who commute in public transport or carpool	3
People who live with the above-mentioned employees or students	3
People who do not fall under any category	1

The above-mentioned table is the priority table we have hypothesized for priority based on our WHO's findings combined with more specific prone categories inspired by ADU's HR policy. The below-mentioned table is our hypothesized testing frequency, which should be the maximum limit of tests done to a person. The higher the priority number is, the more risk-prone they are and must get checked in these recommended rates. We believe this level of sorting on priority number will safeguard the people who have more risk of fatality due to this virus.

Priority Number	Recommended Testing Frequency
10	Once in a week
7	Once in 2 weeks
5	Once in 3 weeks
3	Once in 4 weeks
1	Once between 5 – 6 weeks.

### **Project Overview**

#### **Aim & Objective**

The aim of this project is to create an integrated database system that will allow prioritized testing for people who are more prone to the Corona Virus, which would lead to a more sustainable way of testing. This will involve, but is not limited to:

- Creating a logical and meaningful entity - relation diagram to integrate systematically.
- Eliminating data redundancy by linking tables and databases with the needed databases.
- Organizing the data according to the recommended priority order for testing.
- Accurate representation of the number of COVID positive cases and curb the spread.
- Using the current technology of Database Management Systems (DBMS) (Preferably Oracle or MySQL).

#### **Expected Results**

The expected results would mean there could be a higher chance of seeing more COVID positive cases because we would be testing more of higher-risk people on a priority basis. This is not a bad thing as we will be able to quarantine infected people with proper health care as well as stop the spread of the virus. As an added benefit, this database can be used in future pandemics because of the linkage between various databases without redundancy.

We, as a team of 3 (Saeed, Abdul Rehman, and Kevin), also would be gaining practical experience to design, structure, and implement a database system. These most techniques utilized would be from the course CSC305 (Database Management Systems) guided by DR. Adel Khelifi, ranging from Entity Relation Diagrams to linking the databases.

This system would also be a concept in the future for prioritizing testing with limited supplies. Therefore calculated measures can be taken in a similar scenario of demand and low supply. This system would further need testing and Rapid Application Development (RAD) as it is still in the prototype phase.

## References

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