PHARMACY MANAGEMENT WEB APPLICATION

A PROJECT REPORT

Submitted by

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To

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ABSTRACT

PHARMACY MANAGEMENT WEB APPLICATION

To develop web applications these days, we use Modern View Controller architecture. Spring provides MVC framework with ready components that can be used to develop flexible and loosely coupled web applications. MVC framework provides separation between input logic, business logic and UI logic.The Model encapsulates the application data.The View is responsible for rendering the data.However,Controller is responsible for processing user requests and building model and passing it to view for rendering.Along with Spring MVC Framework we make use of another component called Hibernate. Hibernate maps Java classes to database tables and from Java data types to SQL data types. Hibernate lies between relational database and Java objects to handle all the work in persisting those objects based on accurate O/R configuration.Here I have developed a web application in support of above mentioned reqirements and this web application is used for Pharmacy Management. This application is developed for a pharma assistant where he/she is able to add new medicines, view available stock and update/delete the medicine details. It also has a search module where the assistant can search using the medicine id. This pharmacy management system will be used to minimize the time and resource by maintaining the details of the drug systemically so that the data can be used in possible quickest time. While the resource which is minimized are workforce, money, papers, etc. The system is user-friendly and will help the pharmacist.

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CHAPTER 1

INTRODUCTION

The project named “Pharmacy Management System”,a Medical Information System is a client/server based application.An interactive application for managing Stock which helps in maintaining the records of the medicine and also reduce the work of searching medicine manually.The main aim of this application is applying technology supporting a pharmacist where he/she can easily view the stock of medicines,insert the newly arrived medicines,update the details of existing medicines and delete them if currently not available.For these functionalities to achieve CRUD Operations are utilized and applied on the database of the medicines with certain details.

The user has to set a username and password and that is been stored inside a separate database.This database contains the username and password set by the user and can get access to this application.Without the username and password no one can get access to the application.In this application,we have given access to two different users who have their specified work to perform and this can manage the all the stocks of the store and manage it.On accessing the application in the main page of the application consists of different buttons corresponding to different operations along with that it consists of a search module where the person using application can search any medicine easily with its id.All these functionalities are achieved by performing the corresponding CRUD Operations on the database if medicines.Along with Spring MVC framework,Hibernate the UI part is designed using HTML and CSS styling components.Javascript also plays a major role in this application like it generates a popup while deleting any medicine and while trying to acess the application in an unauthorized manner.

CHAPTER 2

REQUIREMENT SPECIFICATION

Different technologies has been applied across different layers of the creation of the Pharmacy Management Web Application. Generally the entire web application can be divided into 3 layers where different technologies or tools are applied to manage to a web application. In the Presentation layer/WEB UI part the tools utilized are:

2.1 HTML 5

HTML or Hyper Text Markup Language is the main markup language for creating web pages and other information that can be displayed on a web browser.HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets(like<html>),within the webpage content.Html tags most commonly come in pairs like<h1> and </h1>,although some tags represent empty elements and so are unpaired, for example <img>.The first tag in a pair is start tag and the second is the end tag.In between these tags web designers can add text, further tags, comments and other types of text-based content. The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags,but uses tags to interpret the content of the page.

2.2 JAVASCRIPT

JavaScript(JS) is a dynamic computer programming language.It is most commonly used as part of web browsers,whose implementtions allow client-side scripts to interact with the user,control the browser,communicate asynchronously,and alter the document content that is displayed.It is also being used in server-side programming,game development and the creation of desktop and mobile applications.The application of JavaScript in use outside of web pages-for example in PDF documents,site-specific browsers and desktop widgets.

2.3 CSS

Cascade Style Sheets(CSS) is a style sheet language used for describing the look and formatting of a document written in markup language.While most often used to style web pages and interfaces written in HTML and XHTML,the language can be applied to any kind of XML document,including plain XML,SVG and XUL.CSS is a cornerstone specification of the web

and almost all web pages use CSS style sheets to describe their presentation.CSS is designed primarily to enable the separation of document content from document presentation,including elements such as layout,colors,fonts.This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics,enable multiple pages to share formatting and reduce complexity and repititon in structural content.

2.4 JSTL

JSTL is a standard tag library of the JSP. Here we will see how using different JSTL tags will make JSP coding easier. JSTL stands for java server pages standard tag library, and it is a collection of custom JSP tag libraries that provide common web development functionality. It provides a rich layer of the portable functionality of JSP pages. It's easy for a developer to understand the code. As scriplets confuse developer, the usage of JSTL makes the code neat and clean. It has an advantage of JSTL over JSP scriptlets. JSTL Expression language handles JavaBean code very easily.

The other 2 layers are the middleware layer and persistence provider where the components used in both are given as.The software requirements in both layers are summarized below:-

2.5 Java 1.8+

Java SE 8,supporting JDK 1.8 is one of the most feature packed release in the Java History.Along with the important features, there are other minor enhancements, security features, bug fixes are available as part of Java 8.They are Lambda Expressions,Pipelines and Streams,Date and Time API,Default Methods,Type Annotations,Nashorn JavaScript Engine,Concurrent Accumulators,Parallel operation,PermGen Space Removed,TLS SNI.

2.6 Apache Tomcat Server 7.0 or above

Apache is generally recognized as the world’s most popular Web server(HTTP Server).The Apache Web server has been ported windows and other network operating systems.Apache also supports plugin modules for extensibility.Apache is free software,distributed by the Apache Software Foundation that promotes various free and open source advanced web technologies.

2.7 Hibernate with My SQL Database 5.0 or above

MySQL is the world's most popular open source database,enabling the cost-effective delievery of reliable,high-performance and scalable web-based and embedded database applications.On top of that,it is very commonly used to create powerful and dynamic server-side applications.One of the benefits of using JPA and Hibernate is that it provides an abstraction of database-specific dialects and features. So, in theory, we can implement an application, connect it to one of the supported databases and it will run without any code changes. Hibernate does that really well. The efficient handling and creation of primary keys are a basic but one of the most important parts of an application is one thing done by Hibernate.

2.8 ECLIPSE IDE/STS 2018-2019

Eclipse is an Integrated Development Environment (IDE) used in computer programming. It contains a base workspace and an extensible plug-in system for customizing the environment. Eclipse is written mostly in Java and its primary use is for developing Java applications. The Eclipse IDE can be extended with additional software components. Eclipse calls these software components *plug-ins*. Plug-in can be grouped into *features*.

Spring is at the heart of most modern business applications, in the center of modern cloud-based microservice applications, and used by millions of developers around the globe. And Spring Boot is at the heart of the current renaissance of Spring, making it easy, convenient, and extremely efficient to implement applications and services on top of Java. To make it even easier to write modern Spring Boot applications, the latest generation of the Spring Tools for the Eclipse IDE are well suited for getting started with Spring Boot and working on large microservice applications that are based on Spring Boot. The most important features of the tooling and provides great insight into a number of tips and tricks along the way. We can install the Spring Tools for Eclipse IDE into an existing Eclipse installation using the Eclipse Marketplace. Just open the marketplace client in Eclipse, search for Spring Tools and install the "Spring Tools (aka Spring IDE and Spring Tool Suite)" entry.

2.9 MAVEN 3.0 OR ABOVE

A Project Object Model or POM is the fundamental unit of work in Maven. It is an XML file that contains information about the project and configuration details used by Maven to build the project. It contains default values for most projects. When executing a task or goal, Maven looks

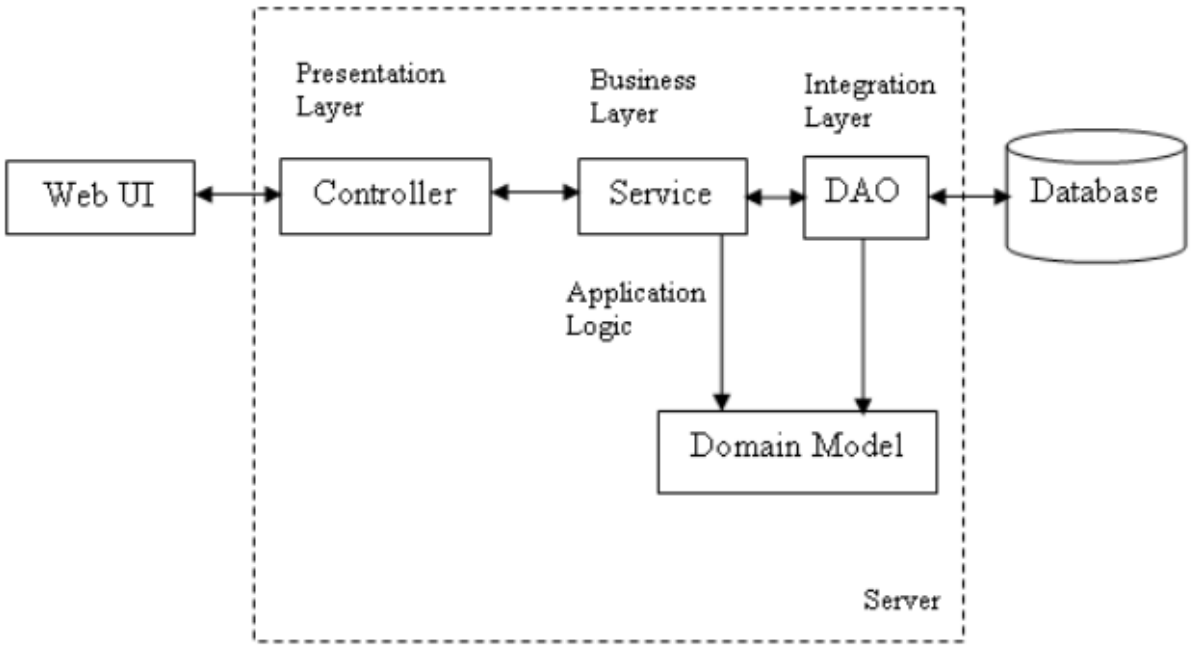
for the POM in the current directory. It reads the POM, gets the needed configuration information, then executes the goal.Some of the configuration that can be specified in the POM are the project dependencies, the plugins or goals that can be executed, the build profiles, and so on. Other information such as the project version, description, developers, mailing lists and such can also be specified.Maven can be downloaded either explicitly or from the Eclipse Market place.

2.10 JUNIT 4

JUnit is an open source Unit Testing Framework for JAVA. It is useful for java Developers to write and run repeatable tests.It is an instance of xUnit architecture. As the name implies, it is used for Unit Testing of a small chunk of code. Developers who are following test-driven methodology must write and execute unit test first before any code. Once we are done with code, we should execute all tests, and it should pass. Every time any code is added, we need to re-execute all test cases and makes sure nothing is broken. Unit Testing is used to verify a small chunk of code by creating a path, function or a method. JUnit Testing, finds bugs early in the code, which makes our code more reliable.JUnit is useful for developers, who work in a test-driven environment.Unit testing forces a developer to read code more than writing.

CHAPTER 3

ARCHITECTURE DESIGN



3.1 Architectural design

The above diagram represents the entire architecture of this project. Basically the entire project can be divided into three different layers Presentation, Business and Integration layers. Apart from these three major layers Web UI and Server plays very important role.

3.1 WEB UI

UI is the design process of making interfaces using different tools or devices with a focus on looks or style. Designers aim to create layouts which make the users easy to use and pleasureable. The UI of this project is made attractive and easy to use using HTML5, CSS and JavaScript. The UI part of this project includes a login section where the authorized user can login with the preset username and password. If the username or password is made empty and trying to login then a popup will appear created with the help of JS displaying “username or

password cannot be empty". If wrong credentials are used by the user that will be redirected to an error page showing wrong credentials. The below image shows the login section of the web application.

3.2 Login Page

3.2 INTEGRATION LAYER

Integration layer is the section of the architectural design where Dao interfaces are included and the implementations are provided. This layer can also be known as Repository layer and is the lowest layer of the web application. It is responsible for communicating with the used data storage, that is here it is database containing the information of medicines. DAO part is the one which directly interacts with the database and return the desired results of the operations carried out.

3.3 PRESENTATION LAYER

The presentation layer is one of the important sections of this design. The presentation layer includes the Controller part, both the Home Controller and the remaining CRUD operations controller too. Controller part accepts the requests from the client and then redirect to the exact location as specified in the URL pattern. The Home Controller is responsible to redirect to the login section of the web application and on submitting the credentials it is redirected to a main page where this design includes different buttons corresponding to each CRUD operation need to be carried out. When the user clicking on different buttons, like list medicine, add medicine, this request is dealt by controller. For viewing the stock a different jsp page is returned where the user can view the stock and then there itself against each medicine "update" or "delete" link is provided. For adding new stock of medicine another jsp page is returned on clicking the

corresponding button where a medicine form is available and can fill the details and save to database.

3.4 BUSINESS LAYER

The Service layer comes under this category of the architectural design. The Service layer comes after the Web layer. It acts as a transaction boundary and contains both application and infrastructure services. The application services provides the public API of the Service layer. They also act as a transaction boundary and is responsible for authorization. This includes a kind of plumbing code where the methods inside this layers invokes the methods to interact with external resources such as file systems, databases etc. All the service layer classes are annotated using the @Service annotation and the methods inside the implementation invokes the method of DAO classes. For accessing the DAO methods, DAO object is injected with @Autowired annotation inside this service layer. This layer takes entities as method parameters and return entities. Session object is created inside this and thus by obtaining the current session we can perform the appropriate CRUD Operations.

3.5 DOMAIN MODEL

For designing the interface of each layer this is the phase we use two terms like data transfer Object(DTO) and domain model. A data transfer object is an object that is just a simple container and these objects are used to carry data between different processes and between the layers of our application. The domain model consists of three different objects. They are:-

- A domain service is a stateless class that provides operations which are related to a domain concept but are not a part of an entity or a value object.
- An entity is an object that is defined by its identity which stays unchanged throughout its life cycle.
- A value object describes a property or a thing.

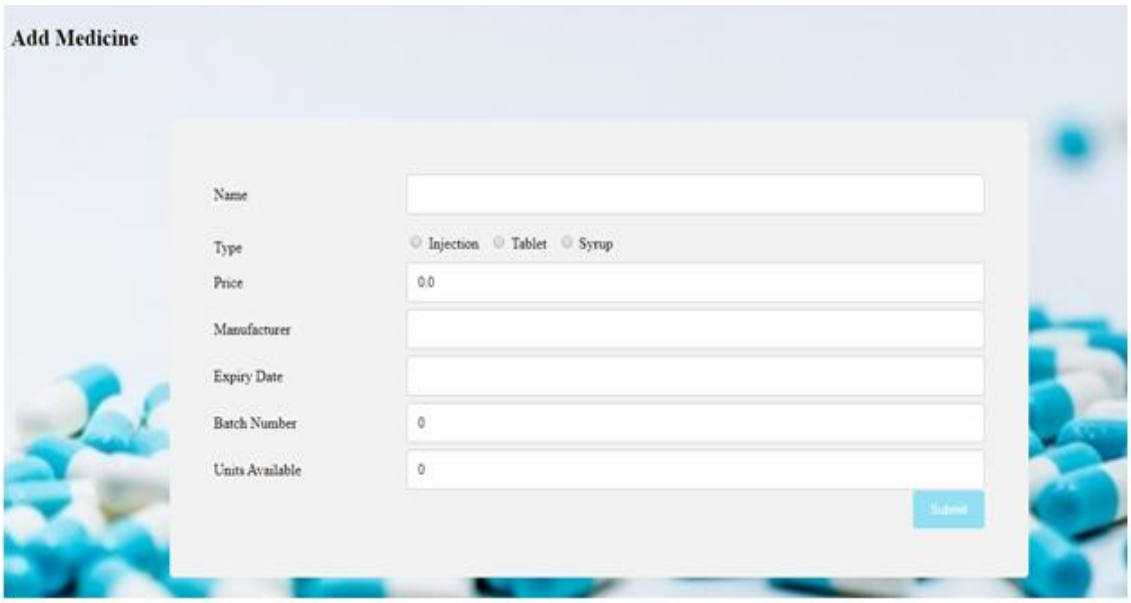
3.6 DATABASE

Database is the part of the architectural design where consists of different tables where data is stored in the predefined format. Here this project consists of two tables. One table is used to store the credentials for logging in to the web application, thus by access given to authorized persons

only. The second table is used to store the details of the medicines available in the Pharmacy with enough details.

The other images of web application are shown below:-

3.3 After login user reaches this page where various operations are carried out.



3.4 Medicine-form to add medicines

3.5 Available Stock page, against each medicine update or delete operation can be done

CHAPTER 4

CONCLUSION AND FUTURE WORK

The system is secure ensuring only authorized personal can access the records and it has the ability to keep track of the available stock and also to make changes to the existing records of the medicines while improving the record management efficiency in spite of the large data. This system can be further enhanced so that it not only records the data of the stock available but also the record of the sales done, more details of the users and the suppliers, daily cash balance information and current cash information.

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