Cloud as a SaaS Based Hospital Management System

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Abstract- In this paper, cloud as a SaaS based web application is developed that is used to manage the patient information. This website eliminate the problem of time wastage for storing and retrieving the information in the traditional hospital system. The languages used to implement that system are Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and Hypertext Preprocessors (PHP) as a front end. For this website we used cloud as a back-end. This website is maintain the information of Shree Ganesh Dental Clinic.

***Index Terms*— HMS – Hospital Management System, Cloud Computing, Web application, PHP, Computerized.**

I. INTRODUCTION

Hospital is deals with life and health of Patient. The system designed to help to manage the various aspects of a HMS that enables access to the right information at a right time to right people. A HMS is a computer or web based system that facilitates the managing the functioning of the hospital. The main purpose of our project is provide friendliness with user interactive GUI and give appropriate information to help us. HMS web application is powerful, flexible and easy to use and is designed and developed to deliver real benefits to hospitals. This application is designed for multispecialty hospitals, to provide a wide range of hospital administration and management processes. It is a specially designed end-to-end HMS that provides relevant information across the hospital to support the effective decision making for patient care, hospital administration in a same flow. For designing purpose we have used PHP and Html with CSS and Java-Script. For the database designing we have used cloud computing environment. Cloud computing allows us to create, configure and customize the application online. In that project we used cloud as a SaaS service. In traditional HMS is not Computerized System. In traditional HMS system, every time patient have to visit the hospital to take doctor's appointment and wait for few hours in queue. But in computerized system, Patient can take the appointment online. By this computerized web application will reduce the long waiting queue of patient. In traditional system it was difficult to maintain the patient reports, treatments by manually with handling lots of documents. It is very time consuming task also data redundancy may be generate. But in the current computerized system, paperwork can be reduced by paperless work. All the history related to patient, treatment details will be easily available for user through this web application.

II. RELATED WORK

1. "Design and Implementation of Hospital Management System" (IJEIT) by Adebisi O. A. etal. [1]

Used to manage patient information and its administration. Eliminated the problem of inappropriate data keeping, inaccurate reports, time wastage in storing, processing and retrieving information encountered by the traditional hospital system. The tools used to implement that system are Hypertext Mark-up Language (HTML), Cascading Style Sheets (CSS), Hypertext Pre-Processor (PHP) and My Structured Query Language (MySQL).

2. "Design and Implementation of Hospital Management System Using Java" (IOSR-JMCA) by Olusanya Olamide. O etal. [2]

This research work is on design and construction of Hospital Management System (HMS). The system uses JAVA as the front-end software which is an Object Oriented Programming language.

3. "Hospital-Pharmacy Management System: A UAE Case Study" (IJCE) by D. Ahmed etal. [3]

The system has a mobile application for visiting patients to, mainly, keep track of their prescriptions and access to their personal information. The server side allows doctors to submit the prescriptions online to pharmacists who will process them. This system is expected to reduce the long waiting queues of patients and increase their satisfaction while also reducing doctors pharmacists stress and facilitating their work. It will be deployed to users of Android devices only.

III. PROBLEM STATEMENT

Develop a web application on hospital management system using cloud.

IV. OBJECTIVES

- Paperless HMS.
- Patients will be able to contact or chat with doctor for 24 hours about their health problems and doctor will give advices and prescriptions to patient through this HMS web application.
- To maintain the record of patients details like all kinds of Treatments, Patient reports, X-ray.
- To simplifies the task.
- It is user-friendly system which do not require any special training or expertise of computer.
- To works more efficient and faster so it require less time.
- To keeps information about various treatments and medicines available to cure them.

V. TECHNOLOGIES USED

This HMS is designed by using web application. In this concept we discuss about what technology is most useful for our project which is develop and improve high quality of application. For the front end purpose we used languages as HTML, PHP with CSS and JavaScript. For the backend purpose we used database connectivity in wamp server with cloud computing environment.

Overview of Front-End Technology:-

PHP: PHP stands for "Hypertext Pre-Processor". It is widely used, open source scripting language. PHP Scripts are executed on the server. It is a free to download and use. PHP files can contain text, HTML, CSS, JavaScript and PHP code. This code are executed on the server and result is returned to the browser. It can generate dynamic page content. PHP can add, delete and modify data in the database. PHP can restrict users to access some pages on the website also it can encrypt data. PHP is platform independent. It is compatible with almost all servers which are using in today's worlds such as (Apache, IIS etc.). It supports a wide range of database.

HTML: HTML stands for Hypertext Mark-up language which is used to create webpages. HTML is written in the form of Html elements such as different tags. HTML is used to define the content of web pages.

CSS: It is a style sheet language used for describing the look and formatting of a document written in mark-up language. CSS is used to specify the layout of web pages.

JAVASCRIPT: JavaScript is the Scripting language of the web. All modern Html pages are using JavaScript. JavaScript code can be inserted into any Html pages and it can be executed by all type of web browsers. JavaScript is used to specify the behavior of web pages.

Overview of Back-End Technology:-

For the back-end purpose, we used cloud as a SaaS service.

Cloud Computing:

Cloud Computing provides us means of accessing the applications as utilities over the Internet. It allows us to create, configure, and customize the applications online. The term Cloud refers to a Network or Internet. In other words we can say that Cloud is something, which is present at remote location. Cloud can provide services over public and private networks, i.e., WAN, LAN or VPN. Applications such as e-mail, web conferencing, customer relationship management (CRM) execute on cloud. Cloud Computing refers to manipulating, configuring, and accessing the hardware and software resources remotely.

Cloud computing is based on service models. These are categorized into three basic service models which are-

- Infrastructure-as-a-Service (IaaS)
- Platform-as-a-Service (PaaS)
- Software-as-a-Service (SaaS)

We are using the SaaS i.e. Software-as-a-Service. SaaS model allows to use software applications as a service to end-users. It refers to a software that is deployed on a host service and accessible via Internet.

- **Characteristics of SaaS Service Model:-**

1. SaaS makes the s/w available over the internet.
2. They are available on demand.
3. SaaS applications are cost-effective since they do not require any maintenance at end user side.
4. They are automatically upgraded and updated.
5. SaaS offers shared data model. Therefore, multiple users can share single instance of infrastructure.
6. All users run the same version of the software.

VI. PROJECT MODULE/ METHODOLOGY

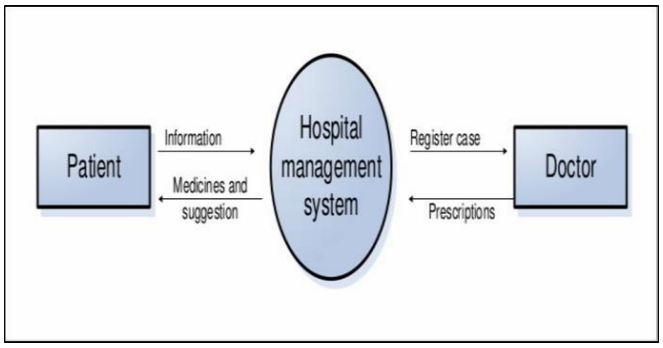

Fig: Hospital Management System

In our project, there are four modules presents:

- Registration
- Patient Record
- Doctor Record
- X-ray

Registration:

For every system registration is very important. In our project after successfully completion of account creation, the User ID (in the form of User Aadhar card no.) and random password will be provides to the user through Mobile-SMS in order to login to the System. The user database and records are maintained by the system. Patient can take appointments by E-Registration. A Unique User ID will be provides to each patient. By using this unique User ID we will maintain the Patient details.

Patient Record:

New patients can be registered in the system. An electronic medical record system is in-built which stores all the basic and medical details of the patient in a website. An old patient can also book appointment through this. The system maintains a detail record of each patient who will be admitted to the hospital. Patient will be able to view his information and treatment details online by logging on to the system on the internet which will be great help to patient.

Doctor Record:

This section includes to record the details of the doctor. Doctor can add the medicine and treatment details of every patient so that patient can easily view details of medicine and treatments.

X-ray:

All the data is fed in the system, one can retrieve and review the past X-ray reports of the patients anytime. When the doctor advises an x-ray report to patient the same is updated in the HMS and directly received by the patient.

VII. EXECUTION

In our HMS Project, we implemented the website of Shree Ganesh Dental Clinic.

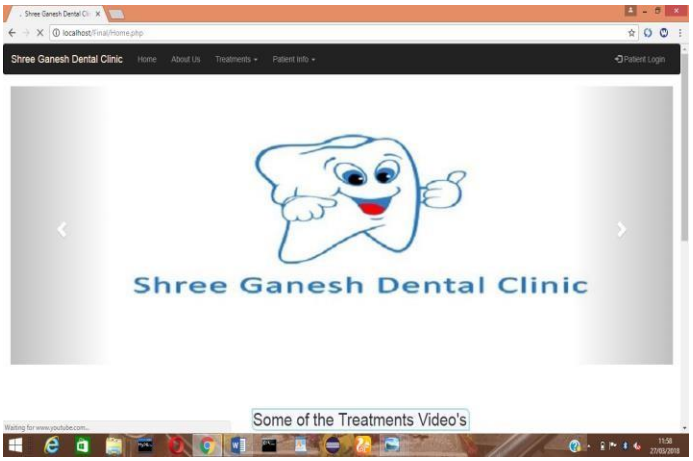

Fig: Home Page

Home Page:

This is the Home page of our website. By using this page we can visit in various menus like About us, Treatments and Patient Info. In About us menu contain dental clinic information. In treatment menu contains different treatments which are available in that dental clinic. In Patient Info. contain post operative instructions and FAQ's.

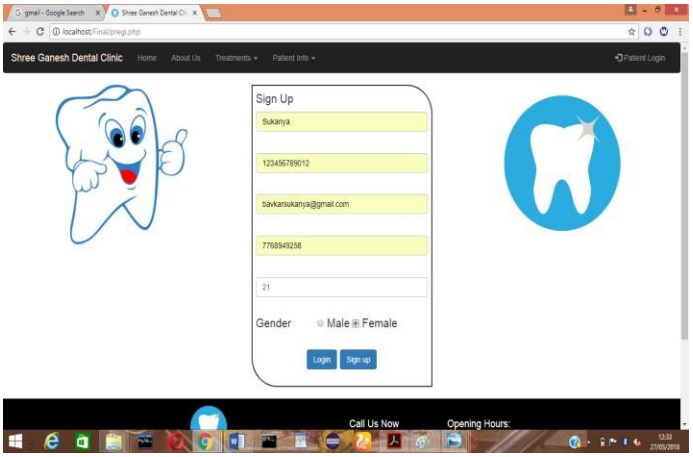

Fig (a): Sign-Up Page

Sign-Up Page:

This is the Sign-Up Page of our dental clinic website. In that contains fields like Patient Name, Aadhar ID, Email Address, Mobile No. , Age and Gender. By using this Sign-Up Page we will login that website. For Sign-Up that website Aadhar ID of Patient is required.

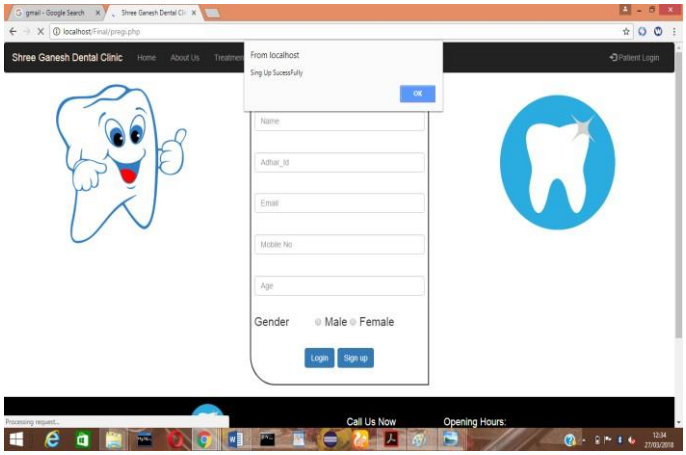

Fig (b): Sign-Up Page

After filling the Sign-Up information, This window will be shown. When Sign-Up is successful, then message will be send to patient's mobile. In that message contain, User ID and Password. User ID is the Patient Aadhar ID and Password will be generates randomly. This User ID and Password is required to login that system.

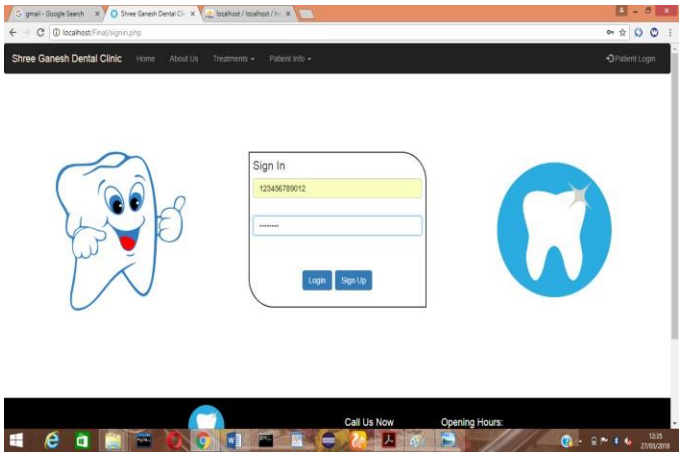

Fig: Sign-In Page

Sign-In Page:

By using this page we can login that dental clinic website. For Sign-In the system, User ID and Password is required which is sent to Patient's Mobile No.

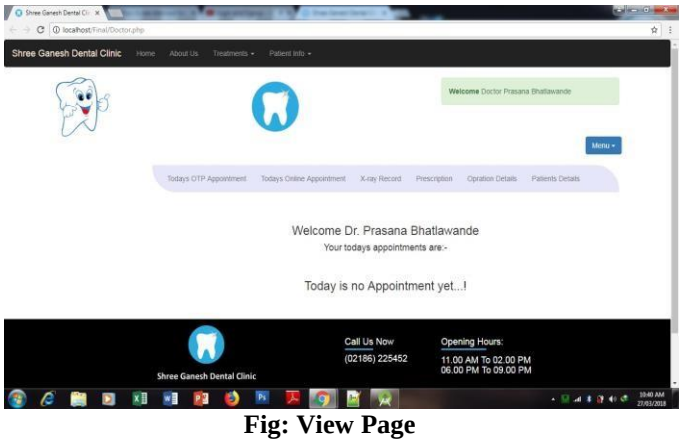

Fig: View Page

View Page:

By using this page, Doctor can view the details of patient. In that details contain appointment details, X-ray record, Prescription details etc. of patient.

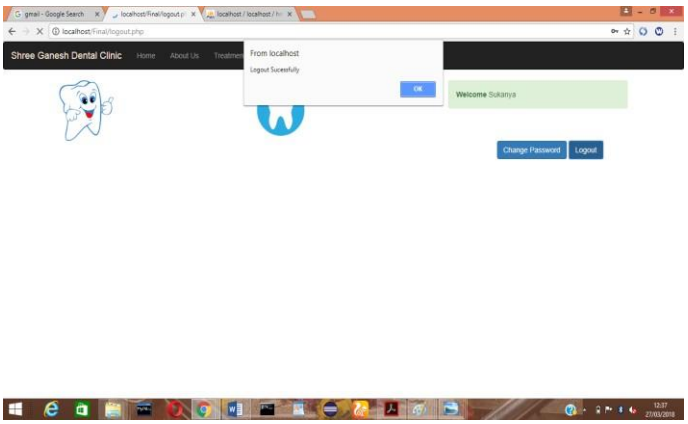

Fig: Logout Page

Logout Page:

By using this page, we will logout that website. When logout that system then Logout successful this message will appears.

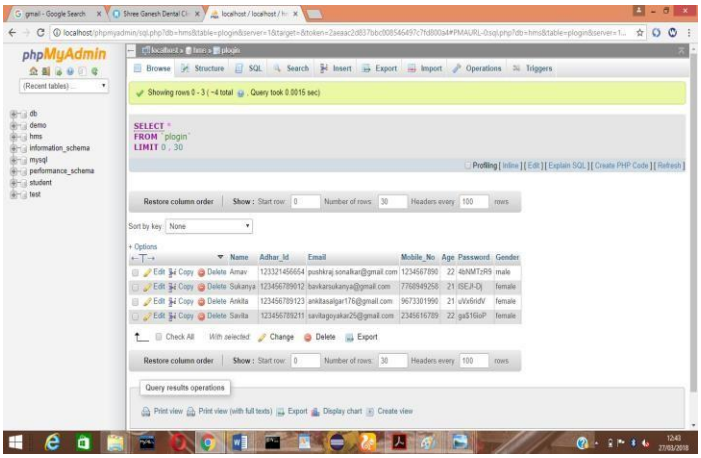

Fig: LoginDb Page

LoginDb Page:

This is the database of our website which is created in Wamp Server. In that database stores the patient login data.

VIII. RESULT AND ANALYSIS

Thus it can be summarized that, we developed web application which overcome the problems of patient long time waiting queue, Data redundancy due to inappropriate information of patient history. Also data can be stored securely and sequential format.

IX. CONCLUSION

In that project we are entering details of the patients electronically in the "Hospital Management System website" so that Computerized HMS has been developed. That computerized system solved the problems which are associated with the existing manual system. Security is also enhanced through authentication to access the. By this project long waiting queue of patient for doctor appointment will be reduced. Every patient data will be aailable at any time & data will be secure. Using this application we will retrieve patient's history. Thus processing information will be faster. It easily reduces the book keeping task by giving the paperless solution and thus reduces the human effort and increases accuracy speed.

ACKNOWLEDGMENT

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