A REPORT OF ONE MONTH TRAINING

at

COUNCIL OF CYBER VIGILANCE AND SECURITY ENFORCEMENT

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD

OF THE DEGREE OF

BACHELOR OF TECHNOLOGY

(Computer Science & Engineering)

JUNE-JULY, 2025

SUBMITTED BY:

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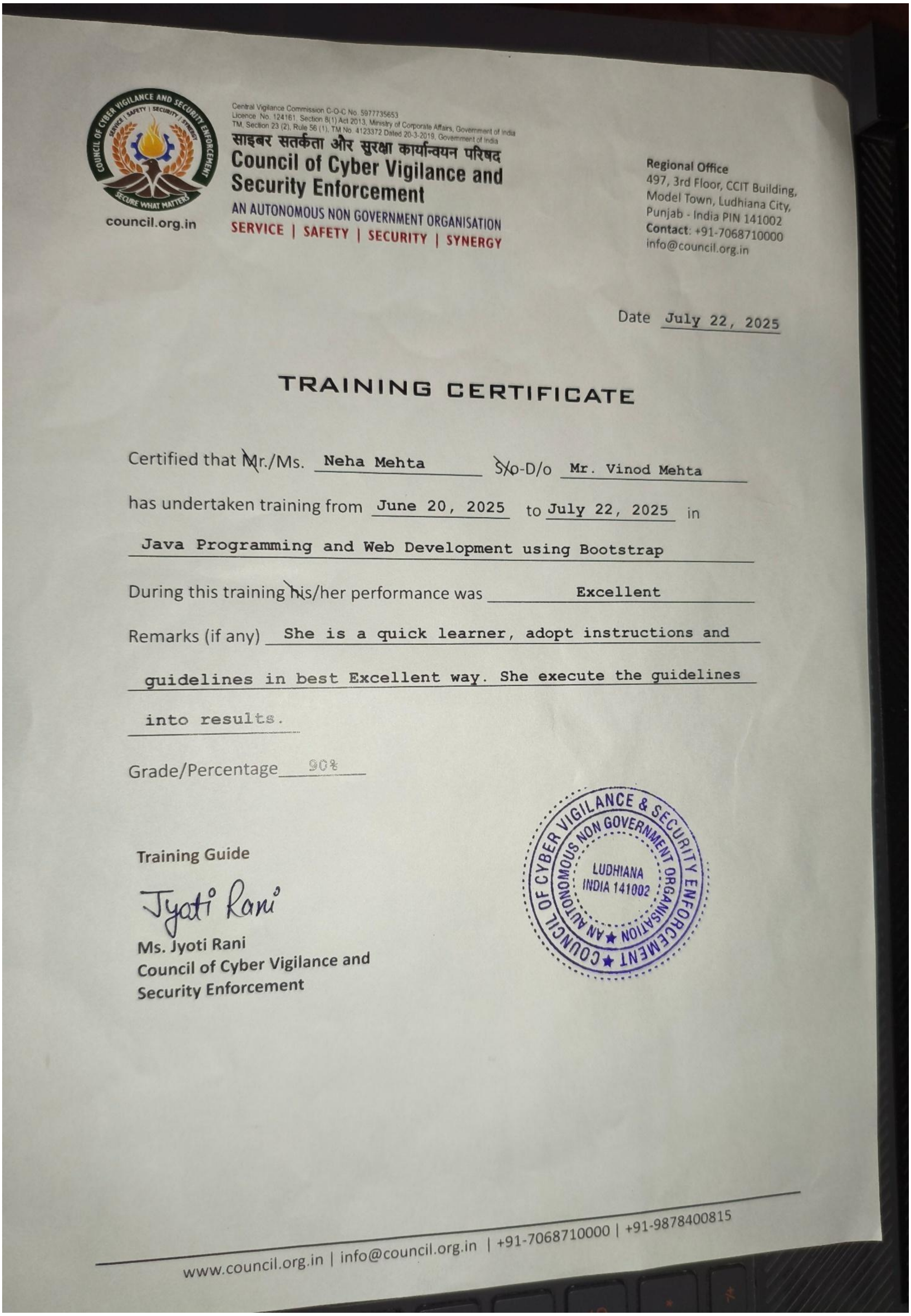
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

GURU NANAK DEV ENGINEERING COLLEGE LUDHIANA

(An Autonomous College Under UGC ACT)

TRAINING CERTIFICATE



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Date July 22, 2025

TRAINING CERTIFICATE

Certified that ~~Mr.~~/Ms. Neha Mehta ~~S/o~~-D/o Mr. Vinod Mehta

has undertaken training from June 20, 2025 to July 22, 2025 in

Java Programming and Web Development using Bootstrap

During this training ~~his~~/her performance was Excellent

Remarks (if any) She is a quick learner, adopt instructions and guidelines in best Excellent way. She execute the guidelines into results.

Grade/Percentage 90%

Training Guide

Jyoti Rani

Ms. Jyoti Rani
Council of Cyber Vigilance and Security Enforcement

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GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA

CANDIDATE'S DECLARATION

I “NEHA MEHTA” hereby declare that I have undertaken one month training **“COUNCIL OF CYBER VIGILANCE AND SECURITY ENFORCEMENT”** during a period from 20th June, 2025 to th July, 2025 in partial fulfilment of requirements for the award of degree of B.Tech (Computer Science & Engineering) at GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA. The work which is being presented in the training report submitted to Department of Computer Science and Engineering at GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA is an authentic record of training work.

Signature of the Student

The one-month industrial training Viva–Voce Examination of____________________ has been held on _____________and accepted.

Signature of Internal Examiner   Signature of External Examiner

ABSTRACT

This report presents a comprehensive summary of my four-week industrial training on Core Java Development, aimed at gaining practical knowledge of object-oriented programming concepts and building efficient, reusable, and scalable software applications. The training began with strengthening programming fundamentals such as data types, operators, control structures, and arrays, followed by an in-depth study of Object-Oriented Programming (OOP) principles including classes, objects, inheritance, polymorphism, encapsulation, and abstraction.

In the later phase, I explored exception handling, multithreading, file handling, and collection framework to develop robust and high-performance applications. The training also covered Java Database Connectivity (JDBC) for integrating Java applications with databases and performing CRUD operations. Throughout the training, I developed several mini-projects and console-based applications that enhanced my understanding of software logic, debugging, and application flow.

Overall, the program provided valuable hands-on experience with Core Java, improved my problem-solving and programming skills, and prepared me for advanced topics such as Java EE, frameworks, and full-stack application development.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to all those who contributed to the successful completion of my TR-102 Summer Training on Core Java.

I am thankful to the faculty and management of Guru Nanak Dev Engineering College, Ludhiana, for providing continuous guidance, academic support, and the opportunity to undertake this training as part of the curriculum. Their efforts in promoting practical learning and technical growth are truly commendable.

I would also like to extend my heartfelt thanks to CCIT for offering me the opportunity to gain valuable hands-on experience in core java. I am especially grateful to my mentor, Miss Jyoti, for her constant support, expert supervision, and encouragement throughout the training. Her mentorship helped me strengthen my technical knowledge and develop a deeper understanding of real-world web application development.

Lastly, I wish to thank my family, friends, and fellow trainees for their cooperation, motivation, and encouragement during this learning journey. Their support played a vital role in making this training experience productive, insightful, and memorable.

Thank you all for making this training experience truly valuable and enriching.

ABOUT THE COMPANY

The Council of Cyber Vigilance and Security Enforcement (CCVSE) is a reputed organization dedicated to advancing cybersecurity awareness, digital vigilance, and software development excellence. Based in Mohali, Punjab, the council specializes in providing professional training, consultancy, and technical solutions in areas such as software development, network security, data protection, and cyber forensics. With a vision to create a digitally secure and technologically empowered society, the organization emphasizes both theoretical knowledge and hands-on practical experience in cutting-edge technologies.

The council offers a diverse range of technical training programs, including Core Java Development, Web Technologies, Python Programming, Cybersecurity Essentials, and Database Management. These programs are designed to help students and professionals build strong programming foundations, analytical skills, and a security-first mindset in software development.

During my industrial training at the Council of Cyber Vigilance and Security Enforcement, I underwent comprehensive training in Core Java, where I learned key concepts such as object-oriented programming (OOP), exception handling, multithreading, collection framework, and file management. I also gained exposure to database connectivity through JDBC and developed several mini-projects that strengthened my understanding of logic building and real-world application development. The guidance from experienced mentors and the structured learning environment provided me with valuable insights into professional software practices, teamwork, and the importance of writing secure and efficient code in modern IT solutions.

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ABBREVIATIONS

API	Application Programming Interface
JVM	Java Virtual Machine
AWT	Abstract Windowing Toolkit
MVC	Model View Controller
JSP	Java Server Pages
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheet
SQL	Structured Query Language
DFD	Data Flow Diagram

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CHAPTER 1 INTRODUCTION

This project aims to introduce a **Patient Scheduling Online Service** for health care institutions that would ease off the appointment-scheduling journey for users and pave the path of a better doctor-patient experience. The proposed system advances with online facilities that eliminate the chaos of traditional appointment services. This system offers online appointment booking, to view doctors list, to cancel and update appointments with an administrative portal to manage all the sections. It provides advanced functionality to streamline the process thus easy access to personal hospital services that help organizations to stay connected with their customers, clients and most importantly patients and can result in significant time and monetary savings In to order to develop a successfully running online Patient Scheduling, the system is required to interact with system database, scheduling module and the administrative module for example, to achieve the best implementation, the scheduling system would be able to interact with several medical health care staff such as physicians, nurses admin staff and patients.

1.1 Problem Context

Online Patient Scheduling also commonly known as Online Appointment booking system an optimized phase of medial healthcare service to improve patient healthcare journey in hospitals and clinics. Motivated by the rising popularity of electronic appointment booking system, this project aims to develop an appointment-scheduling model that takes into account the patient preferences regarding when they would like to be seen. Currently, it is rational to establish the fact that, very few hospitals provide online scheduling doctor-patient session.

1.2 Disadvantages of Existing System

The disadvantages of current system are all those associated with manual working systems. It is time consuming to produce appointment sheets or reports as compared to any other computerized system. Humans are more probes to errors so always possibility of errors in managing records. It is very difficult and time consuming to manage the medicine stocks manually. Patients are not able to check their disease online. Chemists contact with doctors in case of any discrepancy related to any medicine.

- Patients have to run to doctors every time.
- No use of Web Services and Remoting.
- Risk of mismanagement and of data when the project is under development.
- Less Security.
- No proper coordination between different Applications and Users.
- Fewer Users - Friendly.
- Manual system need man power a lot.
- Communication between Doctor and Patient is not directly.
- It is less user-friendly.

1.3 Appointment Booking System

Involves everything that has to do with the management of medicines, doctors, patients, appointment details etc. This is basically used to build a web application program that a company uses to manage the records of the doctors, patients and medicines. Only the administration has the legal rights to work with the system. Patient can only log on to the system to see their current status and prescribe the medicines to patients. To manage all the information about the Details of the medicines

- To manage all the information about the medicines, according to the abbreviation to be used.
- To manage all the information about the medicines according to the Chapter, Topic.
- To manage all the information about the medicines, according to the Salt.
- To manage the stock of medicines.
- To check the disease by matching the symptoms by a patient.
- Administrator has the privilege that he can create, modify the database.
- It modifies the information when need arises of the new patients and doctors.
- To intimate user according to the threshold value set for Quantity.

1.4 Features of Project

The use of computer in medical applications continues to be widely increased dramatically throughout the last three decades. Traditionally, with this field, information technology has been utilized to read, scan, store, process, retrieve and analyze medical information. They have already been used as being a tool inside Computer Aided Diagnosis and proper care of patients.

An expert method is a **patient appointment system** that control flow of patient appointments and generate display board for each day so a sequence of appointments can be handled and expert system deal with emergency levels which may be Emergent,Urgent,No-Urgent and the highest emergency level patient are attended first and display board is automatically refereshed to re-arrange the appointments. These examples from your through the problem domain can either have the correct class labels related to them, categorized as supervised learning, or sub–classes of examples can automatically be found from the inside the data.

- **User Friendly**: The system produced is user friendly, understandable and easy to use so that the users of the system can easily learn to use the system. For this the system is made menu-driven with well-documented programs.

- **Time Element (response and processing time)**: The response time of the system is very less and takes less time to execute queries and triggers.

- **Maximum Throughput**: The system gives maximum throughput with relevant output

- **Robustness**: The system will be able to handle undesirable situations and errors encountered at various levels e.g. if the user supplies invalid input for processing, the system gracefully halts, displaying a message to the user indicating the cause of the error and prompting him it enter the correct input.

- **Flexibility:** The system is flexible in nature so that likely changes and alterations can easily be made.

- **Information Security:** Records in the system must be safe, confidential and must be prevented from unauthorized access.

- **Moral and User Satisfaction**: System will be able to satisfy the user requirements; this is the main and conspicuous measure of the system performance. Also the system must raise the moral of the user. The higher the moral, greater the expected work performance level.

The Inputs Required for this System are:

- Login.
- Patient Maintenance
- Appointment maintenance.

The Outputs Required for this System:

- Patient Reports
- Appointment Report
- Symptom checker
- Logout

1.5 Technologies Used

FRONT END	JAVA
BACKEND	JDK1.8.0

JAVA: The Java Development Kit (JDK)

MySQL: MySQL is an open source relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. MySQL is a relational database management system (RDBMS), and ships with no GUI tools to administer MySQL databases or manage data contained within the databases.

CHAPTER 2 PROJECT WORK UNDERTAKEN

Information technology has been like a boom in almost every kind of management system. The continuous improvement in the field of technology along with increasing complications in day-to-day life has resulted in the online information system. The availability of the software's for almost every process or every system has taken the world in its top-gear and fastens the day-to-day life. So, we have tried our best to develop this software program.

In this Project I have made a Hospital website which performs tasks very efficiently. This project name is Appointment Booking System for Patient. In this System Patients can request appointments after they login. The request is forwarded to surgery staff (admin) which process the request and assign them priority. Patients can view the display board for the confirmation of their appointments and they can see the token no being assigned them according to their emergency level. They can also request for the appointment to the specialized doctors in this hospital and meet them for further tests.

2.1 Modules

The system after careful analysis has been identified to be presented with the following modules:

The modules involved are:

- Admin Module
- Patient Module

2.1.1 Admin Module - Admin Module means Administrator Module. In this module or panel, the Administrator has the privileges to Add, Delete & Modify the database. Administrator will have complete control of the system. Admin operates the whole system. He will be responsible for managing all the records of the system and generating various reports.

This Module is divided into different sub-modules.

- Doctor Management
- Patient Management
- Appointment Management

- **Doctor Management-** In Doctor Management, Admin can add, modify and delete the doctor details. He provides the privileges to confine the view upto a limit so that doctors cannot manipulate all data own their own.
- **Patient Management-** In Patient Management, Admin can add, modify and delete the Patient details. He provides the privileges to confine the view upto a limit so that patients cannot manipulate all data own their own.
- **Appointment Management-** In Appointment management, Admin can manage appointments requested by patients and allotted them token no.

2.1.2 Patient Module – In this Module Patients can check their personal details, they can match the symptoms and conclude about the disease they have, they can also request for the appointment , They can also change their password if necessary.

This Module is divided into different sub-modules.

- View Personal Details
- Symptom Checker
- Request Appointment
- Change Password

- **View Personal Details**- Here the Patient who have login, that very particular Patient can view his personal details, He can also modify his Particulars if he want to.
- **Symptom Checker-** Here Patients can match their symptoms and can find what disease they are suffering from and what are the medicines required to treat that disease.

- **Request Appointment-** Here Patients can request for the appointment for checkup to the specialized doctor in the area they are suffering disease.

- **Change Password-** Here Patients can change their password if they wish to do so.

2.2 HARDWARE REQUIREMENTS

- Intel(R) Pentium(R) i3 Processor minimum or higher is recommended.
- 4 GB RAM minimum (8GB RAM is recommended)
- Disk space: We will require 500 GB maximum disk space for installing the full Show Organizers application and additional disk space for the resources that we develop. We will require additional disk space to meet the database requirements.
- Display resolution:

  Windows 800 x 600 display minimum (1024 x 768)

  ▶ Linux 1024 x 768 display minimum.

2.3 SOFTWARE REQUIREMENTS

This section contains all the software requirements at a level of detail. These are as follows.

- Operating System : Windows 9X/XP, Windows Vistas, Windows 7.
- IDE : NetBeans 8.0.1
- Technology : Struts, JSP, Jquery, Servlets
- Web Technologies : Html, CSS
- Database : MySql 5.0, WampServer
- Web Server : apache tomcat 8.0.32
- Development kit : jdk-8

2.4 System Implementation

Implementation implies what configurations are required to implement the given software at the end user’s site.

- There must be JDK loaded on all the computers that will provide support to the computer on which the application is running. Then, install the installation on the system using its installer.
- There must be MySQL Server 5.0 installed on the system to provide the support of database.

After the system is implemented, a review of the system is conducted by the users and the analysts alike to determine how well the system is working, how it has been accepted and whether any adjustments are needed.

2.5 Overview of JAVA

Java is an object-oriented programming language with a built-in application programming interface (API) that can handle graphics and user interfaces and that can be used to create applications or applets. Because of its rich set of API's, similar to Macintosh and Windows, and its platform independence, Java can also be thought of as a platform in itself. Java also has standard libraries for doing mathematics.

In Java we distinguish between applications, which are programs that perform the same functions as those written in other programming languages, and applets, which are programs that can be embedded in a Web page and accessed over the Internet. Our initial focus will be on writing applications. When a program is compiled, a byte code is produced that can be read and executed by any platform that can run Java.

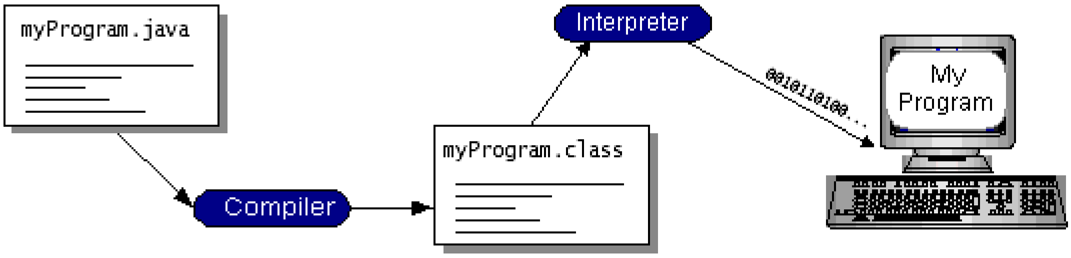


Fig.4.2.1 Compilation of java Program

2.5.1 Characteristics Of Java:

1. Platform Independent

2. Robust

3. Object Oriented

4. Multithreaded

5. High Performance

6. Dynamic

Speciality Of Java: Java is a programming language for distributed applications. It doesn't just allow you to add new types of content to your pages like Netscape and Internet Explorer do. Rather it lets you add both the content and the code necessary to interact with that content .

Here are just a few of the many things Java can do for a web page:

- Inline sounds that play in real-time whenever a user loads a page
- Music that plays in the background on a page
- Cartoon style animations
- Real-time video
- Multiplayer interactive games

2.5.2 Java Platform:

A java platform is the hardware or software environment in which a program runs. The java platform has two components:

- Java Virtual Machine (JVM)
- Java Application Programming Interface (Java API)

- **Java Virtual Machine (JVM)** : JVM is a standardized hypothetical computer, which is emulated inside your computer by a program.
- **Java Application Programming Interface (Java API)** : The Java API is a large collection of ready-made software components that provide many useful capabilities, such as graphical user interface (GUI). The java API is grouped into libraries of related classes and interfaces these libraries are known as packages.

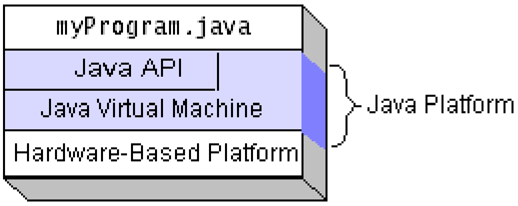


Fig.4.2.2 Java Platform

2.5.3 Different Modules Of Java:

- **AWT**: The Java programming language class library provides a user interface toolkit called the Abstract Windowing Toolkit, or the AWT. The AWT is both powerful and flexible. Newcomers, however, often find that its power is veiled. The class and method descriptions found in the distributed documentation provide little guidance for the new programmer. Furthermore, the available examples often leave many important questions unanswered. Of course, newcomers should expect some difficulty. Effective graphical user interfaces are inherently challenging to design and implement, and the sometimes complicated interactions between classes in the AWT only make this task more complex. However, with proper guidance, the creation of a graphical user interface using the AWT is not only possible, but relatively straightforward.

- **APPLET:** Applets are small Java programs that are embedded in Web pages. They can be transported over the Internet from one computer (web server) to another (client computers). They transform web into rich media and support the delivery of applications via the Internet. Although Java is a general-purpose programming language suitable for a large variety of tasks, the task most people use it for is applet programming. An applet is a Java program that executes on a World Wide Web page. When the prerelease versions of the Java Developers Kit were made available in 1995, the demonstration programs that drew international attention to the language were applets.

The current uses of applets include the following:

- Tickertape-style news and sports headline updates
- Animated graphics
- Video games
- Student tests
- Image maps that respond to mouse movement
- Advanced text displays
- Database reports

2.5.4 SWING: Most Swing developers know by now that Swing components have a separable model-and-view design. And many Swing users have run across articles saying that Swing is based on something called a "modified MVC (model-view-controller) architecture."

But accurate explanations of how Swing components are designed, and how their parts all fit together, have been hard to come by -- until now.

The silence ends with the publication of this article, a major white paper on Swing component design. It provides a comprehensive technical overview of Swing's modified MVC structure and demystifies many other facets of Swing component architecture as well. This document presents a technical overview of the Swing component architecture. In particular, it covers the following areas in detail:

- Design goals
- Roots in MVC
- Separable model architecture
- Pluggable look-and-feel architecture Design Goals

Component	**Model Interface**	**Model Type**
JButton	ButtonModel	GUI
JCheckBox	ButtonModel	GUI/data
JRadioButton	ButtonModel	GUI/data
JMenu	ButtonModel	GUI
JMenuItem	ButtonModel	GUI
JSlider	BoundedRangeModel	GUI/data

Table 4.2.1 Component-to-Model mapping for Swing

2.5.5 JSP: JavaServer Pages™ (JSP) is a web-scripting technology similar to Netscape server-side JavaScript (SSJS) or Microsoft Active Server Pages (ASP). However, it's more easily extensible than SSJS or ASP, and it isn't proprietary to any one vendor or any particular web server. Although the JSP specification has been managed by Sun Microsystems, any vendors can implement JSP in their own systems.

If you're working with Netscape technologies today or are planning to in the future, you should start learning about JSP, because Netscape will soon be introducing products that use it.

JSP Request Model

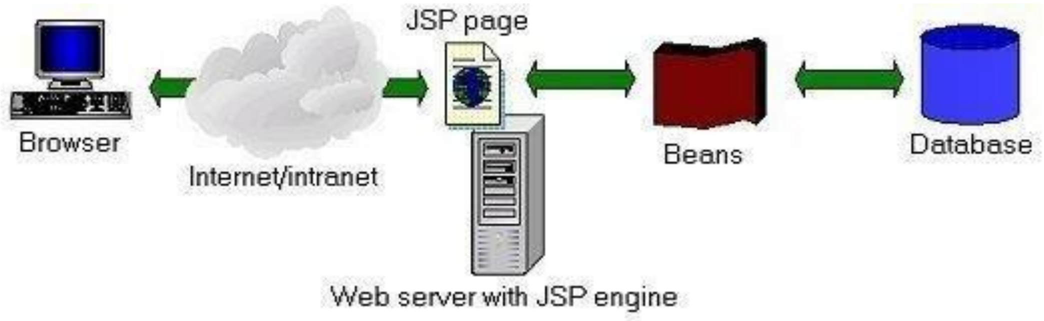


Fig.4.2.3 Basic JSP Request Model

This figure illustrates the flow of information in this model. JSP code controls interactions with JavaBeans components for business and data logic processing, and then displays the results in dynamically generated HTML mixed with static HTML code.

Scope	**Description**
page	Object is accessible only by a single client from the page on which it is created.
request	Object is accessible by a single client for the lifetime of a single client request.

session	Object is accessible by a single client from anywhere in the application for the lifetime of an entire user session.
application	Object accessible is by any client from any page within the application for the lifetime of the application.

Table 4.2.2 Scope and state maintenance in JSP

2.5.6 Servlets: A Servlet is quite simply a java class that adheres to the general model of a Servlet as defined by the Servlet API. A Servlet Container, also known as a Servlet Engine translates requests from whatever protocol is being used into objects that the Servlet understands, and also gives the Servlet an object which it can use to send a response. This container is also responsible for managing the lifecycle of a Servlet.

Now we have already met the idea of a JSP Container which manages JSP execution. In fact the JSP Container is only responsible for the rewriting of a JSP page to a Servlet and then allows the Servlet Container handle the actual execution.

The basic lifecycle of a Servlet is:

- The Servlet Container creates an instance of the Servlet.
- The Container calls the instance's init() method.
- If the Container has a request for the Servlet it will call the instance's service() method.
- Before the instance is destroyed the Container will call the destroy() method.
- Finally the instance is destroyed and marked for garbage collection.

2.5.7 Struts: Apache Struts 2 is an elegant, extensible framework for creating enterprise-ready Java web applications. The framework is designed to streamline the full development cycle, from building, to deploying, to maintaining applications over time.

Apache Struts2 was originally known as Web Work 2. After working independently for several years, the Web Work and Struts communities joined forces to create Struts2. This new version of Struts is simpler to use and closer to how Struts was always meant to be. Struts 2 is a pull-MVC framework. i.e. the data that is to be displayed to user has to be pulled from the Action.

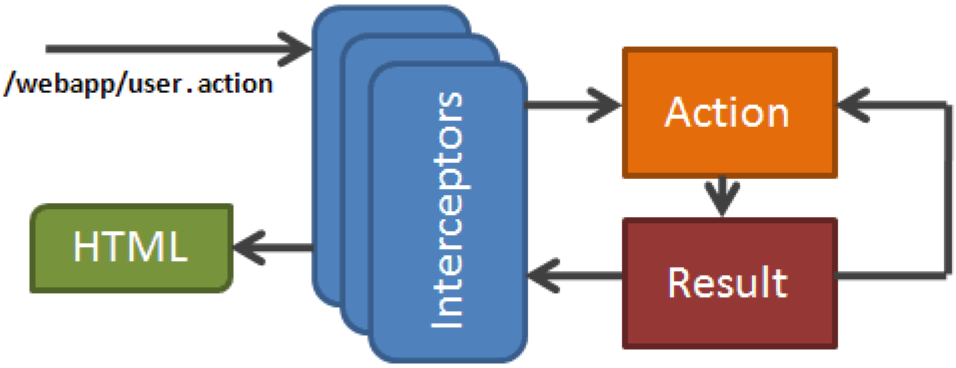


Fig. 4.2.4 Struts 2 Working

Architecture of Struts 2:

- The normal lifecycle of struts begins when the request is sent from client. This results invoke the servlet container which in turn is passed through standard filter chain.
- The FilterDispatcher filter is called which consults the ActionMapper to determine whether an Action should be invoked.
- If ActionMapper finds an Action to be invoked, the FilterDispatcher delegates control toActionProxy.
- ActionProxy reads the configuration file such as struts.xml. ActionProxy creates an instance ofActionInvocation class and delegates the control.

- ActionInvocation is responsible for command pattern implementation. It invokes the Interceptors one by one (if required) and then invoke the Action.
- Once the Action returns, the ActionInvocation is responsible for looking up the proper result associated with the Action result code mapped in struts.xml.
- The Interceptors are executed again in reverse order and the response is returned to the Filter (In most cases to FilterDispatcher). And the result is then sent to the servlet container which in turns send it back to client.

2.5.8 HTML:

HTML is a language for describing web pages.

- HTML stands for Hyper Text Markup Language
- HTML is a markup language
- A markup language is a set of markup tags
- The tags describe document content
- HTML documents contain HTML tags and plain text
- HTML documents are also called web pages

HTML Tags:

HTML markup tags are usually called HTML tags

- HTML tags are keywords (tag names) surrounded by angle brackets like <html>
- HTML tags normally come in pairs like <b> and </b>
- The first tag in a pair is the start tag, the second tag is the end tag
- The end tag is written like the start tag, with a forward slash before the tag name
- Start and end tags are also called opening tags and closing tags.

2.5.9 CSS: A CSS (cascading style sheet) file allows you to separate your web sites (X)HTML content from it’s style. As always you use your (X)HTML file to arrange the content, but all of the presentation (fonts, colors, background, borders, text formatting, link effects & so on…) are accomplished within a CSS.

- CSS stands for Cascading Style Sheets
- Styles define how to display HTML elements
- Styles were added to HTML 4.0 to solve a problem
- External Style Sheets can save a lot of work
- External Style Sheets are stored in CSS files

2.5.10 Jquery:

- jQuery is a lightweight, "write less, do more", JavaScript library.
- The purpose of jQuery is to make it much easier to use JavaScript on your website.
- jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.
- jQuery also simplifies a lot of the complicated things from JavaScript, like AJAX calls and DOM manipulation.

The jQuery library contains the following features:

- HTML/DOM manipulation
- CSS manipulation
- HTML event methods
- Effects and animations
- AJAX
- Utilities

2.6 Introduction to Mysql:

2.6.1 Introduction: The MySQL (R) software delivers a very fast, multi-threaded, multi-user, and robust SQL (Structured Query Language) database server. MySQL Server is intended for mission-critical, heavy-load production systems as well as for embedding into mass-deployed software. MySQL is a trademark of MySQL AB.

2.6.2 History of MySQL: We started out with the intention of using mSQL to connect to our tables using our own fast low-level routines. However, after some testing, we came to the conclusion that mSQL was not fast enough or flexible enough for our needs. This resulted in a new SQL interface to our database but with almost the same API interface as mSQL. This API was designed to allow third-party code that was written for use with mSQL to be ported easily fr use with MySQL. The derivation of the name MySQL is not clear. Our base directory and a large number of our libraries and tools have had the prefix ``my'' for well over 10 years. However, co-founder Monty Widenius's daughter is also named My. The name of the MySQL Dolphin (our logo) is Sakila. Sakila was chosen by the founders of MySQL AB from a huge list of names suggested by users in our ``Name the Dolphin'' contest. The winning name was submitted by Ambrose Twebaze, an open source software developer from Swaziland, Africa. According to Ambrose, the name Sakila has its roots in SiSwati, the local language of Swaziland. Sakila is also the name of a town in Arusha, Tanzania, near Ambrose's country of origin, Uganda.

2.6.3 Main Features of MySQL:

The following list describes some of the important characteristics of the MySQL Database Software.

- **Internals and Portability**
  - Written in C and C++.
  - Tested with a broad range of different compilers.
  - Works on many different platforms. Uses GNU Automake, Autoconf, and Libtool for portability.
  - APIs for C, C++, Eiffel, Java, Perl, PHP, Python, Ruby, and Tcl are available.

  - Fully multi-threaded using kernel threads. This means it can easily use multiple CPUs if they are available.
  - Provides transactional and non-transactional storage engines.
  - A very fast thread-based memory allocation system.
  - Very fast joins using an optimized one-sweep multi-join.
  - In-memory hash tables which are used as temporary tables.
  - SQL functions are implemented using a highly optimized class library and should be as fast as possible. Usually there is no memory allocation at all after query initialization.
  - The MySQL code is tested with Purify (a commercial memory leakage detector) as well as with Valgrind, a GPL tool.
  - The server is available as a separate program for use in a client/server networked environment. It is also available as a library that can be embedded (linked) into standalone applications. Such applications can be used in isolation or in environments where no network is available.

- **Column Types**
  - Many column types: signed/unsigned integers 1, 2, 3, 4, and 8 bytes long, FLOAT, DOUBLE, CHAR, VARCHAR, TEXT, BLOB, DATE, TIME, DATETIME, TIMESTAMP, YEAR, SET, ENUM, and OpenGIS geometry types.

  - Fixed-length and variable-length records.

- **Commands and Functions**
- Full operator and function support in the SELECT and WHERE clauses of queries. For example:

    - mysql> SELECT CONCAT(first_name, ' ', last_name)
        - □ FROM tbl_name
        - □ WHERE income/dependents > 10000 AND age > 30;

- Support for LEFT OUTER JOIN and RIGHT OUTER JOIN with both standard SQL and ODBC syntax.

- DELETE, INSERT, REPLACE, and UPDATE return the number of rows that were changed (affected). It is possible to return the number of rows matched instead by setting a flag when connecting to the server.

- **Security:** A privilege and password system that is very flexible and secure, and allows host-based verification. Passwords are secure because all password traffic is encrypted when you connect to a server.

2.6.4 Scalability and Limits

- Handles large databases. We use MySQL Server with databases that contain 50 million records. We also know of users that use MySQL Server with 60,000 tables and about 5,000,000,000 rows.

- Up to 32 indexes per table are allowed. Each index may consist of 1 to 16 columns or parts of columns. The maximum index width is 500 bytes (this may be changed when compiling MySQL Server). An index may use a prefix of a CHAR or VARCHAR column.

2.6.5 Connectivity

- Clients may connect to the MySQL server using TCP/IP sockets on any platform. On Windows systems in the NT family (NT, 2000, or XP), clients may connect using named pipes. On Unix systems, clients may connect using Unix domain socket files.

- The Connector/JDBC interface provides MySQL support for Java client programs that use JDBC connections. Clients may be run on Windows or Unix. Connector/JDBC source is available.

2.6.6 Clients and Tools

- The MySQL server has built-in support for SQL statements to check, optimize, and repair tables. These statements are available from the command line through the mysqlcheck client. MySQL also includes myisamchk.

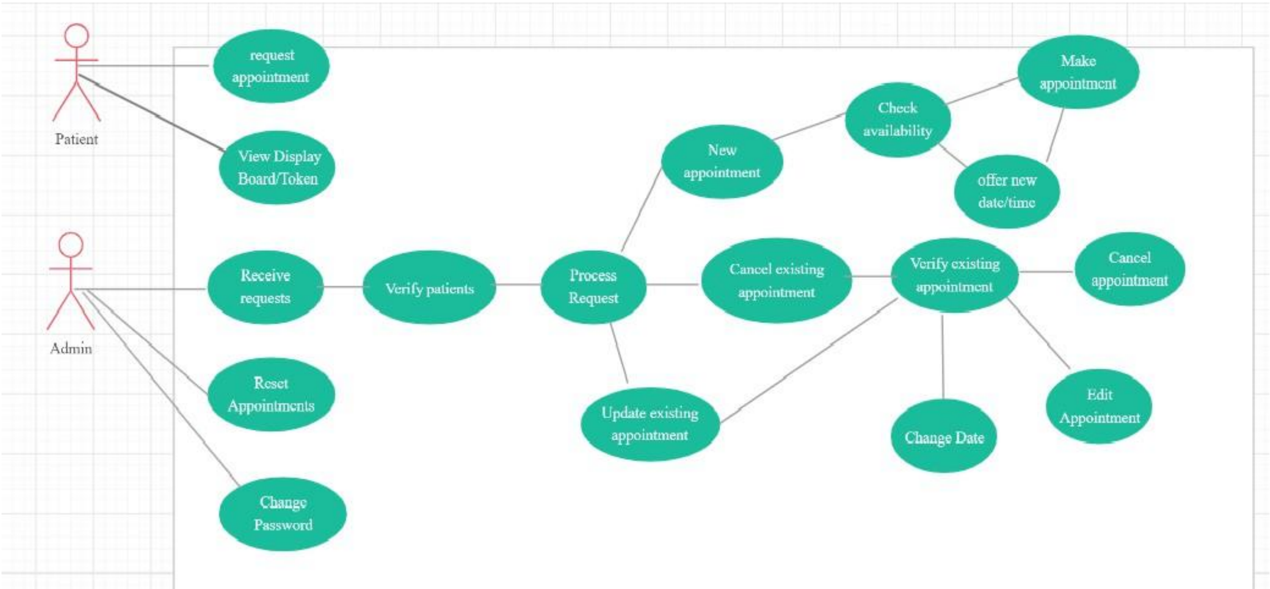
2.6.7 How Big MySQL Tables Can Be

MySQL Version 3.22 had a 4 GB (4 gigabyte) limit on table size. With the MyISAM storage engine in MySQL Version 3.23, the maximum table size was increased to 8 million terabytes (2 ^ 63 bytes). With this larger allowed table size, the maximum effective table size for MySQL databases now normally is determined by operating system constraints on file sizes, not by MySQL internal limits.

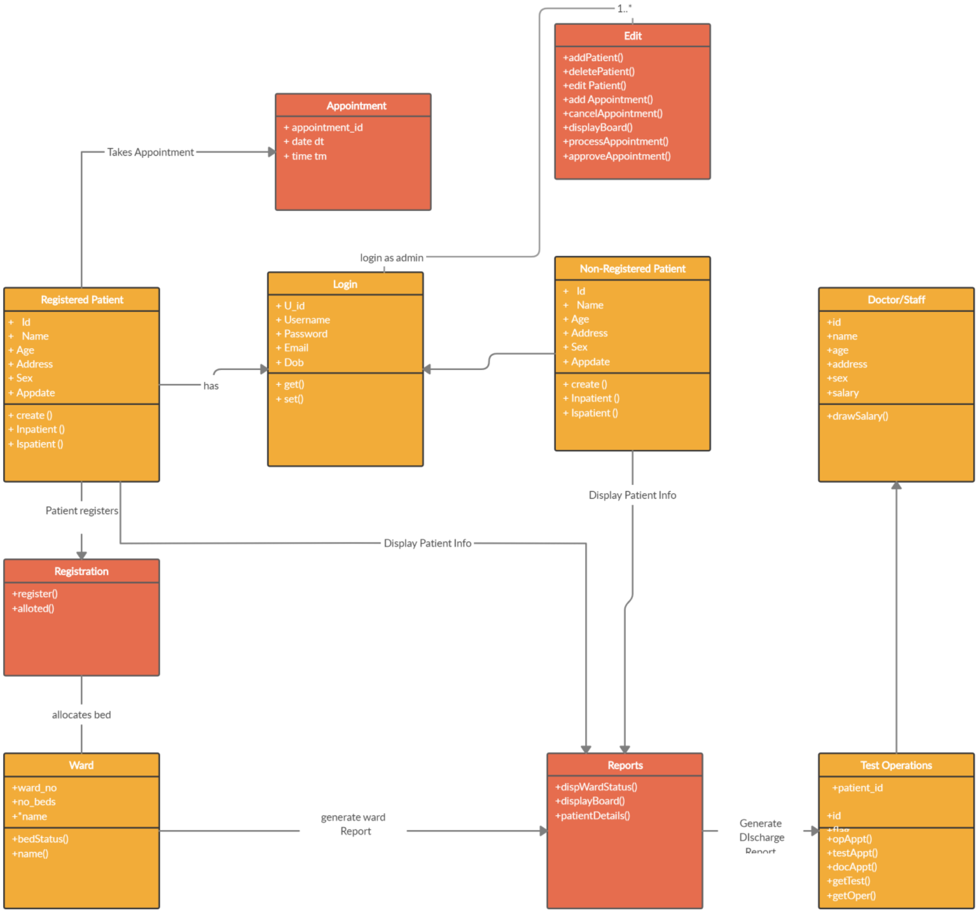
Operating System	**File-Size Limit**
Linux-Intel 32-bit	2 GB
Linux-Alpha	8 TB
Solaris 2.5.1	2 GB
Solaris 2.6	4 GB
Solaris 2.7 Intel	4 GB
Solaris 2.7 UltraSPARC	512 GB

Table 4.3.1: Operating system Vs file-size limits

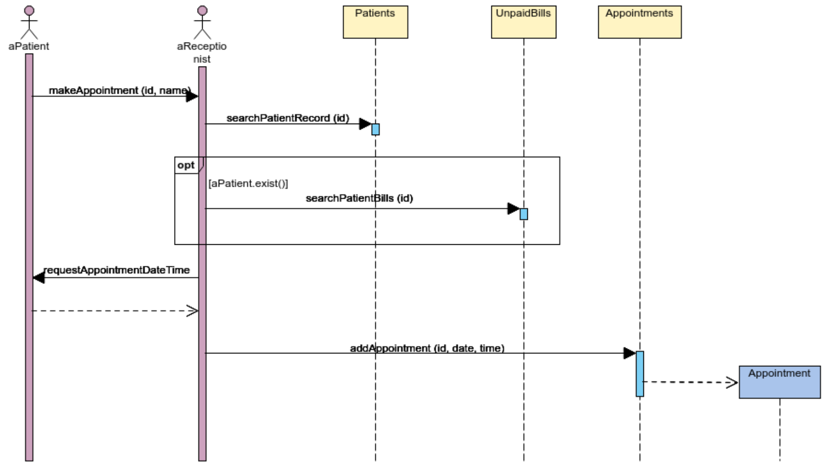
2.6.8 Use Case Diagramme



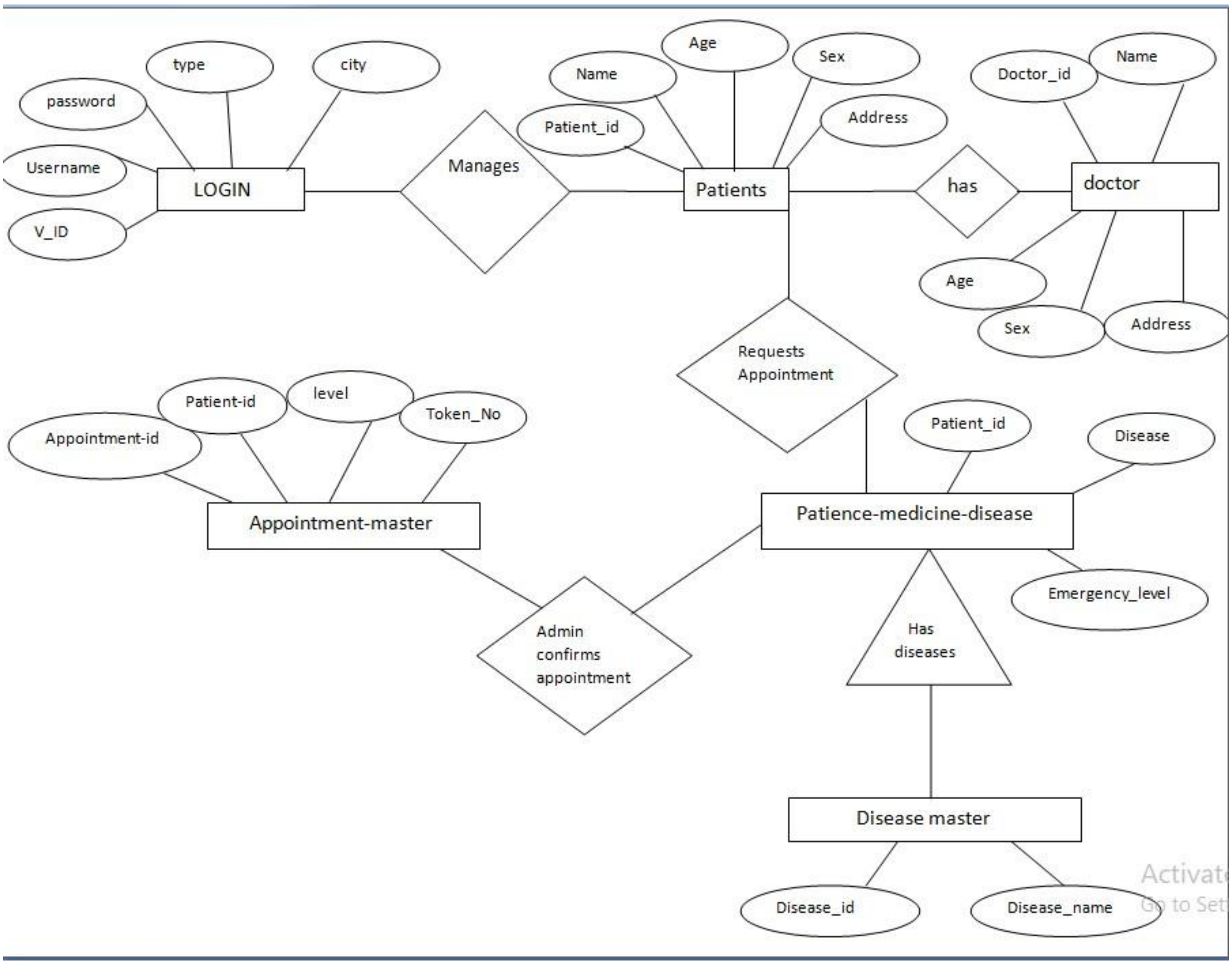
2.6.9 Class Diagram



2.6.10 Sequence Diagramme



2.7 E-R Diagramme



2.8 DATA FLOW DIAGRAM(DFD) :-

Data Flow diagram is the logical representation of the data flow of the project. The DFD is drawn using various symbols. It has a source and a destination.

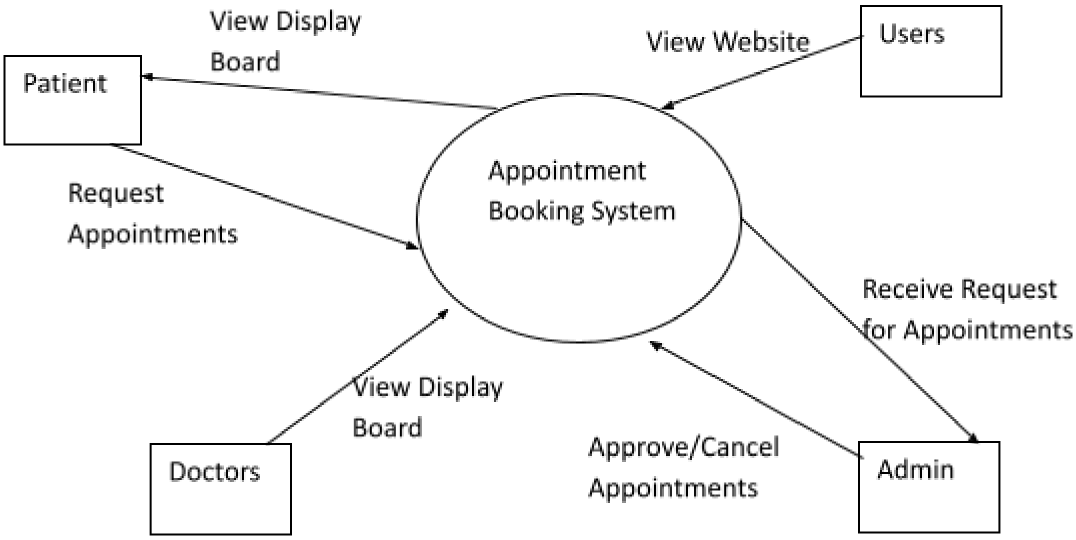
Circle - It represents the Process.

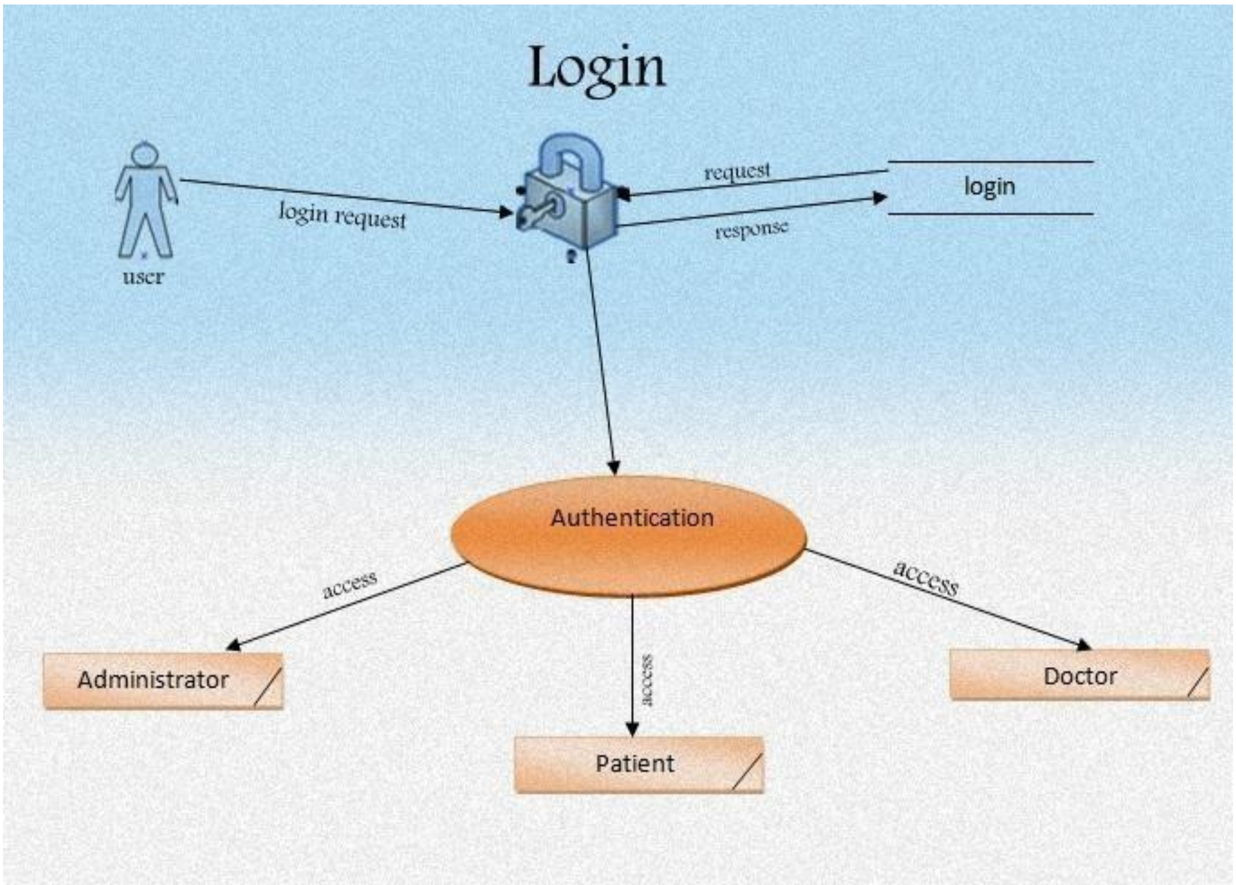
Squares- It represents the source and destination.

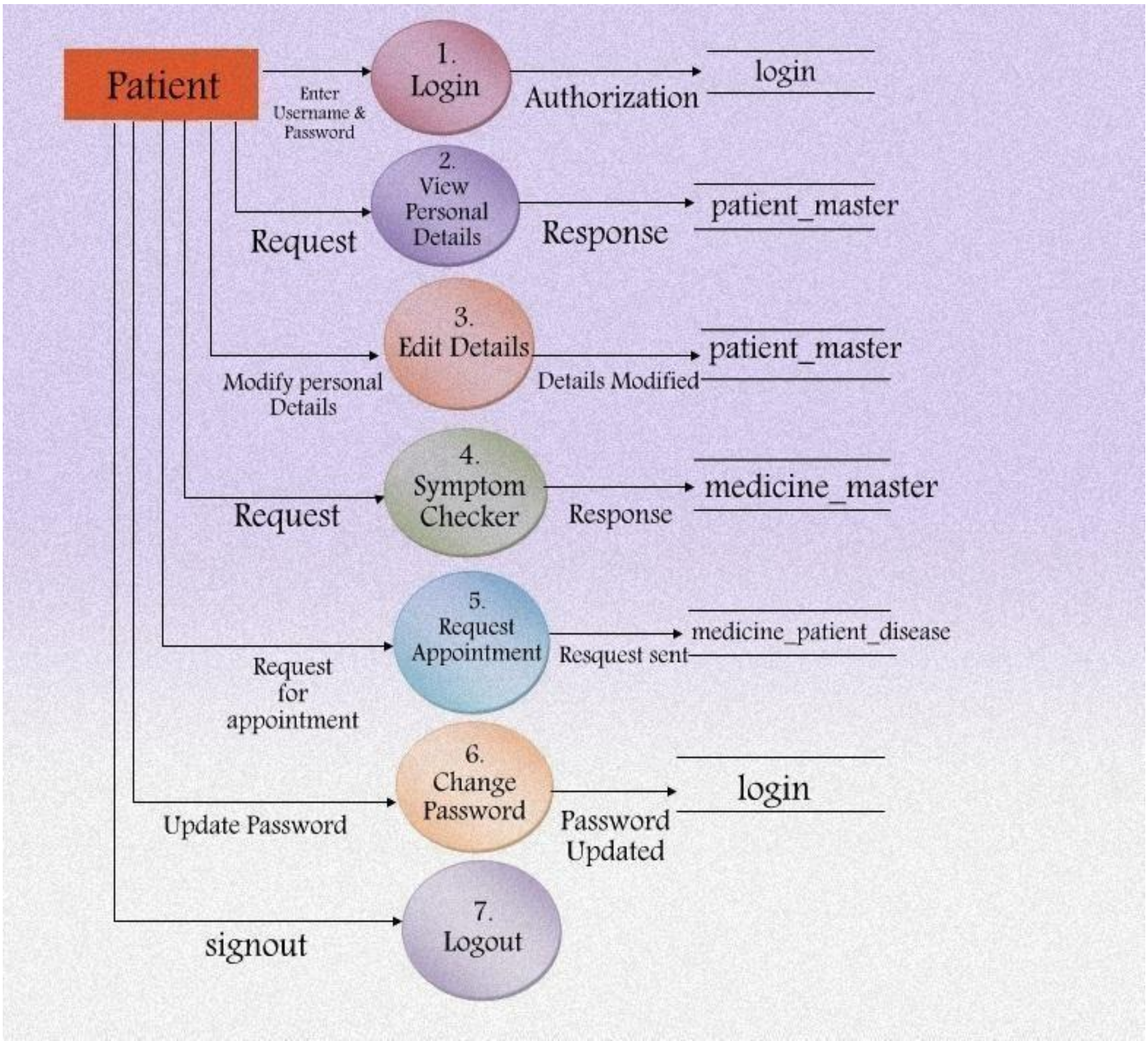
Arrows- It represents the data flow.

One reader can easily get the idea about the project through Data Flow Diagram.

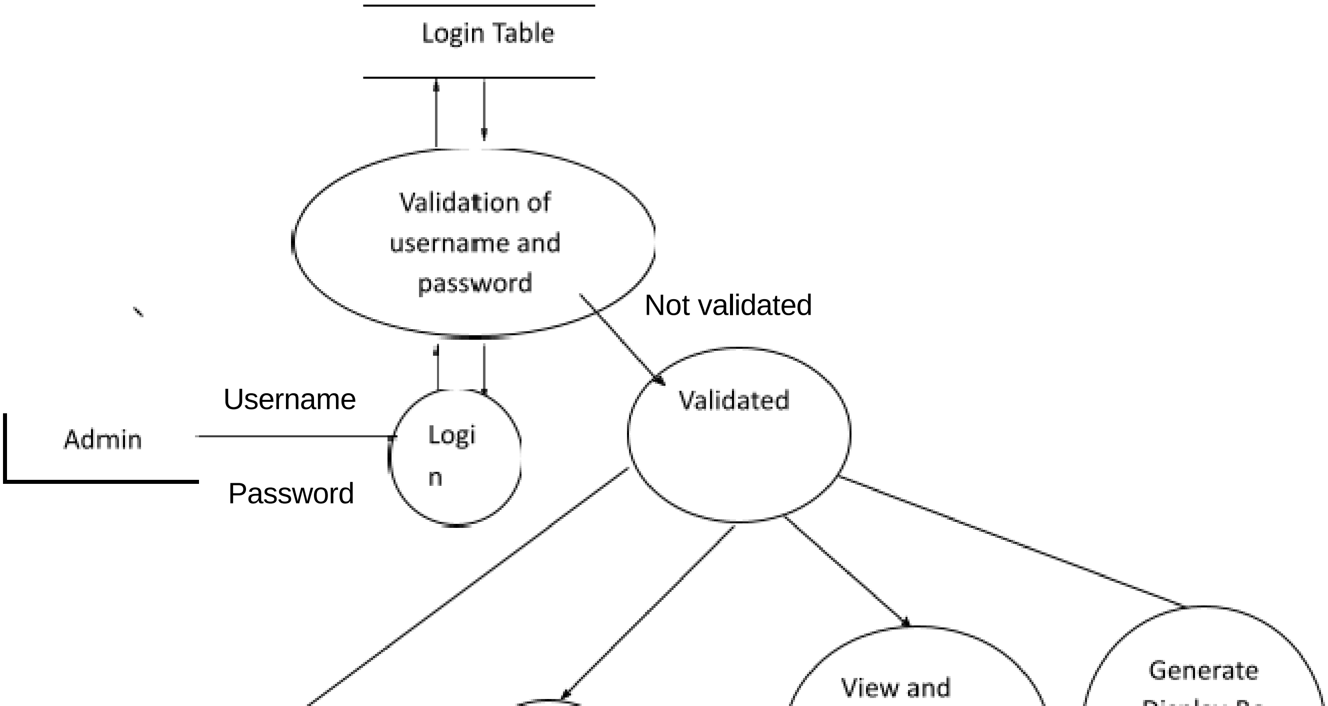
0 Level DFD




Login
user
login request
request
response
login
Authentication
access
access
access
Administrator
Patient
Doctor


Patient
Enter Username & Password
1. Login
Authorization
login
Request
2. View Personal Details
Response
patient_master
Modify personal Details
3. Edit Details
Details Modified
patient_master
Request
4. Symptom Checker
Response
medicine_master
Request for appointment
5. Request Appointment
Resquest sent
medicine_patient_disease
Update Password
6. Change Password
Password Updated
login
signout
7. Logout

Admin


Login Table
Validation of username and password
Not validated
Validated
Username
Admin
Logi n
Password
View and
Generate

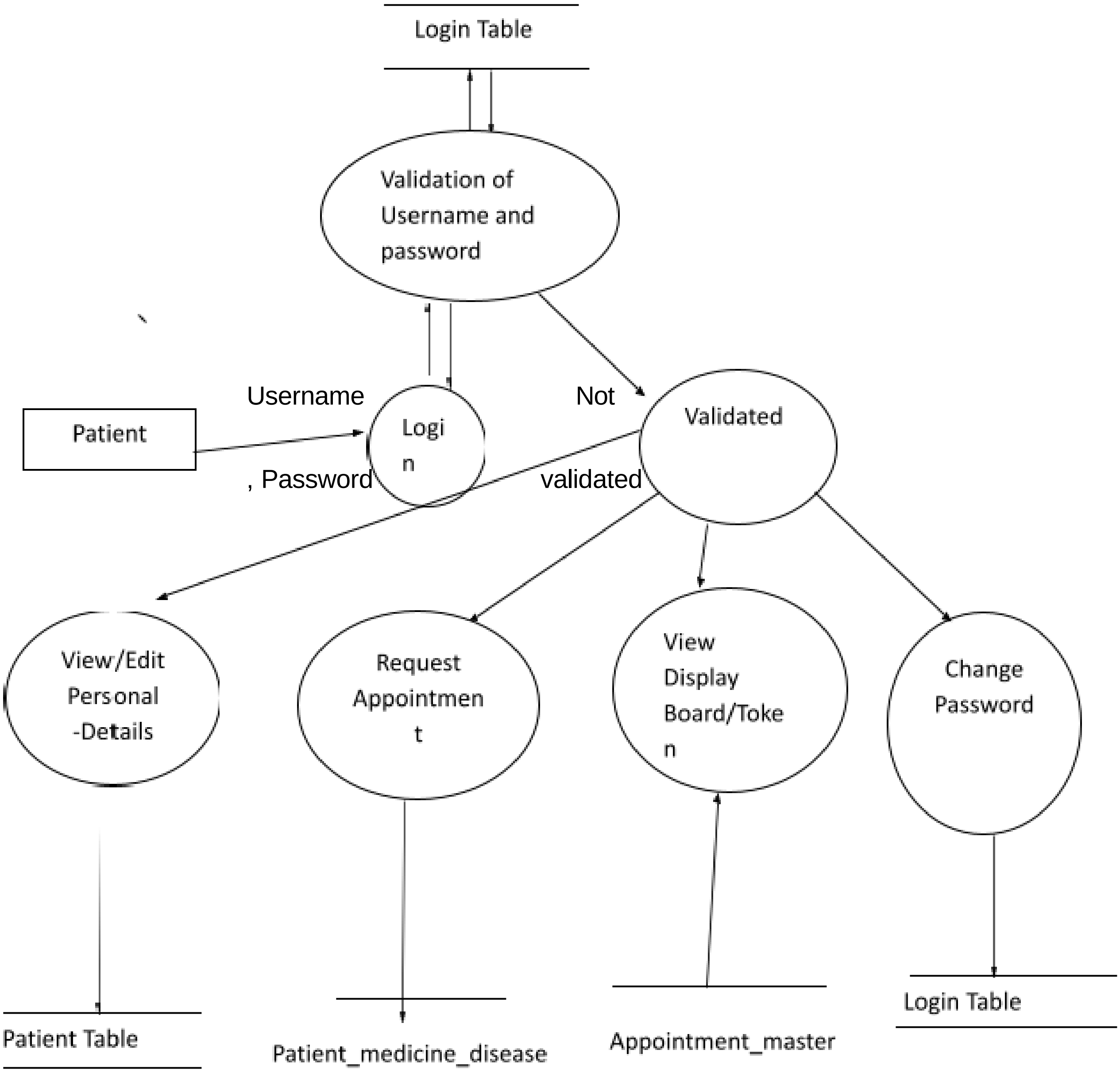
+

Appointment_master

Appointment_master

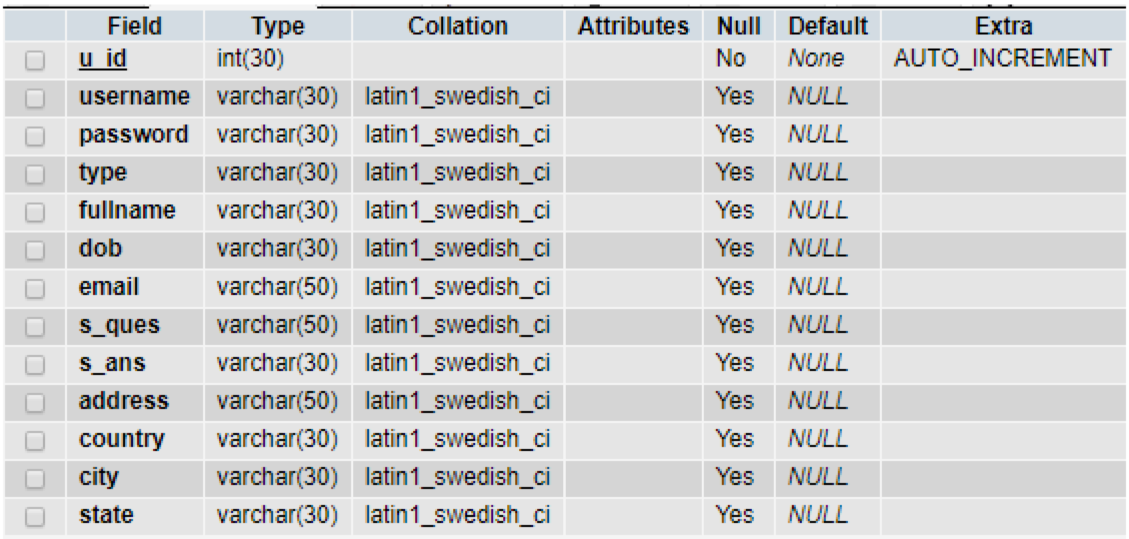
Patient_Medicine_Disease

2.9 Patient


Login Table
Validation of Username and password
Username
, Password
Patient
Login
Not
validated
Validated
View/Edit Personal -Details
Request Appointment
View Display Board/Token
Change Password
Patient Table
Patient_medicine_disease
Appointment_master
Login Table

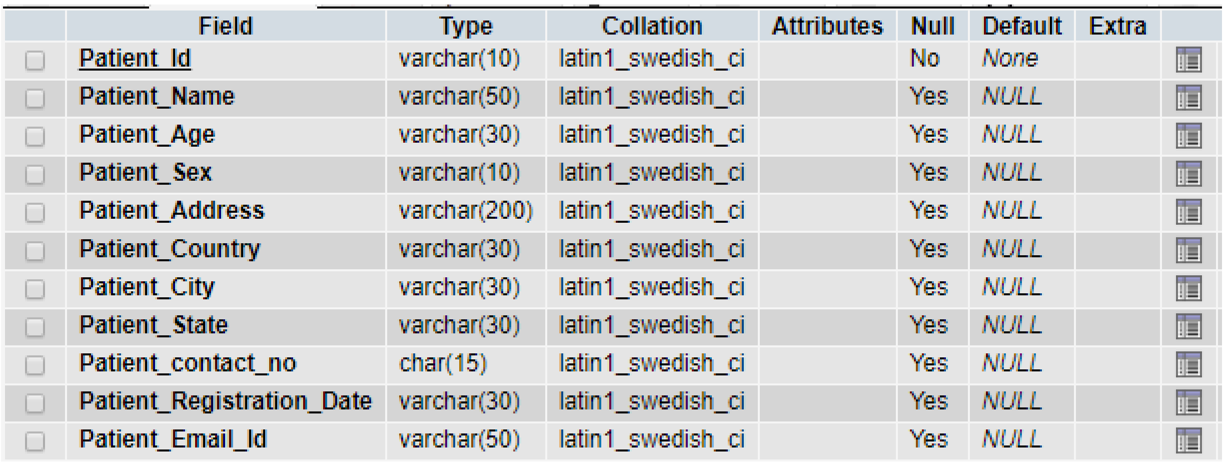
2.10 Data Base Design

Login Table



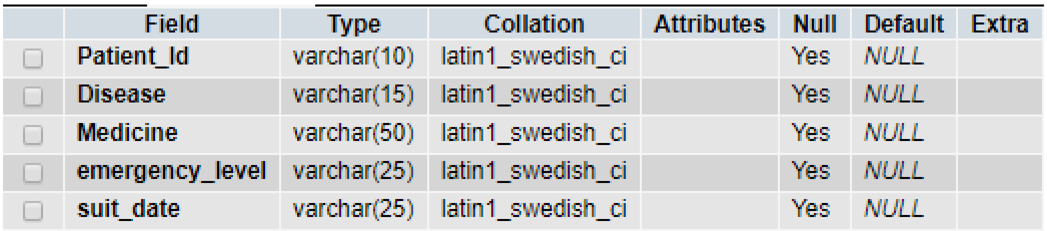
	Field	Type	Collation	Attributes	Null	Default	Extra
□	u_id	int(30)			No	*None*	AUTO_INCREMENT
□	username	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	password	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	type	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	fullname	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	dob	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	email	varchar(50)	latin1_swedish_ci		Yes	*NULL*	
□	s_ques	varchar(50)	latin1_swedish_ci		Yes	*NULL*	
□	s_ans	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	address	varchar(50)	latin1_swedish_ci		Yes	*NULL*	
□	country	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	city	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	state	varchar(30)	latin1_swedish_ci		Yes	*NULL*	

Patient Master Table



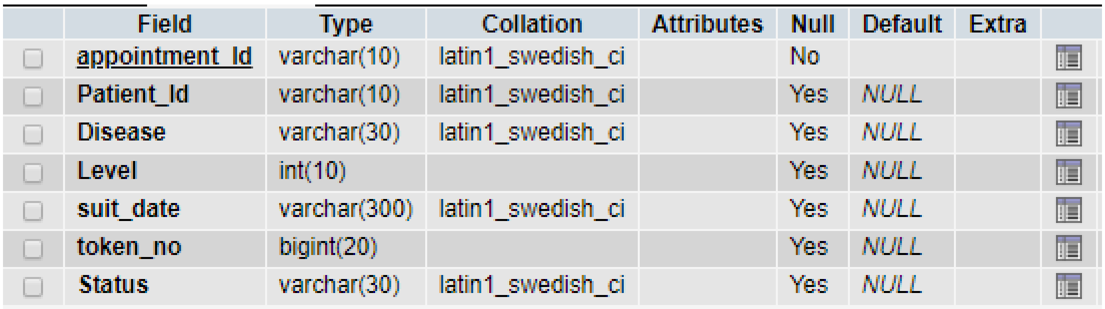
	Field	Type	Collation	Attributes	Null	Default	Extra	
□	Patient_Id	varchar(10)	latin1_swedish_ci		No	*None*		▤
□	Patient_Name	varchar(50)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_Age	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_Sex	varchar(10)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_Address	varchar(200)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_Country	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_City	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_State	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_contact_no	char(15)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_Registration_Date	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤
□	Patient_Email_Id	varchar(50)	latin1_swedish_ci		Yes	*NULL*		▤

Patient_Medicine_Master



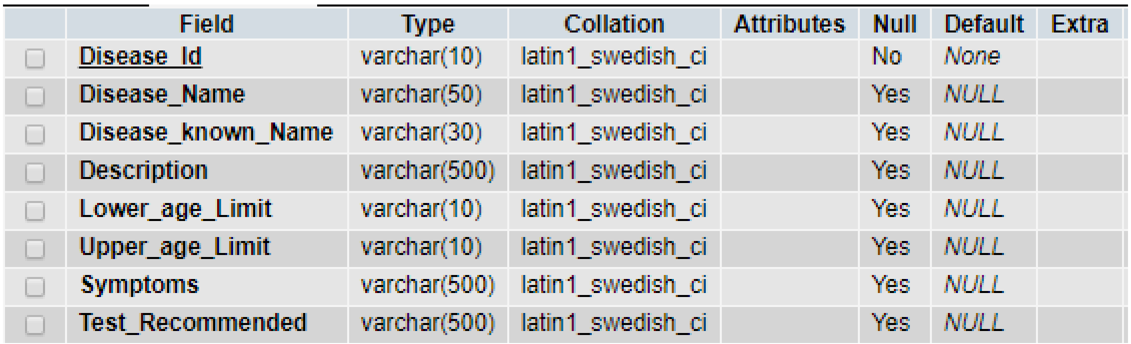
	Field	Type	Collation	Attributes	Null	Default	Extra
□	Patient_Id	varchar(10)	latin1_swedish_ci		Yes	*NULL*	
□	Disease	varchar(15)	latin1_swedish_ci		Yes	*NULL*	
□	Medicine	varchar(50)	latin1_swedish_ci		Yes	*NULL*	
□	emergency_level	varchar(25)	latin1_swedish_ci		Yes	*NULL*	
□	suit_date	varchar(25)	latin1_swedish_ci		Yes	*NULL*	

Doctor_Master



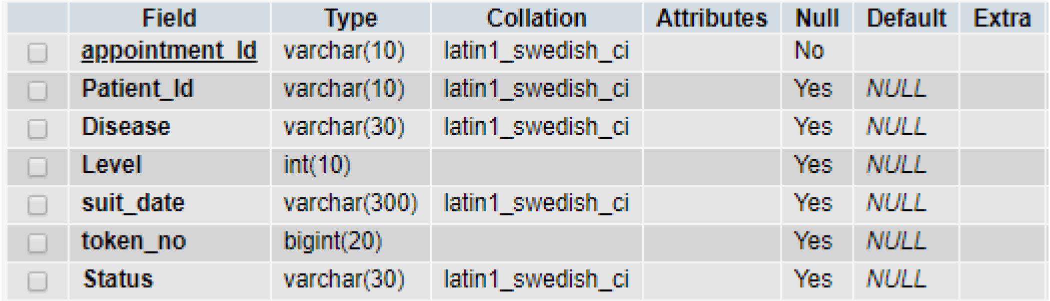
	Field	Type	Collation	Attributes	Null	Default	Extra	
□	appointment_Id	varchar(10)	latin1_swedish_ci		No			▤
□	Patient_Id	varchar(10)	latin1_swedish_ci		Yes	*NULL*		▤
□	Disease	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤
□	Level	int(10)			Yes	*NULL*		▤
□	suit_date	varchar(300)	latin1_swedish_ci		Yes	*NULL*		▤
□	token_no	bigint(20)			Yes	*NULL*		▤
□	Status	varchar(30)	latin1_swedish_ci		Yes	*NULL*		▤

Disease_Master



	Field	Type	Collation	Attributes	Null	Default	Extra
□	Disease_Id	varchar(10)	latin1_swedish_ci		No	*None*	
□	Disease_Name	varchar(50)	latin1_swedish_ci		Yes	*NULL*	
□	Disease_known_Name	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	Description	varchar(500)	latin1_swedish_ci		Yes	*NULL*	
□	Lower_age_Limit	varchar(10)	latin1_swedish_ci		Yes	*NULL*	
□	Upper_age_Limit	varchar(10)	latin1_swedish_ci		Yes	*NULL*	
□	Symptoms	varchar(500)	latin1_swedish_ci		Yes	*NULL*	
□	Test_Recommended	varchar(500)	latin1_swedish_ci		Yes	*NULL*	

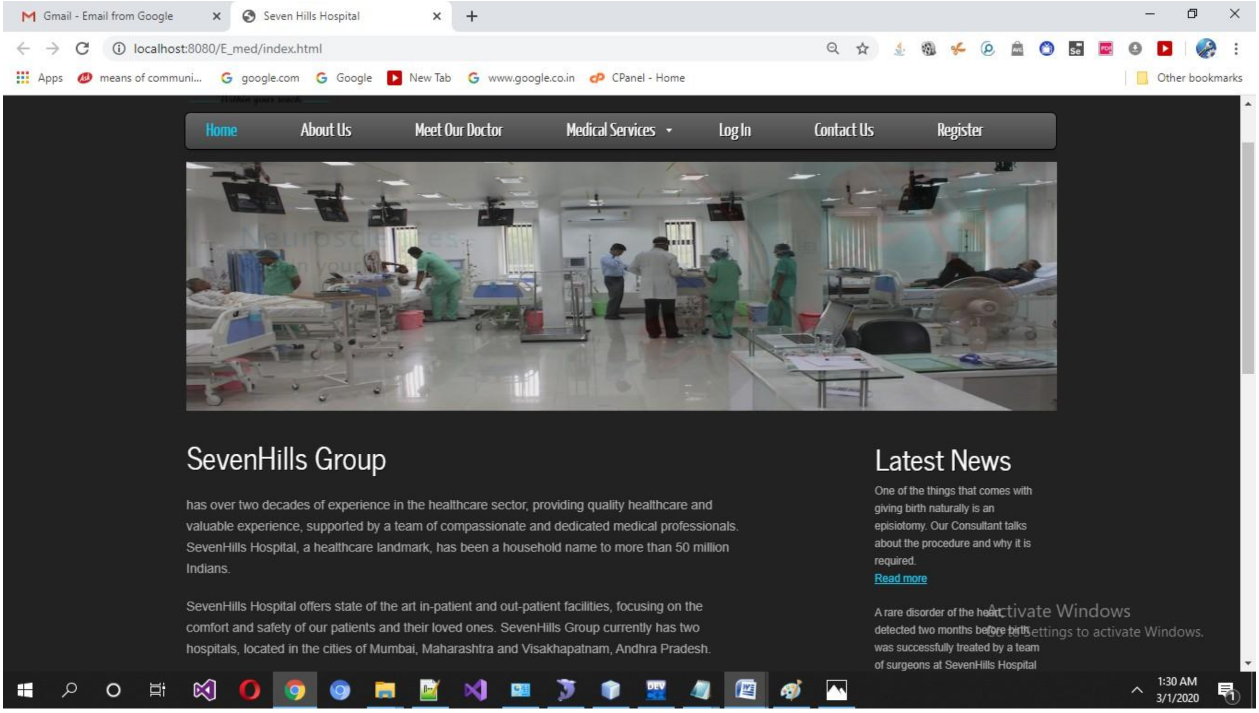
Appointment_Master



	Field	Type	Collation	Attributes	Null	Default	Extra
□	appointment_Id	varchar(10)	latin1_swedish_ci		No		
□	Patient_Id	varchar(10)	latin1_swedish_ci		Yes	*NULL*	
□	Disease	varchar(30)	latin1_swedish_ci		Yes	*NULL*	
□	Level	int(10)			Yes	*NULL*	
□	suit_date	varchar(300)	latin1_swedish_ci		Yes	*NULL*	
□	token_no	bigint(20)			Yes	*NULL*	
□	Status	varchar(30)	latin1_swedish_ci		Yes	*NULL*	

2.11 Screen-Shots

Home Screen



SevenHills Group

has over two decades of experience in the healthcare sector, providing quality healthcare and valuable experience, supported by a team of compassionate and dedicated medical professionals. SevenHills Hospital, a healthcare landmark, has been a household name to more than 50 million Indians.

SevenHills Hospital offers state of the art in-patient and out-patient facilities, focusing on the comfort and safety of our patients and their loved ones. SevenHills Group currently has two hospitals, located in the cities of Mumbai, Maharashtra and Visakhapatnam, Andhra Pradesh.

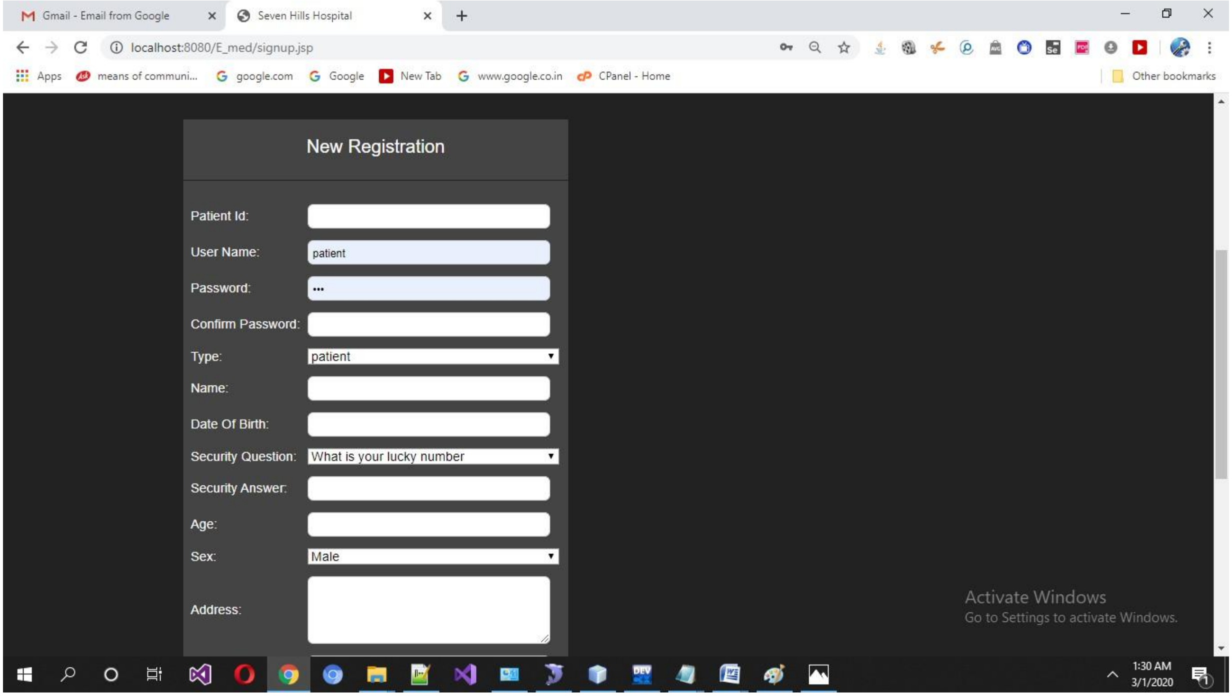
Latest News

One of the things that comes with giving birth naturally is an episiotomy. Our Consultant talks about the procedure and why it is required.

Read more

A rare disorder of the heart, detected two months before birth was successfully treated by a team of surgeons at SevenHills Hospital

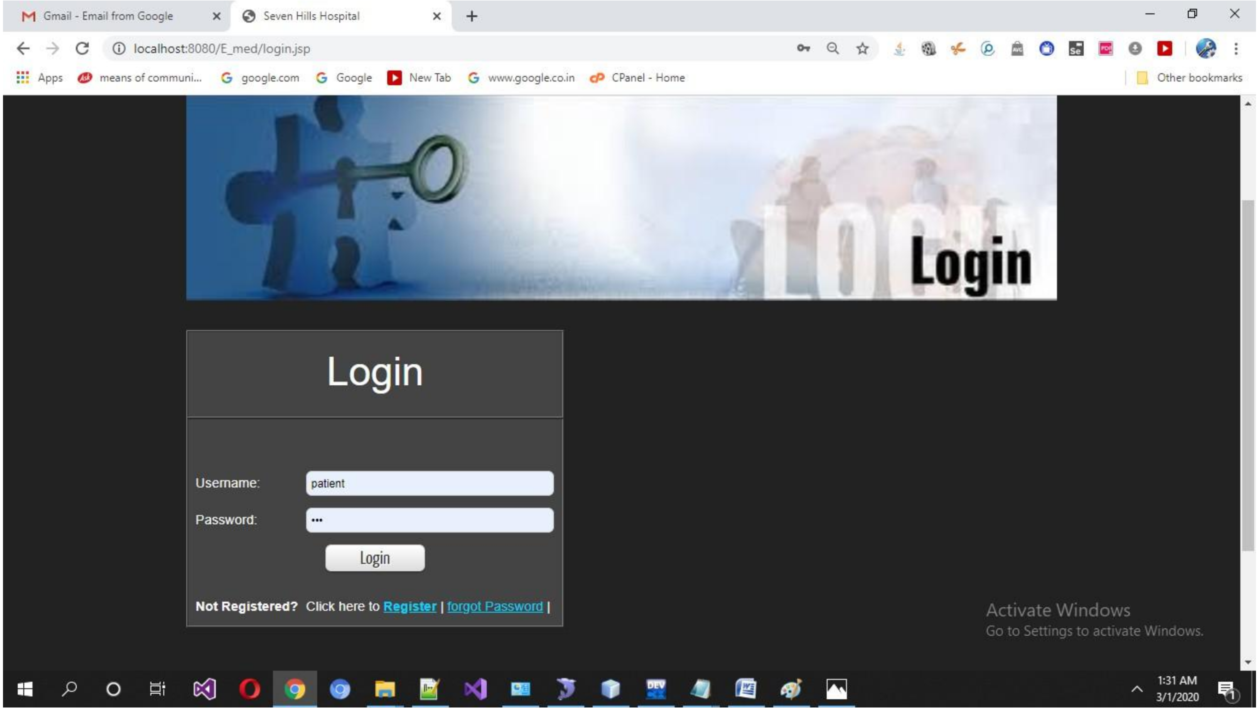
Registration Screen



New Registration

Patient Id:	
User Name:	patient
Password:	•••
Confirm Password:	
Type:	patient ▾
Name:	
Date Of Birth:	
Security Question:	What is your lucky number ▾
Security Answer:	
Age:	
Sex:	Male ▾
Address:	

Login Screen

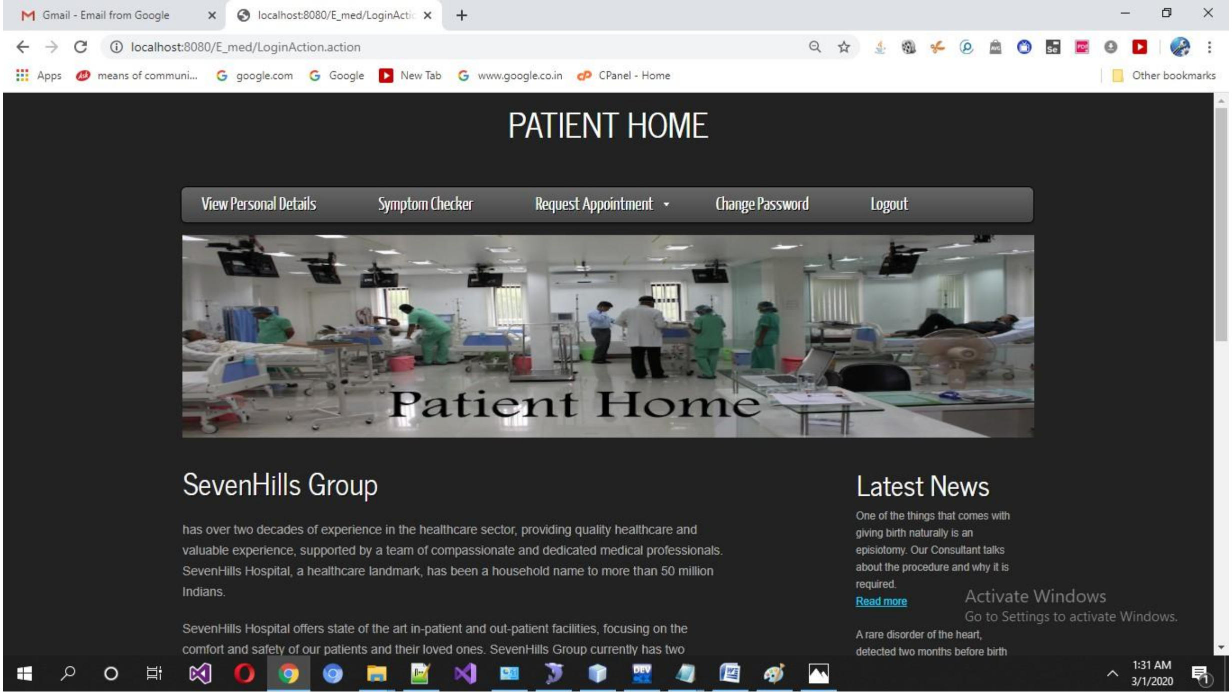


Username: patient

Password: •••

Not Registered? Click here to **Register** | forgot Password |

Patient Home Screen



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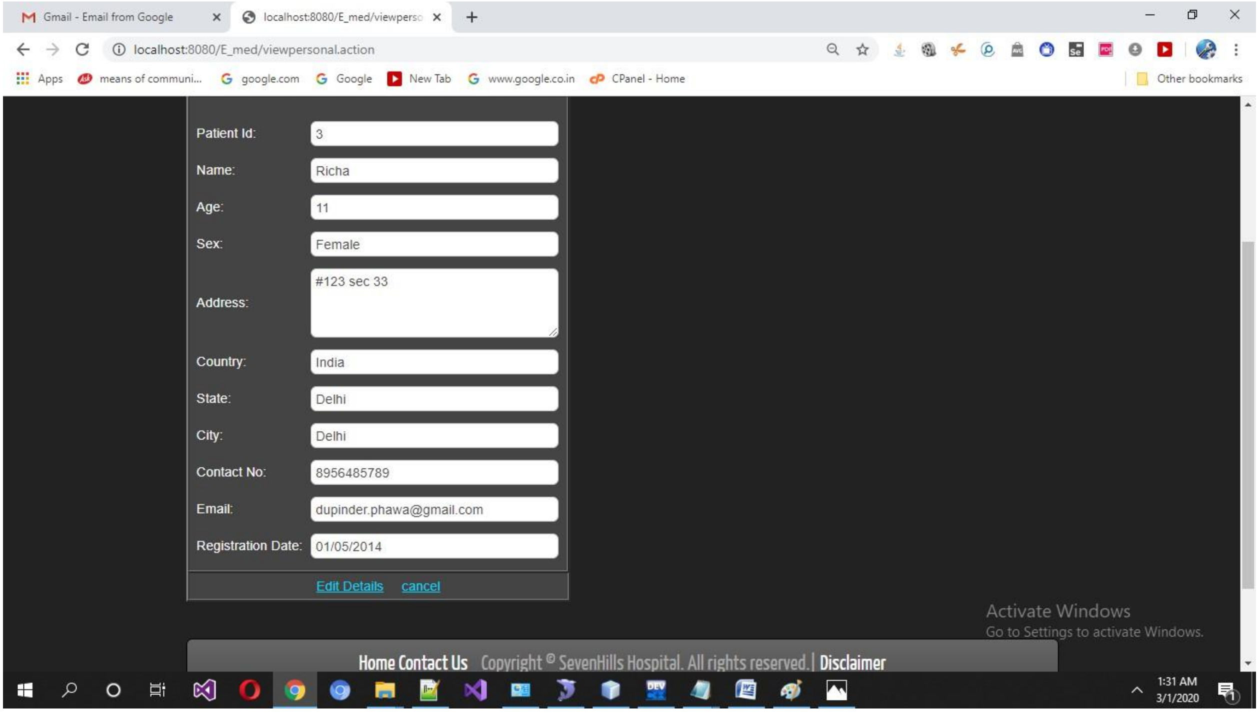
Latest News

One of the things that comes with giving birth naturally is an episiotomy. Our Consultant talks about the procedure and why it is required.

A rare disorder of the heart, detected two months before birth

Patient View Personal Details


Gmail - Email from Google
localhost:8080/E_med/viewperso
localhost:8080/E_med/viewpersonal.action
Apps
means of communi...
google.com
Google
New Tab
www.google.co.in
CPanel - Home
Other bookmarks
Activate Windows
Go to Settings to activate Windows.
1:31 AM
3/1/2020

Patient Id: 3

Name: Richa

Age: 11

Sex: Female

Address: #123 sec 33

Country: India

State: Delhi

City: Delhi

Contact No: 8956485789

Email: dupinder.phawa@gmail.com

Registration Date: 01/05/2014

Edit Details cancel

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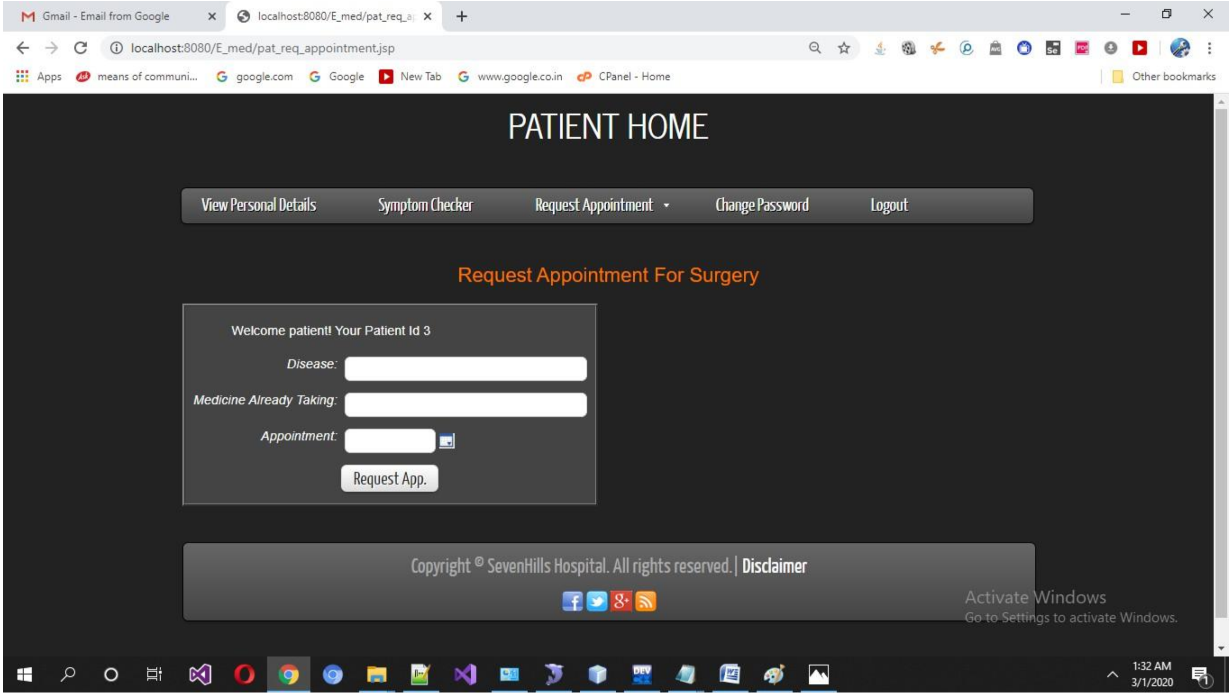
Patient Request Appointment



PATIENT HOME

Request Appointment For Surgery

Welcome patient! Your Patient Id 3

Disease:

Medicine Already Taking:

Appointment:

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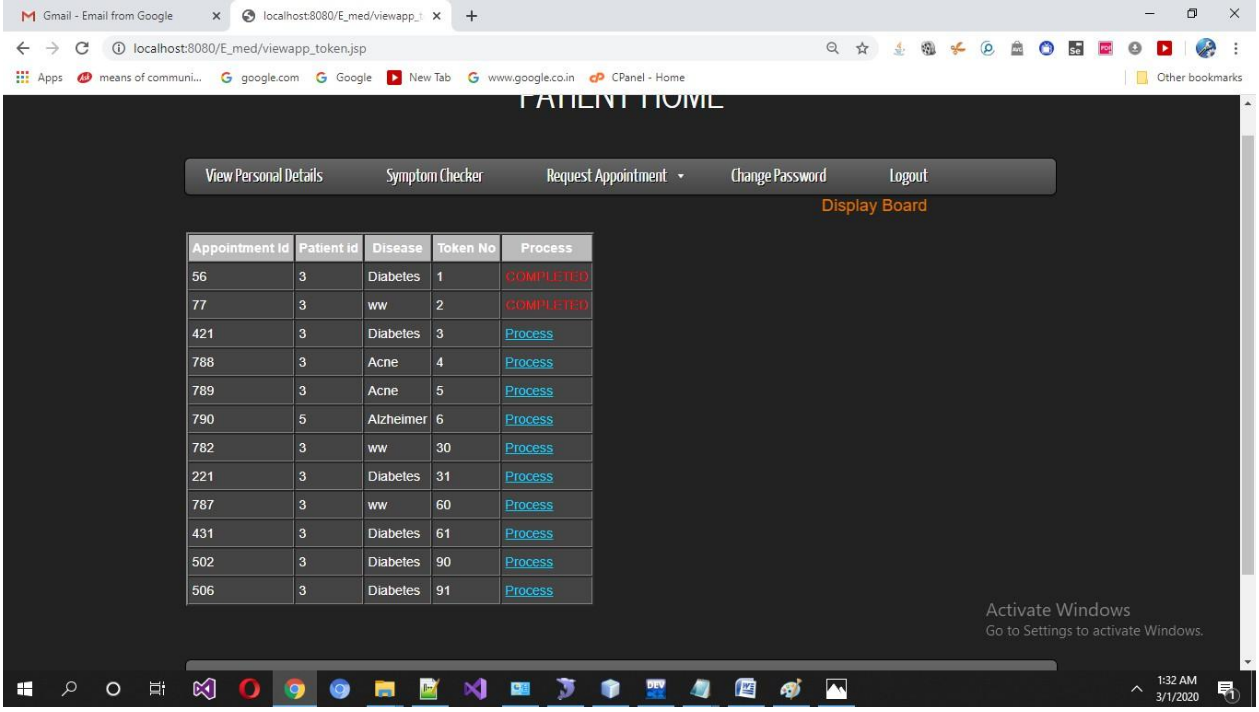
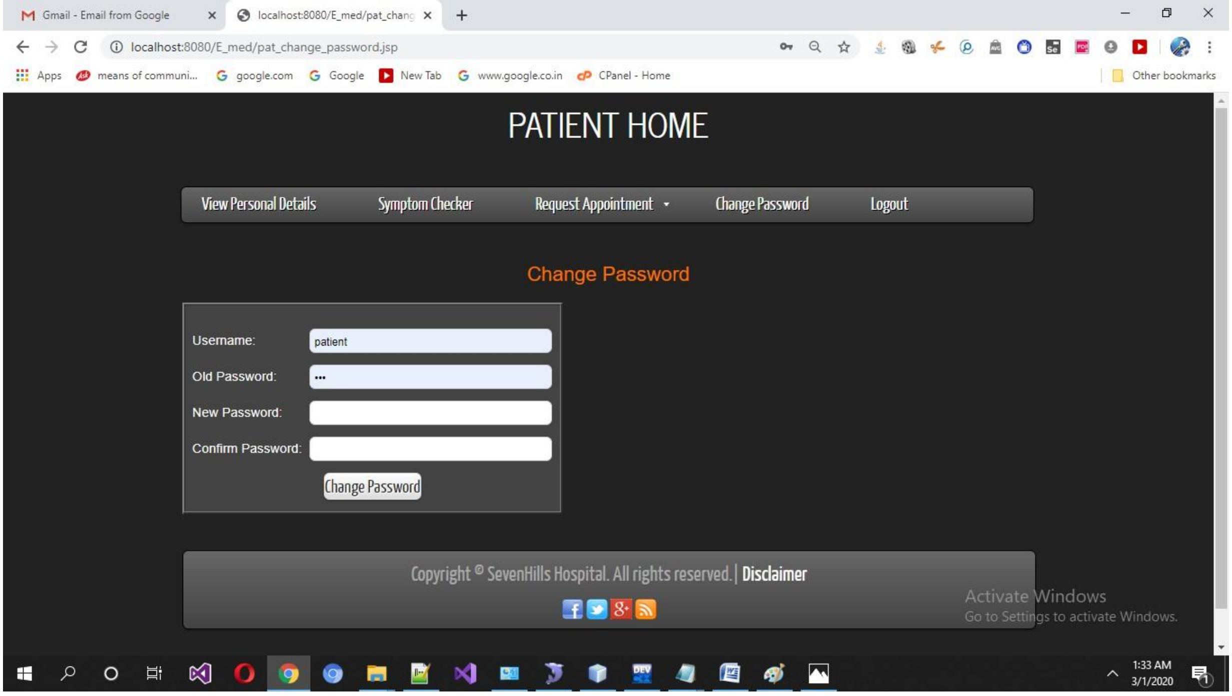
Patients View Appointment and Tokens



Appointment Id	Patient id	Disease	Token No	Process
56	3	Diabetes	1	COMPLETED
77	3	ww	2	COMPLETED
421	3	Diabetes	3	Process
788	3	Acne	4	Process
789	3	Acne	5	Process
790	5	Alzheimer	6	Process
782	3	ww	30	Process
221	3	Diabetes	31	Process
787	3	ww	60	Process
431	3	Diabetes	61	Process
502	3	Diabetes	90	Process
506	3	Diabetes	91	Process

Patient Change Password



Username: patient

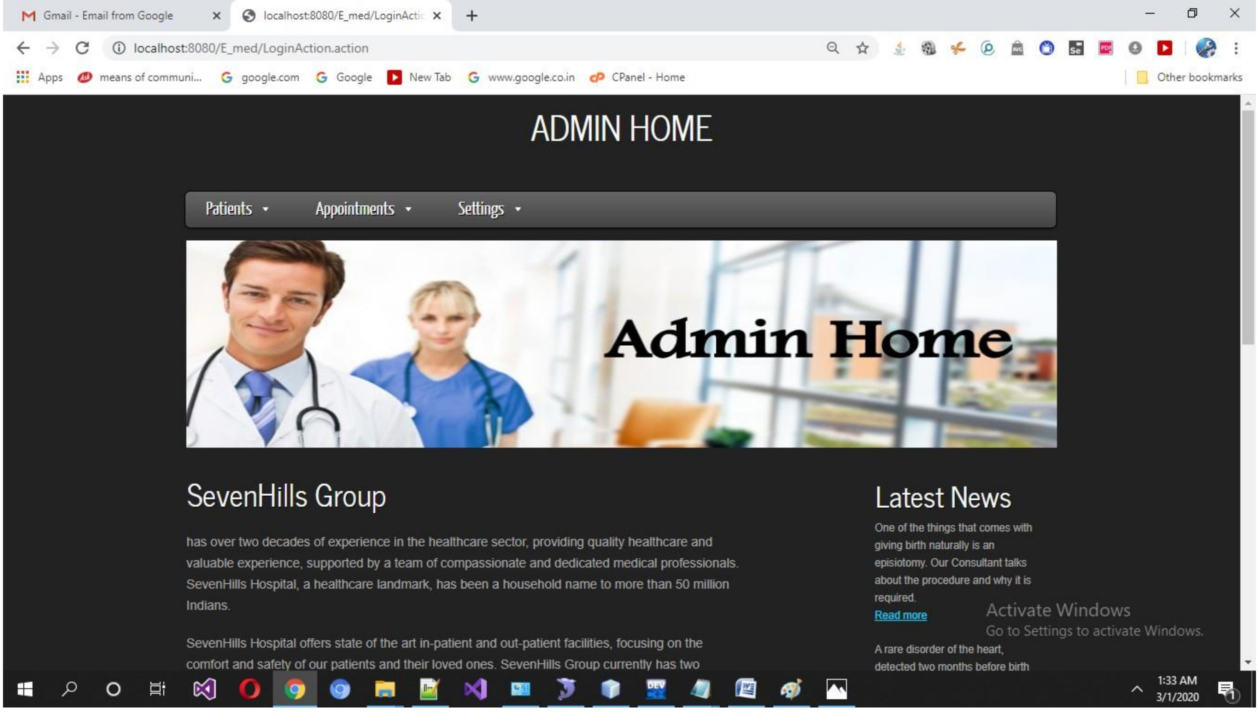
Old Password: •••

New Password:

Confirm Password:

Change Password

Admin Home Screen



ADMIN HOME

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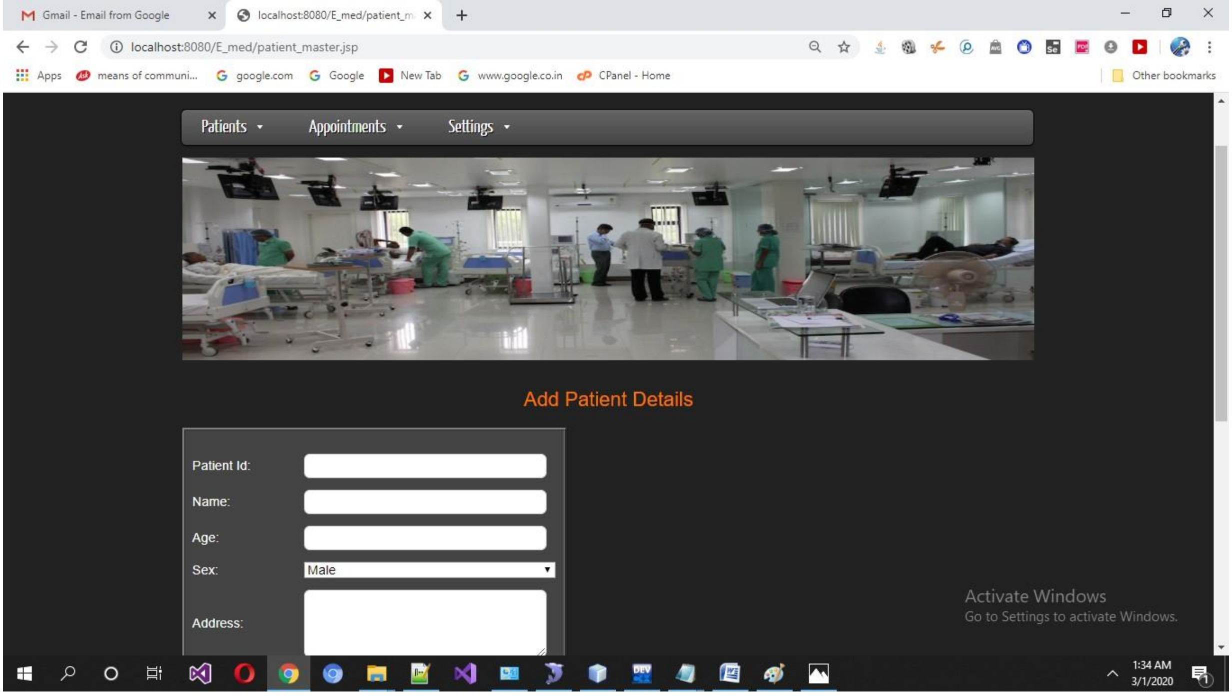
Latest News

One of the things that comes with giving birth naturally is an episiotomy. Our Consultant talks about the procedure and why it is required.

A rare disorder of the heart, detected two months before birth

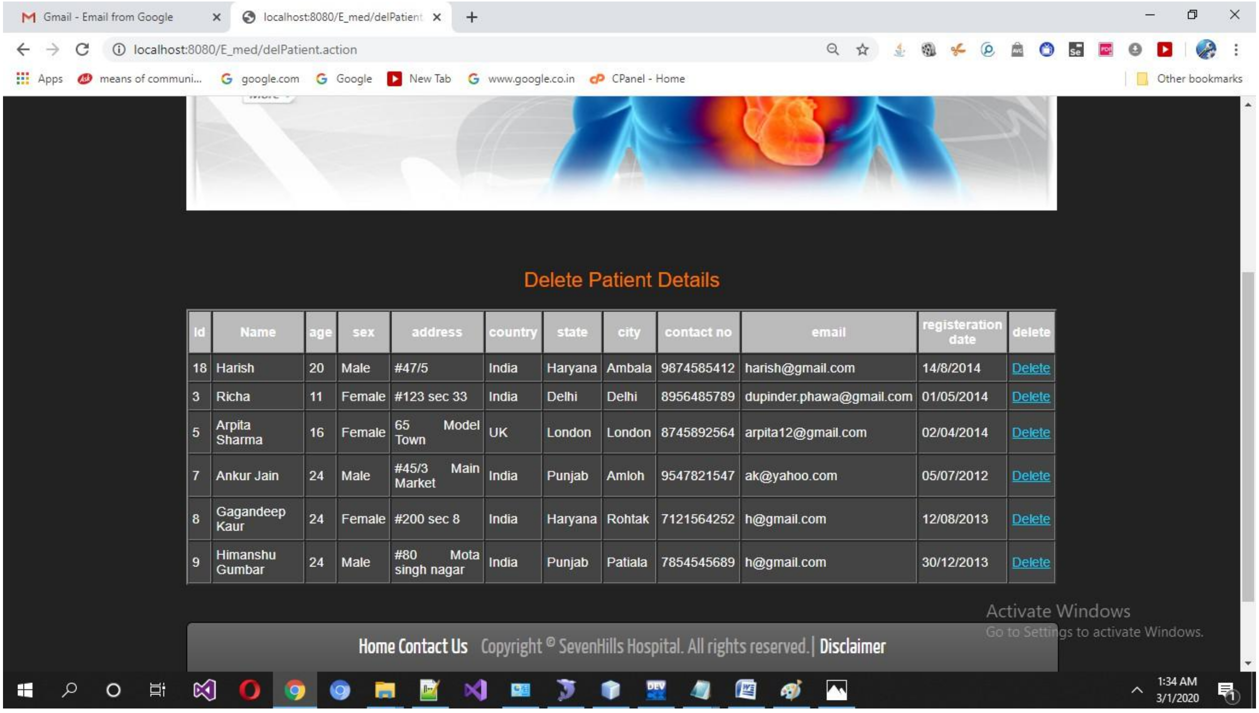
Admin Add Patients Details



Add Patient Details

Patient Id:	
Name:	
Age:	
Sex:	Male ▾
Address:	

Admin Delete Patient Details


Gmail - Email from Google
localhost:8080/E_med/delPatient
localhost:8080/E_med/delPatient.action
Apps
means of communi...
google.com
Google
New Tab
www.google.co.in
CPanel - Home
Other bookmarks
Activate Windows
Go to Settings to activate Windows.
1:34 AM
3/1/2020

Delete Patient Details

Id	Name	age	sex	address	country	state	city	contact no	email	registeration date	delete
18	Harish	20	Male	#47/5	India	Haryana	Ambala	9874585412	harish@gmail.com	14/8/2014	Delete
3	Richa	11	Female	#123 sec 33	India	Delhi	Delhi	8956485789	dupinder.phawa@gmail.com	01/05/2014	Delete
5	Arpita Sharma	16	Female	65 Model Town	UK	London	London	8745892564	arpita12@gmail.com	02/04/2014	Delete
7	Ankur Jain	24	Male	#45/3 Main Market	India	Punjab	Amloh	9547821547	ak@yahoo.com	05/07/2012	Delete
8	Gagandeep Kaur	24	Female	#200 sec 8	India	Haryana	Rohtak	7121564252	h@gmail.com	12/08/2013	Delete
9	Himanshu Gumbar	24	Male	#80 Mota singh nagar	India	Punjab	Patiala	7854545689	h@gmail.com	30/12/2013	Delete

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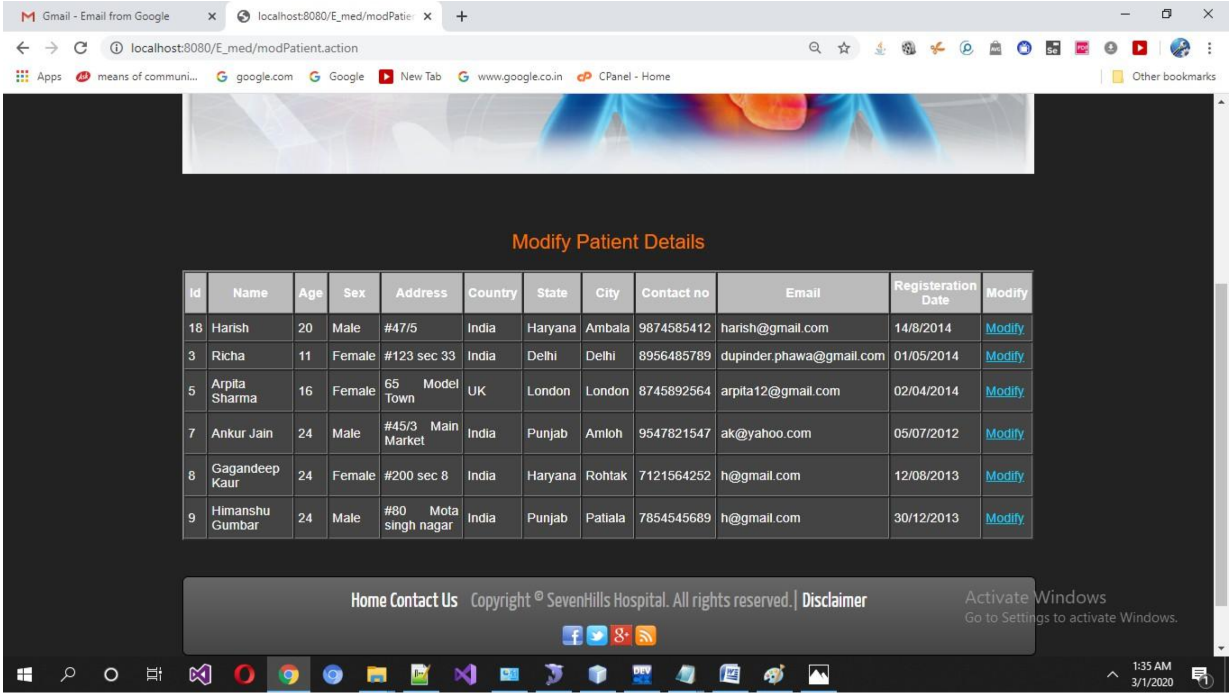
Admin Edit Patient Details


Gmail - Email from Google
localhost:8080/E_med/modPatie
localhost:8080/E_med/modPatient.action
Apps
means of communi...
google.com
Google
New Tab
www.google.co.in
CPanel - Home
Other bookmarks
Activate Windows
Go to Settings to activate Windows.
1:35 AM
3/1/2020

Modify Patient Details

Id	Name	Age	Sex	Address	Country	State	City	Contact no	Email	Registeration Date	Modify
18	Harish	20	Male	#47/5	India	Haryana	Ambala	9874585412	harish@gmail.com	14/8/2014	Modify
3	Richa	11	Female	#123 sec 33	India	Delhi	Delhi	8956485789	dupinder.phawa@gmail.com	01/05/2014	Modify
5	Arpita Sharma	16	Female	65 Model Town	UK	London	London	8745892564	arpita12@gmail.com	02/04/2014	Modify
7	Ankur Jain	24	Male	#45/3 Main Market	India	Punjab	Amloh	9547821547	ak@yahoo.com	05/07/2012	Modify
8	Gagandeep Kaur	24	Female	#200 sec 8	India	Haryana	Rohtak	7121564252	h@gmail.com	12/08/2013	Modify
9	Himanshu Gumbar	24	Male	#80 Mota singh nagar	India	Punjab	Patiala	7854545689	h@gmail.com	30/12/2013	Modify

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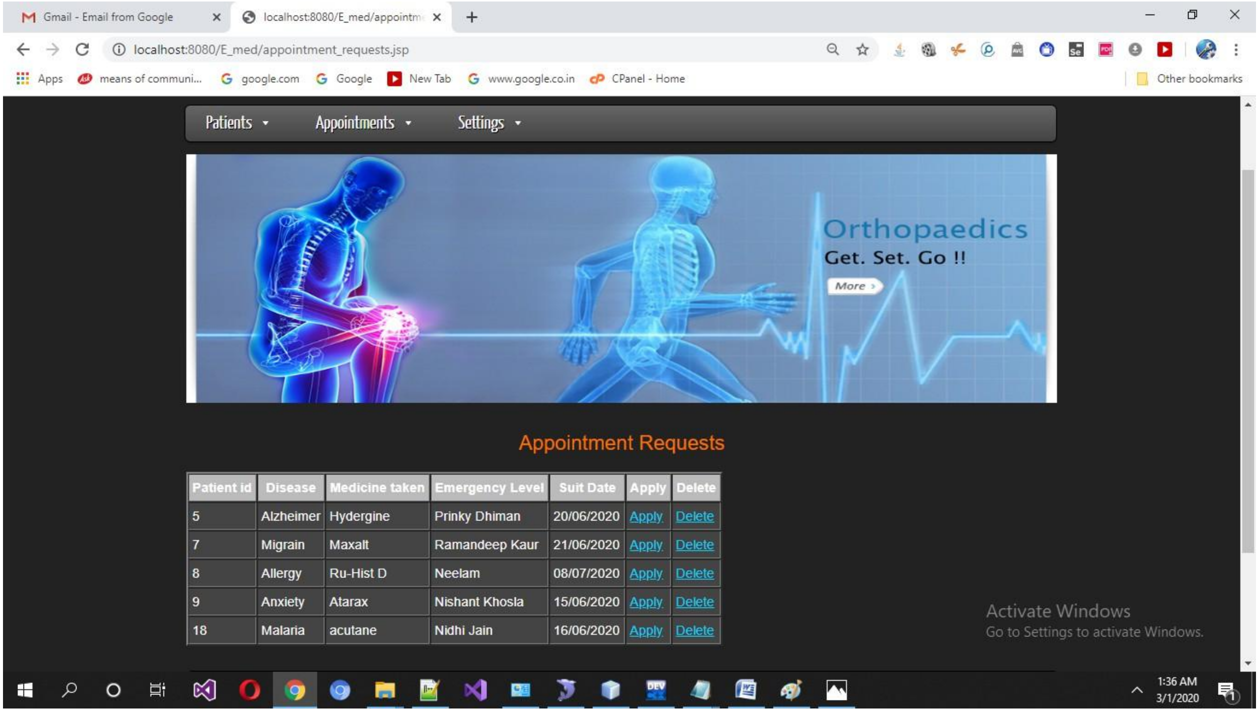
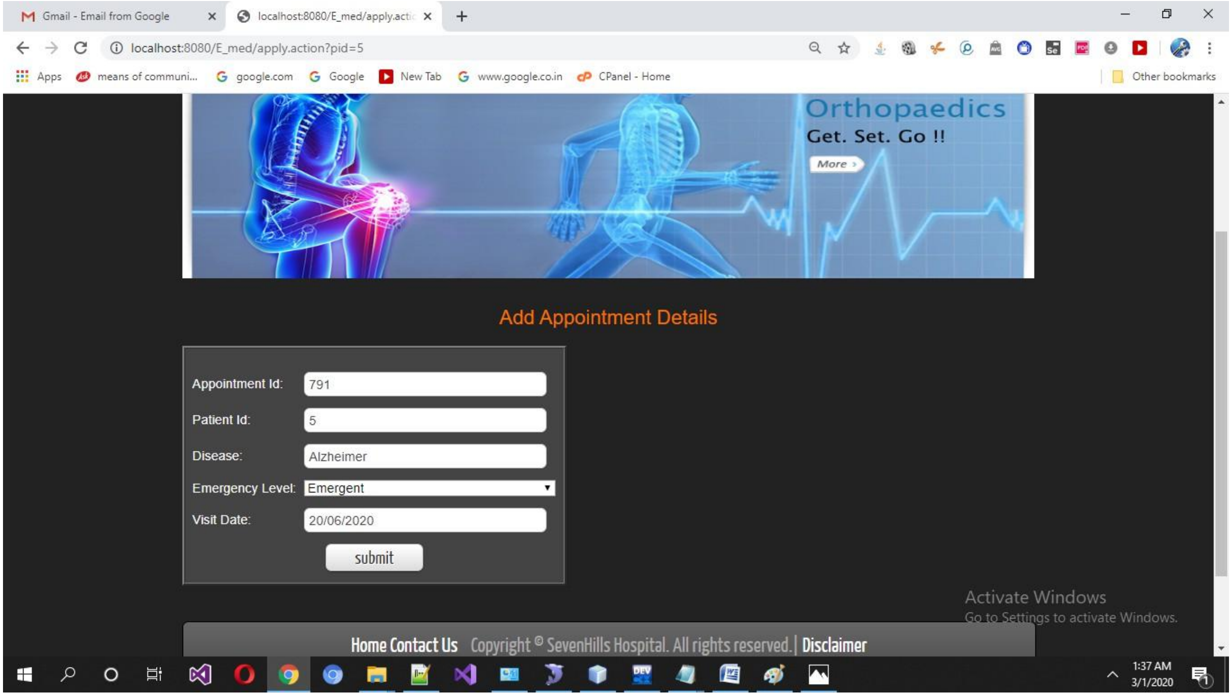
Appointment Requests


Gmail - Email from Google
localhost:8080/E_med/appointm
localhost:8080/E_med/appointment_requests.jsp
Patients
Appointments
Settings
Orthopaedics
Get. Set. Go !!
More
Activate Windows
Go to Settings to activate Windows.
1:36 AM
3/1/2020

Appointment Requests

Patient id	Disease	Medicine taken	Emergency Level	Suit Date	Apply	Delete
5	Alzheimer	Hydergine	Prinky Dhiman	20/06/2020	Apply	Delete
7	Migrain	Maxalt	Ramandeep Kaur	21/06/2020	Apply	Delete
8	Allergy	Ru-Hist D	Neelam	08/07/2020	Apply	Delete
9	Anxiety	Atarax	Nishant Khosla	15/06/2020	Apply	Delete
18	Malaria	acutane	Nidhi Jain	16/06/2020	Apply	Delete

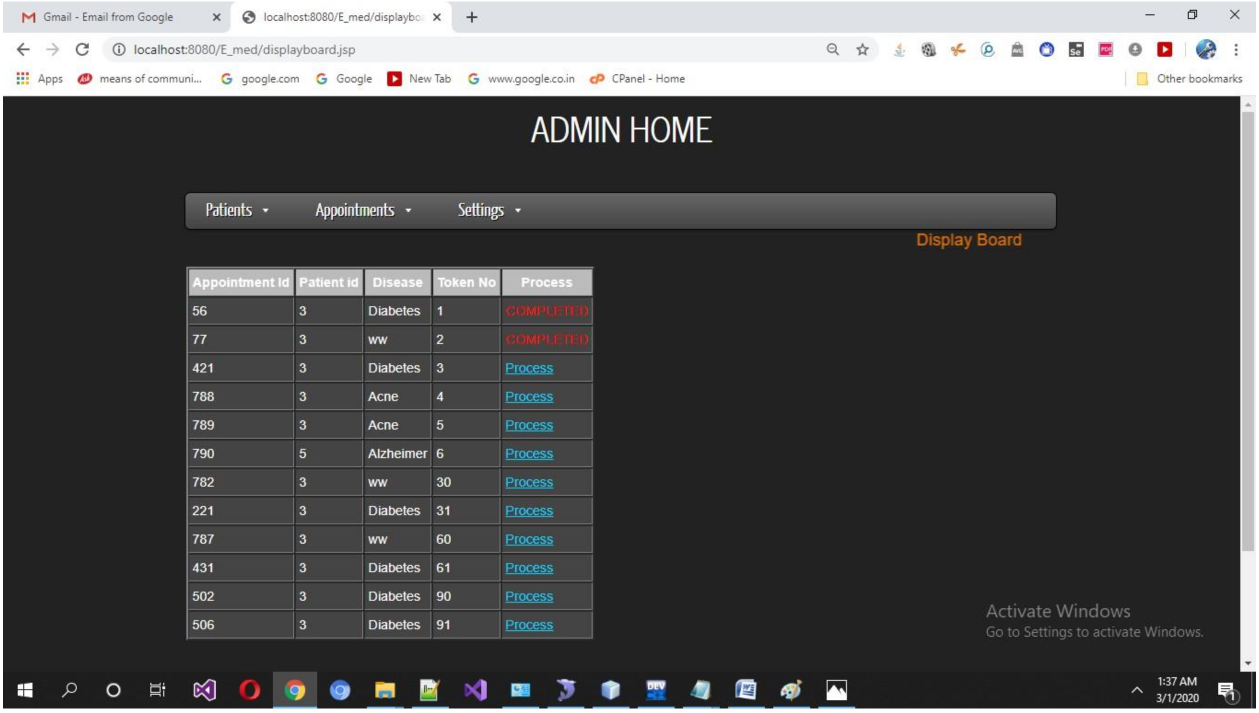
Admin approve appointments


Gmail - Email from Google
localhost:8080/E_med/apply.actio
localhost:8080/E_med/apply.action?pid=5
Orthopaedics
Get. Set. Go !!
More
submit
Home Contact Us Copyright © SevenHills Hospital. All rights reserved. | Disclaimer
Activate Windows
Go to Settings to activate Windows.
1:37 AM
3/1/2020

Add Appointment Details

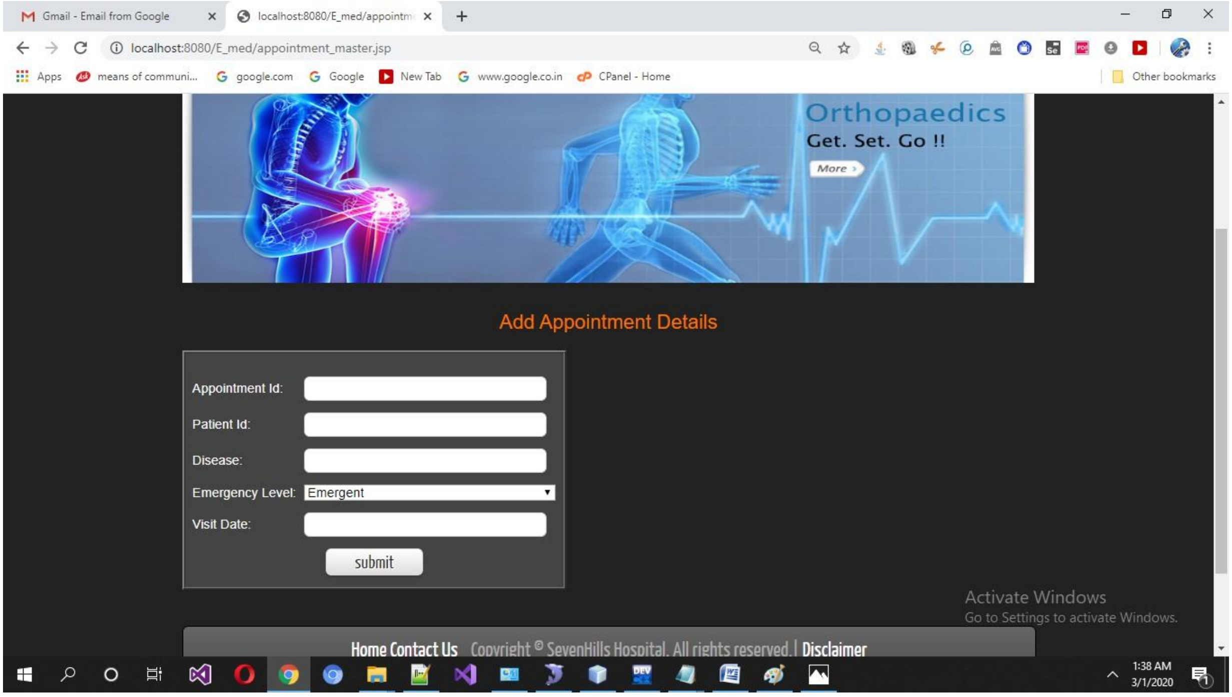
Appointment Id:	791
Patient Id:	5
Disease:	Alzheimer
Emergency Level:	Emergent
Visit Date:	20/06/2020

DisplayBoard



Appointment Id	Patient id	Disease	Token No	Process
56	3	Diabetes	1	COMPLETED
77	3	ww	2	COMPLETED
421	3	Diabetes	3	Process
788	3	Acne	4	Process
789	3	Acne	5	Process
790	5	Alzheimer	6	Process
782	3	ww	30	Process
221	3	Diabetes	31	Process
787	3	ww	60	Process
431	3	Diabetes	61	Process
502	3	Diabetes	90	Process
506	3	Diabetes	91	Process

Admin add appointments


localhost:8080/E_med/appointment_master.jsp
Orthopaedics
Get. Set. Go !!
More
Activate Windows
Go to Settings to activate Windows.
1:38 AM
3/1/2020

Add Appointment Details

Appointment Id:

Patient Id:

Disease:

Emergency Level: Emergent

Visit Date:

submit

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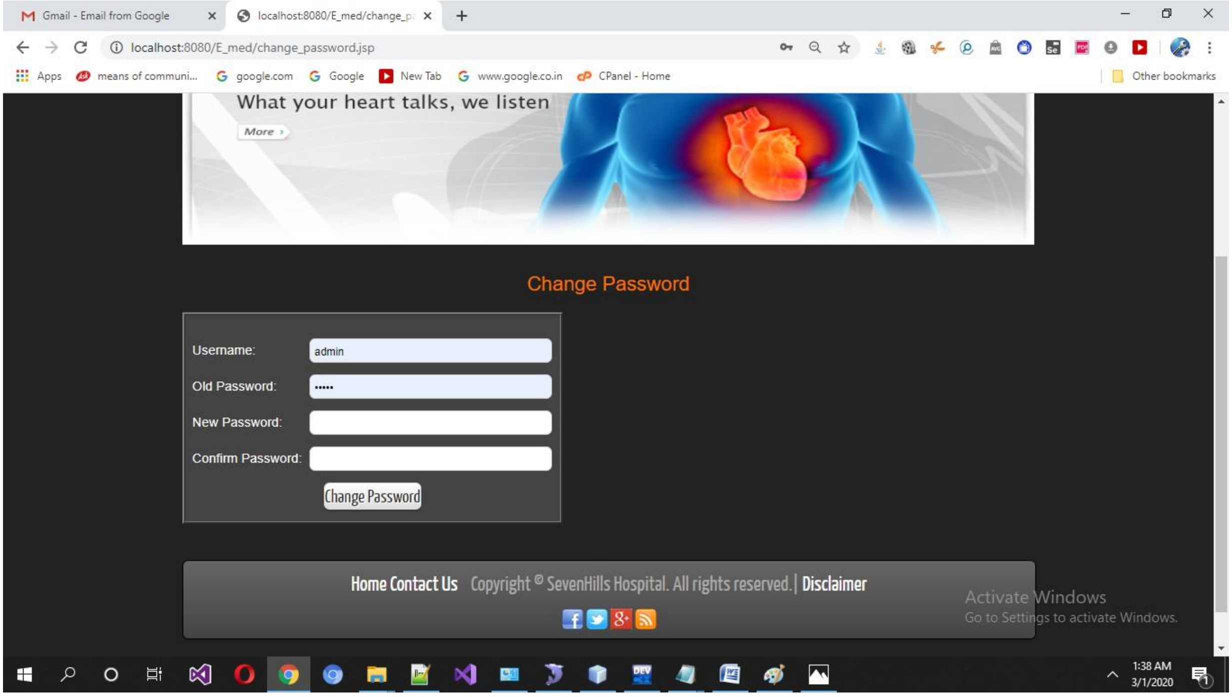
Admin Change Password


Gmail - Email from Google
localhost:8080/E_med/change_p
localhost:8080/E_med/change_password.jsp
Apps
means of communi...
google.com
Google
New Tab
www.google.co.in
CPanel - Home
Other bookmarks
What your heart talks, we listen
More
Activate Windows
Go to Settings to activate Windows.
1:38 AM
3/1/2020

Change Password

Username: admin

Old Password: •••••

New Password:

Confirm Password:

Change Password

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CHAPTER 3 RESULT & DISCUSSION

The system can automate the process of managing data of Doctors/Patient. It will manage all the information about the Patient Appointments . The doctors can view their patient using this system. The Patients can see his appointments using this system. The Patients can match their symptoms and can find out matching disease they are suffering from. Administrator can generate display board depending on emergency levels. Only the Patients/Administrator can visit the site or can access information.

Without the use of online system the company has to record the data in the registers which entries were to be updated daily with updation of data.. Thus it was very time consuming process.

This system has successfully achived its design goal. It results as follows:

- All the information about the doctors has been managed.
- Patients can easily check the disease they have by matching the symptoms.
- Appointments has been successfully requested and responsed by the doctors.
- Administrator has the privilege that he can create, modify the database.
- Information modified when need arises of the new patients and doctors.
- To intimate user according to the threshold value set for Quantity.
- Users can easily view their personal details and can modify their particulars.
- Patients can check his/her appointments and token no for their turn.

CHAPTER 4 CONCLUSION AND FUTURE SCOPE

The industrial training on Core Java provided a solid foundation in the principles of object-oriented programming and enhanced my understanding of software development using Java as a robust and versatile programming language. Through this training, I gained practical experience in implementing core concepts such as classes, objects, inheritance, polymorphism, abstraction, and encapsulation, which are essential for developing modular and reusable code.

I also learned advanced topics including exception handling, multithreading, file handling, and collection framework, which deepened my ability to write efficient and optimized programs. The inclusion of Java Database Connectivity (JDBC) further helped me understand how Java interacts with databases to perform CRUD operations, bridging the gap between theoretical learning and real-world applications.

Overall, the training strengthened my problem-solving and logical thinking skills, improved my coding standards, and prepared me for developing large-scale applications in both academic and professional environments. This experience not only enhanced my technical competence but also gave me confidence to pursue further learning in advanced Java frameworks and software engineering practices.

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