

HEALTH INFORMATION SYSTEM EFFECTIVELY COMBINING WITH MEDICAL AID SYSTEM TO IM- PROVE SOUTH-AFRICAN MEDICAL SERVICES (MZANZI-MED)

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Abstract

Health care is a vital aspect of human existence and it is vital to the progress of south Africa as a nation, this is because many South Africans depend on medical aid systems, which help to pay medical bills in times of emergency. These Medical Aid cards are shown to doctors on request, so that the patients are not requested to pay cash, since the medical aid will cover the cost. To ensure that the doctors or health representatives are sure that the patient is on the medical aid, we have developed a system that will assist the medical doctors verify that the patient is on the medical aid system, and will also assist the doctor with the patient's medical history.

Introduction

Health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease [1]. It can also be defined as the complete state of the human body in respect to all variants such as disease and physical inadequacies. Medical aid schemes help reduce the cost of medical treatment, these medical aid schemes include Momentum health, GEMS and Bonitas[10]. These medical aid schemes have helped patients at different stages of treatment and it all depends on how much medical aid cover an individual has been approved for. The unique advantages of the medical aid schemes include easy access to the best private hospitals, helps pay for surgeries and dental work, helps to pay for any emergencies and unexpected medical costs[10].

South Africa is one of the world populous country and has encouraged its people to use medical aids at all times, it is a criteria for international students studying in south Africa to have or be registered to a medical aid scheme[17].

Health Information Systems (HIS) have progressed since 1984, [2, 3] it has moved from paper based society to computer based society, changed from institutional based global and regional based, recognition of patients and health product consumers as part of the HIS body, data retrieved from

patients are now being used for analysis and forecasting for the future [4], and lastly the ever increasing impact of technology in health care.

The major aim or importance of HIS is to provide efficient, effective and high level patient care and also the major participant in HIS is the patient , all other participants are secondary participants such as doctor, nurse, administrator[5,6]. Healthcare services that are availed to everyone independent of time and location are known as ubiquitous healthcare. Ubiquitous healthcare systems holds the potential of maintaining wellness, disease management, support for independent living, prevention and prompt treatment, along with emergency intervention anytime and anywhere as and when needed [7,8]. Moreover, technologies that provide ubiquitous healthcare services will be assimilated seamlessly in our daily lives such that they become invisible [9].

HIS has been able to help manufacturers produce 10 percent of HIS equipments and increase the gross domestic product, and 5percent of ICT equipments. These ICT equipments have reduced the number of ultrasound scanners that are needed for extra medical investigation since the HIS can easily answer the questions which the doctor needs to know.

The web application is wide province wide initiative designed to improve access to patient information through a central electronic web application. Mzansi med's goal is to streamline Patient information flow and accessibility for doctors and other health care providers these changes in service will improve patient care quality and patient safety over time .the hospital software is easy to use and eliminates error cause by hand writing, the new technology system gives perfect performance to pull up information from the server it's also efficient and accurate administration of finance and distribution of medical aid. Risk that that might occur network connectivity invested.

This paper aims to introduce a new HIS which works hand in hand with the medical aid system. The rest of the paper comprises of related work in section 2, methodology in section 3, while results are in section 4 and section 5 comprises conclusion and further work.

Related Work

In healthcare, various information systems have being proposed and developed in an attempt to reduce healthcare costs and ensure better service provisioning by and at healthcare centers. [11] carried out a study identifying the importance of operable information systems in the healthcare sector. Their study proposed a healthcare information system framework to manage voluminous complex medical data. The software exchange system operating on the framework was designed based on an adaptable standard to provide a solution to interoperability in healthcare systems and improve quality of care of patient. In a broad survey article, [12] looked into the emerging trends in Healthcare Information Systems focusing on the use of analytics techniques to cluster patients into similar groups, or to process streaming data for detecting abnormal medical conditions as early as possible. Their study aimed to bypass several architectural challenges in healthcare systems and provide support for “big-data” handling. Using data mining techniques [13] proposed a Potentially Preventive acute health Events (PPE) system integrated with Electronic Healthcare Records (EHR) for the diagnosis of Ambulatory Care Sensitive Conditions (ACSCs) with the aim of determining and reducing medical costs and developing clinical decision support system.

In a more recent study on the importance of Healthcare Information Systems, [14] carried out a theoretical approach using interviews and surveys on the private hospitals. The study provides detailed insights for system developers and hospital managers to implement effective Healthcare Information Systems.[15] presented a study showing the relationship between information quality and healthcare quality. Their study provided a way to effectively use information on patient’s health to provide better and cost effective healthcare.

With the recent advancements in telemedicine/Healthcare Information Systems, [16] improved on existing healthcare systems by developing and implementing a service oriented healthcare system that seamlessly integrates various heterogeneous systems and medical data for preventive healthcare. Their system was aimed to provide variety of healthcare services at affordable costs.

This current study improves on these existing healthcare information systems, by linking the medical aid system to the HIS. This combination gives the doctor or health practitioner the opportunity to know what finances are available for the patient and helps the doctors to easily get the patients medical history.

Methodology

The evolved system was designed using Dreamweaver and the database was designed using mysql server. The pseudo-code of the system is as follows:

Given a patient x

[1] X logs into the online HIS (by providing his name and Identification number)

[2] X User name is verified and send to the medical aid system (Y)

[3] Y Checks if X is a member, if X is not a member Y tells X to pay cash

[4] If X is a member Y furthermore checks what type of member X is

[5]Once Y confirms the type of membership X has,

[6] Y Provides the doctor with the limit of services that can be provided, and provides advice to the doctor.

The pseudo-code is furthermore explained in the flowchart in figure 3.1.

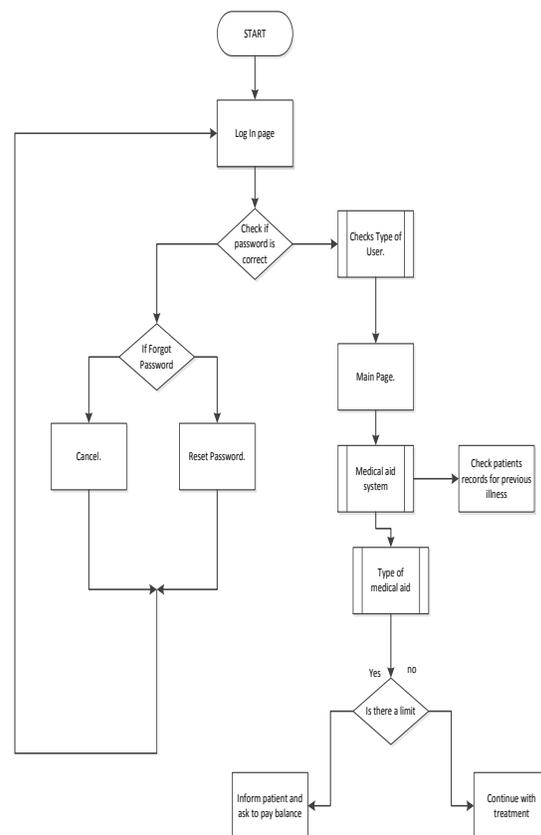


Figure 3.1: Flow chart of expert health care system

Results

The results from the developed system can be seen in the figures below:



Figure 4. 1 Login In Page

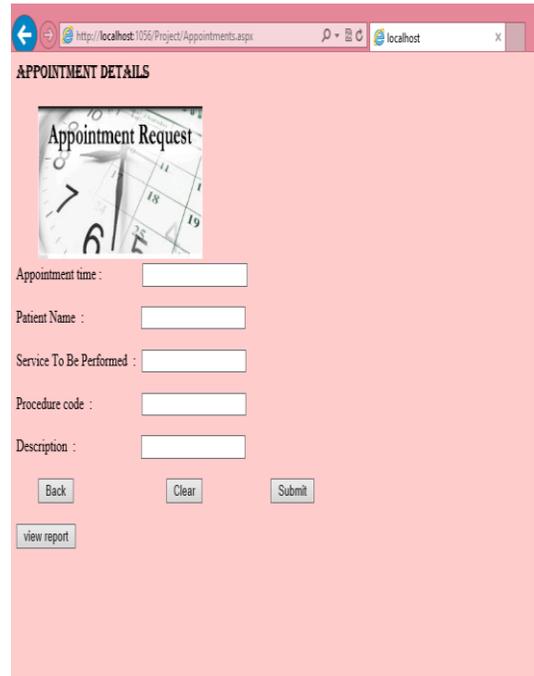


Figure 4.3. APPONTMENT DETAILS

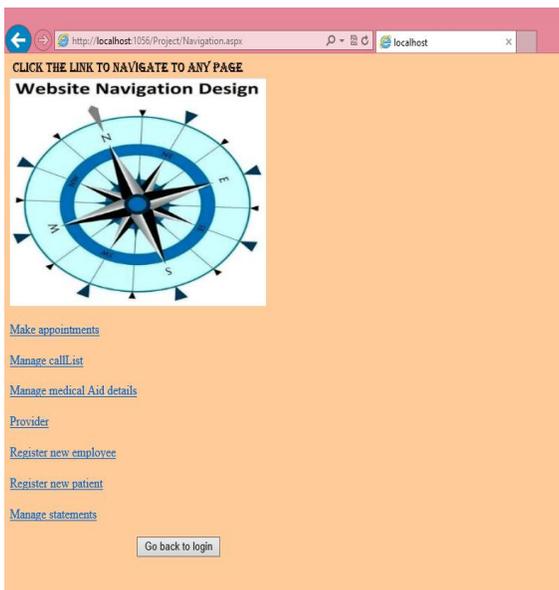


Figure 4. 2. Mzansi med naviagtion

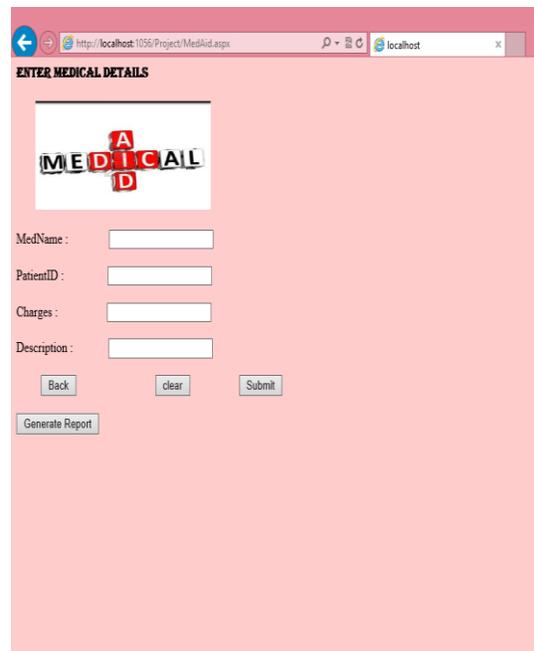


Figure 4.4.MEDICAL AID DETAILS



Conclusion and Future Work

This study has successfully developed a HIS system that can work with the medical aid systems, which will assist doctors to confirm that patients are truly members of the medical aid and help get report of medical history of the patient, and furthermore prevent the hospital from running at a loss due to bills not being paid. There are still aspects of the study that need improvement such as can we successfully integrate a video conference system into the developed HIS to enable the doctors to discuss with the medical aids and previous doctors who have treated the patients.

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Biographies

RANDLE .O.A received the B.S. degree in Computer Science from Covenant University in Nigeria, in 2002, an M-tech in Information Networks from the Tshwane University of Technology ,Pretoria ,South-Africa, in 2012, Currently, He (She) is undertaking his Doctorate degree. His teaching and research areas include social networks, machine learning, game playing, e-learning.