"Implementation of Information Kiosk for BARC Hospital"

Project Report

Submitted in partial fulfillment of the requirements for the degree of

Bachelor of Engineering

by

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CERTIFICATE

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This is to certify that the project entitled *Implementation of Information Kiosk for BARC Hospital* is a bonafide work of **Kadam Pooja Laxman Lilavati**(11CO01),**Mishra Preeti Ravindra Vimla**(11CO02) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering** in **Department of Computer Engineering**.

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Project Approval for Bachelor of Engineering

This project entitled *Implementation of Information Kiosk for BARC Hospital* by *Kadam Pooja Laxman Lilavati,Mishra Preeti Ravindra Vimla*is approved for the degree of *Bachelor of Engineering in Department of Computer Engineering.*

Examiners

1. ....
2. ....

Supervisors

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2. ....

Chairman

....

Declaration

We declare that this written submission represents our ideas in our own words and where others ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Kadam Pooja Laxman Lilavati(11CO01)

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Abstract

Tittle: Implementation of Information Kiosk for BARC Hospital

Kiosk has been part of human life for many years and centuries. Technology impacted kiosk to be operated independently to serve mankind. In modern world, kiosk is not just a computer with a touch screen enclosed in a box but is an integration of Mechanical, Computer Hardware, Software, Peripherals and Embedded Controllers and to build it requires high order domain expertise and intellectual power. The aim of the hospital Kiosk project is to pave the way for more advanced hospital services applications with user interface. We have attempted to quantify the benefit to both patients and professional users by introducing a self-service kiosks. We then estimated the time savings and other benefits. There were significant time savings both for nursing, General Practioner (GP) staff and similar time savings for patients. The key to successful implementation appears to be strong support, particularly from reception staff to encourage and facilitate the use of kiosks. This paper is used to guide technical audiences who want to develop kiosk systems, organizations willing to start sale through kiosks and functional beginners who want to possess basic knowledge of the kiosk systems. In IT world it is a common scenario where client provides business objectives and high level requirement to build the complete system and they are not in a position to provide all the details of the system one is expecting to be developed.

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Keywords And Glossary

Keywords :

ATM(Automated Teller Machine),Cater,Cognitive Impairments,Diagnostic, Embedded,Kiosk, Multilingual,Navigate,Peripherals,Pertinent,Pervasive,Spirometers,Telemedicine,To pave the way

Glossary :

A

ATM(Automated Teller Machine): An electronic banking outlet, which allows customers to complete basic transactions without the aid of a branch representative or teller

C

Cater: Provide with what is needed or required

Cognitive Impairments : When a person has trouble remembering, learning new things, concentrating, or making decisions that affect their everyday life intuitive

D

Diagnostic: The art or practice of medical diagnosis

E

Embedded : Fixed into the surface of something

K

Kiosk : A small open-fronted hut or cubicle from which newspa- pers, refreshments, tickets, etc. are sold.of and at the same rate as the depiction

N

Navigate : To make or find a course or way

P

Peripherals: On or near an edge or constituting an outer boundary

Pertinent : Having precise or logical relevance to the matter at hand

Pervasive: Spreading widely throughout an area or a group of people

S

Spirometers : An instrument for measuring the air capacity of the lungs

T

Telemedicine : The remote diagnosis and treatment of patients by means of telecommunications technology

To pave the way : To prepare or make easier

Chapter 1

Project Overview

1.1 Introduction

Information display kiosks are useful in libraries, galleries, museums, educational institutions, municipal offices, visitor information booths, conferences, shopping malls, airports - in short any location where simple, easy access to information is desirable. Kiosks are normally set up with touch screens or pointing devices such as trackballs to allow people to select and view information that is attractively displayed and up to date.

There are many ways to create kiosks, from expensive solutions based on proprietary software to HTML-based open-source solutions. Browser-based technologies are particularly attractive because they are inherently multimedia offering text, graphics, sound and streaming media and the content is highly portable.

Self-service kiosk (Information Kiosk) deployment in hospital has gained a big attraction due to the importance of the information existing on the kiosk as well as ease of use. KIOSK physical prototype is to be designed with user friendly interface which can benefit visitors or patients.Moreover,this kiosk should be designed to cater for those with limited skills or experience,physical and congnitive impairements,also the interface should be intuitive,clear and pretty.Users must be able to get the information within a minutes without the knowledge of others and wastage of time;in a queue waiting for administration to answer their queries.Hospitals justify the implementation of kiosk primarily as a means to improve the patient service and not strictly as a cost-saving measure.The experiences of leading organizations have shown that kiosk can increase patient satisfaction by reducing waiting times and offering greater convien.nce privacy.

1.1.1 Motivation

An automated self-service information sysytem KIOSK which will not only be used by patients but visitors can also utilize the services. The complex layout of the building where working

employees waste their time in stance of hospital for basic queries, small check-ups, getting appointments after long duration etc encouraged us to design a system which can overcome all these problems for the convenience of patients and visitors. Emergency Services is also one of the factor that has been included because patients are likely to shift to other departments in hospitals for treatment.

1.1.2 Advantages Over Current System

The proposed solution has the following advantages compared to other approaches that currently exist for providing ubiquitous health-care:

a. Kiosk helps in finding vital information related to hospital so that information can be easily found by patients or visitors.

b. Easy to use, friendly interface with multi-lingual using local language for each place.

c. No long queues or waiting for small checkups.

d. Economically viable for suppliers and within reach of most users.

e. Hygienic and safe equipped with high precision and quality devices.

f. The user who has already logged into Kiosk (like in an ATM) is given his summary report and is offered either preliminary solution or recommended to nearest specialty hospitals if need to be, and his record is updated with the new diagnosis and recommendations.

1.2 Proposed System Architecture

Every software has a model. Before the implementation of software, architecture is drawn in the form of a flowchart or in the form of any diagram so that it becomes easy for anyone to understand the flow of the process thus helping for easier implementation of the software. The architecture not only helps the developer of that software but also helps the end user to understand the flow of the process. Therefore an software architecture helps the developer for easier understanding of the project as well as easier implementation. The client interacts with the developer team so that the client can make them understand what kind of software do they want and the way it should work. So on the basis of this, the team of developer come together and discuss about how the software would be implemented i.e. all the process from starting till the ending would be drawn in the form of diagrams which would help them further in the implementation and completion of the project. If they explain the client the flow of the software through these diagrams, then it would also help the client to understand the way in which the software would work. If any changes are to be made, then the client could also ask the developer to make the required changes.

This system architecture is a three- tier architecture which has been designed in MVC based pattern. For implementing user interfaces, a software architectural pattern is required. A given software application is divided by MVC into three inter connected parts, to separate internal representations of information from the user in a three-tier architecture. Traditionally it is used for desktop graphical user interfaces for designing web application; this architecture has become extremely popular. The webserver, application server, authentication server and the database are main components in this architecture.

Below is the proposed software architecture for our project:
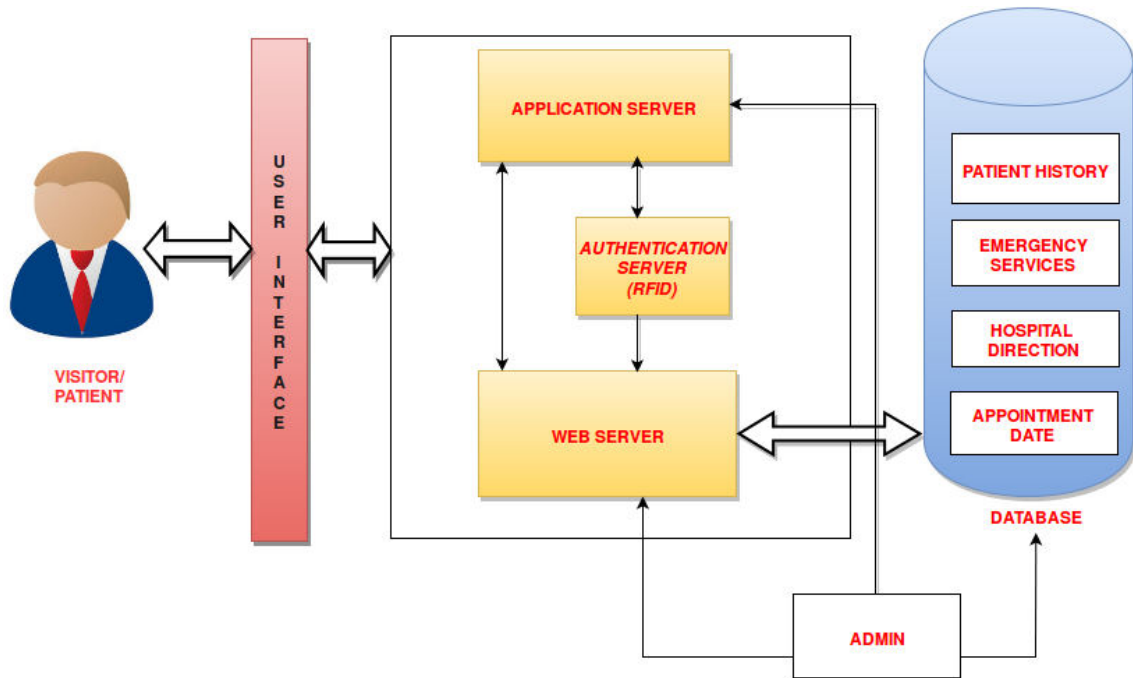
Figure 1.1: System Architecture

1.2.1 Formulation of Problem With using Technology

- **EXISTING SYSTEM**
  Existing system refers to the system that is being followed till now. Presently all the hospital functionalities are done manually. That is if a patient wants to consult a doctor he can visit them till his name has been called. This makes it very difficult for that patient. Out-Patient and In-Patient tickets were distributed directly.The main disadvantage is time consuming.

- **LIMITATIONS OF EXISTING SYSTEM**
  a. Lack of security of data.
  b. Time consuming.
  c. Consumes large volume of paper work.
  d. Manual work.
  e. No direct role for the higher officials.
  f. To avoid all these limitations and make the system working more.
  g. Accurately it needs to be computerized .

- **OBJECTIVES OF PROPOSED SYSTEM**
  The implementation of Kiosk software is user-friendly.The main objectives of this system is to show and help any person to collect most of the information about Hospitality and Medical Services .The system is very simple to use. This system requires very low resources and will work in almost all configurations. The main objectives of the proposed system can be enumerated as follows:
  1. Doctors can be easily allocated to the patients.
  2. Searching for Doctors availability is possible.
  3. Ease of searching different departments within the Hospital building.

- **ADVANTAGES OF PROPOSED SYSTEM**
  The system is very simple in design and therefore using it becomes very easy. This system requires very low system resources and will work in almost all configurations.
  1. Security of data.
  2. Ensure data accuracy.
  3. Administrator controls the entire system.
  4. Minimize manual data entry.
  5. Greater efficiency.
  6. User friendly and interactive.
  7. Minimum time required.

1.3   Organization of the Project

The remaining part of the project is organized as follows.

Chapter 2 presents a review of related work.

Chapter 3 introduces the Software and Hardware Requirement of the project.

Chapter 4 proposes the Project Design of the Project . It represent the architectural design, front end design and database design of the project.

Chapter 5 introduces the system model and some basic assumptions and Dependencies of our work.

Chapter 6 presents the Results and Test cases related work.

Chapter 7 described the time management and time utilization during the Project implementation.

Chapter 8 described the Workload distribution.

Chapter 9 provides some concluding remarks and directions of our future work.

Chapter 2

Review Of Literature

2.1 A Survey of the Healthcare Kiosk.

2.1.1 Discription

In the paper by H. Dhand and A. Verma, the focus was to take health-care services to the doorstep of people in emerging countries that requires huge skilled workforce along with equipment for medical testing and monitoring, which requires massive investment. These countries are still at a stage where they cannot afford the involved costs; and yet the number of diseases is growing, especially with the western lifestyle and stress factor in society increasing. They proposed a technology and business model for providing diagnostic health-care services in an efficient manner, which could in time become as popular and pervasive as ATMs are today for financial activities. They proposed a fusion of technologies -Vital Signs monitoring (VSM) and Web based prescriptive diagnosis. In their offering, they proposed a kiosk like structure,where the vital signs of a patient are measured on the frontend; and with the data collected, a backend database (offline or tele-based) gives on-the-spot diagnosis. The user who already has logged in (like an ATM) is given his summary report, with either a preliminary solution or recommended to nearest speciality hospitals, and his record is updated with the new diagnosis and recommendations. The underlying business model is based on both service and advertising mode. For the sensing devices, the cost is extracted from the customer (minimal), while for the kiosk and display setup, the hospitals or websites which are further recommended can pay in the form of advertisement revenue.

2.1.2 Pros

The country where it is not possible to prescribe medicines authorization of a certified medical practioner. In such cases, these kiosks could be set up by national health authorities and hospitals and preferably in hospital premises, so that the interface is clear and also fast.Here, the report generated will still include the diagnosis and possible remedies along with drugs. When

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recommended any drug, the patient takes his report to the doctor who could certify it or might change it if required.

Here, the report generated will still include the diagnosis and possible remedies along with drugs. When recommended any drug, the patient takes his report to the doctor who could certify it or might change it if required.

2.1.3 Cons

Efficient and complete healthcare services are a scarce commodity. Even in the developed countries there is a long delay (2-3 days) for getting an appointment for basic healthcare checkup, besides the services being very expensive. It may not be updated regularly enough therefore there may be chances of getting wrong result.

On the other hand, in developing countries, the resources are far too less to provide services for the large number of people. As a result, people suffer from basic diseases and delayed diagnosis of their problems often leads to aggravation of their health condition. This, in addition to being a major drain on the countryâ™s economy, reduces the quality of life of the people and hinders progress on the social development front as well.

2.1.4 How we overcome Those problem in Project

In our Project, by comparing the healthcare services are not scarse commodity. In BARC hospital the services is costless and getting an appointment will not be delayed for longer period.

We are providing 24*7 time services and have improved the quality of life where getting an information is a easy task.

2.2 A Low-Cost Community Healthcare Kiosk

2.2.1 Discription

In this paper, kiosk integrates some low-cost biological devices and controls them with a built-in industrial computer. A touch-screen based Graphic User Interface and a remote service interface is offered too. It currently supports monitoring ECG, blood pressure, temperature, blood oxygen saturation and weight. The results will be automatically sent to the remote server with 128bit encrypted https protocol and without any user information except an ID number which is delivered by the trusted thirdparty who will support the kiosk based medical service. Users can query their records via internet and receive reminders and help in case their records should show abnormality. Some trial results are presented at the end of this paper.

This paper employs the three-level healthcare framework in the kiosk designing process which isolates the physical devices and business logic effectively and provides friendly interfaces and control mode to users and developers.

2.2.2   The three-level healthcare architecture.
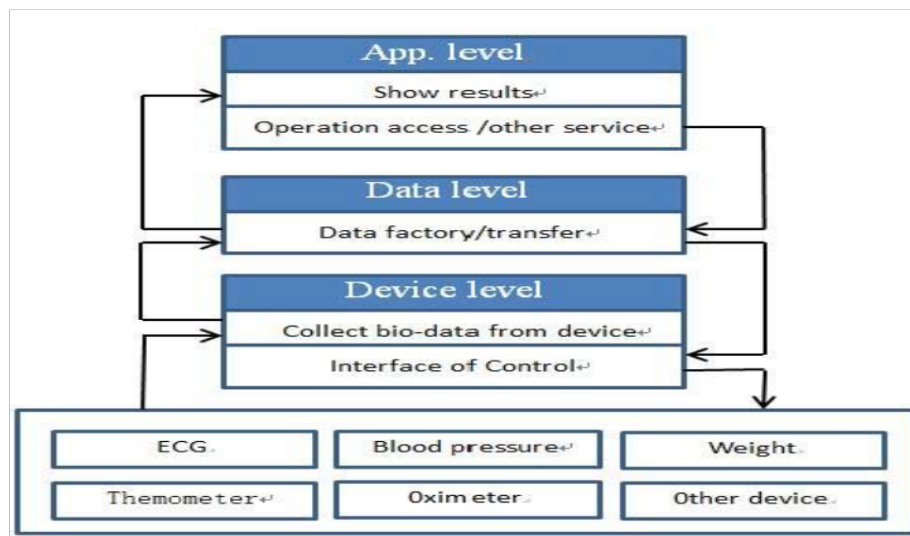
Figure 2.1: The three-level healthcare architecture.

A. Device level
This level focuses on the medical/biological devices. Using wireless or wired connections the framework integrates devices which are selected in particular designs. There are corresponding interfaces designed in device level for reading data and controlling devices respectively.

B. Data level
This level focuses on data processing and data transfer. Our framework can integrate a variety of devices, each of which has its own data format. In this paper, we design general data formats in data level for convenience of reading and controlling devices and easy support of applications in the framework.

C. Application level
This level is composed of a variety of medical applications. Some applications just show data to user; some analyze; some connect to remote server.

2.2.3 Pros

The cost of the integration of the biological devices to the kiosk is low by using the existing data ports of the devices and the computer. The most cost of the kiosk is taken to set up the steel model and buy the peripheral devices, which is relatively low though.

2.2.4 Cons

The usability and robustness of the system are not guaranteed in initial trials.

2.2.5 How we overcome Those problem in Project

In future work, real community trials will be deployed and more testing results will be collected and analyzed. Based on them, the usability and robustness of the system will be improved further. At the same time, more environment-friendly profile design of the kiosk will be taken into account

2.3 The Development of Information Architecture for User-centered Hospita Kiosk

2.3.1 Description

Hospital Kiosk are being installed and administered as a useful means to help the hospital reduce its workforce cost and keep serving its clients after working hours. Unfortunately, most of the kiosk which are being used today is equipped with one function or two separately such as issuance of prescription/receipt, automatic receipt, civil complaint, parking free payment and timesheet. And, this causes inconvenience to both clients and hospital staff. Moreover, since the information service of the kiosk tends to be hospital-centered, it does not make users want to use the device. Particularly, some specific information which patients, their family and visitors require is not being provided. In this regard, we aim to analyze the kiosk of each function and suggest an alternative information architecture of hospital kiosk with integrative function which can reduce such inconvenience and enhance the usability.

2.3.2 Pros

The new information architecture for the integrated hospital kiosk has better accessibility to the menus which reflects userâ^{TM}s preemptive needs and it include more specific information that

can support user tasks.

2.3.3 Cons

The information service of the kiosk tends to be hospital-centered, it does not make users to use the device. Particularly, some specific information which patients, their family and visitors require is not being provided.

2.3.4 How we overcome Those problem in Project

We aim to analyze the kiosk of each function and suggest an alternative information architecture of hospital kiosk with integrative function which can reduce such inconvenience and enhance the usability.

2.4 Touchscreen Check-In:Kiosks Speed Hospital Registration

2.4.1 Description

Patient kiosks are interactive computer stations designed for self-service tasks, such as patient check-in and collection of co-payments. Interest in self-service kiosks is growing rapidly as hospitals seek to improve patient satisfaction and operational efficiency. Although fewer than 10 percent of health delivery organizations have implemented patient kiosks, the experiences of early adopters show that kiosks can be effective tools for meeting rising consumer expectations.

Hospitals are deploying patient kiosks in two main settings: ambulatory departments and emergency departments. In the ambulatory setting, the most common uses of kiosks are for patient check-in, wayfinding assistance, collection of co-payments and outstanding balances, updating patient demographics, and to ask patients basic screening questions. Some organizations also enable patients to sign consent forms and fill out real-time patient satisfaction surveys. In the ED setting, where there are fewer kiosk implementations industry-wide, kiosks are generally used to enable patients to sign in and provide caregivers with basic triage information.

The author has described the experiences of leading organizations have shown that kiosks can increase patient satisfaction by reducing waiting times and offering greater convenience and privacy. Many organizations also achieve significant operational benefits, including increased patient throughput and improved accuracy of demographic data in patient records. However, kiosks are intended to supplement, not replace, staff.

Choosing the right type of kiosk to use and the right functions to deploy requires careful planning and consideration. Integrating the systems with scheduling, billing, and other existing systems also requires care in selecting vendors with the right type of expertise.

2.4.2 Pros

The success rate for kiosk implementations is high. Compared to other technologies such as electronic medical records or clinical systems, patient kiosks are relatively uncomplicated to implement, require a small investment, and can be deployed selectively to the departments that are likely to benefit from their use.

2.4.3 Cons

Kiosk implementations have not succeeded. Sometimes there is not enough interest on the part of patients to use the kiosks, or the kiosks are not integrated closely enough with existing systems, diminishing the overall benefit.

2.4.4 How we overcome Those problem in Project

These risks can be minimized by adhering to a short list of best practices identified through researching kiosk implementations at a variety of leading organizations across the country. Best practices for kiosk implementations include:

2.4.5 System Selection

- Choose a kiosk with the physical location in mind.

- Consider purchasing more than one kiosk per area/department.

- Freestanding kiosks offer an important opportunity for branding.

2.4.6 Deployment

- Start with areas that have high numbers of repeat patients.

- Use a greeter during the initial rollout.

- Place the kiosks in an obvious location.

- Enable as many languages as you reasonably expect to use.

2.4.7   Policies and Procedures

- Make use of the patient kiosk voluntary.

- Assign basic oversight responsibilities for each kiosk.

2.5   Technological Review

2.5.1   HTML5

In implementing the project, we are making use of HTML language as the main language. HTML5 is the revolution that the web needed and the fact is, it is the future . HTML5 makes creating accessible sites easier for two main reasons: semantics and ARIA. ARIA is a W3C spec that is mainly used to assign specific âœrolesâ to elements in an HTML document â“ essentially creating important landmarks on the page: header, footer, navigation or article, via role attributes.

2.5.2   CSS

CSS stands for Cascading Style Sheet and is used by web pages to help keep information in the proper display format. CSS files can help define font, size, color, spacing, border and location of HTML information on a web page, and can also be used to create a continuous look throughout multiple pages of a website. It allows one to adapt the presentation to different types of devices, such as large screens, small screens, or printers. CSS is independent of HTML and can be used with any XML-based markup language.

2.5.3   Javascript

JavaScript is a cross-platform, object-oriented scripting language. It is a small and lightweight language. Inside a host environment (for example, a web browser), JavaScript can be connected to the objects of its environment to provide programmatic control over them. JavaScript contains a standard library of objects, such as Array, Date, and Math, and a core set of language elements such as operators, control structures, and statements. Core JavaScript can be extended for a

variety of purposes by supplementing it with additional objects; Client-side JavaScript, Server-side JavaScript.

2.5.4   Web Engine

WebEngine is a non-visual object capable of managing one Web page at a time. It loads Web pages, creates their document models, applies styles as necessary, and runs JavaScript on pages. It provides access to the document model of the current page, and enables two-way communication between a Java application and JavaScript code of the page. Loading Web Pages

The WebEngine class provides two ways to load content into a WebEngine object: From an arbitrary URL using the load(java.lang.String) method. This method uses the java.net package for network access and protocol handling.From an in-memory String using the loadContent(java.lang.String, java.lang.String) and loadContent(java.lang.String)methods. Loading always happens on a background thread. Methods that initiate loading return immediately after scheduling a background job. To track progress and/or cancel a job, use the Worker instance available from the getLoadWorker() method.

Chapter 3

Requirement Analysis

3.1 Platform Requirement :

3.1.1 Supportive Operating Systems :

The supported Operating Systems for client include:

- Windows xp onwards

- Linux any flavour.

  Windows and Linux are two of the operating systems that will support comparative website. Since Linux is an open source operating system. This system which is used in this project is developed on the Linux platform but is made compatible with Windows too.The comparative website will be tested on both Linux and Windows.

  The supported Operating Systems for server include: The supported Operating Systems For server include Linux. Linux is used as server operating system. For web server we are using apache 2.0

3.2 Software Requirement :

The Software Requirements in this project include:

- Java

- Jsp

- Mysql

- Google Chrome,Internet Explorer, Mozila FiireFox, etc

In this project, we used JavaServer Pages (JSP);a technology for developing web pages that support dynamic content which helps developers insert java code in HTML pages. A JavaServer Pages component is a type of Java servlet that is designed to fulfill the role of a user interface for a Java web application. Web developers write JSPs as text files that combine HTML or XHTML code, XML elements, and embedded JSP actions and commands.Using JSP, you can collect input from users through web page forms, present records from a database or another source, and create web pages dynamically. JSP tags can be used for a variety of purposes, such as retrieving information from a database or registering user preferences, accessing JavaBeans components, passing control between pages and sharing information between requests, pages etc.

Java language is the fundamental language being used in the development of the project. Mysql which is used as a database for storing information.If a web application requires more than database, requires load balancing or sharding.

3.3 Hardware Requirement :

3.3.1 Hardware Required For Project Development:

- Operating System : Linux Mint 17.2 Cinnamon 64-bit

- Cinnamon version:2.6.11

- Memory: 108GiB

- Hard Drives: 99.9GB

- Graphics Card: Intel Cooperation Processor Integreted Graphics Controller

Chapter 4

Project Design

4.1 Design Approach

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities design, coding, implementation and testing that are required to build and verify the software. The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made. These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer requirements into finished software or a system. Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data.

4.2 Software Architectural Designs

Our system is follow the three tier architecture . First tier consist of GUI, Comparision tier and the Database.

1. GUI: The GUI(Graphical User Interface) in our project deals with the interface for the user where the user enters the name of the product he/she wants to search. The GUI provides a platform for the user to communicate with the database.

2. Comparision block: The comparision block is the block where the actual processing of our project is done. This block connects the GUI to the database i.e. It acts as a connector as well as communicator which connects the database and helps in transfer of data between the GUI and the database. It's main function is to index the products in our database and do the

comparision on the basis of the product price and other aspects.

3. Database: Database tier is the tier used for the storage of data. This tier contains all the data that is need for the processing of the whole project. The data in this tier is related to the patient details such as the name, report information and other details that are present on the website regarding the hospital.
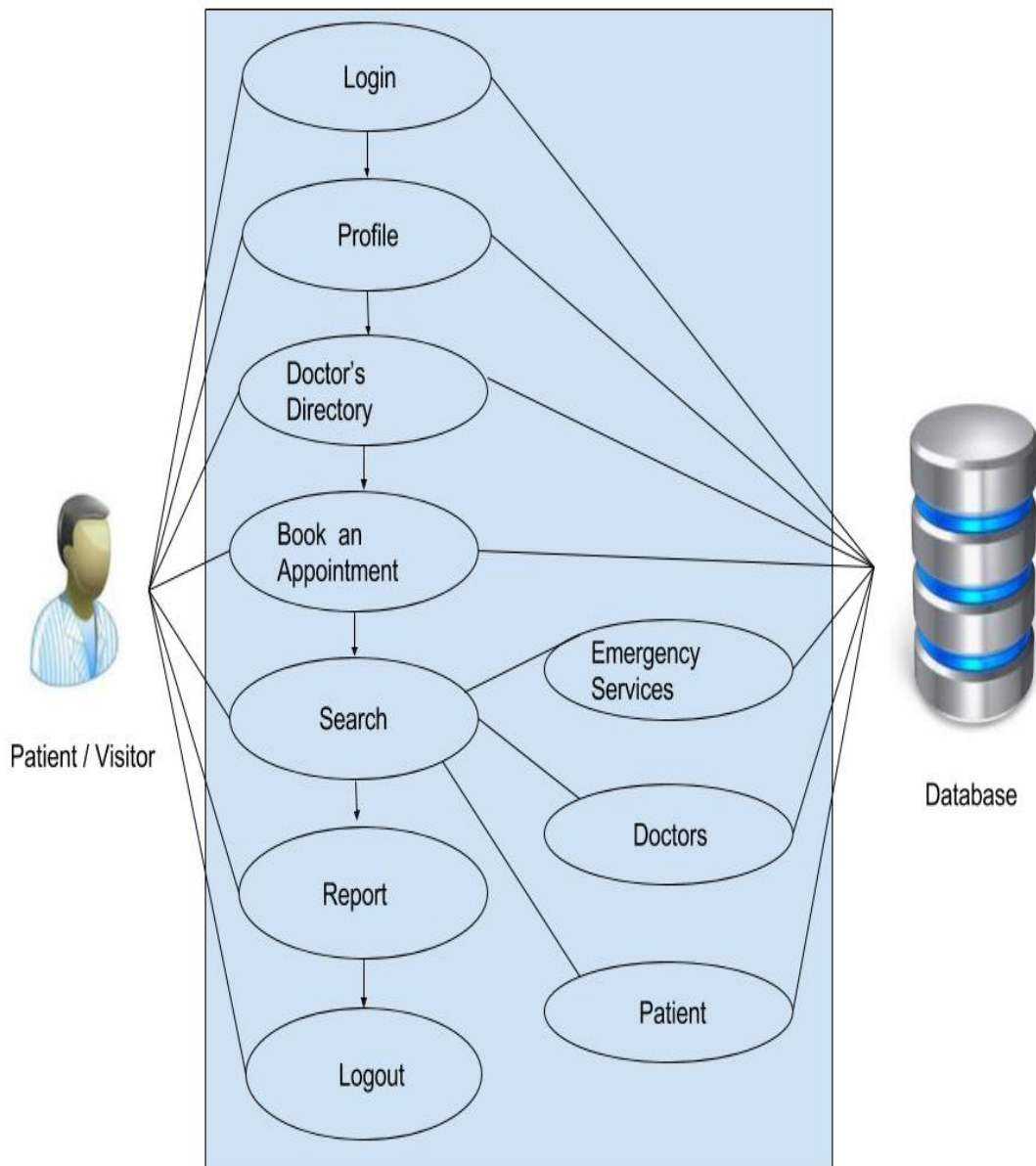
4.2.1 usecase diagram

Figure 4.1: Use Case Diagram for information kiosk system for BARC hospital

4.2.2 Front End Designs
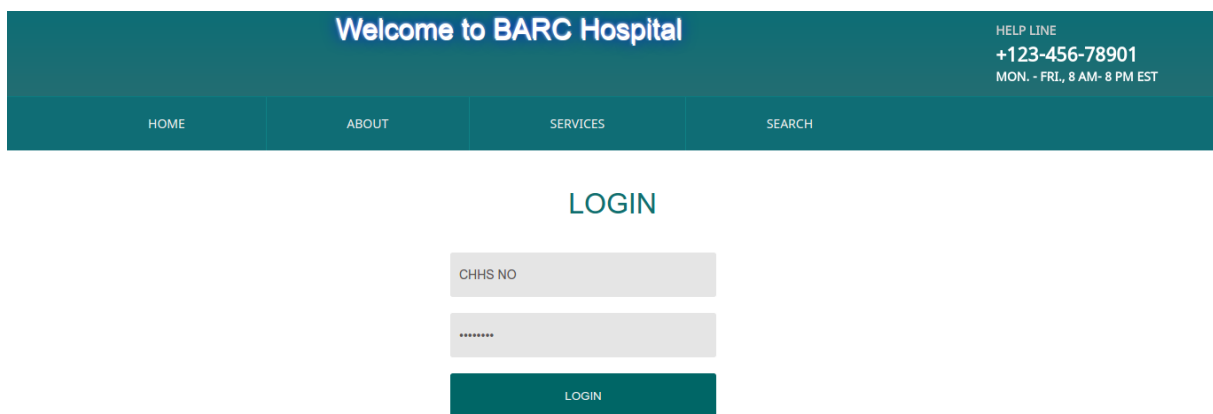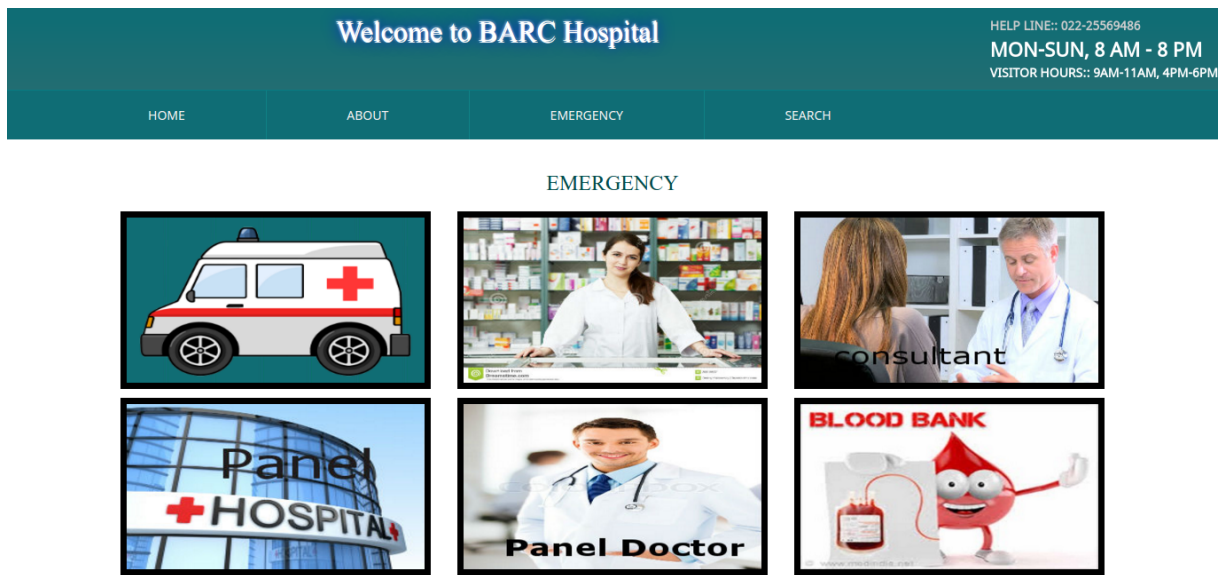

Figure 4.2: Front End Design

4.2.3 Login Page

Figure 4.3: Login Page

4.2.4 Emergency Page

Figure 4.4: Emergency Page
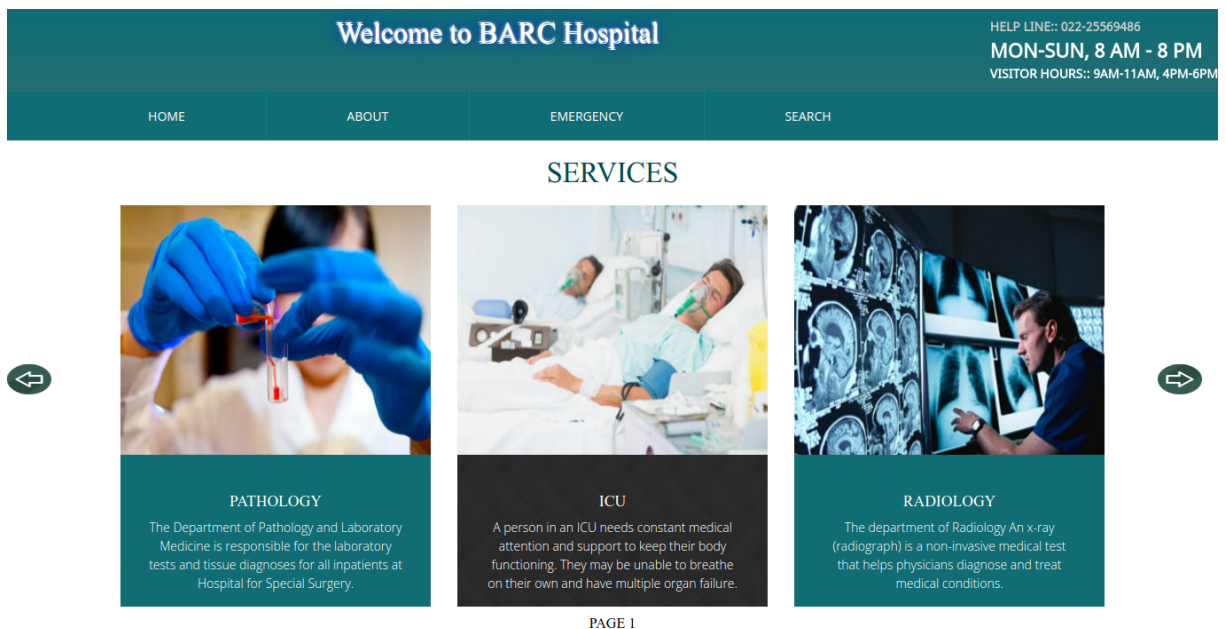
4.2.5 Service Page

Figure 4.5: Service Page

4.2.6 Doctor's Directory Page

Figure 4.6: Doctor's Directory Page

4.2.7 Search Page
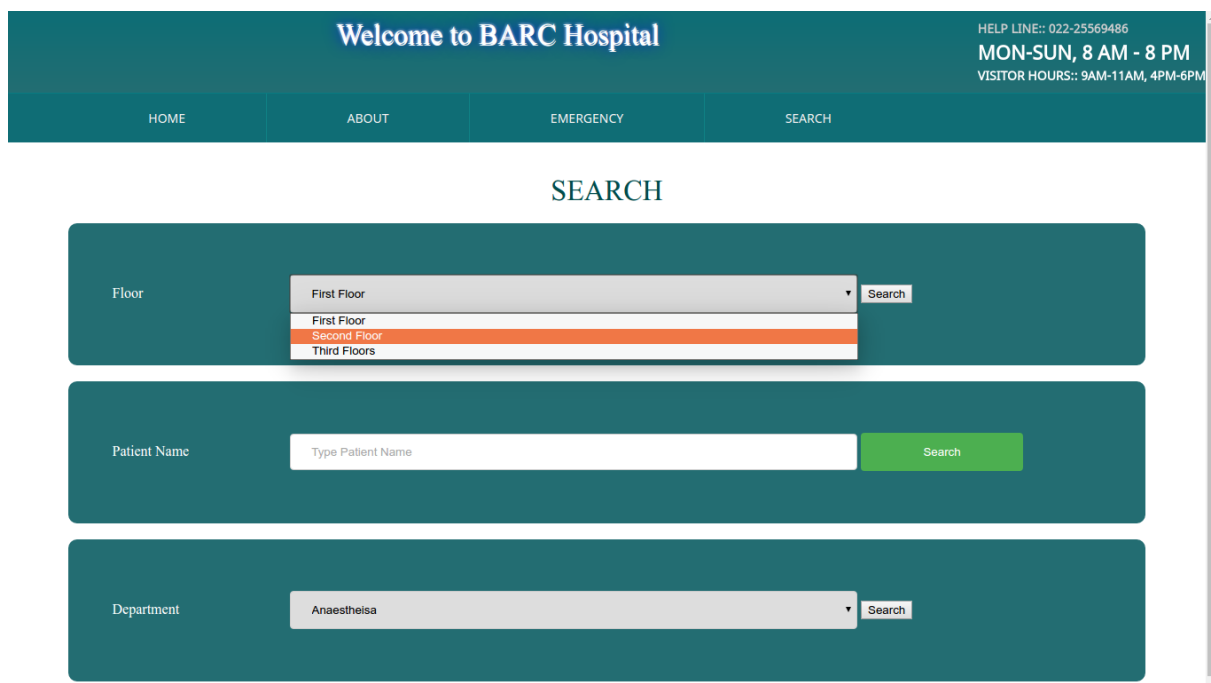
Figure 4.7: Search Page

4.2.8 Patient's Report
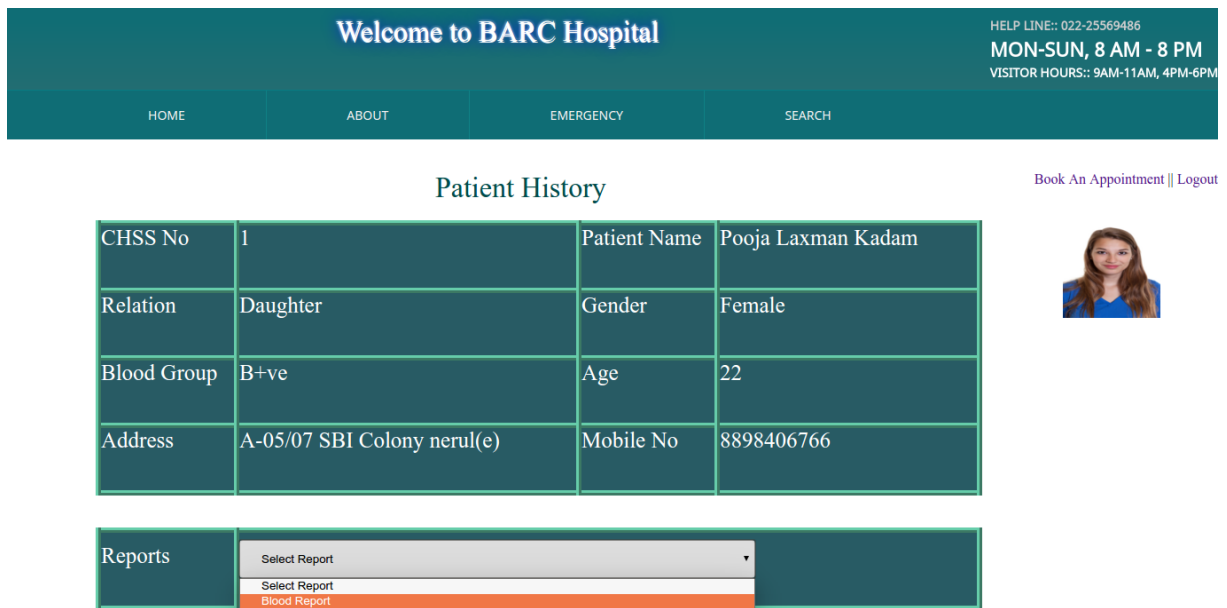
Figure 4.8: Patient's Report

4.2.9 Report in pdf format
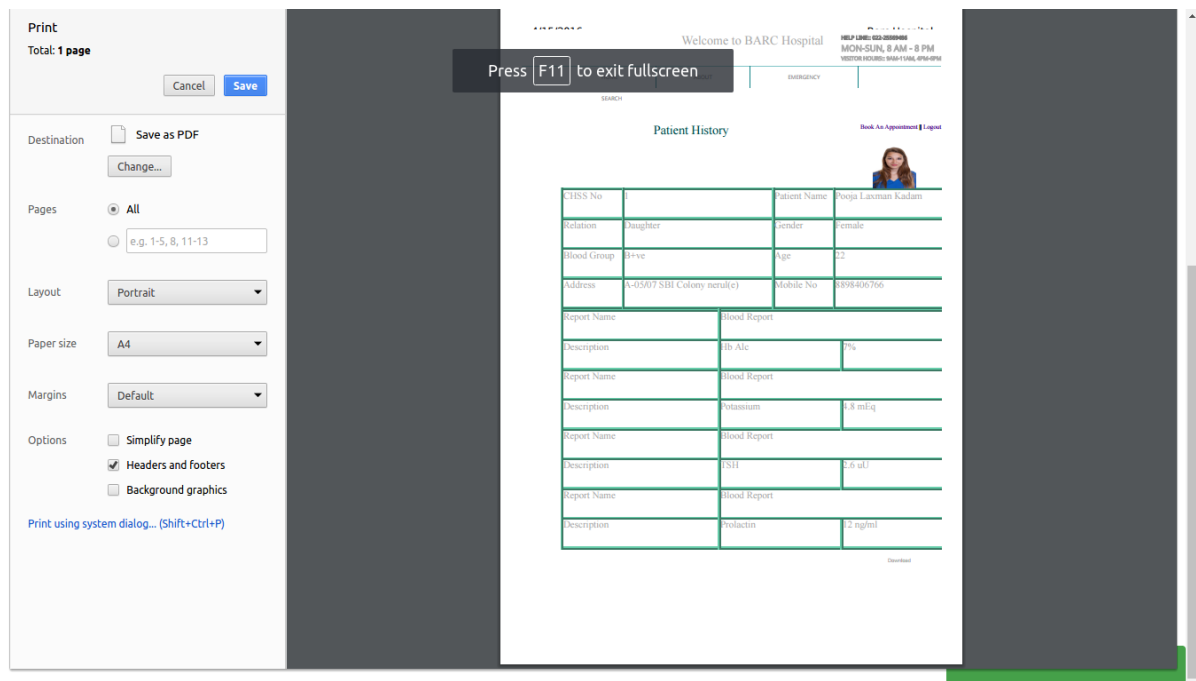

Figure 4.9: Report in pdf format

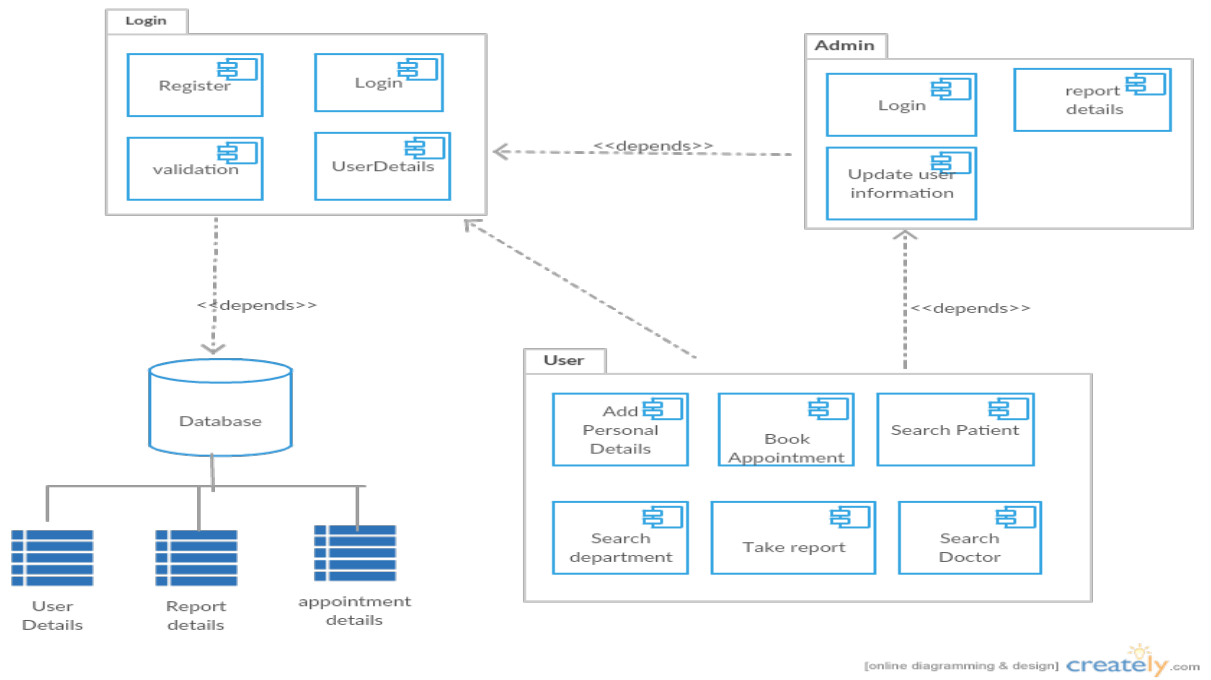## 4.2.10   Component Diagram

Figure 4.10: Component Diagram

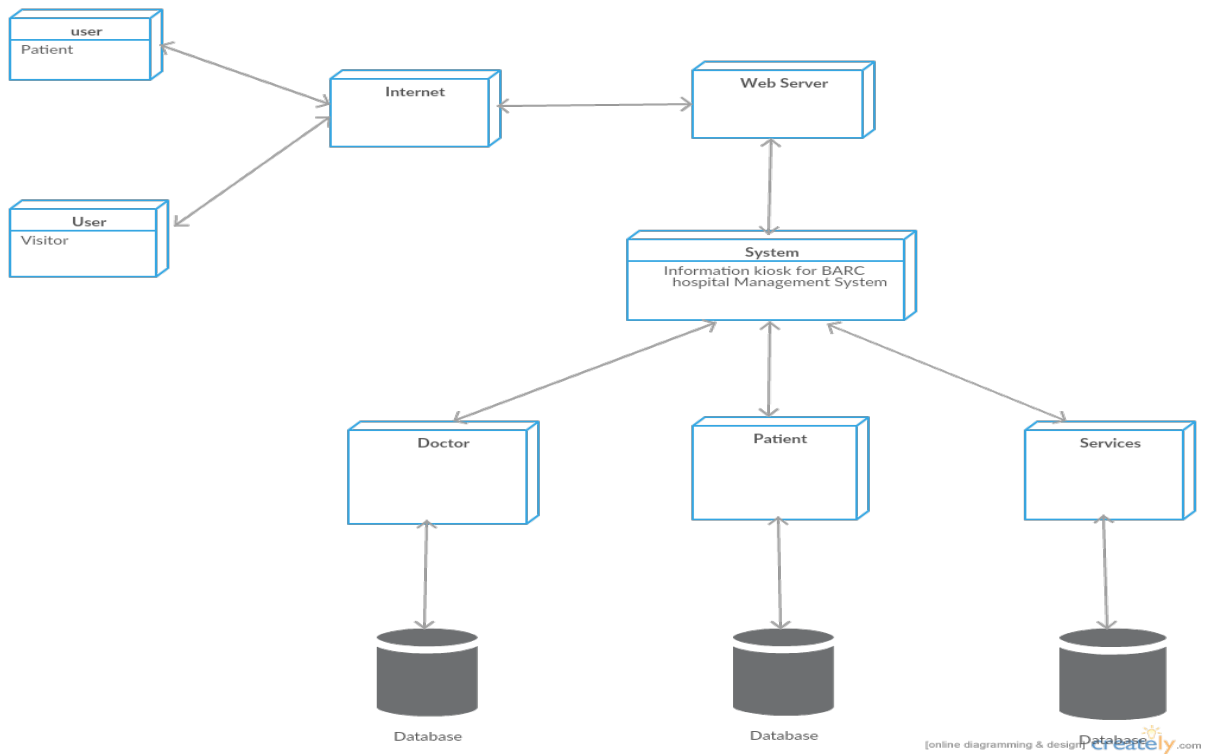## 4.2.11   Deployment Diagram

Figure 4.11: Deployment Diagram
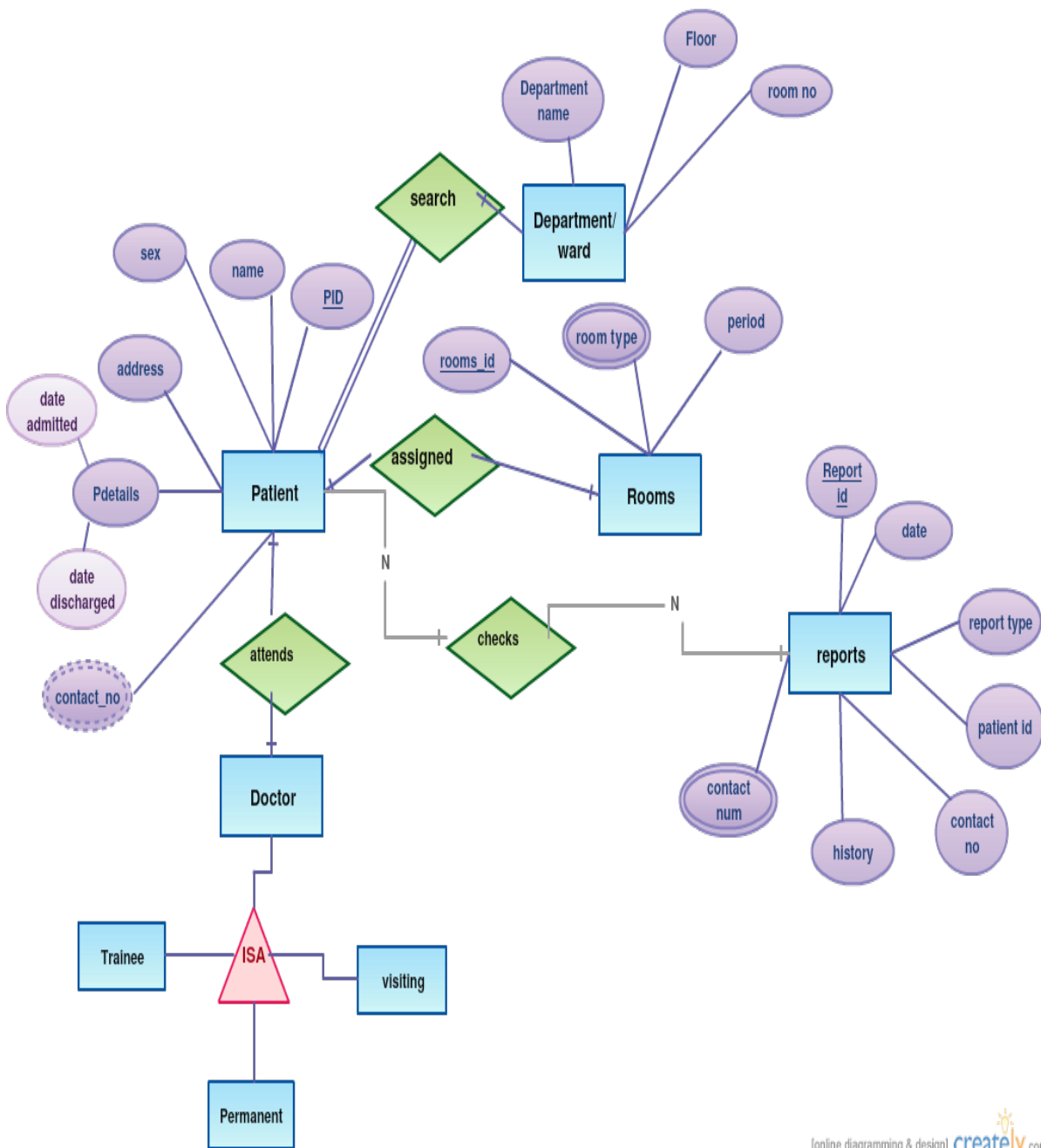
4.3 Database Design

4.3.1 E-R Diagram

Figure 4.12: E-R Diagram

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4.4 Work-flow Design

4.4.1 Flow Diagram
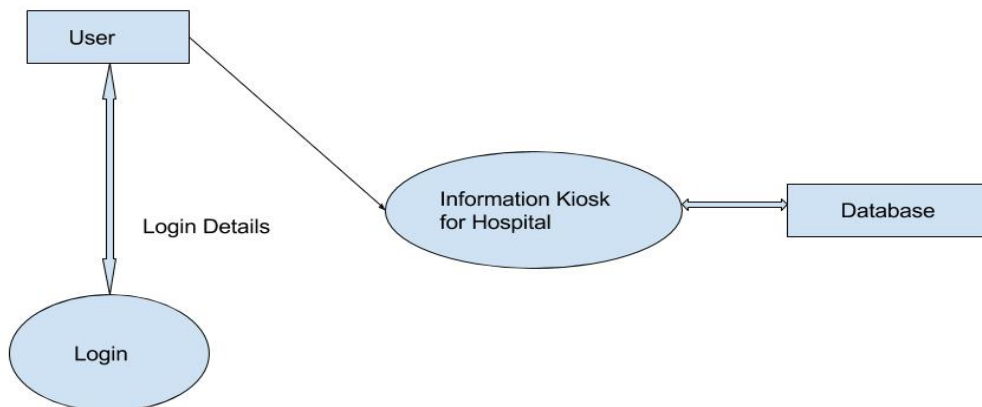

Figure 4.13: Level 0 DFD

Figure 4.14: Level 1 DFD User
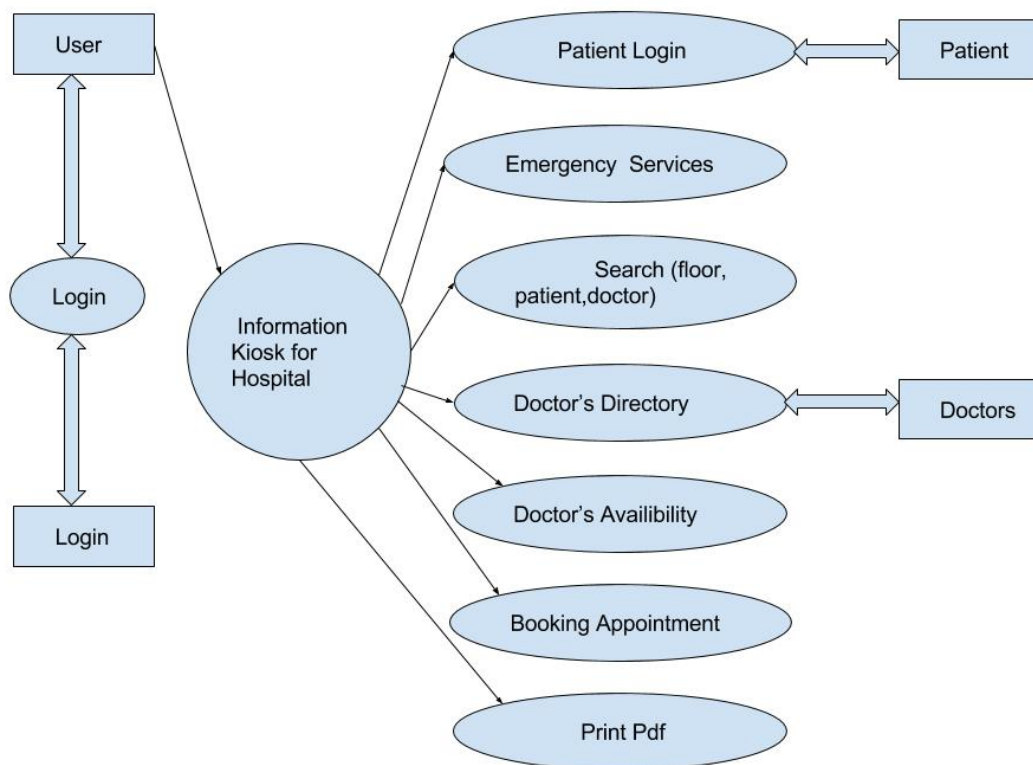
Figure 4.15: Level 2 DFD User

Chapter 5

Implementation Details

5.1 Assumptions And Dependencies

5.1.1 Assumptions

The following Assumption was taken into consideration:

- The web search engine software searches the data on the World Wide Web. The engine periodically searches the data on the World Wide Web and updates the local database if any updates are made by our websites. Therefore it is assumed that the engine has to be very effective and fast in fetching the database. The local database is assumed to be scalable and robust so that it can store huge amount of data with time and maintain consistency of the data.

- The web search engine has to be very optimized in performing the search. As soon as the user queries the database the web search engine is assumed to bring the required and accurate results. The user interface should be simple and clean that allows soothing effect to the user.

5.1.2 Dependencies

The dependencies are as follows:

- For backend processing, Jsp and Mysql is being used. The backbone structure of the system is developed by making use of Jsp and Mysql . JavaServer Pages are built on top of the Java Servlets API, so like Servlets, JSP also has access to all the powerful Enterprise Java APIs, including JDBC, JNDI, EJB, JAXP etc.and SSI(Server-Side Includes)is really only intended for simple inclusions, not for "real" programs that use form data, make database connections etc.

- Tomcat is the server which is put into use for handling server side request and response. Apache

Tomcat is an open source software implementation of the JavaServer Pages and Servlet technologies and can act as a standalone server for testing JSP and Servlets and can be integrated with the Apache Web Server.

5.2 Implementation Methodologies

The different modules to be used in our project are:
1. Creating a GUI
2. Taking input from the user
3. Performing the required functions
4. Displaying the output

5.3 Modular Description of Project

5.3.1 Analysis and Description of Project

Creating a GUI: First, a user-friendly GUI is created so that it is easier for the user to perform necessary operations. The GUI is created in NetBeans. NetBeans is a software development platform written in Java .

Taking input from the user: The input is given by the user. This query is taken through the GUI placed over kiosk screen .Icons and bars are given as inputs. After taking the input from the user, the further actions are performed which is according to the needs of the user.

Performing the required functions: After taking the query as an input, the required things are performed like fetching the data from database. All the functions have been already discussed in the previous chapters. All the things that the user needs to perform are provided in the GUI, the user just has to click them according to his/her requirements.

Displaying the output: After achieving the desired result, through the database output is displayed in two forms. One is in table format consisting of rows and columns,second one is in the form of profile of doctors and the last one is in the form booking an appointment different formats of output give a clear understanding of the output. So it becomes easier for the user to interpret the information.

5.3.2 Usecase Report

Title:	Impementation of Information Kiosk for BARC Hospital
Description:	Impementation of Information Kiosk for BARC Hospital , provide the way to visitor/patient that allows them to view the information,find various departments and doctors with their availability for appointments,layout of the building, services provided by hospital,emergency,etc.
Primary Actor:	Patients or Visitors
Preconditions:	Patients or Visitors visits the Hospital
Post conditions:	Patients or Visitors searches their requirements
Main Success Scenario:	1. This software will help the person to login into the Kiosk & stores that info in the database 2. After login, person may search for any queries related to the hospital. 3. Different searches are performed and results are displayed on the interface where the data has been fetched through web engine.
Frequency of Use:	User can use any number of time because information is available 24*7 hours.
System Requirement:	Normal. No Specific Requirement
Web Search Engine::	This entity perform the fetching task i.e. it fetches the web pages from the database.

Table 5.1: Usecase Report

5.4 Class Diagram
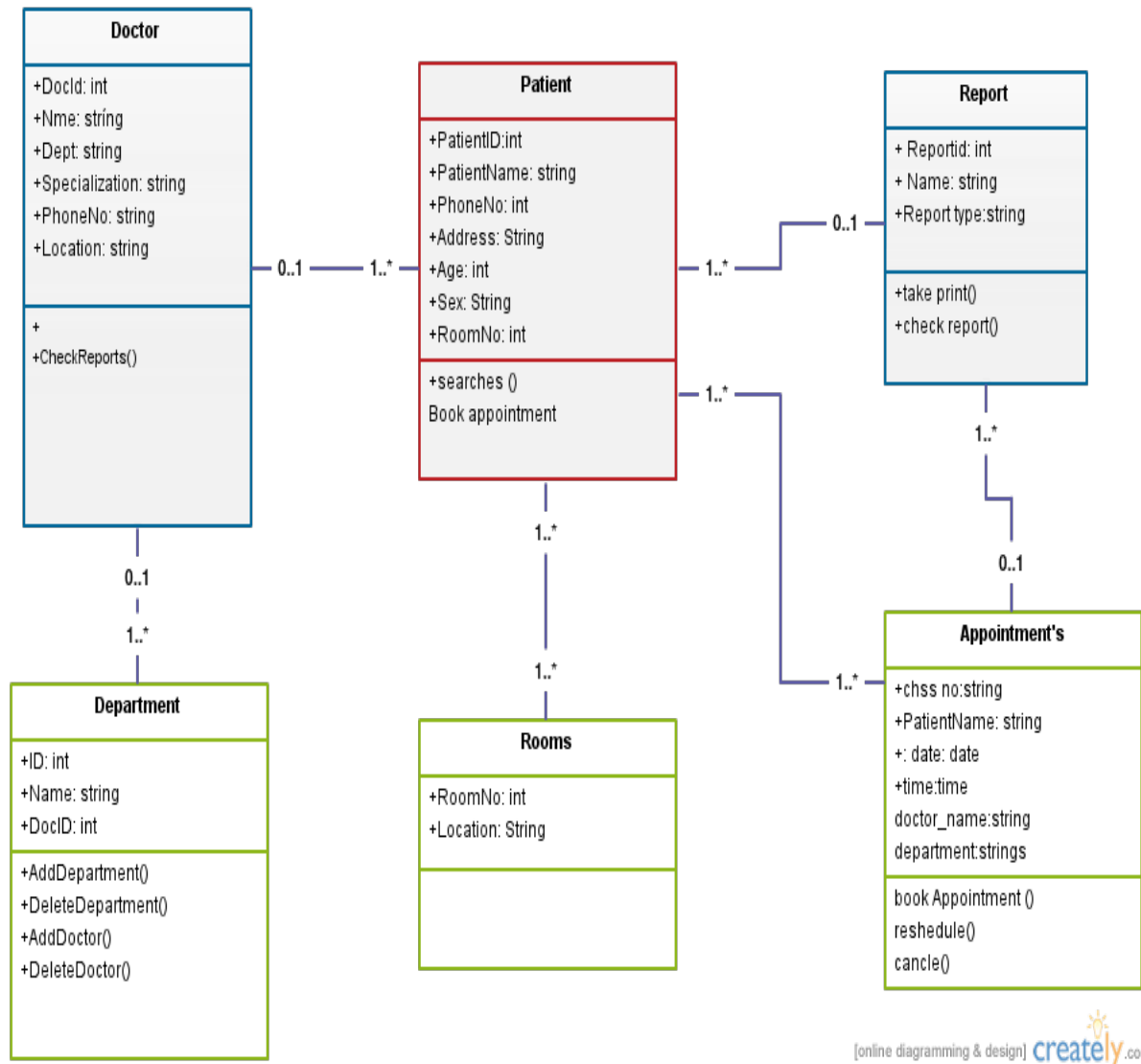
Figure 5.1: Class Diagram

5.4.1 Class Diagram Report

Title:	Impementation of Information Kiosk for BARC Hospital
Description:	Impementation of Information Kiosk for BARC Hospital , provide the way to visitor/patient that allows them to view the information,find various departments and doctors with their availability for appointments,layout of the building, services provided by hospital,emergency,etc.
Preconditions:	Patients or Visitors visits the Hospital
Post conditions:	Patients or Visitors searches their requirements
Main Success Scenario:	1. This software will help the person to login into the Kiosk & stores that info in the database 2. After login, person may search for any queries related to the hospital. 3. Different searches are performed and results are displayed on the interface where the data has been fetched through web engine.
Web Search Engine::	This entity perform the fetching task i.e. it fetches the web pages from the database.
Database:	Database is used for storing the Patient details and information of doctors an etc.

Table 5.2: Class Diagram Report

Chapter 6

Results and Discussion

6.1 Test cases and Result

This involves testing the system using different types of system tests that were performed on the systemThis is aimed at uncovering errors and measuring the system capability. We have tested our web application by considering following test cases:

6.1.1 Unit Testing

We begin with login part,in which we have thoroughly checked all the input box and verified that each value is successfully entered into the database.Secondly we have also cross checked that login is done successfully.After that patientcan booked an appointment for according to their choice of doctor for various treatment. Example , Below picture shows the validation and verification process and booking an appointment process.
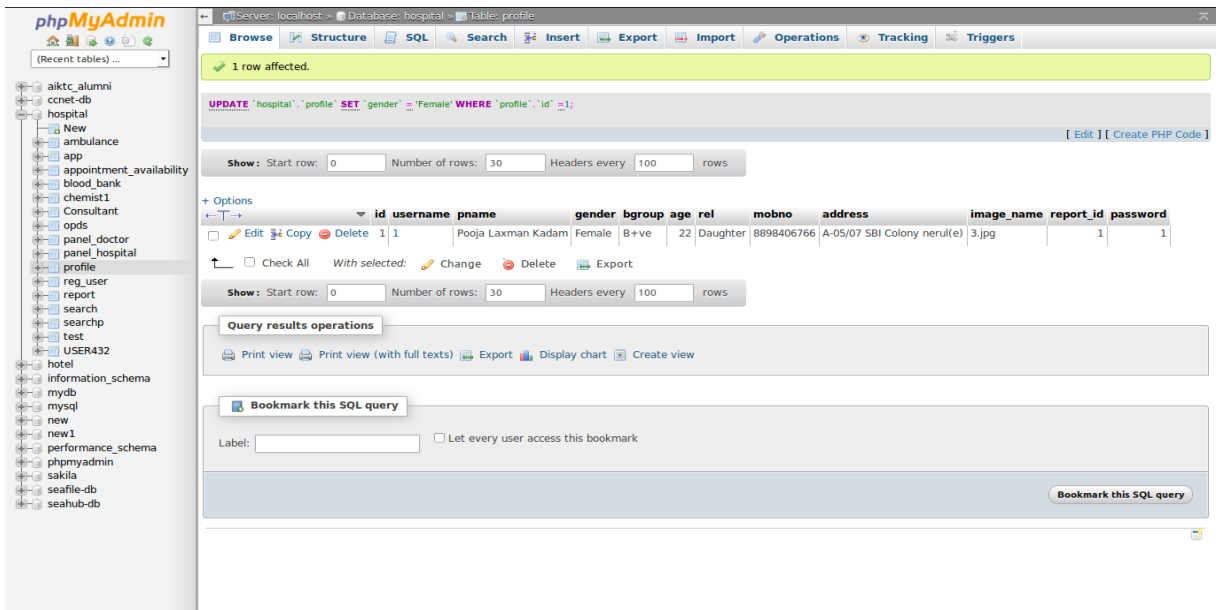
Figure 6.1: User Validation
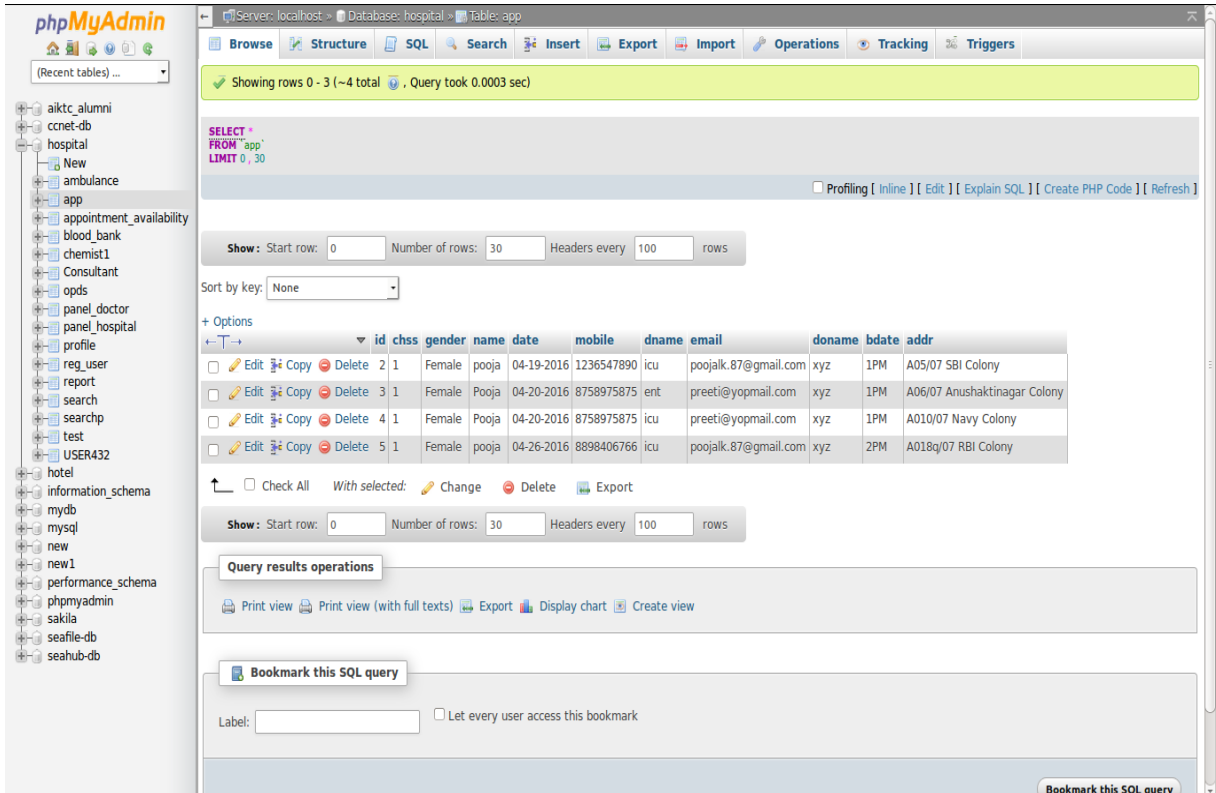
Figure 6.2: Booking Appointment

Figure 6.3: Patients Report

Chapter 7

Project Time Line

7.1   Project Time Line Matrix

		Name	Duration	Start	Finish	Predecessors	Resource Names
1		Requirement Gather...	7 days	14/12/15 8:00 AM	22/12/15 5:00 PM		
2		Confirm Requiremnt	7 days	23/12/15 8:00 PM	1/1/16 5:00 PM		
3		Front-end user inter...	10 days	2/1/16 8:00 AM	15/1/16 5:00 PM		
4		Back-end database ...	10 days	15/1/16 8:00 AM	28/1/16 5:00 PM		
5		Front End Coding	10 days	28/1/16 8:00 AM	10/2/16 5:00 PM		
6		Database creation	10 days	10/2/16 8:00 AM	23/2/16 5:00 PM		
7		Coding for Screens,t...	9 days	24/2/16 8:00 AM	7/3/16 5:00 PM		
8		Creation of test cases	9 days	8/3/16 8:00 AM	18/3/16 5:00 PM		
9		Unit testing	6 days	19/3/16 8:00 AM	28/3/16 5:00 PM		
10		System testing	7 days	29/3/16 8:00 AM	6/4/16 5:00 PM		
11		Alpha and Beta testi...	6 days	6/4/16 8:00 AM	13/4/16 5:00 PM		
12		Deployment	2 days	14/4/16 8:00 AM	15/4/16 5:00 PM		

Figure 7.1: Time Line Matrix

7.2 Project Time Line Chart
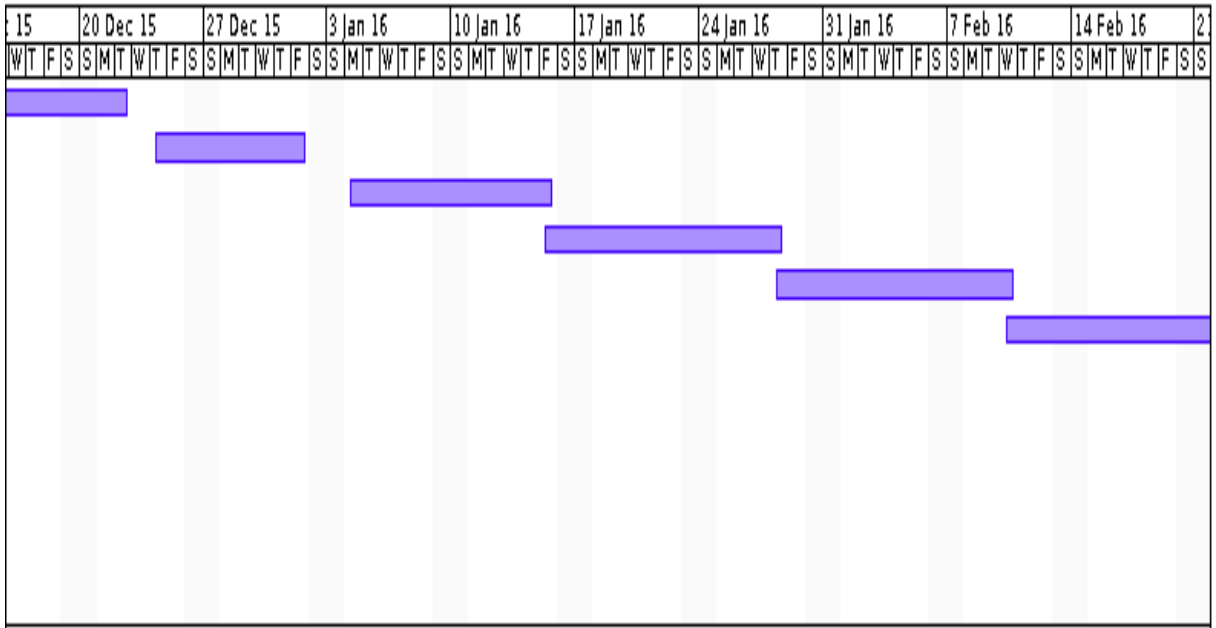
Figure 7.2: Time Line Chart
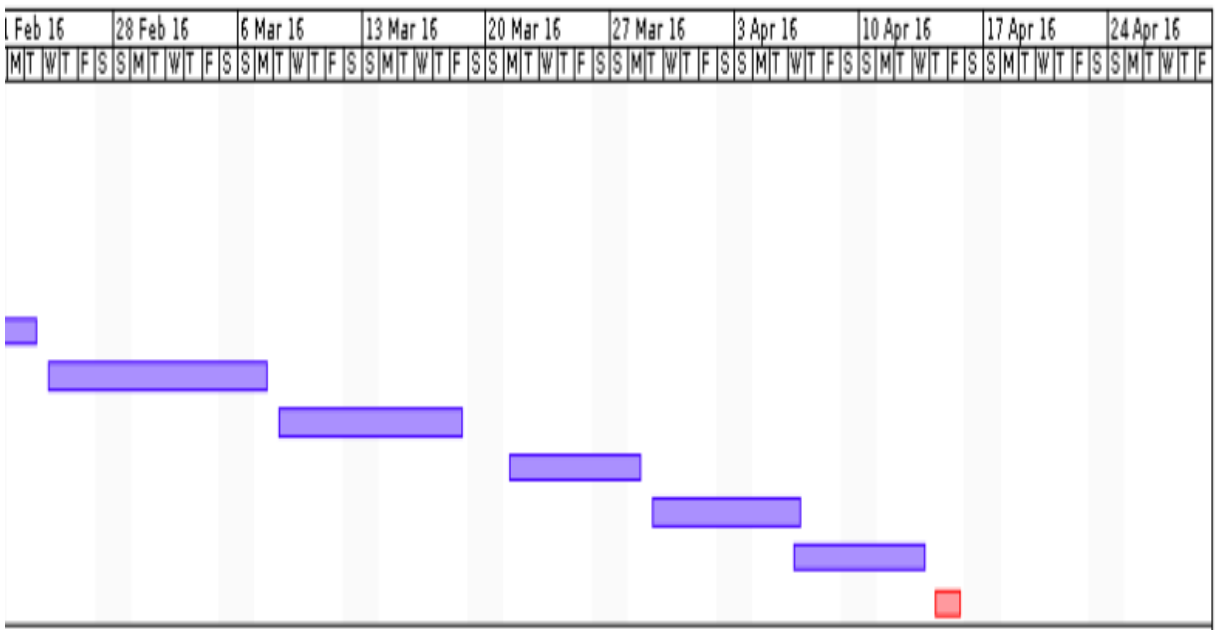
Figure 7.3: Time Line Chart

Chapter 8

Task Distribution

8.1 Distribution of Workload

8.1.1 Scheduled Working Activities

Activity	Time Period	Comment
Requirement Gathering	08 Days	Requirement gathering has took placed through searching on internet and taking the ideas, sharing the views among group members.
Planning	04 Days	Planing has done by Reviewing of literature of IEEE papers and by taking the walkthrough.
Design	04 Days	Designing has done by creating UML diagram, By creating Charts,
Implementation	90 Days	Implementation has done First creating the backend and then front end module by module.
Testing	10 Days	Testing has done by perfoming unit testing, alpha & Beta Testing, integrated testing and system testing.
Deployment	05 Days	Deployment has done by installing project on the server.

Table 8.1: Scheduled Working Activities

8.1.2 Members actvities or task

Member	Activity	Time Period	Start Date	End Date	Comment
M1, M2	Requirement Gather-ing	4 Days	14/12/15	18/12/15	M1 and M2 has perfomed the seaching for project requirement on the internet by reviewing the related literature and by anlysing the related prject which is already available in the market. Regularly inform to the other member of team.
M1, M2	Analysing of the require-ment	3 Days	19/12/15	21/12/15	M1, M2 done the requirement analysing of project by sharing the ideas, and by discussing on related information which is gather by the M1, And M2 has created the list of requirement after every meeting
M1, M2	Finalysing the re-quire-ment	1 Day	22/12/15	22/12/15	Whole team finalize the requirement. M1 and M2 has created a list of finalise requirement.
M1, M2	Planning	7 Days	23/01/15	1/01/15	Planning has done by walkthrough and by analysing the available product. M2 and M1 creats a list of funtion which will be implement in the project. Each and every module were discuss in every group meeting and M1 and M2 creates a blue print for project .

M1, M2	Front End design	10 Days	2/01/16	15/01/16	M1 and M2 creates the UML diagram for front end of the system and data flow diagrams and informed to the whole team regularly.
M1, M2	Back End design	10 Days	15/01/16	28/01/16	M1 and M2 creates the UML diagram for back end of the system and data flow diagrams and informed to the whole team regularly.
M1, M2	Installation of tools and technology for front end	1 Days	29/01/16	29/01/16	M1 and M2 installed the all the require tools which is use for front end design.
M1, M2	Installation of tools and technology for back end	2 Days	30/01/16	1/02/16	M1 and M2 installed all the require tools which is use for back end design.
M1, M2	Implementation of GUI	4 Days	20/01/16	24/01/16	M1 and M2 creates the GUI of the project.
M1		20 Days	20/01/16	10/02/16	M1 implemented the webcrawler and discuss on it with other team membar
M2	Implementation of Login page an authentication program in jsp.	4 Days	20/01/16	02/02/16	M2 implemented the scraper and discuss on it with other team member
M1,M2	Login page an authentication connectivity with GUI	4 Days	02/02/16	06/02/16	M1 and M2 makes the connection among scraper and webcrawler. M1 and M2 Explain the codes to the our guide.

M1	Implementation of other module connectivity with GUI	8 Days	07/02/16	14/02/16	M1 makes the conection with GUIand discuss on it with other team member regularly.
M1, M2	Database connectivity	4 Days	06/02/16	10/02/16	M1 and M2 created the database connectivity.
M1	GUI Connectivity	4 Days	11/02/16	14/02/16	M1 created the connectivity GUI with database
M1, M2	Implementation of pdf Generation of report from database	10 Days	15/02/16	25/02/16	M1 and M2 implemented the program for pdf Generation of report from the database and regularly updates to the other member of team.
M1, M2	Data gathering into database	2 Days	15/02/16	17/02/16	M1 gather the data of nearby hospital to BARC hospital an emergency sevices from different websites.
M1, M2	Connectivity of search page with database	8 Days	26/02/16	04/03/16	M1 and M2 created the connectivity of search page with Database. They expalin the code to other member of team.
M2	Indexing	8 Days	26/02/16	05/03/16	M2 implements indexing programs in the jsp. And Connect it with the GUI. He explain the code to other memeber of team.

M2	Connectivity of indexing with database	3 Days	06/03/16	09/03/16	M2 makes the indexing program connectivity with database. And informed to the other member of team.
M1,M2	Collect the information of emergency sevices an put into database	5 Days	10/03/16	16/03/16	M2 and M1 Collect the information of emergency sevices an put into database.
M1,M2	Searching program connectivity	2 Days	18/03/16	20/03/16	M1 and M2 makes the connectivity of searching pages with GUI.
M1, M2	Integration of all modules	13 Days	21/03/16	3/03/16	M1, M2 integrated all the module. Implemented whole system properly.
M1,M2	Unit testing	4 Days	4/04/16	9/04/16	M1 and M2 performed the unit testing and noted down results and discuss with other member of team.
M1, M2	Functional testing	5 Days	10/04/16	14/04/16	M1 and M2 performed the functional testing and noted down results and discuss the result of testing with other member.
M1, M2	Deployment our project on kiosk System	â	15/04/2016	â	â

Table 8.2: Member Activities and Task

Chapter 9

Conclusion and Future Scope

9.1   Conclusion

The project is all about serving all groups of people through a friendly interface where getting information has become an easiest way. Patients as well as medical professionals could save up to 90 percent of their formerly wasted time .Most important, the quality of the medical services has been improved since the newly created workflow brings together patients and doctors in front of the clinical workplace to check whether all entries are correct.

Information kiosks are widely used and favorably accepted by the general public. Deployment of healthcare kiosks in both community and medical institution setting is an effective,efficient,and low cost method of providing healthcare information and can improve healthcare outcomes of target audience regardless of age, gender, race, language. literacy, demographics, and previous computer usage experience.careful design of the kiosk,its user interface,and the information content is necessary to maximize the effectiveness of the kiosk and to allow for its use across a broad spectrum of users.

9.2   Future Scope

KIOSK is growing very fast in this particular self-service technology where a person can ask a doctor for advice via kiosk. The person can write their health query, attach his/her picture or upload lab report and ask for advice and they will receive response either by email or on their phones. Kiosk does the work of self-assessment that will deliver a Health Age to the user by estimating the users biological age based on their health habits and biometrics. The assessment also calculates age,gender,weight,BMI,pulse,blood pressure and other queries that takes only 4 to 5 minutes to get on the touch screen KIOSK. In addition to this,it also give users their top five health risks based on their information. reports can be received by users on their,strengths and weekness.

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Publication

[1] Kadam Pooja, Mishra Preeti,Prof brinda,Prof Sameer Panwala, IMPLEMENTATION OF INFORMATION KIOSK FOR HOSPITAL, International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)2015

[2]Kadam Pooja, Mishra Preeti,Prof brinda,Prof Sameer Panwala, IMPLEMENTATION OF INFORMATION KIOSK FOR BARC HOSPITAL, International Journal of Scientific Research in Science, Engineering and Technology (ijsrset.com)

IMPLEMENTATION OF INFORMATION KIOSK FOR HOSPITAL

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ABSTRACT: Kiosk has been part of human life for many years and centuries. Technology impacted kiosk to be operated independently to serve mankind. In modern world kiosk is not just a computer with a touch screen enclosed in a box – it is an integration of Mechanical, Computer Hardware, Software, Peripherals and Embedded Controllers, and to build it requires high order domain expertise and intellectual power. The aim of the hospital Kiosk project is to pave the way for more advanced hospital services applications with user interface. This paper is used to guide technical audiences who want to develop kiosk systems, organizations willing to start sale through kiosks and functional beginners who want to possess basic knowledge of the kiosk systems. In IT world it is a common scenario where client provides business objectives and high level requirement to build the complete system and they are not in a position to provide all the details of the system one is expecting to be developed.

KEYWORDS: Kiosk**,** Integration**,** Peripherals**,** Embedded, User Interface, To pave the way

I. INTRODUCTION

Self-service kiosk (Information Kiosk) deployment in hospital has gain a big attraction due to the importance of the information existing on the kiosk as well as ease of use. "KIOSK " physical prototype is to be designed with user friendly interface which can benefit visitor or patients. Moreover, this kiosk should be designed to cater for those with limited skills or experience, physical and cognitive impairments, also the interface should be intuitive, clear and pretty. Users must be able to get the information within a minutes without the knowledge of others and wastage of time; in a queue waiting for administration to answer their queries. Hospital justify the implementation of kiosk   primarily as a means to improve the patient service, not strictly as cost-saving measure. Hospital justify the implementation of kiosk primarily as a means to improve the patient service, not strictly as cost-saving measure. The experiences of leading organizations have shown that kiosk can increase patient satisfaction by reducing waiting times and offering greater convenience and privacy.

II. RELATED WORK

The author has succeeded in reducing the stance of hospital but has failed in various aspects like it supported only in English. It is natural that a device kept in a public place should follow rules for communication and behaviour that its users are already familiar with. Kiosk users comes from a broad range of backgrounds and will not have an opportunity for extensive training with the interface. So it became the big issue of handling. The major challenge is that the kiosk user-interface must actively participate in initiating and regulating interactions with its users it without any issue. It should greet person who approaches it and engage people at a distance only. The next issue was the ability to interact with multiple users simultaneously, and dynamically adjust .

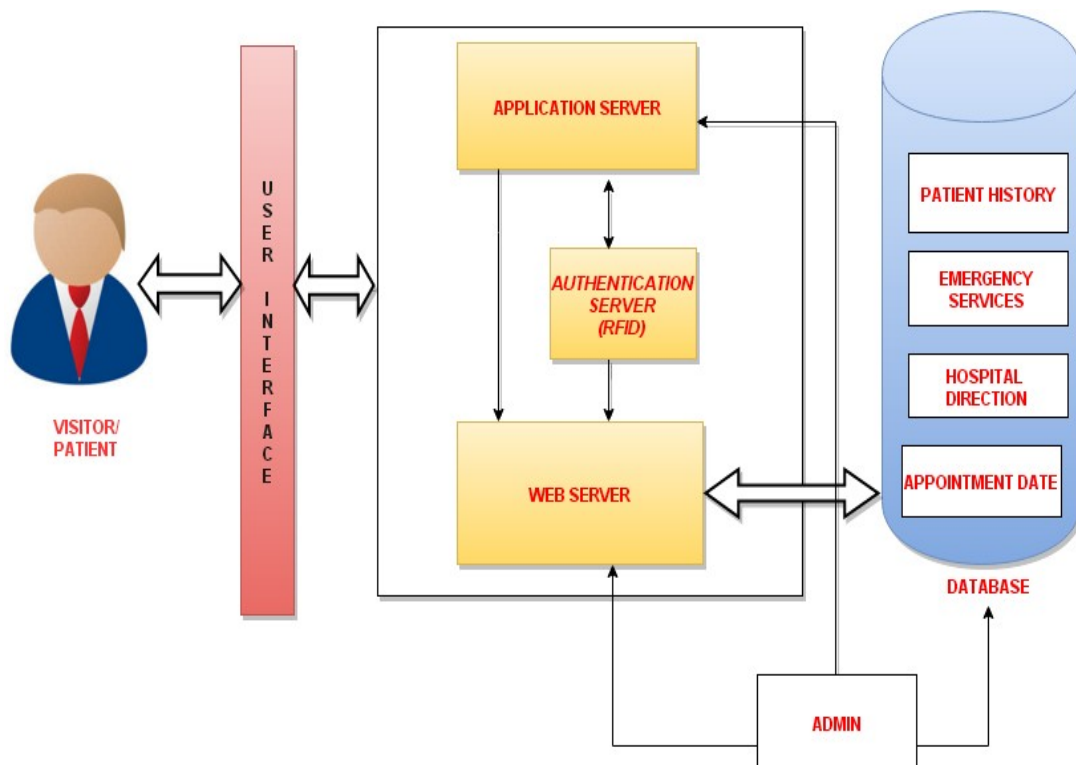### III. PROPOSED ARCHITECTURE

Fig1: System Architecture

A.   Architectural Description

This system architecture is a three- tier architecture which has been designed in MVC based pattern. For implementing user

2

interfaces , **Model–view–controller** (**MVC**);a software architectural pattern is required. A given software application is divided by MVC into three interconnected parts, to separate internal representations of information from the user in a three-tier architecture. Traditionally it is used for desktop graphical user interfaces, for designing web application; this architecture has become extremely popular.

To get into the system, the user first request through the user-interface. The request then first goes to the web server where it searches for the static content like facilities, services, emergency services etc. through HTTP protocol to display the information on the screen. Here, in first stage the user is either the visitor or patient. The visitors request is a short process compared to the patients request as the visitor has only simple query which will be stored in the web server itself. But, in case the user is patient then the request further goes to application server that forwards the request to the authentication server to validate the particular users identity and further sends it to the web server which is directly has connection to the database to fetch the dynamic information which has to be displayed on the user-interface (screen) that includes- the appointment dates, availability of doctors patient's history, recent reports etc.

The user(patient/visitor) uses the system for services through a simple system called "KIOSK". A normal visitor has no authentication permission where as the employees have to authenticate into the system for getting the personal details like getting recent medical reports, their history, appointments dates etc. The employees authenticate themselves by using their RFID. The employees have full access to the system where as visitor can only get the normal queries easily on the user-interface.

IV. SIMULATION RESULTS

The proposed solution Kiosk like structure, where the vital information regarding hospital can be easily found by patient or visitor on the front-end. The interface will display all the required information which is easy to use. A friendly interface, will be in multi-lingual so it would be easy for user to use. The data which is collected is used in a backend database (offline or tele-based) for providing on-the spot and self-service based diagnosis. No long queues or waiting for small check-ups will be an issue for the patient. Kiosk   is economically viable for suppliers and within reach of most users. Our primary duty is to keep "kiosk" hygienic and safe equipped with high precision and quality devices .The user who already has logged in (like in an ATM) is given his summary report, and is offered either preliminary solution or recommended to nearest specialty hospitals if any emergency, and his record is updated with the new diagnosis and recommendations.

Implementation of Information Kiosk for BARC Hospital

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ABSTRACT

Kiosk is playing a vital role in human life from many years and is continuing. The best way to serve mankind and in simplified way is through kiosk. "Kiosk" is not just a computer with a touch screen enclosed in a box – it is an integration of various hardwares and softwares such as Mechanical, Computer Hardware,Software, Peripherals and Embedded Controllers, and a high order domain expertise and intellectual power is required to build it. The aim of this project is make the hospital services applications advanced with user interface. This paper will be guidance for those who wants to build a user-friendly kiosk for their organization and also for beginners who wants to possess basic knowledge of the kiosk. It has become a common scenario in IT world where the clients has their own business objectives to build a high complete level requirement.

Keywords: Kiosk, convenience, Multilingual

I. INTRODUCTION

Self-service an Information Kiosk deployed in hospital with pretty, user-friendly interface and ease of use has gained a big attraction due to. "KIOSK" which is physical prototype designed with user friendly interface benefiting visitors as well as patients. However, the kiosk has been designed to cater those with limited skills or experience, physical and cognitive impairments, also the interface should be intuitive, clear and pretty. Without wastage of time waiting in a long queue ,the user will now have answer to their queries within a second. And now they don't have to wait for the admin to answer them. The purpose of the hospital is not for cost saving but to improve the patient service. The experiences of leading organization have shown that kiosk can increase patient satisfaction by reducing waiting times and offering greater convenience and privacy.

II. OBJECTIVE AND SCOPE

We have proposed a technology and a business model for providing diagnostic health care services in an efficient manner; which could in time became as popular and pervasive as ATM's are today for financial activities and other activities. The new visitor or patient coming to hospital are highly likely to get lost due to the complex layouts of building (new and old),various departments, doctor's availability, for getting an appointment for basic healthcare check-up, etc. There is no such system has been build for the hospital to overcome such problems. Patients and visitors itself rely on the other patients and visitors to find the directions of certain departments. Thus, design a kiosk for the convenience of patients and visitors is imperative.

"KIOSK" a system with user-friendly interface which can benefit visitors or patients without inconvenience. Moreover, it may help the user to find physicians and make appointment, navigate the building ,get a basic understanding of the medical service and guest service the hospital might offer, thereby decreasing waiting time, offer positive visitor experience. This kiosk designed to satisfy for those with limited skills or experience, physical and cognitive impairments, also the interface should be intuitive, clear and pretty.We need to provide more home and community care, so we can keep people out of hospital for longer time. We are working to make sure we have a hospital that will adapt to the changing needs and health services that is fit for the future. This

kiosk is not only limited to your hospital system but also for the airports ,malls, railways etc.
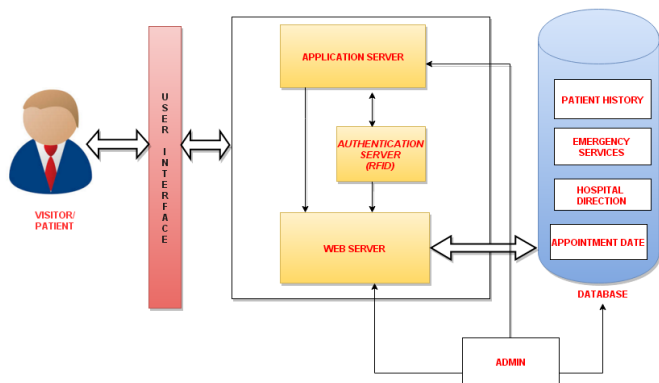
III. PROPOSED METHODOLOGY AND DISCUSSION

Figure 1 : System Architecture

This system architecture which has been designed in MVC based pattern. For implementing user interfaces Model–view–controller (MVC);a software architectural pattern is required. A given software application is divided by MVC into three interconnected parts, to separate internal representations of information from the user . This architecture has now become extremely popular in industrial market which traditionally was used for desktop graphical user interfaces, for designing web application.

Getting inside into kiosk, the user makes request through user-interface. The web server gets the request where it searches for the static information stored into the database. Here, the user could be visitor or patient. The visitors activites is very short process when we compare to the patients actvities that directly requests to the web-server. Whereas,if the user is a patient then its request goes to application server and further to the authentication server for the validation purpose of the user and fetches the data from the databse. Visitor,a normal user goes to application server where authentication is not required.The employees authenticate themselves by using their RFID. The employees have full access to the system where as visitor can only get the normal queries easily on the user-interface.

IV. IMPLEMENTATION METHODOLOGY

To get into the system, the user first request through the user-interface. A normal visitor has no authentication permission so the request first goes to the web server where it gets the static content like facilities, services, emergency services etc. through HTTP protocol to display the information on user- interface. Here, the user is either the visitor or patient. The visitors request is a not a big process as compared to the patients request as the visitor has only simple query which will be in web server itself.

But, in case the user is patient itself then the request further goes to application server that forwards it to the authentication server to validate the particular users identity by using their RFID and further sends it to the web server which is directly has connection to the database to fetch the dynamic information which has to be displayed on the user-interface (screen) that includes-the appointment dates, availability of doctors patient's history, recent reports, their history, appointments dates etc. The employees have full access to the system where as visitor can only get the static pages access on the user-interface.

Figure 2: User Interface

Figure 3. Emergency Services

V. EXPECTED OUTPUT

The report of the recent diagnose and past report of the patient will be displayed . The patient would be able to book their appointment according to their requirement. The patients can check the availability of the doctor and available appointment. The emergency and various services provided could be viewed by both visitor as well as patients.
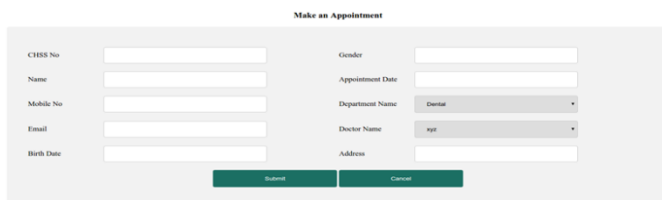

Figure 4. Appointment page

VI. FUTURE SCOPE

We need to provide more home and community care, so we can keep people out of hospital for longer time. We are working to make sure we have a hospital that will adapt to the changing needs and health services that is fit for the future. This kiosk is not only limited to your hospital system but also for the airports, malls, railways etc. A person can ask a doctor via self-service technology "KIOSK". The person can receive response either by email or on their phones by attaching his/her picture or upload lab report and ask for advice related to health.

VII. CONCLUSION

The project is all about reduced the time of the user in this busy lifestyle of people. Gathering of information has become a easiest way to et. Both patients as well as medical professionals could save up to 90 percent of their formerly wasted time. .Most important, the quality of the medical services has been increased, since the newly created workflow brings together patients and doctors in front of the clinical workplace, to check whether all entries are correct.

VIII. ACKNOWLEDGMENT

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Certificate

[1]Certification of Implementation of Information Kiosk for BARC Hospital.

Chapter 10

Appendix I

10.1 What is Kiosk?

Figure 10.1: Kiosk

An electronic kiosk (or computer kiosk or interactive kiosk) houses a computer terminal that often employs custom kiosk software designed to function while preventing users from accessing system functions. Indeed, kiosk mode describes such a mode of software operation.

Computerized kiosks may store data locally, or retrieve it from a computer network. Some computer kiosks provide a free, informational public service, while others serve a commercial purpose (see mall kiosk). Touchscreens, trackballs, computer keyboards, and pushbuttons are all typical input devices for interactive computer kiosk.

Touchscreen kiosks are commercially used as industrial appliances, reducing lines, eliminating paper, improving efficiency and service. Their uses are unlimited from refrigerators to airports, health clubs, movie theaters and libraries.

10.1.1 Different types of Kiosk

The different types of Kiosk are as follows:

1. Telekiosk
The telekiosk can be considered the technical successor to the telephone booth, a publicly accessible set of devices that are used for communication. These can include email, fax, SMS, as well as standard telephone service. Telekiosk is rarely seen or heard anymore.

2. Financial services kiosk
The financial services kiosk can provide the ability for customers to perform transactions that may normally require a bank teller and may be more complex and longer to perform than desired at an ATM. These are sometimes to referred to as "bank-in-a-box"

3.Photo kiosk
An interactive kiosk which allows users to print pictures from their digital images.

4. Hospital and medical clinic registration and check-in kiosks
Hospitals and medical clinics are looking to kiosks to allow patients to perform routine activities. Kiosks that allow patients to check in for their scheduled appointments and update their personal demographics reduce the need to line up and interact with a registration clerk. In areas where patients must make a co-pay, kiosks will also collect payment. As the requirements for documentation, waivers and consent increase, kiosks with integrated signature capture devices are able to present the documentation to the patient and collect their signature.

5.Information kiosk
Museums, historical sites, national parks and other tourist/visitor attractions often engage kiosks as a method for conveying information about a particular exhibit or site. Kiosks allows guests to read about - or view video of - particular artifacts or areas at their own pace and in an interactive manner, learning more about those areas that interest them most.

10.2 What Are The Benefits?

Benefits are as follows:
1.Improve customer buying experience
2.Increase customer base
3.Reduce the cost of business
4.Gain efficiency through diverse applications
5.Boosts job satisfaction

ACKNOWLEDGMENT

We would like to take the opportunity to express our sincere thanks to our guide **Prof. Sameer Panwala**, Assistant Professor, Department of Computer Engineering, AIKTC, School of Engineering, Panvel for his invaluable support and guidance throughout our project research work. Without his kind guidance & support this was not possible.

We are grateful to him for his timely feedback which helped us track and schedule the process effectively. His time, ideas and encouragement that he gave his help us to complete our project efficiently.

We would also like to thank **Dr. Abdul Razak Honnutagi**, AIKTC, Panvel, for his encouragement and for providing an outstanding academic environment, also for providing the adequate facilities.

We are thankful to **Prof. Tabrez Khan**, HOD, Department of Computer Engineering, AIKTC, School of Engineering, Panvel and all my B.E. teachers for providing advice and valuable guidance.

We also extend our sincere thanks to all the faculty members and the non-teaching staff and friends for their cooperation.

Last but not the least, We are thankful to all our family members whose constant support and encouragement in every aspect helped us to complete our project.

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Chapter 10. Appendix I

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