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DESIGN AND IMPLEMENTATION OF BIRTH AND DEATH REGISTRATION SYSTEM

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Abstract Human inspection is the typical way that vital statistics like birth and death are recorded in most countries. The manual recording of births and deaths is labor-intensive, and it is not feasible for huge populations that are growing rapidly. Erroneous birth and death registration records have the potential to create a number of difficulties, including the expense of registering a child, the possibility that both the parent and the kid may lose their registration certificate, and inaccurate demographic figures. Birth and death registration became an issue of utmost importance as a result of difficulties encountered while obtaining accurate population statistics. Accurate population statistics are essential in social service planning for any government and in ensuring that adequate resources and budgets are made available to address the needs of the populace.

Keywords: birth, death, registration, system.

INTRODUCTION

In most countries, birth and death are important occurrences that are recorded. While birth and death registration in developed countries is adequate for estimating population fluctuations and planning, the situation in the majority of power countries is dire [1-5]. According to reports, one (1) out of every three (3) infants out of a total of 40 million births is unregistered [6].

Birth registration is the process of formally documenting a child's birth through a country's official administrative system, which is supervised by a specific government organization [7]. It is the child's permanent and official record of the existence and is crucial to the child's future development. It is also a matter of children's rights and practicalities. Assuring children's citizenship rights enables them to get a passport, establish a bank account, vote, and seek employment. It contributes to the provision of essential services such as immunization, health care, and school enrolment at the proper age. At the moment, millions of Nigerian infants are thought to be unregistered at birth, depriving them of their right to a name and nationality, as well as other basic rights like health care and education.

Civil registrations and censuses are used to gather information on the frequency of occurrence of specific and defined vital events, such as births, deaths, marriages, and divorces, such as birth and death, in addition to pertinent aspects about the events themselves and the person or persons concerned" by the United Nations Statistics Division. This definition can be found on the website of the United Nations Statistics Division. Compilation of statistical data,

processing of those statistics, interpretation of those results, presentation of those results, and distribution of those results are all included in this process. The Vital Statistics System pulls the majority of its information for its analyses from the civil registration system. The constant gathering of information on any and all major occurrences that take place inside the borders of a country is necessary for the process of civil registration. The documentation of a person's death is one of the most important events that may be recorded in a Civil Registration and Vital Statistics (CRVS) System. The documentation of a person's death lays the legal groundwork for the burial or other disposal of dead individuals. The ability to recover inheritance and insurance claims, the capacity to substantiate a claim of death, and the avoidance of issues with law enforcement agents during the transportation of a corpse are additional benefits of death registration.

Problem Statement

Nigeria's mortality rate dropped from 13.5 percent in 2007 to 10 percent in 2017 [8]. Between 2008 and 2017, the WHO's database did not have any information for Nigeria. The country received a score of less than 0.1 on the Vital Statistics Performance Index [1-3] for the period under consideration (out of a possible 1 point). Although Nigeria has the highest rate of unreported births in the world, Lagos has a population of over 21 million people, according to the National Population Commission (NPopC). According to RapidSMS.org, a global birth registration database, Lagos has 1,436,986 (31 percent) unregistered under-fives.

It is possible that the country's overall poor performance is due to the concurrent constitutional and legal tasks of the National Population Commission, the National Identity Management Commission, and the Local Government Authorities.

Aim of the Project

The aim of this study is to design and implement a birth and death registration system.

Objectives of the Project

To achieve this goal, the project will primarily focus on the following objectives:

1. To review the literature on the web-based database to efficiently manage births and deaths processing in Lagos.



2. To design and implement a database system.
3. To test and validate the system.

Project Scope

The project presents the development of an online births and deaths records management system in Lagos state. The system will serve to make information and other computer-based resources available to all the clients, and improve decision-making in the various registration centers in Lagos state.

Project Significance

The significance of this project work is to proffer solutions to current setbacks experienced in the registration of birth and death. The system's practical applications are outlined below:

1. The system offers an alternative that is both technologically and financially practical to the traditional method of maintaining records manually on paper. It effectively cuts down on paperwork time, which translates to improved service.
2. Delivery system: An electronic method reduces paper effort.
3. It facilitates staff information retrieval and offers a backup in the event of data loss.

LITERATURE REVIEW

A population is a distinct group of people, whether it be a nation or a collection of individuals who share a common characteristic. Populations may also refer to groups of people who share a characteristic [4-5]. In the field of statistics, the term "population" refers to the larger group of individuals from whom a statistical sample for an investigation is selected. As a consequence of this, one way to describe a population is as a collection of people who have some characteristics in common. According to [9], Population is the total number of people living in a particular area, city, or country.

National Population Growth Rate

There are several ways to represent the population growth rate (PGR). The most common is to express it as a percentage change in the population of a nation over a period of time, often a year. Typically, the PGR is provided as an annual rate. It illustrates the number of births and deaths as well as the number of persons moving to and from a nation over the course of a certain amount of time [10]. [Note: The rate at which the total number of people in a population increases over the course of time is referred to as the "population growth rate," there are several ways to represent this figure. The term "population growth rate" refers to the pace at which a population grows during a certain amount of time and is frequently represented as a percentage of the entire population at the beginning of the time period. This may be expressed as the formula, which is true over a period of time that is sufficiently brief:

The formula for calculating the rate of population increase is
$$\frac{P(t_2)-P(t_1)}{P(t_1)(t_2-t_1)}$$

When looking at population growth, a positive number indicates that the population is growing, whereas a negative number indicates that the population is shrinking which indicates that the population is decreasing. A growth ratio of zero implies that there was no change in the total number of persons from the beginning to the conclusion of the time period. Even though there are substantial variations between the two time periods in the birth rate, mortality rate, immigration rate, and age distribution, this is still a possibility. The measurement known as the net reproduction rate is analogous to the one being discussed here. If there is no migration taking place, a net reproduction rate that is greater than one is an indication that the female population is expanding. On the other hand, a net reproduction rate that is less than one is an indication that the female population is contracting; this phenomenon is known as sub-replacement fertility. The rate of population growth is largely governed by fertility, mortality, and migration, which are the three most essential variables. These are the three elements that contribute the most to population growth. The National Policy on Population for Sustainable Development (NPPSD) has set the year 2015 as the target date for bringing the annual rate of population increase in the United States down to 2 percent or below. This target was established in order to ensure the nation's continued ability to meet the needs of future generations. The duration of the designated time period has now reached its conclusion. The issue that really matters at this point is whether or not Nigeria was able to accomplish its objective. There are a number of sources that suggest that this target has not been accomplished at this time. For instance, according to estimates provided by the National Institute for Policy and Strategic Studies, NIPSS [11], the rate of population growth in Nigeria was somewhere about 3.2 percent. It went on to say that if the population continues to grow at that pace, it will double in size in just 24 years. This indicates that Nigeria's population is expanding at a rate that is among the highest in the world. In a similar vein, Isiugo-Abanihe [12-15] argued that the rate of the natural expansion of the population of Nigeria is rather large, and experts believe that this is due to historical trends in fertility and mortality rates. According to the National Population Commission and ICP Macro [13], the combination of consistently high fertility rates and typically falling death rates, although at a sluggish pace, has led to a strong population growth rate that is projected to be 3.2 percent annually. According to the Population Reference Bureau, Nigeria's natural rise rate in 2017 was 2.5 percent, and the country's population now sits at 177 million people. If the current pace of population increase in Nigeria is maintained, the country's total population would reach 261.7 million by the middle of the year 2030, and it will



reach 396.5 million by the middle of the year 2050, placing it as the third most populated nation in the world.

Overview of National Population Commission (NPC)

The Federal Government of Nigeria founded the institution that would eventually be known as the National Population Commission (NPC) of Nigeria in the year 1988. As part of the legislative mandate that it is required to carry out, it is tasked with the obligation of collecting, analyzing, and distributing information [16]. The Federal Government of Nigeria formed what is now known as the National Population Commission in 1988. The year 1988 marked the commencement of the commission's operations (NPC). It is charged by the Constitution with the duty of collecting, analyzing, and disseminating data about the population and demographics of the country. In addition to this, it is in charge of conducting demographic sample surveys; collecting, compiling, and disseminating information about migration and civil registration; and keeping an eye on the population policy that the government has in place. The Commission went through a significant transformation in 2011, which included the selection of a Chairman and the recruitment of 37 new members. There is now one member on the Commission representing each of the states as well as the Federal Capital Territory. The Commission is responsible for the upkeep of a network of offices that may be located at all three levels of administration that are present in the United States: the federal level, the state level, and the municipal level (LGAs). According to Zubema [17], it is the job of the Registrar General to carry out the obligations and exercise the authorities that have been given to him in line with the Act. This responsibility falls within the purview of the Act. In addition, the Registrar General has the ability to make any general directions regarding the registration of births and deaths that may be needed for the efficient execution of the Act. These directions may be necessary for a variety of reasons. The Chief Registrars of each state and the Federal Capital Territory (FCT) will report to the Registrar General, and the Registrar General will also receive reports from the Chief Registrars of each state and the FCT. The Registrar General is going to be in charge of overseeing the process of registering births and deaths within the state or the Federal Capital Territory of Abuja that he is assigned to. This is one of the most significant responsibilities that the Registrar General will be accountable for. In addition, a Deputy Chief Registrar will be appointed for each Local Government Area that is a part of a State or for each Area Council that is a part of the Federal Capital Territory of Abuja. These appointments will take place in the coming months. These scheduled meetings are scheduled to take place during the next several weeks. The Deputy Chief Registrar is accountable to both the Registrar-General and the Chief Registrar for the proper execution of the Act within the Local

Government Area or Area Council to which he has been assigned as Deputy Chief Registrar. This responsibility applies to the Local Government Area or Area Council in which the Deputy Chief Registrar was assigned. However, the Deputy Chief Registrar is accountable to the Chief Registrar as well as the Registrar-General for the overarching direction of the organization. Zubema [17] The National Population Commission (NPC) is given the authority to designate registrars under the legislation if it is determined that such individuals are required for the efficient and effective execution of the Act's obligations. In a nutshell, the Vital Registration Program Act creates the roles of Registrar General (Chairman, NPC), Chief Registrars (State Directors), and Deputy Chief Registrars (Comptrollers of LGA), and Registrars. In addition, the Act mandates that all vital records be kept for at least 10 years.

PROBLEMS WITH THE EXISTING SYSTEM

Nigeria currently uses a centralized Civil Registration and Vital Statistics (CRVS) system that has no efficient way of detecting fake birth certificates or birth records that dispute. Due to the numerous birth registration centers with varied certificate looks, textures, and signatures. In Nigeria, it is almost hard to determine whether a birth certificate is forgery or whether a record of birth is inaccurate. This has led to the unfortunate practice of relying on inaccurate statistics for the purpose of allocating national resources, planning, and immigration control.

Birth registration was recognized as a fundamental human right by the United Nations' Council on Human Rights in 2012 [19] [21]. [Suggested Citation: This right, however, enables the Civil Registration to fulfill the need for government data to create public politics [18][20][22] and end extreme poverty in less developed countries, as anticipated by Agenda 2030 for the Sustainable Development [21], thereby providing a legal identity to all entities so that rights, benefits, and opportunities can be attained by all [19].

The significance of a computerized birth record management system in Nigeria cannot be overstated in light of this. Some developing nations, such as India [23] and Bangladesh [24], have already implemented electronic birth record management systems, which have significantly improved their countries' essential demographic statistical archives and effectively checked birth record fraud. Based on information acquired from the present system, it was discovered that the National Population Commission's manual birth and death registration method has a number of flaws below [26-32]:

The system is prone to errors:

This is because there is not a single person on earth who is exempt from the possibility of committing errors. When incorrect information is entered, it is almost certain to have an impact on the overall registration process.

Time-consuming:

It takes a significant amount of time to extract the necessary information from the data that is available.



Changing, modifying, and updating the content in several files is a time-consuming and inefficient operation.

Data Security:

As anyone with access to the system can easily change the information on the A4 sheet, the manual registration process is vulnerable. Unauthorized users can easily access data that has been damaged or lost. Besides, Kingsley [25] contends that major challenges associated with birth and death registration include:

1. The use of vital data for policy choices is underutilized.
2. Access to registration facilities is restricted.
3. To extract the required information from the data that is currently accessible requires a substantial period of time.
4. A substantial amount of time is needed in order to extract the necessary information from the data that is already available.

Record Management System

Online Record Management System

This is a computer application (or a collection of programs) that is used to keep track of and save records. It guarantees that all data generated by the registrar's office is properly categorized, and kept in the repository, and that users can access it when they need it. The system must also be carefully chosen, taking into account the business's needs, the sort of data created, how it will be saved, and how it will be published or shown, as well as the format in which it will be displayed.

Methodology

Research Purpose

The goal of this project is to provide answers to present problems with birth and death registration, resulting in a more effective and efficient data collection, storage, processing, and retrieval system. The adoption of birth and death will increase the efficiency with which births and deaths are processed. The goal of this design is to produce software that can effectively replace all types of paper-based registration methods.

Research Approach

Methodologies combining the qualitative and quantitative approaches were used in the creation of this design. The fundamental distinction between the two is that quantitative research aims to obtain a deeper understanding of a phenomenon or circumstance, whereas qualitative research seeks to give an explanation to a scenario that can be generalized to other individuals and locations.

Requirements Analysis and Specifications

The following are some of the preconditions that must be met before developing a system for the recording of births and deaths:

1. The software comprises a web application that has frontend and backend components that are kept separate.
2. The system should allow hospitals to register.

3. Because Local Government Areas and States are data that will not change for many years, they are hard-coded in the system properties file as part of the system property.

System Design

The design of the system to meet the details stated above is shown in table 3.1 below and the system flowchart is as well shown in

Table 3.1: User Privileges

USER	PRIVILEGES
Hospital	Register as a Hospital under a particular local Government Area.
	Register birth or death cases
	Edit Entries pending approval
	View Entries made by that particular hospital
	Delete Entries pending approval
Local Government Area	Register birth or death cases
	Edit Entries
	View Entries within that particular Local Government Area
	Delete Entries
	Approve & authenticate registered Hospitals
	Delete Registered Hospitals
State Government	View All Entries within that state
	Communicate Instructions to Local Government Areas under it

SYSTEM FLOWCHART

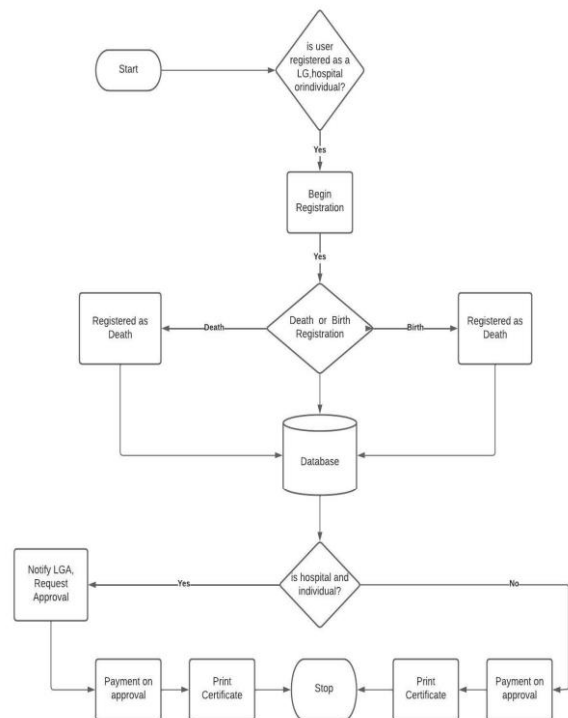


Fig. 3.10. Proposed System Flowchart



**SYSTEM IMPLEMENTATION AND RESULTS
HARDWARE REQUIREMENTS**

The technology is adaptable to a wide variety of mobile phones, among other devices. It is also possible to apply it on any personal computer that has the essential capabilities listed below.

FRONTEND

1. Pentium 4 modified processor.
2. Keyboard
3. Mouse or Track Pad
4. UPS (Uninterrupted power supply)

BACKEND

1. Pentium 4 modified processor (With Virtualization enabled)

2. 4GB RAM (Random Access Memory)

SOFTWARE REQUIREMENT

It is vital to have software in order to allow the physical components to operate successfully. The minimum software requirements for this designed system are:

1. Windows 7 Operating system for personal computers.
2. Android version 4.0 and above for android phones
3. Tablets and i-pads operating systems.

**RESULTS
HOME PAGE**

On this page, you can see the three different ways that birth and death registration information may be entered. In addition to that, it incorporates a statistical analysis of the records included in the database.

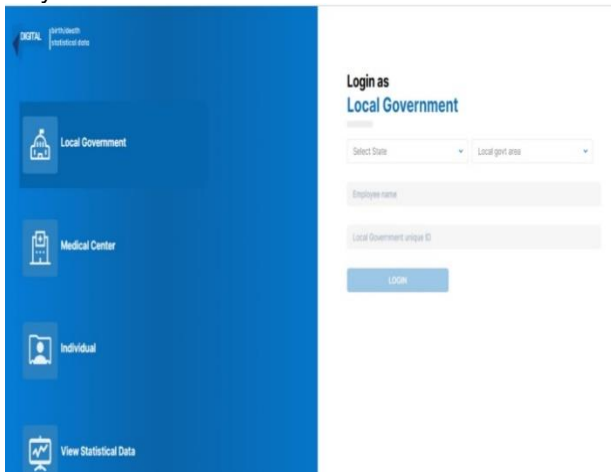


Fig 4.1: Image Description of Homepage

Mortality Dashboard Page

This page presents the statistics picture of the records that are stored in the database. The users alone are responsible for entering the records using the appropriate method of input. The display is something that the system has created.

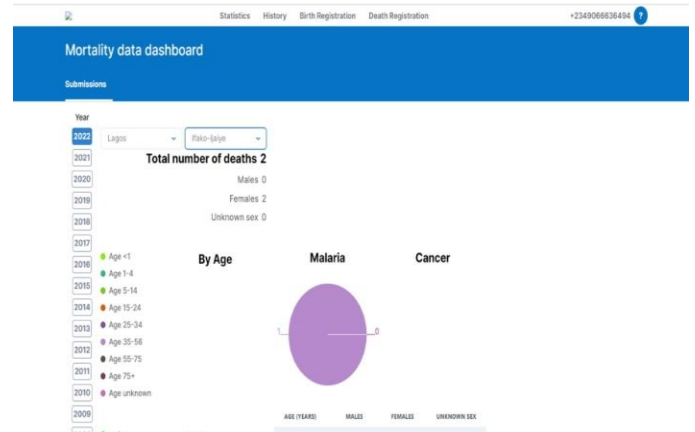


Fig 4.2: Mortality data dashboard image

Birth Registration Page

This shows all the necessary details needed to be filled by users in order to generate necessary results in the database for the birth certificates.

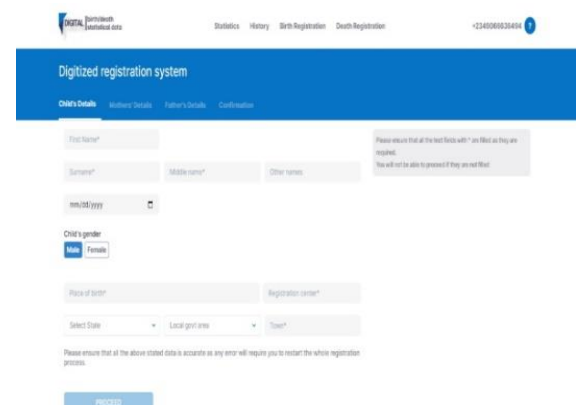


Fig 4.3: Image of the birth registration page

Death Registration Page

This shows all the necessary details needed to be filled by users in order to generate necessary results in the database for death certificate.

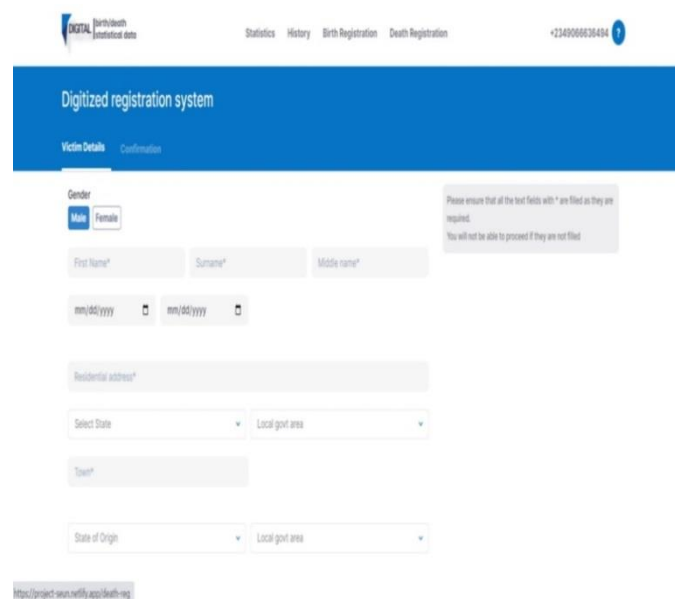


Fig 4.4: Image of the death registration page



Authenticating Unit

This page presents the certificates that have been approved and it is displayed as approved. It shows the certificates that have not been approved and it is displayed as pending.

History

<input type="checkbox"/>	Data/Time	Class	Registrar	Status	Action
<input type="checkbox"/>	Emmanuel Wil Wed May 18 2022	birth	ogolog hospital	pending	Awaiting approval
<input type="checkbox"/>	john Doe Sun Apr 24 2022	death	st teresa	pending	Awaiting approval
<input type="checkbox"/>	Modesty Obrien Fri Apr 15 2022	death		approved	Print Certificate
<input type="checkbox"/>	Kari Landri Fri Apr 15 2022	death		approved	Print Certificate
<input type="checkbox"/>	Alice Nalepka Fri Apr 15 2022	death		approved	Print Certificate
<input type="checkbox"/>	Erica Celinda Fri Apr 15 2022	death		approved	Print Certificate
<input type="checkbox"/>	Moirra Talianian Fri Apr 15 2022	death		approved	Print Certificate
<input type="checkbox"/>	Theda Kalfas Fri Apr 15 2022	death		approved	Print Certificate
<input type="checkbox"/>	Kaitlyn Trey Fri Apr 15 2022	death		approved	Print Certificate

Fig 4.5: Image of the authenticating page

4.4 Payment Interface Screen

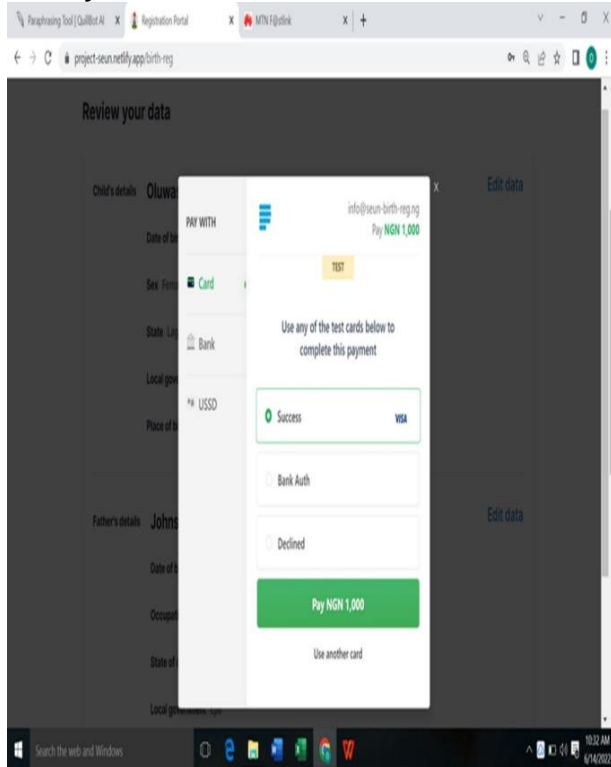


Fig 4.6: Image of the payment interface.

4.5. Birth Certification Page

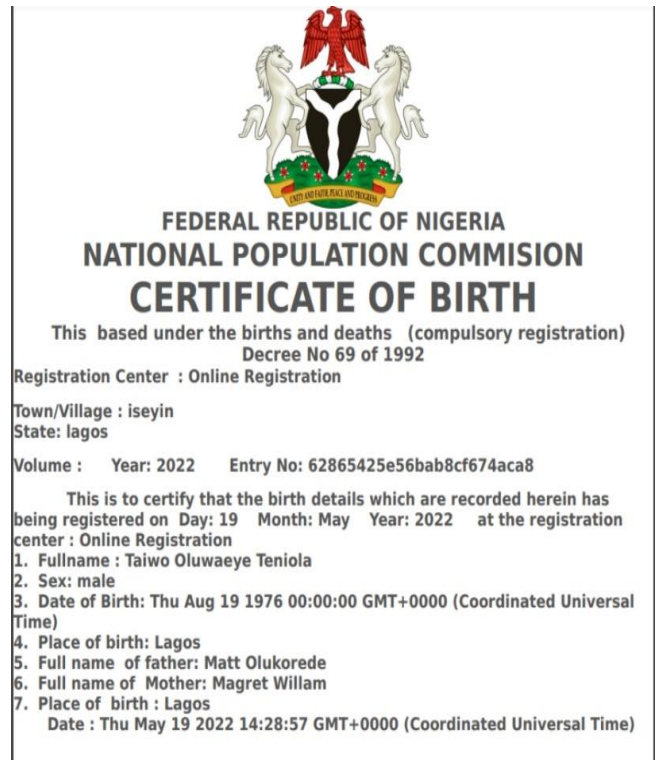


Fig 4.7: Image of the birth certification page

4.6 Death Certification Page

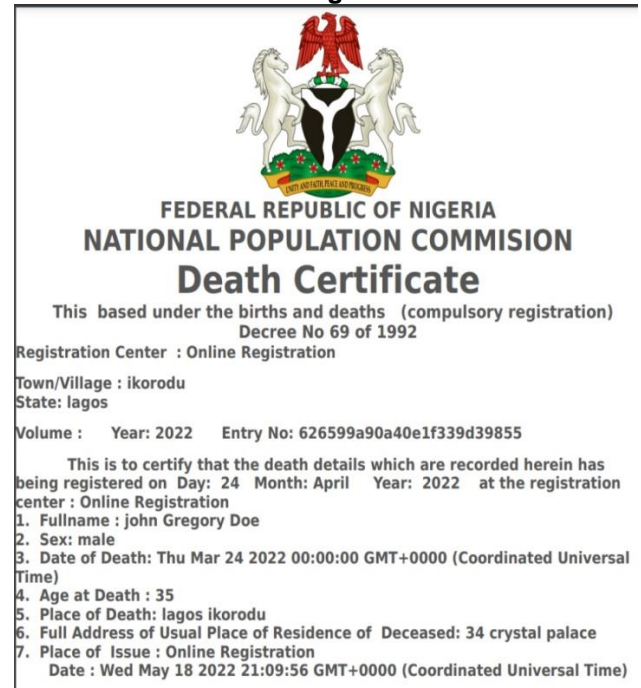


Fig 4.8: Image of the death certification page

CONCLUSION AND RECOMMENDATION

CONCLUSION

When it comes to the advantages of utilizing an online database to register a birth or a death, there is just no way to overstate them. It is impossible to overstate the importance of these advantages. The processing of birth and death certificates will be able to be finished in a way that is both timelier and more



accurate, there will be no cases in which files are lost, and there will be fewer piles of paperwork at government offices. It was determined that the previous strategy was inefficient, and as a response to the discovery that this was the case, a brand-new system was built to address these problems. The importance of having a reliable database in order to get the most value from your application when it comes to processing outcomes. The capability of the product to adjust to upcoming changes in the environment of computers and information processing is a factor that should be taken into consideration just as seriously as the product's potential for monetary success and the extent to which it can perform its intended tasks.

RECOMMENDATION

To have maximum benefits on this System the following are recommended:

1. The Death and Birth Registration System should be developed to work on any platform.
2. This approach was created exclusively for the Local Government Areas of Lagos State. With just a few tweaks, the system might be beneficial in the administration of any other local government.
3. It is essential that a regularly scheduled backup of the database be performed and prioritized.
4. Unauthorized physical and logical access to the database should be strictly disallowed.
5. Training of the members of the staff in the vital registration unit to get accustomed to the system.

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