



Essential Smart Health Care Application for Post Covid(Hospital Management System)

Yadav Rahul Awadhnath, K Razan, Aseel Abdul Razack and
V Manesh

EasyChair preprints are intended for rapid dissemination of research results and are integrated with the rest of EasyChair.

May 1, 2022

ESSENTIAL SMART HEALTH CARE APPLICATION FOR POST COVID(HOSPITAL MANAGEMENT SYSTEM)

Yadav Rahul Awadhnath - Student
School of Computer Science & IT
JAIN(Deemed-to-be) University
Bengaluru,Karnataka,India
rahulbro113@gmail.com

Razan K - Student
School of Computer Science & IT
JAIN(Deemed-to-be) University
Bengaluru,Karnataka,India

Aseel Abdul Razack - Student
School of Computer Science & IT
JAIN(Deemed-to-be) University
Bengaluru,Karnataka,India

Dr.Mahesh V - Assistant Professor
School of Computer Science & IT
JAIN(Deemed-to-be) University
Bengaluru,Karnataka,India
mahesh92411@gmail.com

Abstract—Hospital management system is to initialize the front office management of a hospital to develop a software which is user friendly, simple,fast and cost-effective.the data are well protected for personal use and makes the data processing very fast.This paper addresses that particular region and paves a way for the creation of a software that helps to an easy transition from paperwork to e-papers. The paper describes an idea of such a web-based platform that eliminates the need of paper prescriptions in the Hospitals that proposes E-Medical Management which will increase the efficiency of patient management, schedule management of the doctors and give universal access to the patient data anywhere in the hospital.

1.INTRODUCTION

As we have many industries turning towards the digital front, it could be a very great move for the legacy and necessary industry such as Hospitals to move towards that direction. The current existing module is efficient but when the time is not a constraint. We can not have this system when each and every second matters. This system should include many features in the online front that include the patients records including his disease history and reports.This field had witnessed a rapid transfiguration in all of its sections.Hospital management system is designed to improve the quality and management of hospitals in the areas of clinical progress analysis and activity based-costing Problem.hospital management system enables you to develop your organization and improve its effectiveness and quality of work.Managing the key processes efficiently is critical to the success of the hospital that helps you to manage your processes.Above mentioned data can be accessed by the respective doctor from anywhere around the globe. The storage of all these details would be done by setting up a database server. If a patient is admitted to the hospital, all the vital details would be updated for the

doctors to check it online. They can even give online prescriptions directly to the pharmacy specific to a particular patient with their patient id. Every person who visits the website can register themselves as a patient and get an unique Patient ID that is referred to in all the future transactions. Apatient can take the appointments online and know the availability of the doctor.Now-a-days each and every individual is bound to have a smart device that connects him to the world of the internet and that's when the speed of data transfer or data availability comes into picture. This digital approach would help many people who are in need of medical services for small inconveniences and are unable to travel for the necessary medical treatment.

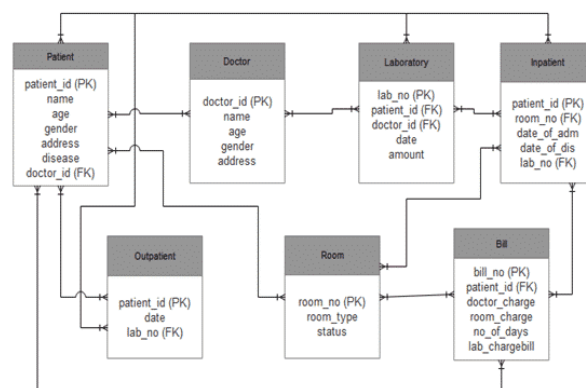


Figure 1.Use Case Diagram

2.LITERATURE SURVEY

This chapter is on the related literature of the study and tries to place the study into its theoretical framework. It explores fields of related theories of the study which will serve as the basis for monitoring patients and their records.

There is a lot of similar software in the market, for example hospital management systems which also function the same

but it is very complex to use and requires a degree of training and expertise before one can use it. With the PATIENT MONITORING SYSTEM, everything is flexible and more user friendly with a high level of security with different levels of authentication.

a) "A hospital resource and patient management system based on real-time data capture and intelligent decision making" Author: Musa, A. Lancashire Bus. Sch., Univ. of Central Lancashire, Preston, UK Yusuf, Y, Meckel.M. Systems and Informatics , 2012 International Conference

One of the major challenges existing hospital management systems face is around operational efficiency and wait times between different processes, departments and persons. This paper highlights such limitations of existing systems and proposes a RFID and wireless sensor based , location and information management framework that facilitates real time tracking of hospital assets, personnel and patients as they move through pre-set procedures as part of daily activities of the hospitals. The International Journal for Research in Engineering Application & Management ISSN : 2494-9150 Vol-01, Issue 11, FEB 2016. INJRV01I11006 www.ijream.org © 2016, IJREAM All Rights Reserved. 2 system covers the visual simulation and provides ability to analyze the ongoing operations so they can be corrected to achieve increased process efficiency and service levels.

b) "Study on information systems of healthcare services management in hospitals" Author: Daiping Hu, Antai Sch. of Manage., Shanghai Jiaotong Univ., China Weiguo Xu ; Huizhang Shen ; Mengyu Li. Services Systems and Services Management, 2005. Proceedings of ICSSSM '05. 2005 International Conference

This paper reviews the Hospital Information Systems which are widely used in many hospitals in China mainly to provide easier and faster way for daily medical tasks /activities with a GUI And provides for overcoming some of the limitations of HIS , eg. HIS aims at improving quality of health care services but do not have way of evaluating /measuring those. So this paper proposes a Hospital Services Management System which aims at improving quality of services, identifying cost reduction areas , analyses and evaluate /rate health care services . The ability to evaluate the services facilitates hospital achieve higher Customer satisfaction scores and get a competitive edge against those hospitals which score less or use HIS and do not have ways of promoting the quality of their services

. c) "Specification of a Reference Model for the Domain Layer of a Hospital Information System" Author: Gudrun Hübner-Blodera , Elske Ammenwertha , Birgit Brigl b , Alfred Winter b a Institute for Health Information Systems,UMIT – University for Health Sciences, Medical Informatics and Technology, Hall in Tirol, Austria b Institute for Medical Informatics, Statistics and Epidemiology, University of Leipzig, Germany, ENMI, 2005.

Many enterprise projects get scrapped due to high costs involved in the initial planning requirement gathering and design phase. The costs in this phase become unmanageable due to a lot of unknown factors. Like lack of Subject area expertise, lack of knowledge on different Hospital enterprise functions 1) Patient admission 2) Patient Treatment planning 3) Order Entry 4) execution of diagnostic and treatment procedures 5) administrative documentation 6) billing 7) Clinical documentation 8) discharge and 9) referral to specialized medical institutions, lack of knowledge /experience on the entities types involved , their roles and responsibilities and the relationships /associations between different enterprise function and /or entity types. This paper aims at creating a reference data model that will serve as a generic starting point for any new HIS development projects so costs involved in studying and analyzing current state and coming up with gaps analysis and additional requirements can be significantly reduced. The model is Hierarchical in nature that is it is divided into 3 levels of sub models and units so a choice for full or partial implementation can be offered based on the requirements.

d) "Developing Effective Hospital Management Information Systems: A Technology Ecosystem Perspective". DATE OF SUBMISSION: 5 October 2014 PREPARED BY: Dr Christopher Bain MBBS, Master Info. Tech Student No: 10054499

The author of this paper focuses more on the needs of hospital managers and the ecosystem in which he/she operates. The internal and external Environment shaping factors ESFs that bear an impact or association on daily hospital activities and decision making process that the hospital manager has to go through in each situation. Some of the challenges that this ecosystem needs to work on are high demand pressure, greater customer satisfaction level and low profit margins. This paper more so contributes to Planning, Design and development aspects of any Hospital management system by highlighting ESFs that should be considered. The external and internal factors the author mentions are: The public at large, Law and policy makers, Funders, International Journal for Research in Engineering Application & Management ISSN : 2494-9150 Vol-01, Issue 11, FEB 2016. INJRV01I11006 www.ijream.org © 2016, IJREAM All Rights Reserved. 3 Medical suppliers, the biggest of which are pharmaceutical companies, the scientific community, and the software development community. Internal influencer authors can obviously also be at play in terms of what services are provided by the hospital and how they are provided. These can include: the skills and experience of staff, internal business strategies such as competition and subsidization, Soft factors such as morale and culture, Equipment availability.

3. OBJECTIVE

The primary objective of this project is to define, implement and build a system which offers support for the hospital management, that can be fulfilled only through achieving the secondary objectives that will be presented next. One of the objectives of this project is to enhance the efficiency in

usage, that is measured through the expressivity and the consistency of the graphical user interface. A user is considered to be efficient when using a system if the time necessary to execute a certain task decreases with each usage. Another objective is to create a system that allows further improvements, extensions of the current functionality. The system should be able to offer the opportunity to manage patient details, doctor's details, schedule appointments, view prescriptions, order medicines online and make online payments.

4. SCOPE OF HOSPITAL MANAGEMENT

All this work is done manually by the receptionist and other operational staff and a lot of papers are needed to be handled and taken care of. Doctors have to remember various medicines available for diagnosis and sometimes miss better alternatives as they can't remember them at that time.

Hospitals and healthcare centers have undergone a change for its betterment. The administrations of the healthcare sector are opting IT solutions for better management and patient care in their hospital campus. Have a look at some salient features of hospital management software.

The modules of hospital management software are user-friendly and easy to access. It has a common user-friendly interface having several modules. The officials can utilize these modules in their processes without any hassle and make the best possible use of the hospital management system.

This tool is a comprehensive solution that integrates all the departments by creating a common platform. In brief, the hospital management system has all the modules that serve the purpose of all the departments of healthcare institutes. In fact, these modules have been competitively designed to make all the operations simplified.

5. DRAWBACKS OF HOSPITAL MANAGEMENT

The hospital management system is generally related to security. It is considered to be a matter of concern in case you go online without enough protection which can create some big problems related to security.

Another greatest problem that is associated with the healthcare industry is the data breach. Not only that, but it is also known to be a sophisticated problem.

Lack of employment is another such thing. The chances of employment usually become less with the automation of the system. Also, the gradual need for manual data drafting becomes an irrelevant aspect.

Therefore, the overall procedure of the software implementation is considered to be a difficult task. Another difficulty faced is associated with the process of getting training properly.

Not only that, but it also becomes integral to learn almost everything related to the maximum utilization of the

software. Apart from the integration of the software for your organizational need, it is integral to ensure that the employees are trained well.

6. FEASIBILITY

A. Feasibility Study

The feasibility of the project is analyzed in this phase and the business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are:

B. Economic Feasibility

This study is carried out to check the economic impact the system will have on the organization. The amount of funds that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products have to be purchased.

C. Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are needed for the implementing this system.

D. Operational Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

7. METHODOLOGY

Hospital Management System is a web application for the hospital which manages doctors and patients. We use PHP and MySQL databases.

The entire project mainly consists of 3 modules, which are

- Admin module
- User module
- Doctor module

A. Admin module

1. Dashboard: In this section, admin can view the Patients, Doctors, Appointments and New queries.
2. Doctors: In this section, admin can add doctor's specialization and manage doctors (Add/Update).
3. Users: In this section, the admin can view users' details(who take online appointments) and also have the right to delete irrelevant users.
4. Patients: In this section, admin can view patient's details.
5. Appointment History: In this section, admin can view appointment history.
6. Contact us Queries: In this section, admin can view queries which are sent by users.
7. Doctor Session Logs: In this section, admin can see login and logout time of doctor.
8. User Session Logs: In this section, admin can see login and logout time of the user.
9. Reports: In this section, admin can view reports of patients in particular periods.
10. Patient Search: In this section, admin can search patients with the help of patient name and mobile number.
11. Admin can also change his/her own password.

B. User module (patient)

1. Dashboard: In this section, patients can view his/her profile, Appointments and Book Appointment.
2. Book Appointment: In this section, Patient can book his/her appointment.
3. Appointment History: In this section, Patients can see his/her own appointment history.
4. Medical History: In this section, Patients can see his/her own appointment history.
5. User can update his/her profile, change the password and recover the password.

C. Doctor module

1. Dashboard: In this section, a doctor can view his/her own profile and online appointments.
2. Appointment History: In this section, the Doctor can see the patient's appointment history.
3. Patients: In this section, doctors can manage patients (Add/Update).
4. Search: In this section, doctors can search patients with the help of patient name and mobile number.

Doctor can also update his profile, change the password and recover the password.

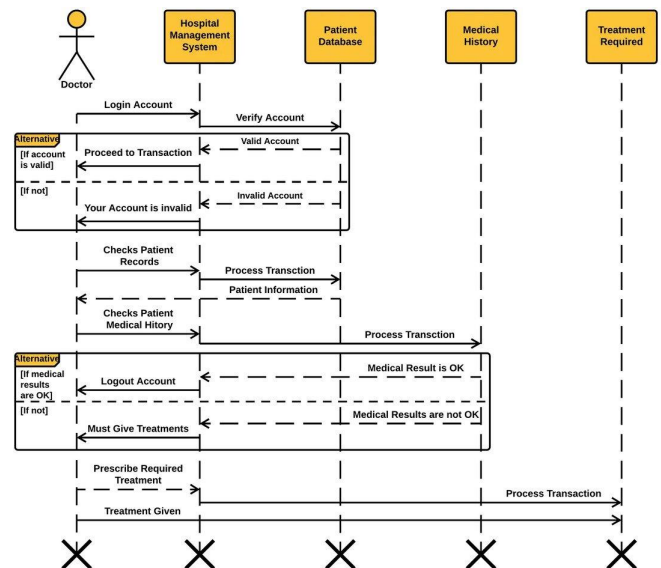


Figure 2. Class Diagram

CONCLUSION

Since we are entering details of the patients electronically in the "Hospital Management System", data will be secured. Using this application we can retrieve a patient's history with a single click. Thus processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed.

Hospital Management System is essential for maintaining detail about the Doctor, Patient, Hospital staff etc. We understand that by using the Hospital Management System project The work became very busy and we saved a lot of time. This would enable it to improve the response to the demands of patient care because it automates the process of collecting, collating and retrieving patient information. Accounting sometimes becomes fully pathetic and complex. This product will eliminate such complexity

FUTURE ADDITION

Some basic algorithms like ID3 have been used for the allotment of Doctors and prediction of disease. Further some complex algorithms can be used to improve the performance of the system.

REFERENCES

- [1] Z. Liu, "Design and Implementation of Hospital Emergency Nursing Information Management System," 2016 International Conference on Smart City and Systems Engineering (ICSCSE), Hunan, 2016, pp. 218-221.
- [2] GB. Koyuncu and H. Koyuncu, "Intelligent Hospital Management System (IHMS)," 2015 International Conference on Computational Intelligence and Communication Networks (CICN), Jabalpur, 2015, pp. 1602-1604.
- [3] Healthcare management system and domain search of nearest Medical services by Ruchi Dumbre, Purva Raut, Bhagyashree

mahamuni, Priyanka Khose, Prof.Jagruti Wagh. IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 3 Issue 3, March 2016

[4] HOSPITAL MANAGEMENT SYSTEM by Digvijay H. Gadhari, Yadnyesh P. Kadam, Prof. Parineeta Suman Department of Computer Engineering, Saraswati College of Engineering, Kharghar, Mumbai, Maharashtra, India. International Journal for Research in Engineering Application & Management 2016

[5] “Quality of information management and efficiency of Hospital employees” by SpamastMalita, Iteit.Hospital Management 10.13140/RG.2.2.16459.28966

[6] Olusanya Olamide.O, Elegbede Adedayo. W and Ogunseye Abiodun. A, “Design and Implementation of Hospital Management System Using Java”. IOSR Journal of Mobile Computing & Application eISSN: 2394-0050, P-ISSN: 2394-0042.Volume 2, Issue 1. PP 32-36

[7] “Advanced Hospital Database Management System” by Gunjan Yadav, Parth Lad , Parul Pandey Tejaswi Kolla. International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 4, April 2016. Design and Implementation of Hospital Management System

[8] “Design and Implementation of Hospital Management System” by Adebisi O.A, Oladosu D.A, Busari O.A and Oyewola Y.V Department of Computer Engineering Technology, the Polytechnic, Ibadan. International Journal of Engineering and Innovative Technology Volume 5, Issue 1, July 2015

[9] Kumar, Prem & Kosalram, Kalpana.E – Hospital Management & Hospital Information Systems – Changing Trends. International Journal of Information Engineering and Electronic Business. 1. 50-58. 10.5815/ijieeb.2013.01.06.

[10] Herbert Scheldt, Java Complete Reference, Fifth Edition, Tata McGraw Hill Edition.

[11] Phil Hanna, JSP 2.0: The Complete Reference, Tata McGraw Hill Edition, 2003.

[12] Elmasri and Navathe, Fundamentals of Database System, Addison Wesley.

[13] Ian Sommerville, Software Engineering, Third Edition, Pearson Education.

[14] Ali Bahrami, Object-Oriented System Development, Third Edition, Tata McGraw Hill Edition.

[15] Ivan Bayross, SQL, PL/SQL programming language of Oracle, Second Edition, BPB Publication.