

# An Improved Online Genotype Registration System

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**Abstract:- The genotype registration system aids in the patient's understanding of his genotype's future trends and behavior, enabling management to make informed decisions. The purpose of the design is to provide rapid access to and retrieval of patient data from hospital data warehouses, hence reducing the amount of time lost on such data retrieval. The data mining tool was also made to find hidden patterns that support managerial decision-making. The analysis of the current system, which served as a blueprint for the design of the suggested system, was conducted using structured system analysis and design methodology. A data warehouse for patient information was created using the PHP programming language and MySQL, allowing for the retrieval of said information as needed.**

## I. INTRODUCTION

Medical diagnosis, which is sometimes just referred to as "diagnosis," describes both the process of trying to identify a potential illness or ailment and the conclusion that is made as a result of this procedure. When used in a diagnostic method, a diagnosis can be seen of as an attempt to divide a person's health into discrete groups so that judgments concerning prognosis and treatment can be made. A diagnostic judgment is therefore frequently explained in terms of a disease or other situations. Wilson (2020).

Clarification of the etiology—that is, the source and origin of the disease or condition of interest—is not always required in the processes of the medical diagnostic system. Such clarification can help to improve the course of treatment, provide more details about the prognosis, or stop the illness or condition from recurring in the future. Interactive computer programs known as clinical decision support systems (or CDSS) are made to help healthcare professionals make decisions. These professionals include doctors, physical therapists, optometrists, dentists, pediatricians, nurse practitioners, and physical assistants. In order to analyze patient data more effectively than either people or software could do on their own, the doctor works with the software, combining their expertise with the program. Donabedian (2020).

Usually, the system provides recommendations for the physician to review. From there, he selects pertinent data and eliminates inaccurate recommendations.

A doctor often uses the patient's clinical history, physical examination, visual evaluation of medical imaging, and laboratory test results to make a diagnosis. In certain instances, confirming the diagnosis might be more challenging since it calls for specific training, experience, or even the use of interventional techniques (such as biopsies). The ability to interpret medical images (such as CT, MRI, ultrasound, and so forth) is typically restricted to radiologists. This is because human search patterns are not systematic, structure noise can obscure normal anatomical background in images, and complex disease states often necessitate the integration of large volumes of clinical and image data. It is anticipated that computer-aided diagnosis, or CAD, will improve doctors' diagnostic skills and shorten the time needed for an accurate diagnosis. CAD is defined as a diagnosis made by a physician who uses the results of a computerized analysis of medical data as a —second opinion in detecting lesions, assessing disease severity, and making diagnostic decisions. The doctor makes the ultimate diagnosis in cases of CAD. Donabedian (2020).

Modern Therapeutic Decision Support (TDS) systems, which use sophisticated simulation techniques and available patient data to improve and individualize patient care, including food, medication, or radiation treatment, are made possible by recent advancements in hardware and software. Bulato (2019).

### ➤ Problems

Physicians' primary responsibilities are genotyping and treating patients. Sometimes a diagnosis is made incorrectly, which results in a genotype result that the patient can change, a prescription for a medication, and further health issues for the patient. Prior to the start of treatment, a significant amount of time is seen to be dedicated to conducting physical examinations and interviews with patients. These issues will be resolved by the clinical decision support system (CDSS), which will efficiently provide high-quality genotyping in real-time.

### ➤ *Research Objective*

The purpose of this research was to develop an improved genotype management system that will act as a gateway for applications to obtain genotype results. The following goals are what the project is attempting to accomplish:

- Examine the specifications of the suggested system.
- To create and design the framework.
- Assess and test the system.

The creation of computer-based systems that assist clinical genetic diagnostic or treatment decisions based on unique patient data has been made possible by this research. Clinical decision support (CDS) systems use mathematical modeling tools and medical data processing techniques to codify and strategically manage biomedical knowledge to address issues in clinical practice. Its significance is further demonstrated by its capacity to: Support genotype diagnosis and simulate the likelihood of different diseases developing or the effectiveness of different treatment approaches. Minimize the possibility of negative drug responses, prescription errors, and hazardous drug interactions. Allow physicians to notify the appropriate authorities about bad medication reactions. Encourage and improved patient care by strengthening the relationship between pharmacists and doctors.

## II. RELEVANT LITERATURES

There have been several studies and publications on the design and implementation of online genotype registration systems.

A web-based genotype registration system for the management of genetic resources in plant breeding programs is presented by Park, J. et al., (2019) The system was created with the help of PHP and MySQL, and it was intended to make it simple for users to upload and download genotype data in different formats, as well as search and browse it. According to the authors, the system successfully increased the accuracy and efficiency of genotype data handling and gave researchers and plant breeders a helpful tool.

Liu, (2017) study, which details the creation and application of a cloud-based genotype registration system for livestock breeding, is another such. Breeders, researchers, and regulatory bodies are among the several stakeholders who can share and manage genetic data thanks to the system's design. The system, according to the authors, was able to increase the precision and effectiveness of genotype data management and offered a helpful forum for cooperation amongst various stakeholders.

(Chitkara2018), which details the creation of a mobile-based genotype registration system for smallholder farmers in South Korea, and (Bartnager2016), which offers a genotype registration system for smallholder farmers in China. In order to better manage and use genetic resources in agriculture, both

studies showed the potential advantages of employing online genotype registration systems.

(Hudson 2017) states that a growing number of repeatable relationships with complex illness features are being found using genome-wide scans of nucleotide variation in human individuals. Together, the majority of the variations found have negligible effects and contribute very little to the total genetic variance. It takes extremely large sample sizes to find and confirm findings. In this case, even minor sources of systematic or random error have the potential to skew results or mask important effects.

Increasingly more genetic markers are becoming available for use in parentage assignment and relatedness assessments thanks to molecular technology (Bertrand, 2020). We introduce Kinship, a tool that uses single-locus codominant genetic markers to test for any non-inbred pedigree relationship between pairs of people using likelihood approaches. Kinship computes probability ratios for each pair of hypotheses as well as the likelihood that every pair of individuals in a data set is linked by a certain pedigree hypothesis. Additionally, a simulation routine is used by the program to give its output statistical significance.

To summarize, extant research indicates that online genotype registration systems have the potential to serve as useful instruments for enhancing the efficacy and precision of genotype data administration, as well as to promote cooperation and resource exchange among diverse stakeholders. To completely comprehend the difficulties and constraints of these systems, however, and to determine the optimal approaches for their development and application, more study is necessary. Warren, (2016)

## III. METHODOLOGY

At the early stage of the research , secondary source of data is best option as it allows one to dig into the pool of information available (both online and offline) in order to have a 360<sup>o</sup> view of the related literatures from the broader down to the narrower perspectives.

The primary source of data is found handy later in the implementation stage of the research, as it provides the opportunity to collect the data necessary for the proposed application.

In this research, both the two methods are applied due the nature of the research and the data required.

The improved system were tested using PHP Development Environment, HTML MySQL and CSS as the development tools.

The paper “An Improved Genotype Registration” System built on PHP, HTML CSS and MYSQL technology provides an interface to the users so that they can easily provide the necessary information required.

The online genotype registration system's architectural design and implementation identify subsystems and provide a framework for subsystem communication and control. The design is offered because employing fine components improves main ability and using large-grain components improves performance.

The main goal of the new system is to create an interactive website for users; another unique feature of the suggested system is its user-friendliness. The benefit of the suggested system is a decrease in stress because it will grant the Administrator authorization to register, traverse the website, and access it. Other officials will also be able to use the newly created system to browse the website and find out what services are offered.

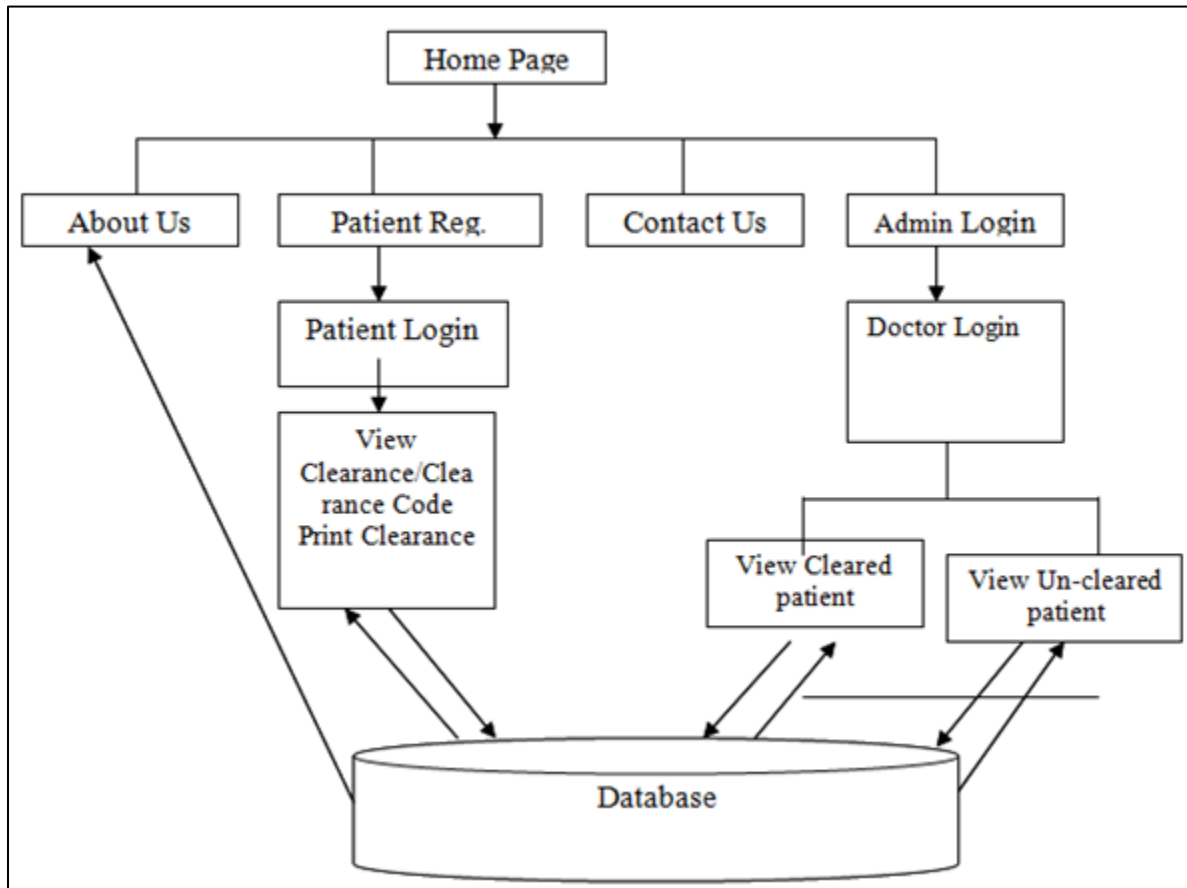


Fig 1: Structure of the Proposed System

**IV. RESULT ANALYSIS**

The final stage of software development, known as the implementation phase, is when a system or piece of software is actually put into use. Using a selected programming language, the software is actually coded during this step. The design document, which was also a direct translation of the user demands and the system need into a developer-friendly document, is the only source from which the coding or implementation can be done.

The operating system or device that the software will run on determines which programming language should be used. Several programming languages must be used while developing web applications, some for the system's functionality and others for the interface design. As previously mentioned, Microsoft Access and Visual Basic were utilized to create the system.

This application is made up of multiple pages, each of which serves a certain purpose. The many modules and pages of the system are depicted in the following Figures. A synopsis of each figure's components and functions appears before it.

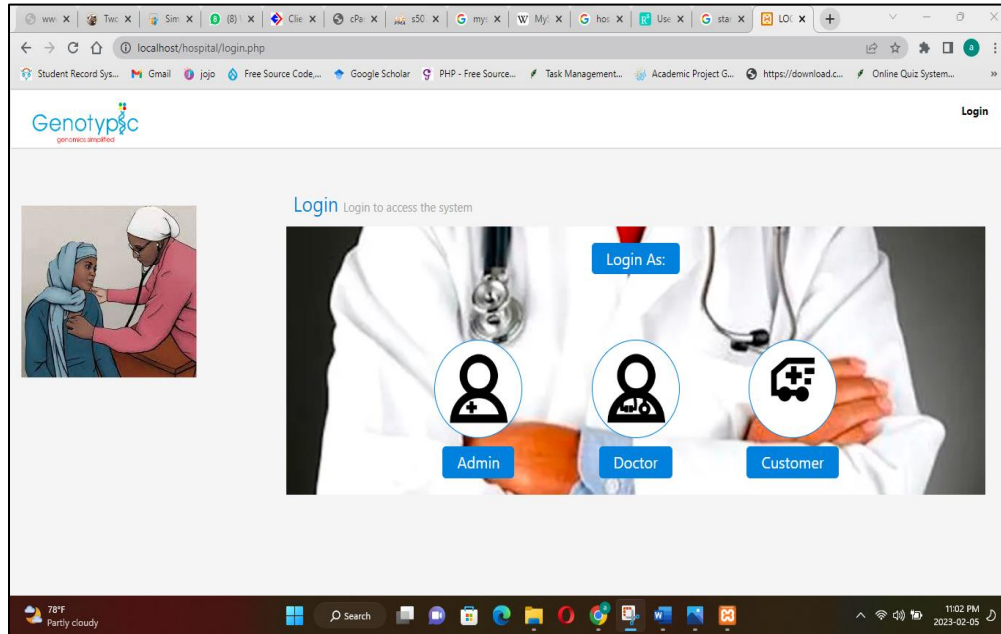


Fig 2: Home Page

The above is the home page where admin, doctor and customer can login to the system.

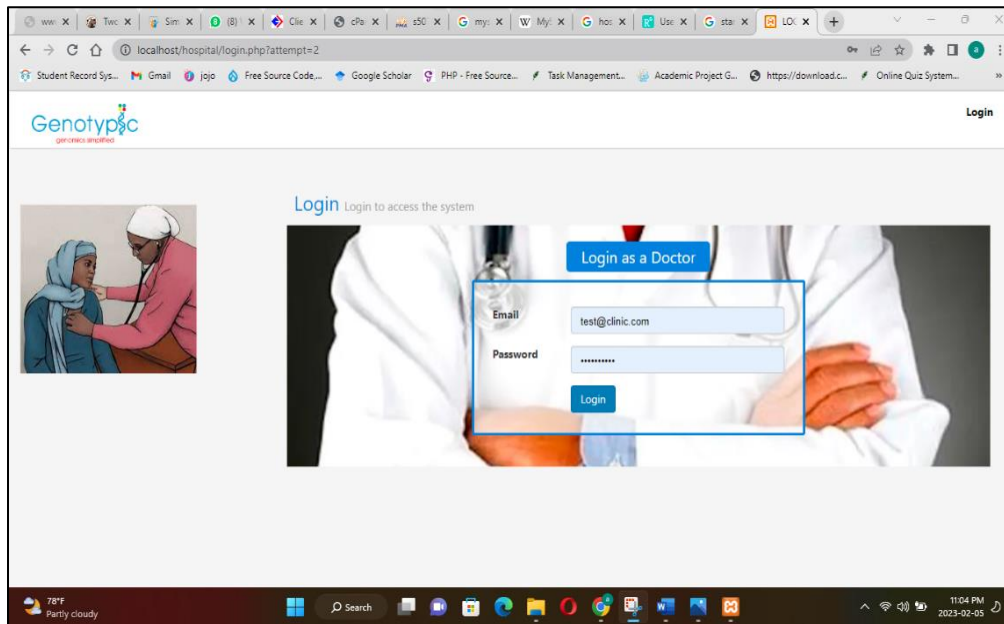


Fig 3:Login Page

This page represents the login page which is generally the main page and it may also serve as a landing page to attract user.

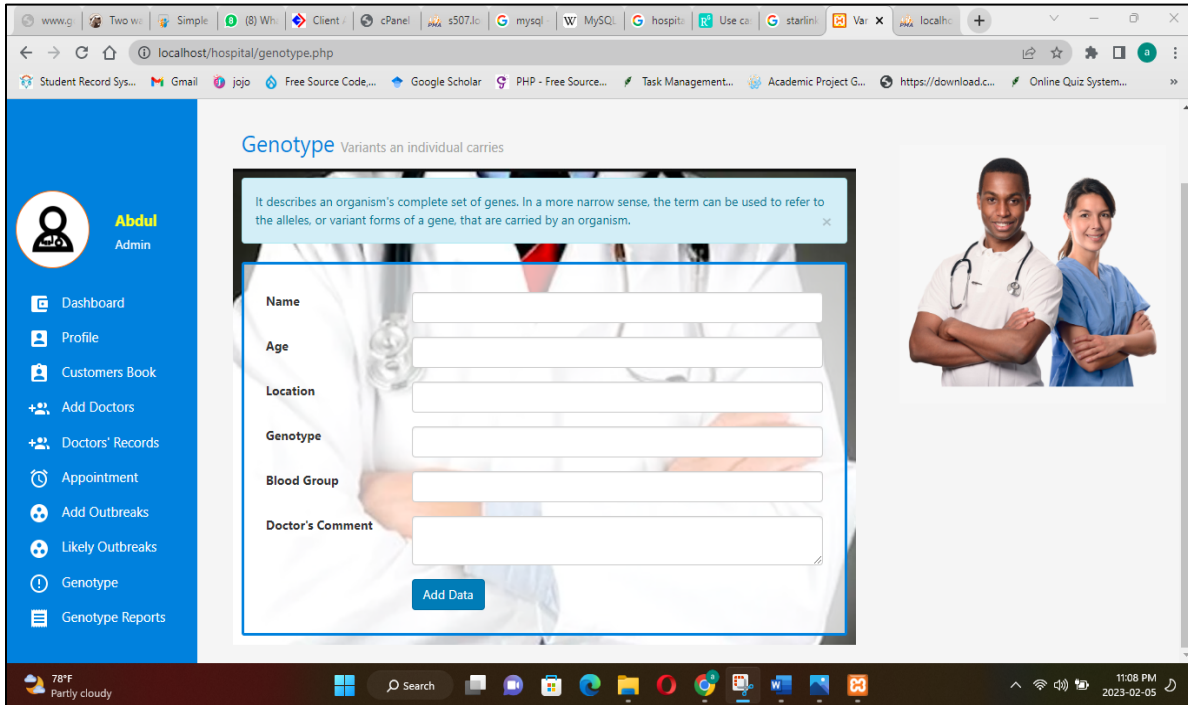


Fig 4: Doctor's Page

This figure shows where doctor can add customer genotype result from the system

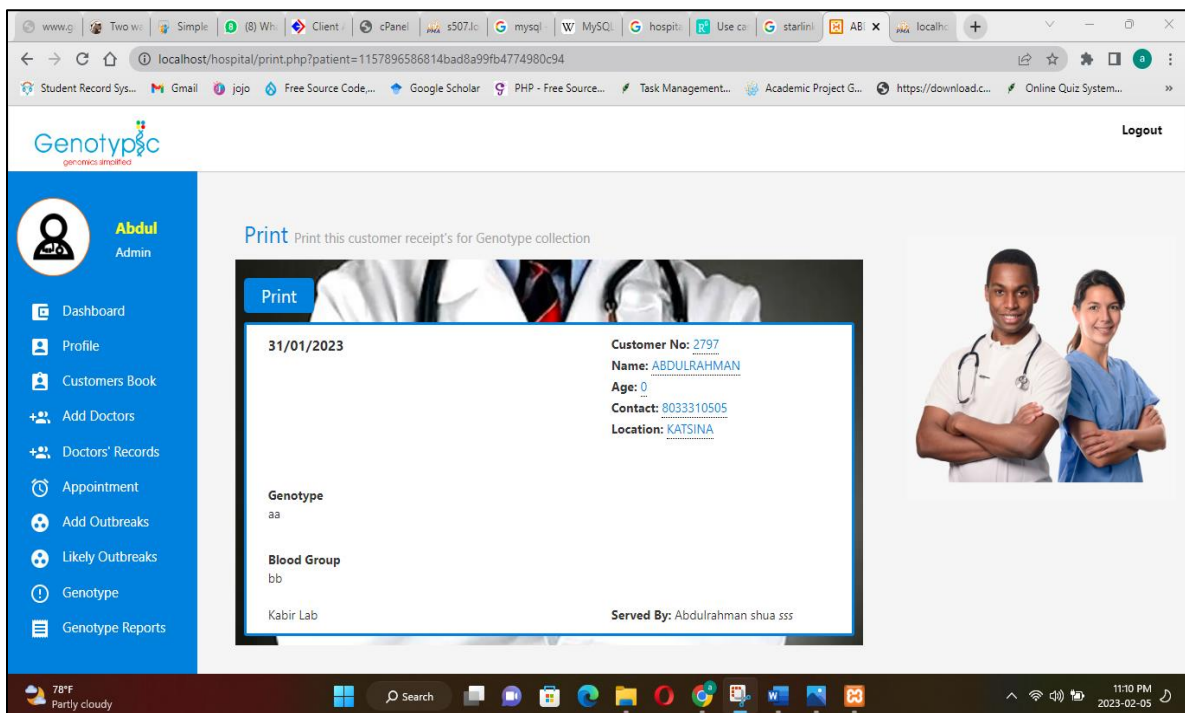


Fig 5:User Page

This figure shows the user page describes where user can print his genotype result registered from the system.

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> appointment	★ Browse Structure Search Insert Empty Drop	4	InnoDB	latin1_swedish_ci	16 KiB	-
<input type="checkbox"/> hiv	★ Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16 KiB	-
<input type="checkbox"/> outbreaks	★ Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16 KiB	-
<input type="checkbox"/> patients	★ Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
<input type="checkbox"/> users	★ Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
5 tables	Sum	10	InnoDB	latin1_swedish_ci	80 KiB	0 B

Check all      With selected:

Fig 6: Database

This figure shows the records of customers who registered their genotype online using the system.

## V. CONCLUSION

It has been discovered that genotype systems are highly helpful in the technologically driven world of today. When an expert's knowledge is retrieved and preserved, it can be utilized to take their place in the event of their death. Genetic systems has enormous benefits for the medical profession. Realizing that while medical specialists cannot meet the needs of every member of the public, their expertise can be duplicated and applied in dire situations.

Since requirements evolve along with business, the system has been designed to be flexible enough to adapt to new needs as they arise. However, it is adaptable to any health organization. This is due to the undeniable fact that a computerized health management system would improve the efficiency and precision of the patient records that the healthcare company maintains.

## FUTURE WORK

The new system can be uses to only register genotype, several diseases exist nowadays, however the system can be extended to carry out examination on the patients.

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