

KRATIN LET'S INNOVATE

INTRODUCTION

This project deals with the Corporate Medicare Management. This project is very helpful to both Medicare staff as well as to the public. It is having mainly Administration and Client modules. Nowday E healthcare System will be very helpfull to us because of this pandemic.

In this sense, Data Mining (DM) can contribute with important benefits to the health sector, as a fundamental tool to analyze the data gathered by hospital information systems (HIS) and obtain models and patterns which can improve patient assistance and a better use of resources and pharmaceutical expense.

PURPOSE

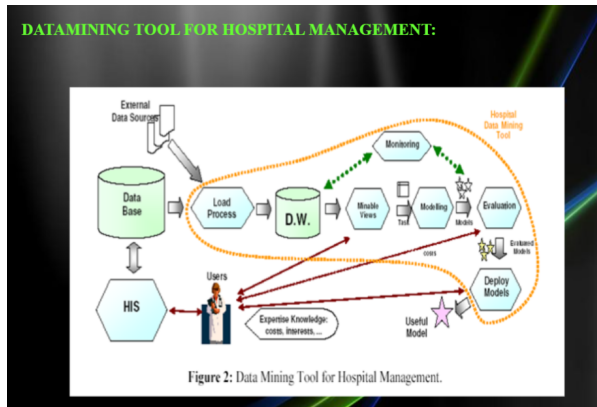
In Medicare management situations we are dealing with Data Mining objectives such as:

1. To optimize bed occupation.
2. To improve the use of operating theatres, avoiding the cancellation of operations.
3. To know how emergencies affect to the administration of the hospital departments or services (cancellation of operations, etc).
4. To optimize the allocation of human and material resources towards and shifts.
5. To detect the influence of certain diseases in the hospital's services.
6. To find clusters of patients.

Data mining Tool for Hospital Management

Taken all of these considerations into account, we propose the following general scheme for an automated data mining tool for hospital management (Figure 2).

The tool is composed by several processes (modules) that correspond to the stages described in Figure 2. Thus, the load process corresponds to stages 2 and 3 (as we have discussed before).



The Minable View process integrates the business objectives in order to select from the D.W. the data to be used for constructing the models. Finally, the following processes (Modeling, Evaluation and Deploy Models) represent stages 4, 5 and 6, respectively.

Data Integration

For solving the data mining objectives, we need two kinds of information: internal (contained in the HIS) and external (not contained in the HIS). Internal information changes from one hospital to another, but for example, all of them collect general data from patients and their treatments. External data are not easy to obtain, because they are not gathered in any database.

SYSTEM ANALYSIS

Requirement Analysis

A requirement is a feature that must be included in the system. Before the actual design and implementation start, getting to know the system to be implemented is of prime importance.

Main emphasis should be on:

- Inputs enter into the system.
- Standard Encryption of Input on submit
- The outputs expected from the system.
- The people involved in the working of the system.
- The volume of DATA (INPUT) and the amount of Information (OUTPUT) that will be involved with respect to the system itself, the following facts should be taking into consideration.

The Major process involved:

- The main points of the application.
- The processing rules for the collected data.
- The exceptions that may be present.
- That checks that should be in place in order to avoid wrong entries.

Software Requirement Specification

OPERATING SYSTEM	:	WIN 98/2000/XP, UNIX/LINUX
DATA BASE	:	ORACLE
SOFTWARE	:	APACHE TOMCAT
FRONT END TOOL	:	DHTML
LANGUAGE	:	JAVA
SCRIPTING LANGUAGE	:	JAVA SCRIPT
WEB COMPONENTS	:	SERVLETS, JSP
DATA MINING TOOL	:	WEKA

Hardware Requirements Specification

PROCESSOR	:	Pentium-IV
PROCESSOR SPEED	:	2.4GHZ
MONITOR	:	COLOR MONITOR
HARD DISK	:	40GB
RAM	:	512MB
MOUSE	:	SCROLLING MOUSE
KEY BOARD	:	MM KEY BOARD

Communication protocols

- TCP/IP protocol should be installed.
- Any browser should be installed (Internet explorer 6.0 or Netscape navigator 8.0)
- HTTP 1.1 should be present on the system.
- Internet connection should be present in order to access the site.
- Internal modem or NIC card should be present.

Design Phase:

In this design phase we design the system making use of study phase and the data flow diagrams. We make use the general access for designing.

We consider the top down approach. In the design phase we determine the entities and their attributes and the relationships between the entities. We do both logical and physical design of the system.

Development Phase:

In the development phase we mostly do the coding part following the design of the system. We follow modular programming for development and after development and after developing each and every module we do the unit testing followed by the integration testing.

Implementation Phase:

The last phase of the project is the implementation phase. Quality assurance is the primary motive in this phase. The quality assurance is the review of software products and related documentation for completeness, correctness, reliability and maintainability. The philosophy behind the testing is it finds errors. The testing strategies are of two types, the code testing and the specifications testing. In the code testing we are examining the logic of the program. On the surface, code testing seems to be ideal methods for testing software, but no tall software errors are uncovered.

Feasibility Study

Feasibility is an important phase in software development process. It enables the developers to have an assessment of the product being developed. It refers to the feasibility study of product in terms of outcomes of the product, operational use and technical support required for implementation it.

4.1 Model View Controller Architecture

MVC Architecture defines that the controller is separated from the system model and View. It is composed of three different layers. Being a Web based architecture. The user Interface is completely separated from the entire Business Logic Layer.

The Database Layer and Business Logic Layer runs on the server Machine and the User Interface Layer will run under the Client Machine. For developing the User Interface we are

having HTML and Java Script. For Business Login and Database Connectivity Servlets and JSP are used. In the Backed the servlets and Jsp's are connected to database through JDBC API. The web server plays a major role in connecting the client user interface and the servlets and JSP

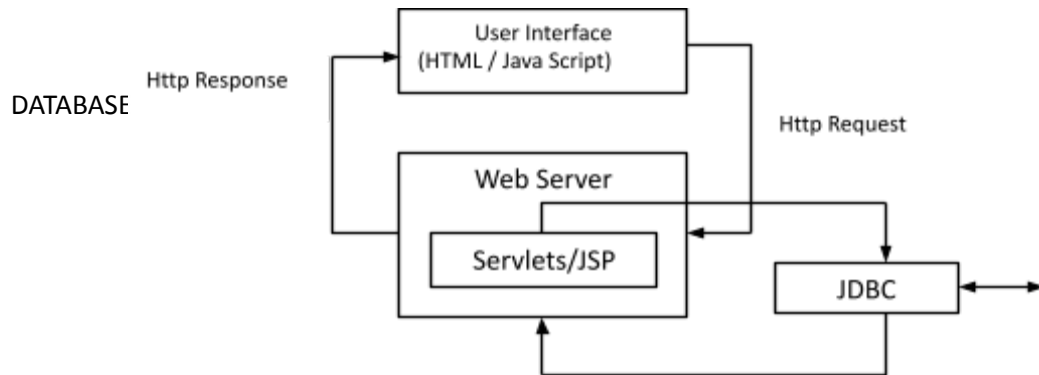


Figure 3: Block Diagram of Architecture

4.2 Unified Modeling Language Diagrams

- The unified modeling language allows the software engineer to express an analysis model using the modeling notation that is governed by a set of syntactic semantic and pragmatic rules.
- A UML system is represented using five different views that describe the system from distinctly different perspective. Each view is defined by a set of diagram, which is as follows.

Structural model view

- In this model the data and functionality are arrived from inside the system.
- This model view models the static structures.

Behavioral Model View

- It represents the dynamic of behavioral as parts of the system, depicting the interactions of collection between various structural elements described in the user model and structural model view.

Implementation Model View

- In the structural and behavioral as parts of the system are represented as they are to be built.

Environmental Model View

- In this structural and behavioral aspects of the environment in which the system is to be implemented are represented.

UML is specifically constructed through two different domains they are

- UML Analysis modeling, this focuses on the user model and structural model views of the system.
- UML design modeling, which focuses on the behavioral modeling, implementation modeling and environmental model views.

4.3 Diagrams

4.3.1 Use case Diagrams

Use case Diagrams represent the functionality of the system from a user's point of view. Use cases are used during requirements elicitation and analysis to represent the functionality of the system. Use cases focus on the behavior of the system from external point of view.

Actors are external entities that interact with the system. Examples of actors include users like administrator, bank customer ...etc., or another system like central database

4.3.2 Class Diagrams

Class diagrams are widely used to describe the types of objects in a system and their relationships. These model the class structure and contents using elements such as classes, packages and objects. Class diagrams describe three different perspectives when designing a system. Conceptual, specification and implementation.

4.3.3 Interaction Diagrams

Sequence diagrams and Collaboration diagrams both are called as interaction diagrams. These are two of the five diagrams used in the UML for modeling the dynamic aspects of the systems. An interaction diagrams shows an interaction, consisting of a set of objects and their relationships, including the messages that may be dispatched among them.

4.3.4 Sequence Diagrams

A sequence diagram shows, as parallel vertical lines (“life lines”), different processes or objects that live simultaneously and horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

4.3.5 Collaboration Diagrams

A collaboration diagram emphasizes the organization of the objects that participate in an interaction. There are two distinguish features from sequence diagram to represent, first, there is the path to indicate how one object is linked to other and second is sequence number, to indicate the time order of messages by prefix with number.

To illustrate the concept of autonomous DDM, we performed an experiment using GMM as the global model to demonstrate how to reach the optimal trade-off between the overall data mining quality and the local source’s data granularity levels via self-organization. Instead of

assuming that the privacy-control component is passive, we implemented the local data sources with the autonomous property to negotiate with the global broker service regarding which data abstraction level to present.

The global broker first requests a data abstraction with coarse granularity from each local source. Then, it actively requests more specific details from those sources on a need-to-know basis so that it can learn the global model in a cost-effective manner.

The global brokering service can send the local sources the global model learned up to a specific moment, for example, and the local sources can then return their bid values computed based on the local data likelihood (defined as the product of the probabilities of generating the data) gained per unit cost by advancing one more level of granularity at the local sources. The global service will ask for more data details from the source with the highest value returned. This protocol continues until the data likelihood stops improving significantly or the computational budget runs out.

Use case Diagram for Admin

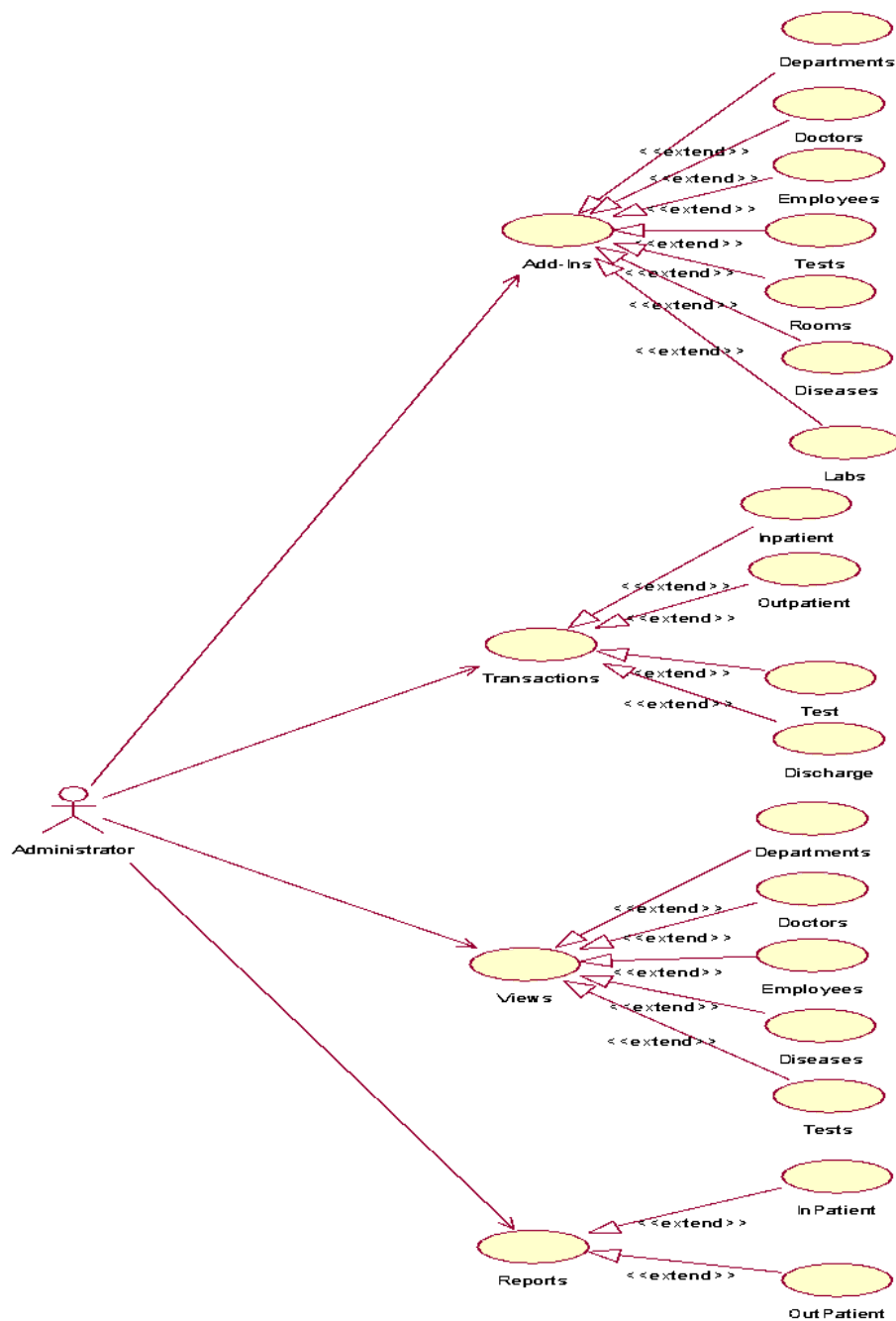


Figure 4: Use case for admin

Use case Diagram for Patient

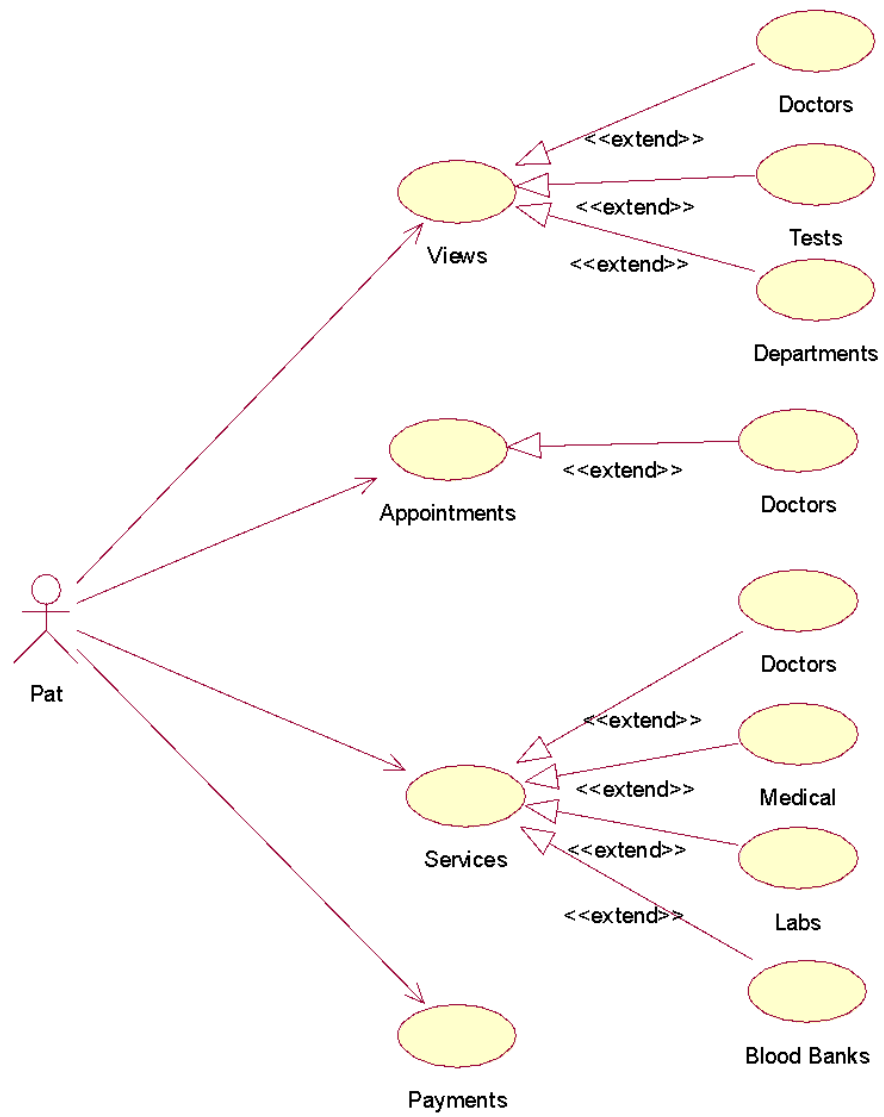


Figure 5: Use case for Patient

Use case Diagram for Patient

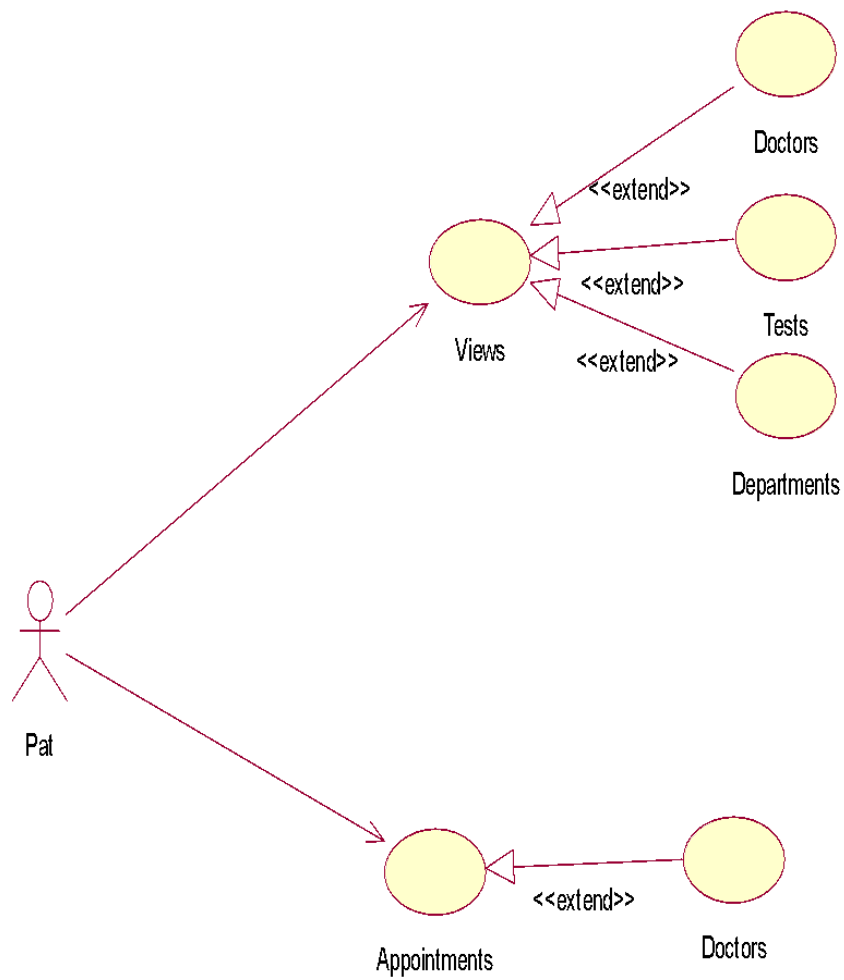


Figure 6: Use case for Public

Class Diagram for Medicare

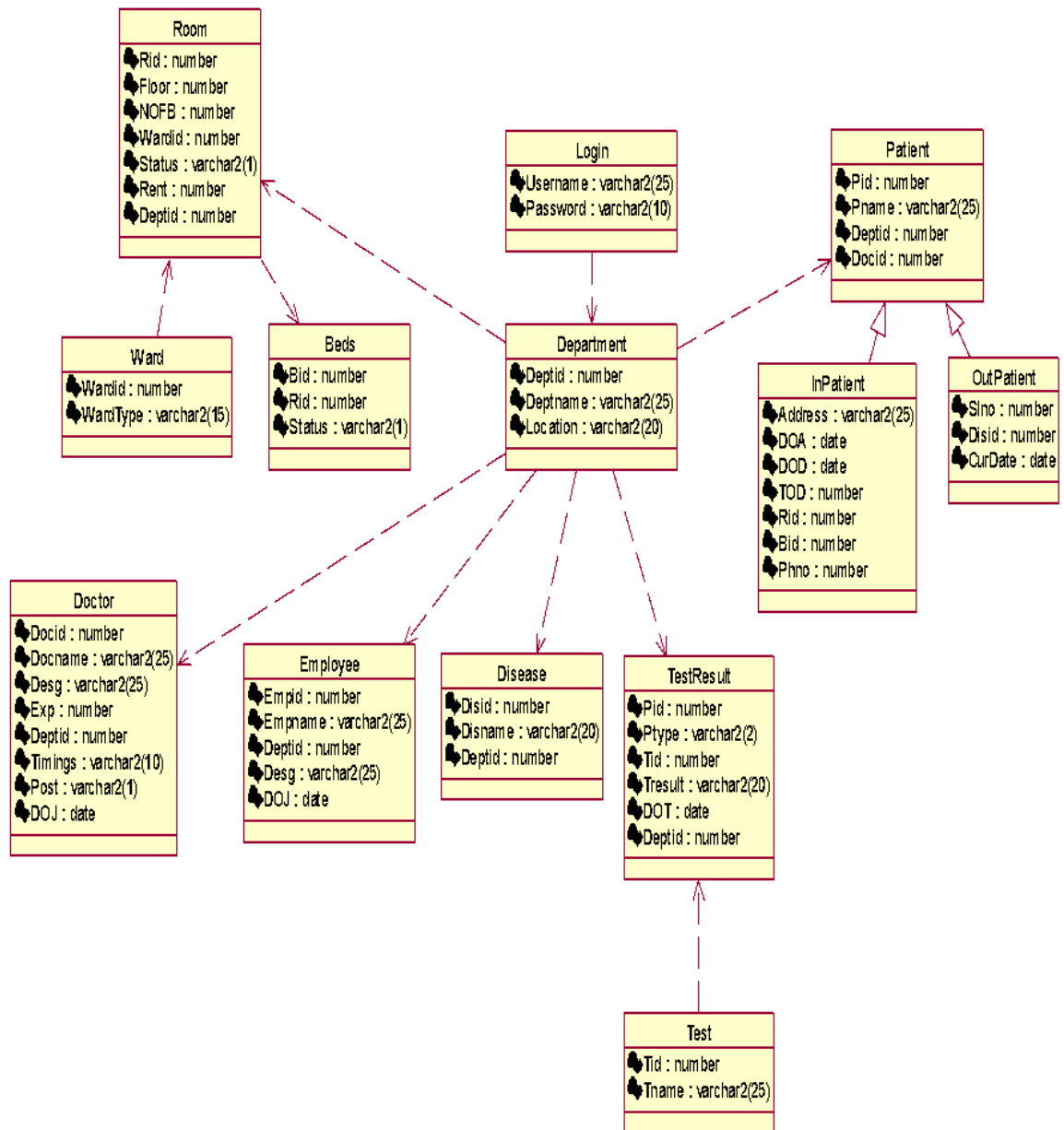


Figure 7: Class Diagram for Medicare

Sequence Diagram for Admin

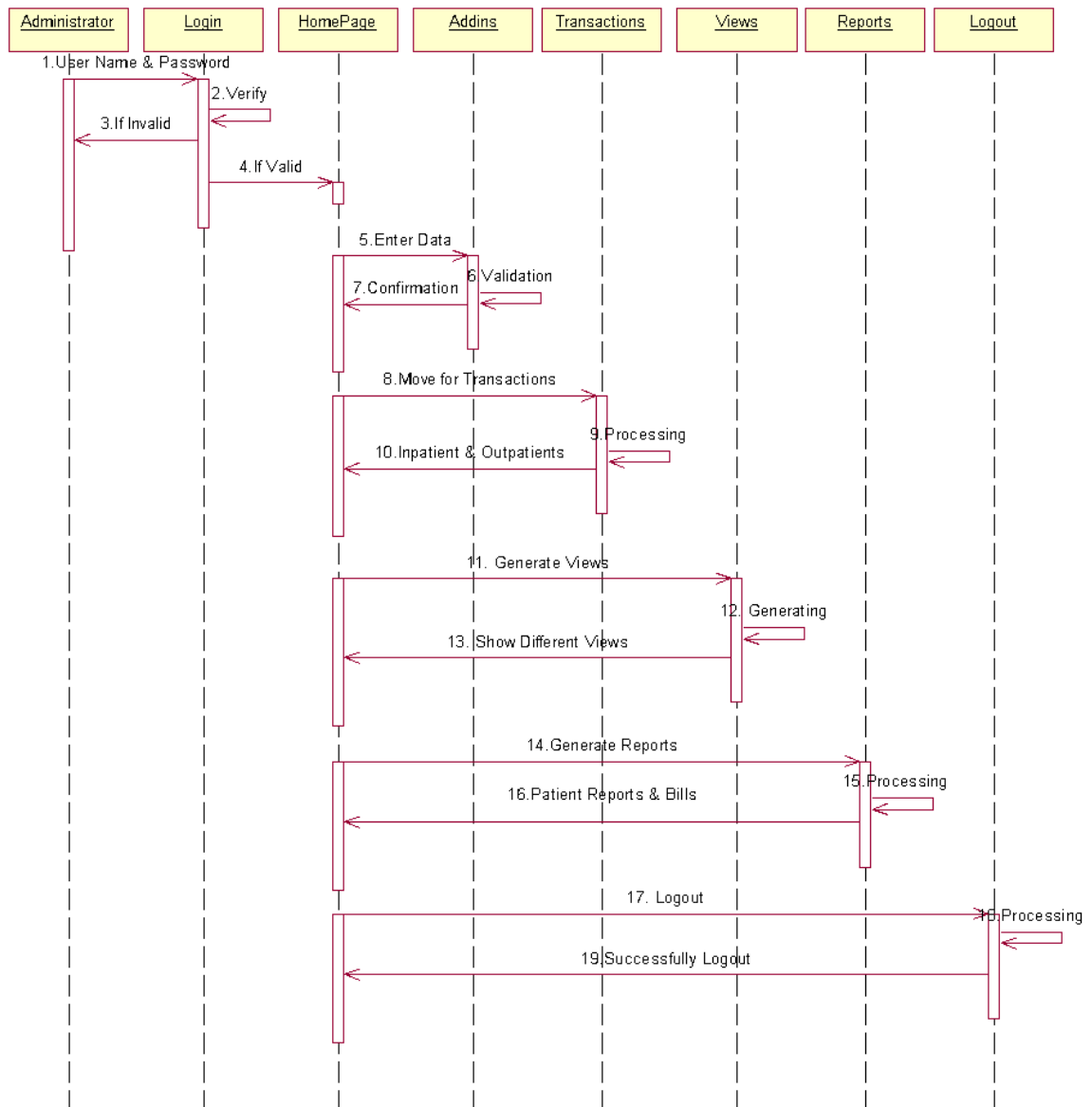


Figure: 8 Sequence Diagram for Admin

Sequence Diagram for patient

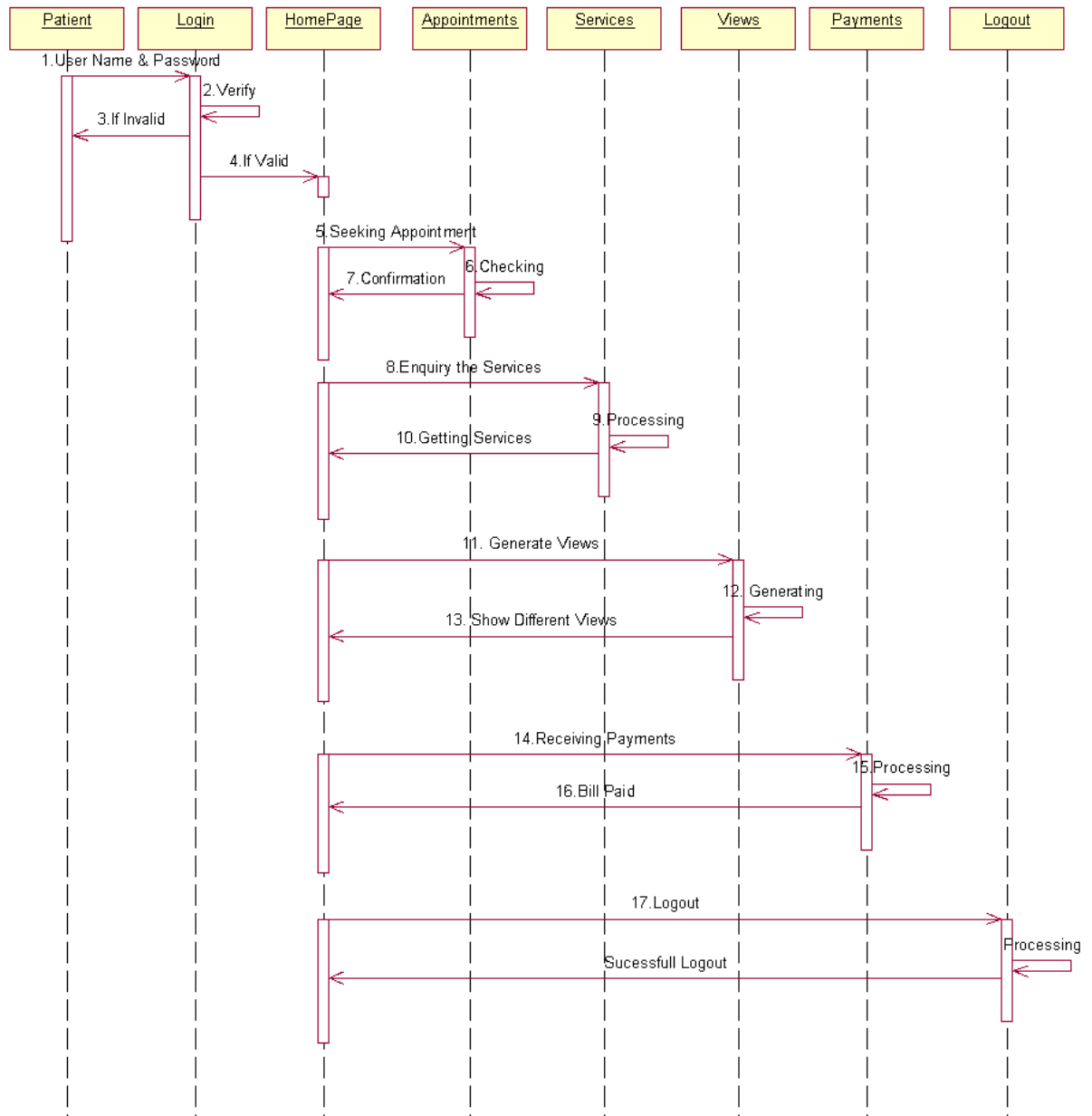


Figure: 9 Sequence Diagram for patient

Sequence Diagram for public

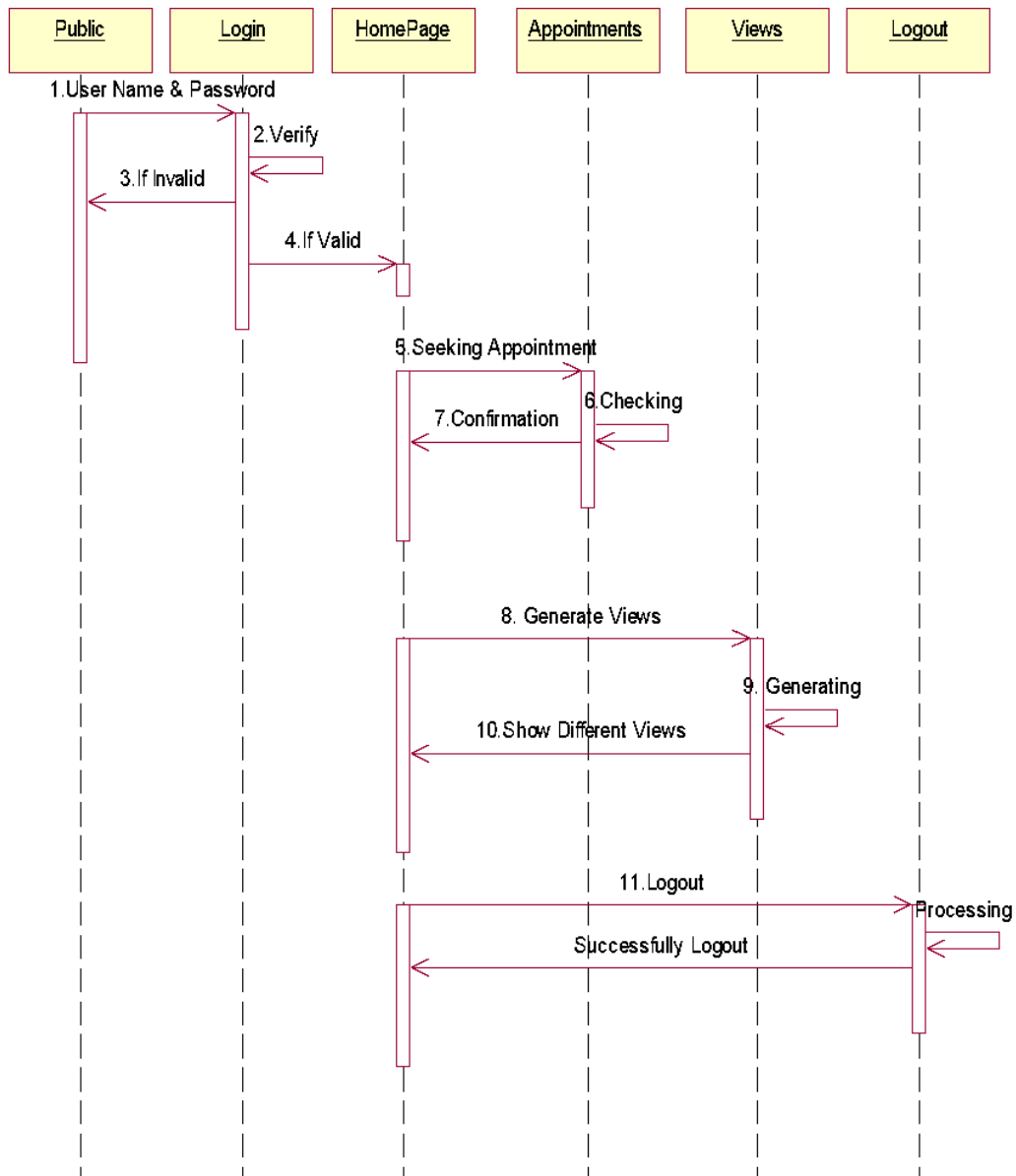


Figure: 10 Sequence Diagram for public

Collaboration Diagram for Admin

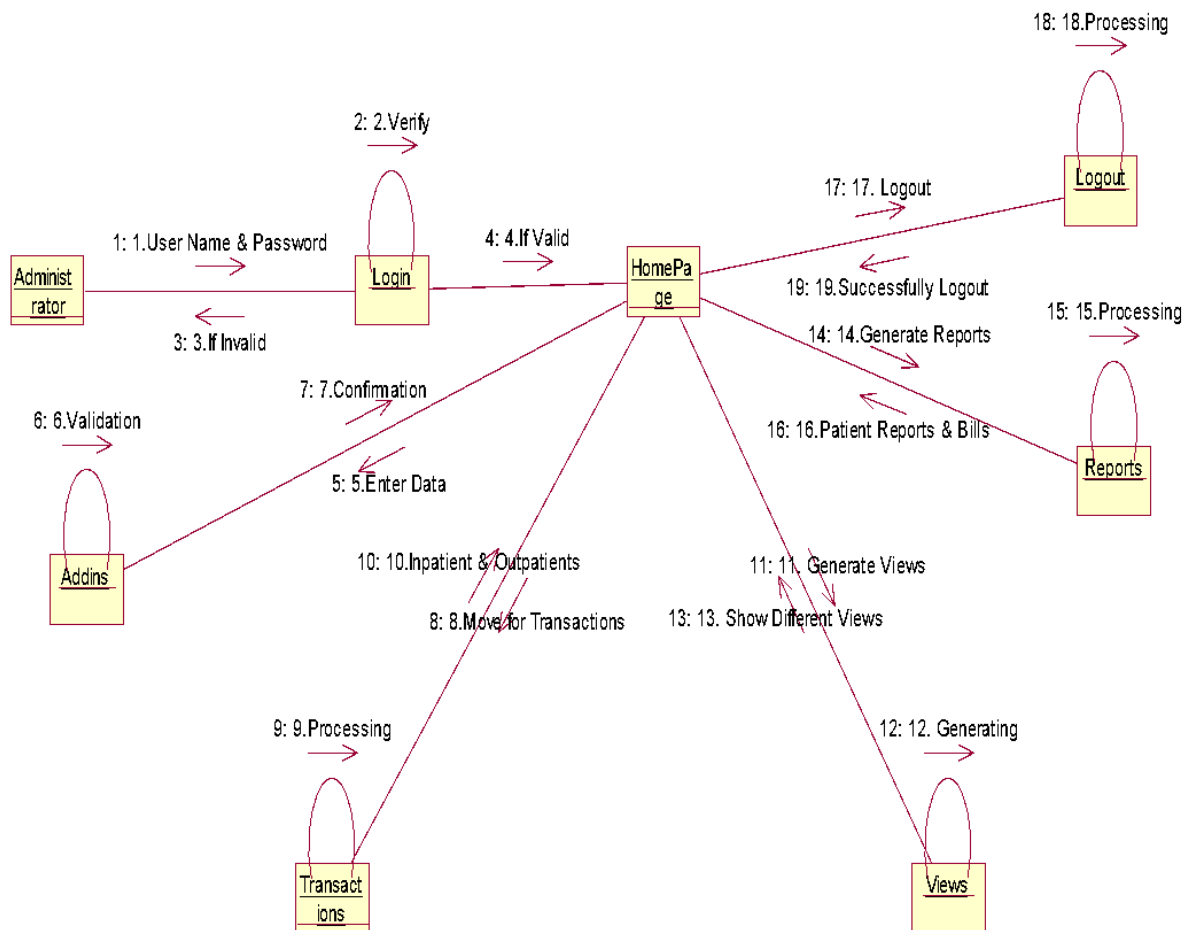


Figure: 11 Collaboration Diagram for Admin

Collaboration Diagram for Patient

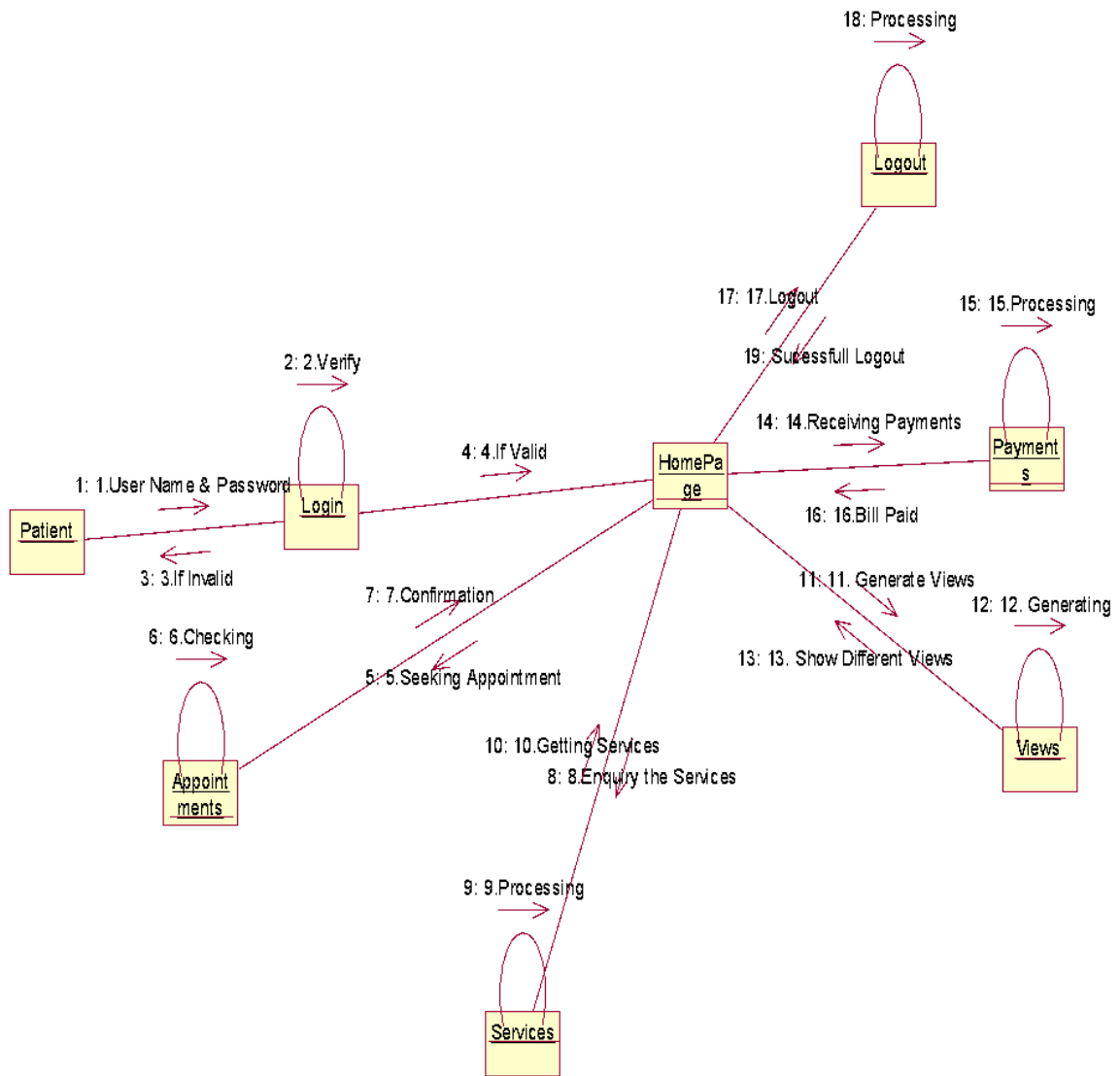


Figure: 12 Collaboration Diagram for Patient

Collaboration Diagram for public

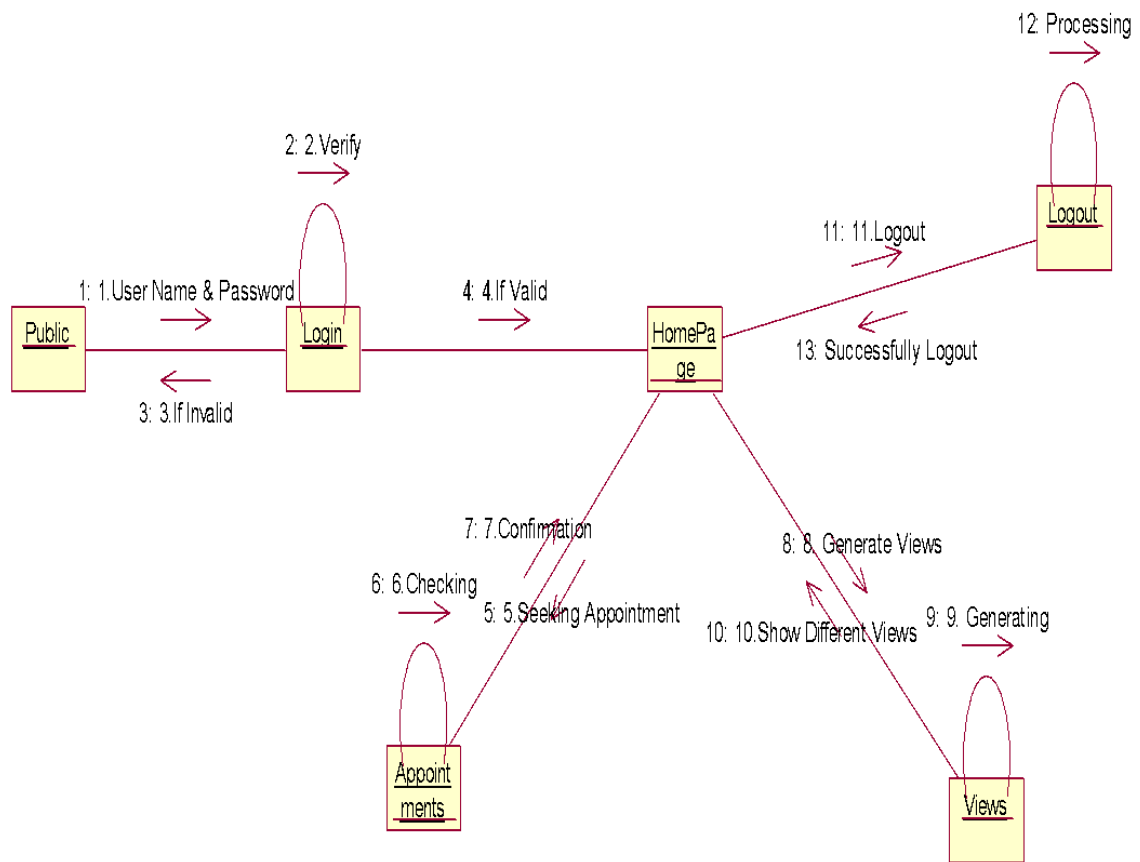


Figure: 13 Collaboration Diagram for public

State chart Diagram for Admin

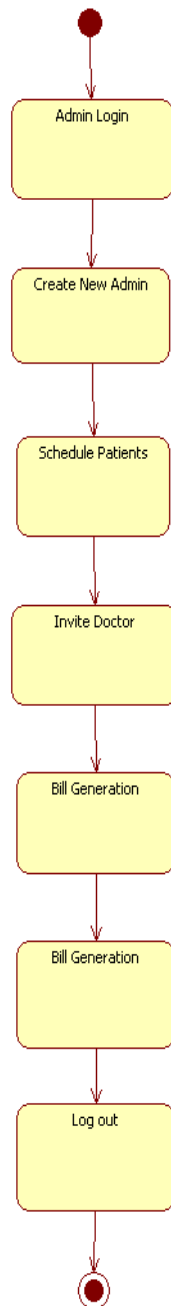


Figure 14: State chart Diagram for

Admin

StateChart Diagram for Patient

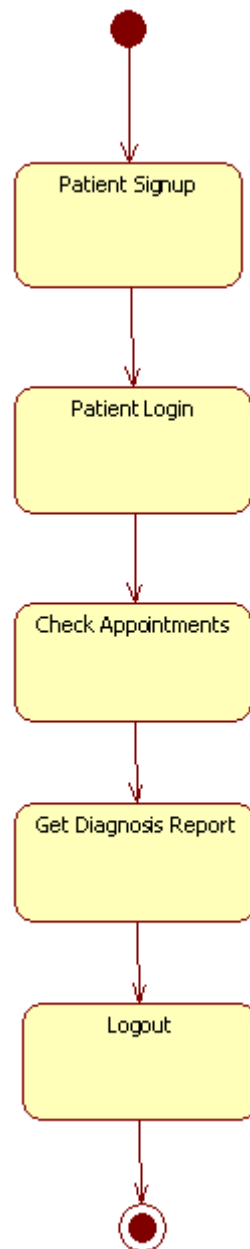


Figure 15 StateChart Diagram for Patient

State ChartDiagram for Doctor

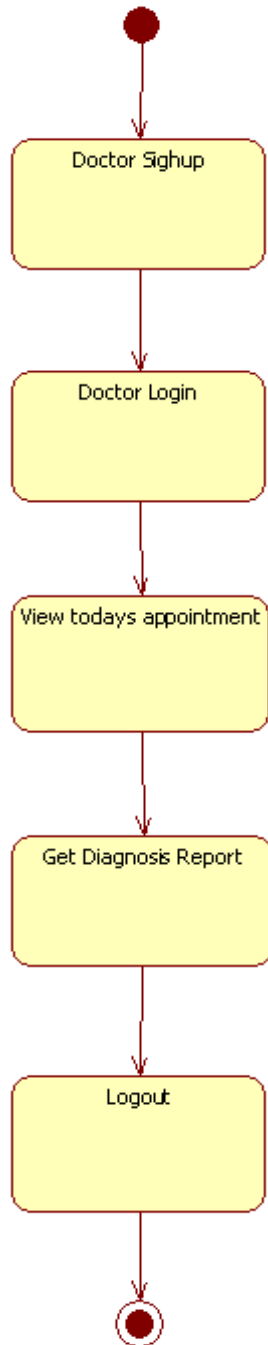


Figure 16 State ChartDiagram for Doctor

5. TECHNOLOGIES USED

5.1 JAVA

In my project, I have chosen **Java** language for developing the code..

Importance of Java to the Internet

Java has had a profound effect on the Internet. This is because, Java expands the Universe of objects are transmitted between the Server and the Personal Computer. They are: Passive information and Dynamic active programs. The Dynamic, Self-executing programs cause serious problems in the areas of Security and probability. But, Java addresses those concerns and by doing so, has opened the door to an exciting new form of program called Applet.

Java can be used create two types of programs

Applications and Applets: An application is a program that runs on our Computer under the operating system of that computer. It is more or less like one creating using C or C++. Java's ability to create Applets makes it important. An Applet is an application designed to be transmitted over the Internet and executed by a Java-compatible web browser.

And applet is actually a tiny Java program, dynamically downloaded across the network, just like an image. But the difference is, it is intelligent program, not just a media file. It can react to the user input and dynamically change.

SERVLETS

Servlets provide a Java –based solution used to address the problems currently associated with doing server-side programming, including inextensible scripting solutions, platform-specific APIs, and incomplete interfaces.

Servlets are objects that conform to a specific interface that can be plugged into a Java-based server. Servlets are to the server-side what applets are to the client-side-object byte codes that can be dynamically loaded off the net. They differ from applet that they are faceless objects (without graphics or a GUI component). They serve as platform independent, dynamically loadable, pluggable helper byte code objects on the server side that can be used to dynamically extend server-side functionality.

For example, an HTTP Servlets can be used to generate dynamic HTML content. When you use servlets to do dynamic content you get the following advantages:

- They're faster and cleaner than CGI scripts.
- They use a standard API (the Servlets API).
- They provide all the advantages of Java (run on a variety of servers without needing to be rewritten).

5.3 JAVA SCRIPT

JavaScript is a script-based programming language which was developed by Netscape Communication Corporation. JavaScript was originally called Live Script and renamed as JavaScript to indicate its relationship with Java.

JAVA SERVER PAGES (JSP)

A JSP page is a text-based document that describes how to process a request to create a response. The description intermixes template data with some dynamic actions and leverages on the Java Platform.

5.5 HTML

Hypertext Markup Language (HTML), the languages of the World Wide Web (WWW), allows users to produce Web pages that include text, graphics and pointer to other Web pages (Hyperlinks).

HTML is not a programming language but it is an application of ISO Standard 8879, **SGML (Standard Generalized Markup Language)**, but specialized to hypertext and adapted to the Web. The idea behind Hypertext is that instead of reading text in rigid linear structure, we can easily jump from one point to another point. We can navigate through the information based on our interest and preferences.

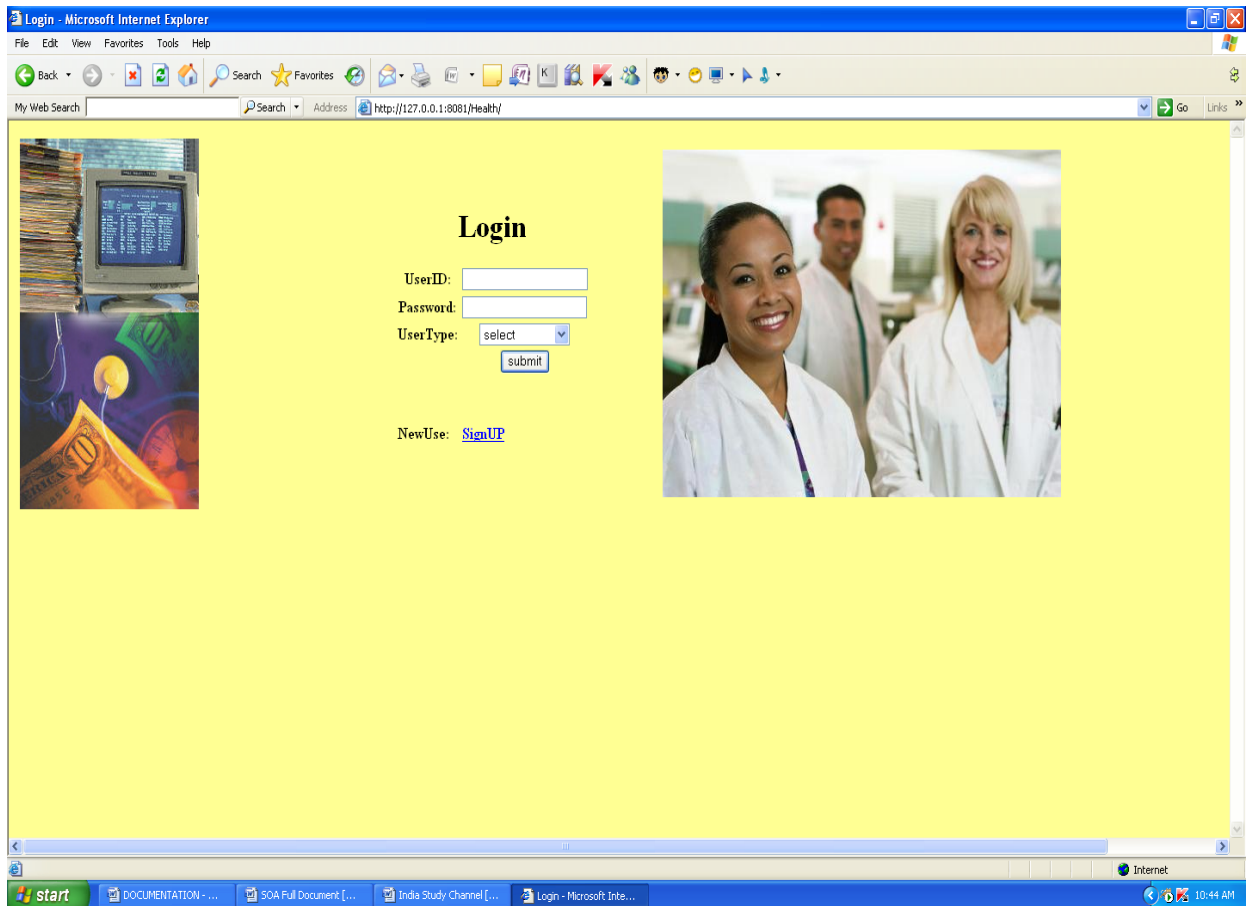
Java Database Connectivity

What is JDBC

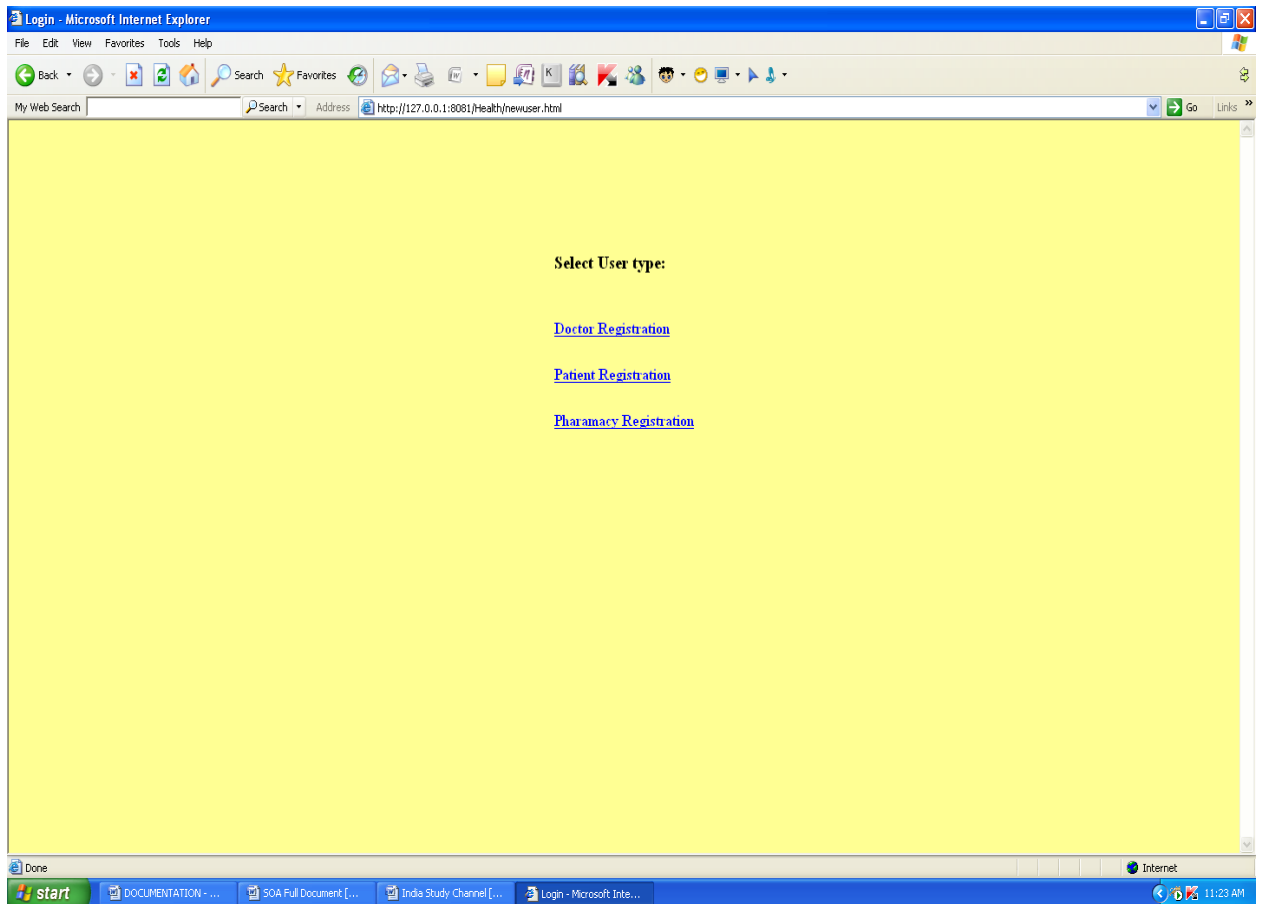
JDBC is a Java API for executing SQL statements. (As a point of interest, JDBC is a trademarked name and is not an acronym; nevertheless, JDBC is often thought of as standing for Java Database Connectivity. It consists of a set of classes and interfaces written in the Java programming language. JDBC provides a standard API for tool/database developers and makes it possible to write database applications using a pure Java API.

OUTPUT SCREENS

Home page



New user Registration page



Patient Registration


Patatient Registration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Home Print Mail News RSS Feeds

My Web Search Search Address http://127.0.0.1:8081/Health/pr.jsp Go Links

Patatient Registration



Patatient Id:

Patatient Name:

Password:

Confirm Password:

Father Name:

Age:

Address:

Problem:

Done Internet

start DOCUMENTATION - ... SOA Full Document [..] India Study Channel [..] Patatient Registratio...

11:58 AM

Doctor Registration page


Doctor Registration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

My Web Search Search Address http://127.0.0.1:8081/health/dr.jsp Go Links

Doctor Registration



Docotor Id:

Docotor Name:

Password:

Confirm Password:

Address:

Age:

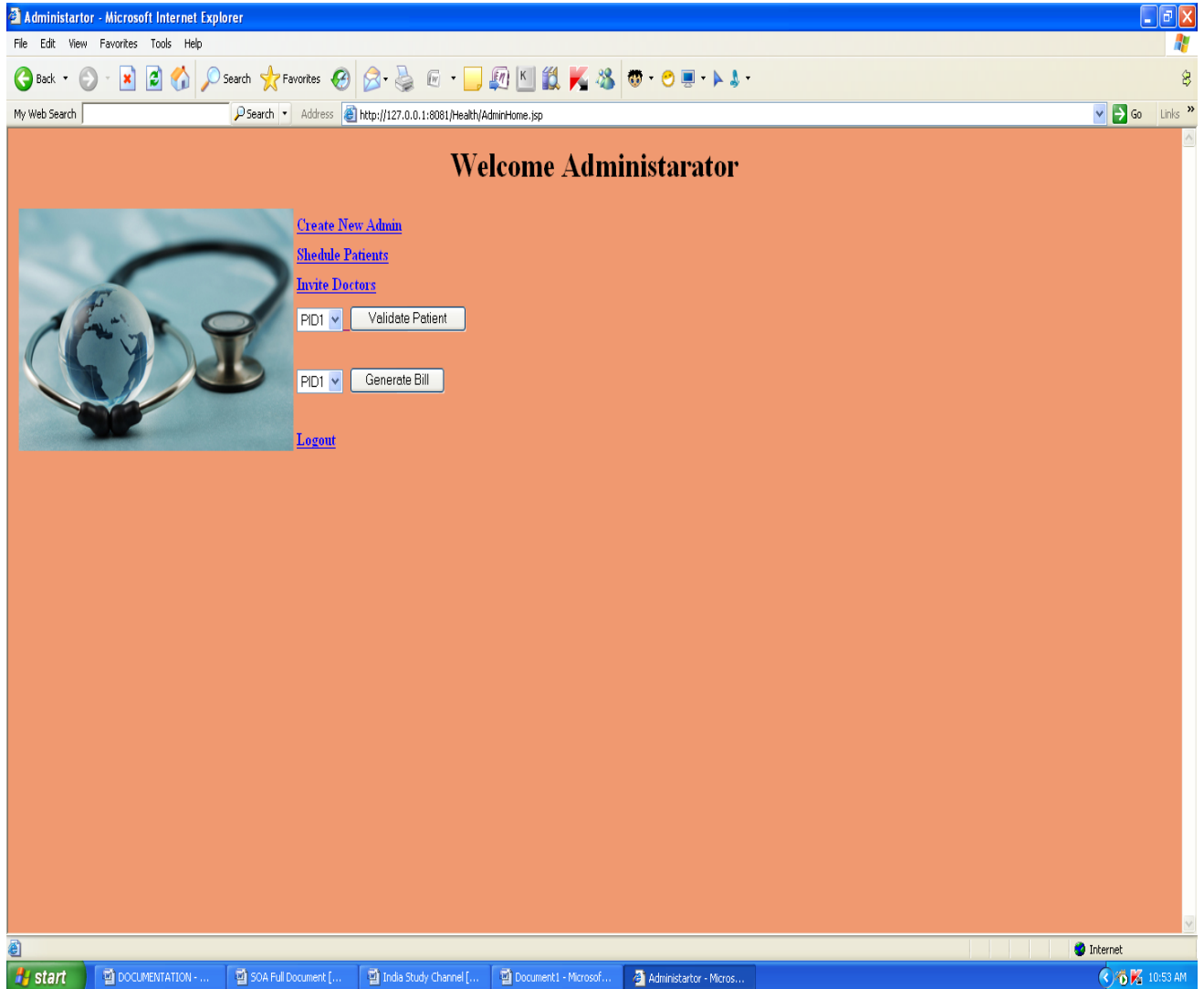
Specialization:

Qualification:

Done Internet

start DOCUMENTATION - ... SOA Full Document [... India Study Channel [... Doctor Registration - ... 11:56 AM

Admin page



Create new Admin


New Administrator - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Search Favorites Home

My Web Search Search Address <http://127.0.0.1:8081/Health/cna.jsp> Go Links

Administrator Registration



Name:

Password:

Confirm Password:

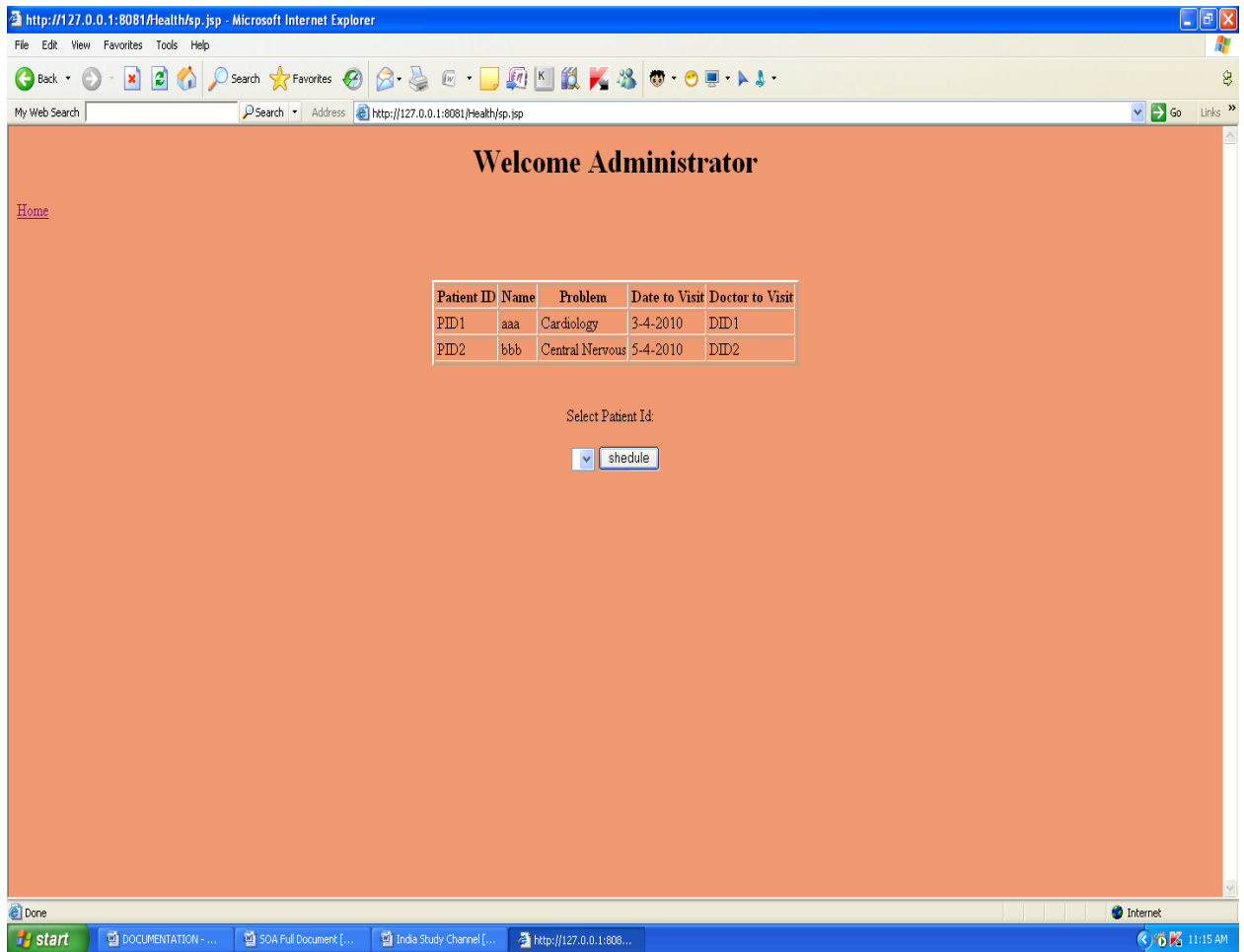
DOB:

Gender:

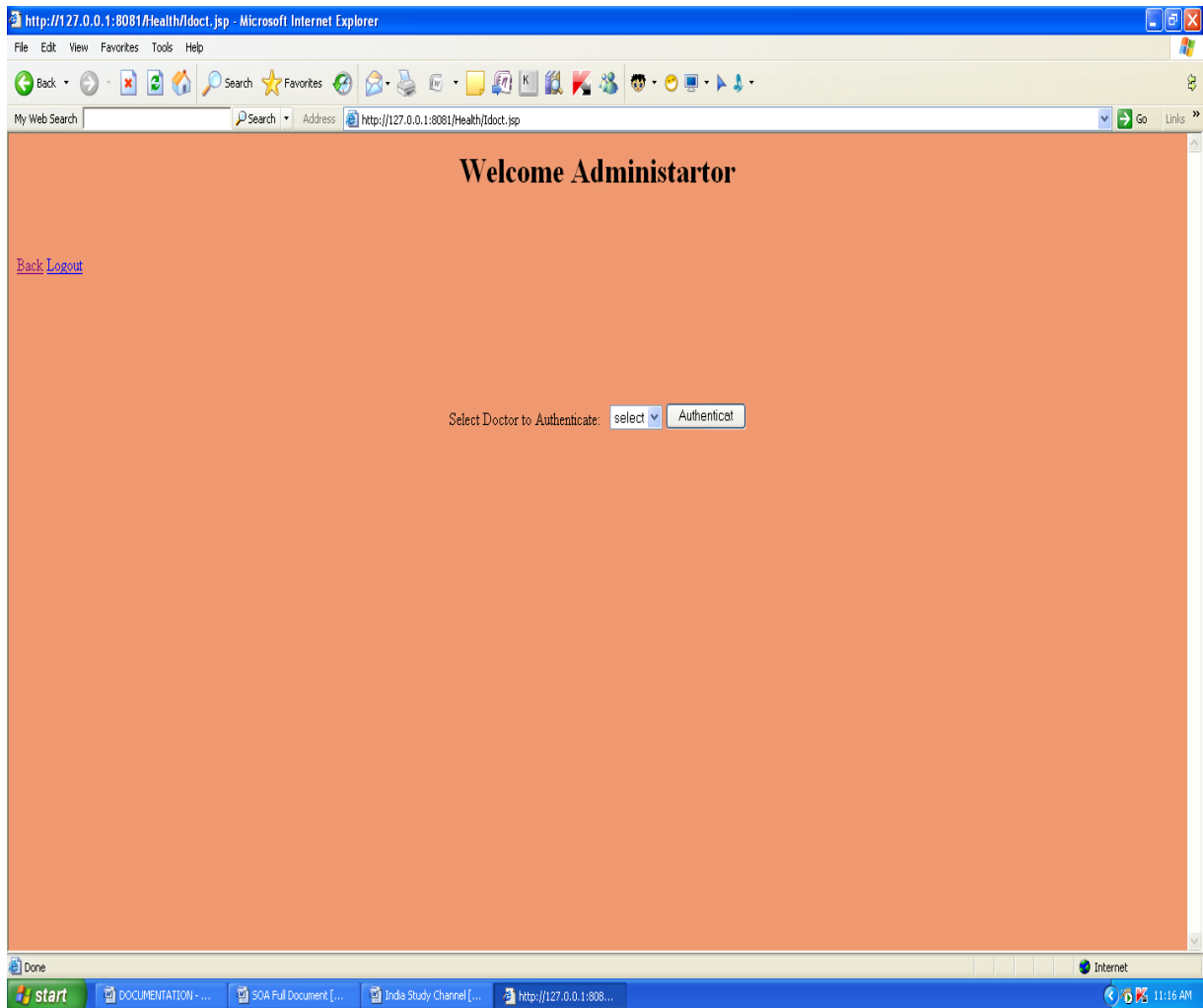
Address:

Role:

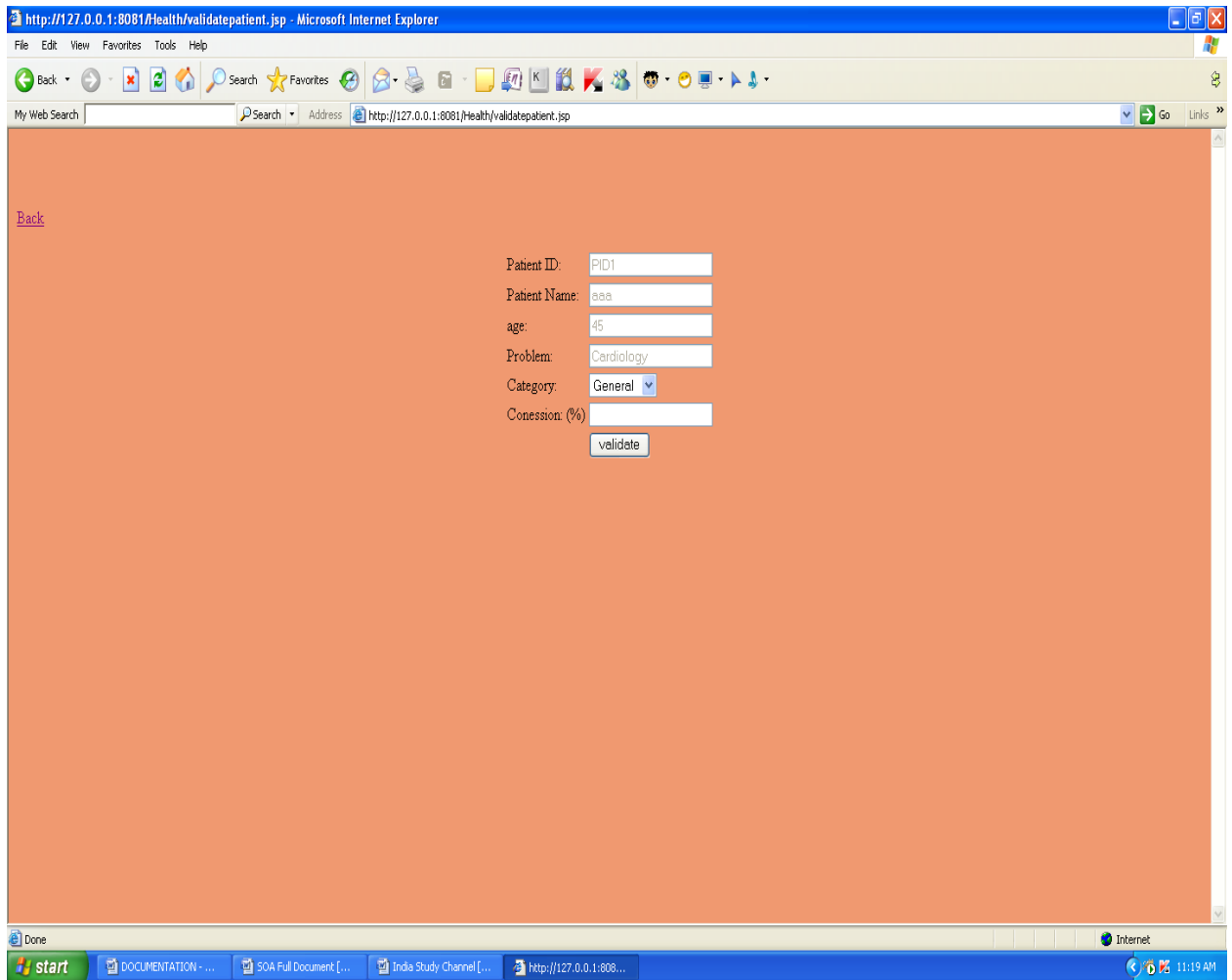
Schedule patients



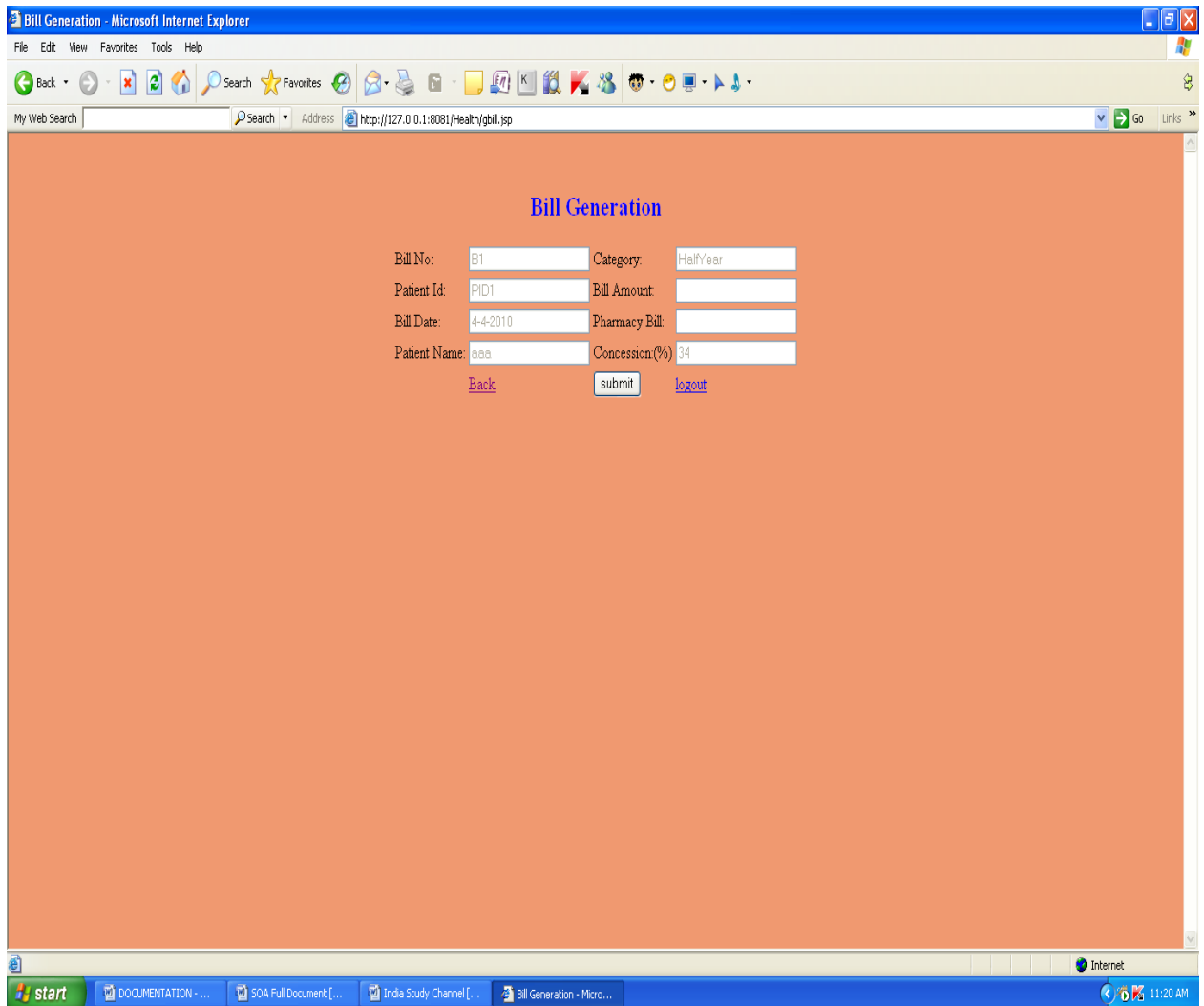
Invite Doctor



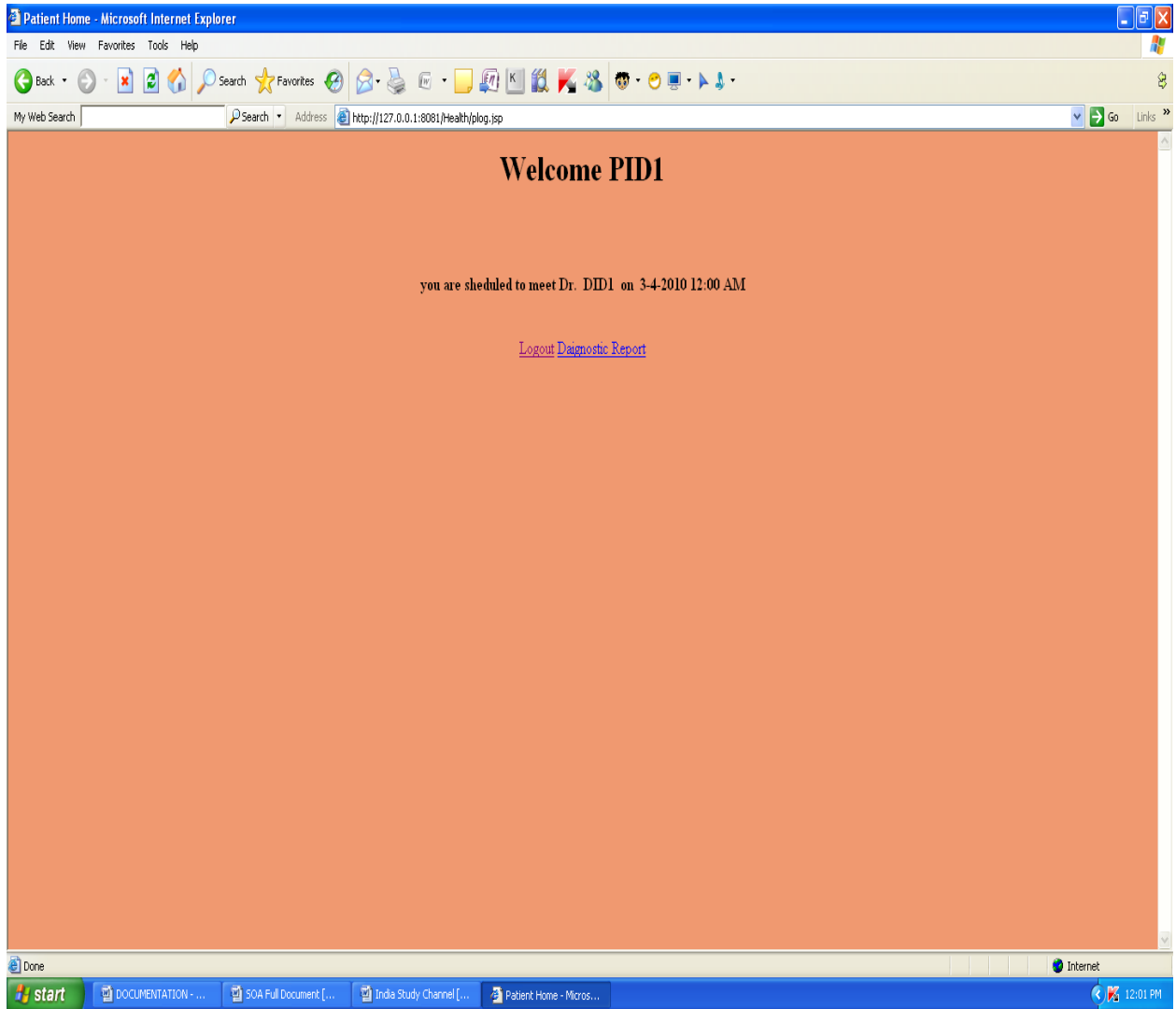
Validate patient



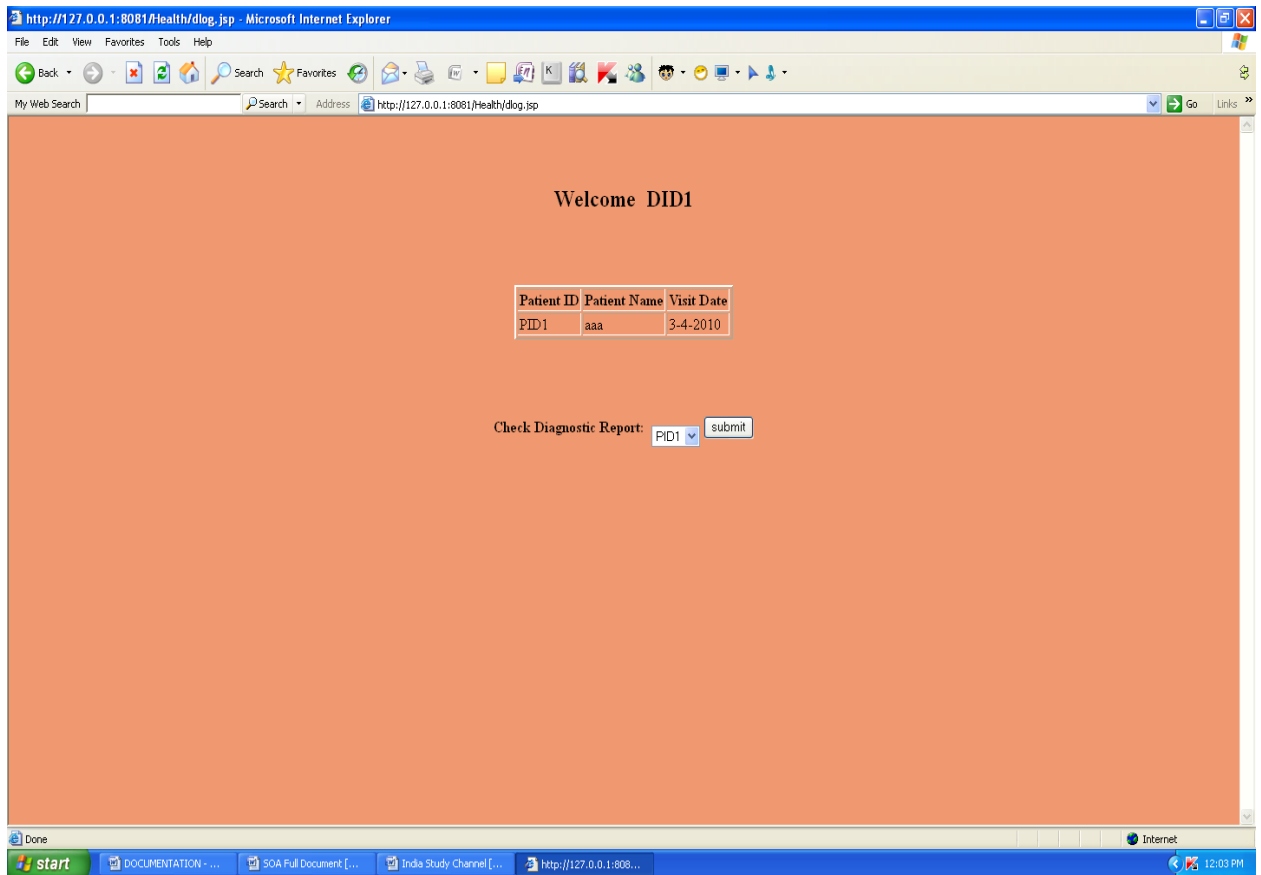
Bill Generation



Patient Report page



Doctor login page containing patient's information



Diagnostic report of patient

http://127.0.0.1:8081/health/doctdiag.jsp - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites

My Web Search Search Address http://127.0.0.1:8081/health/doctdiag.jsp Go Links

Welcome DID1

Patient ID:

Predictions:

Medicines:

Dosage:

From Date:(dd-mm-yy)

To Date:(dd-mm-yy)

Usage Direction:

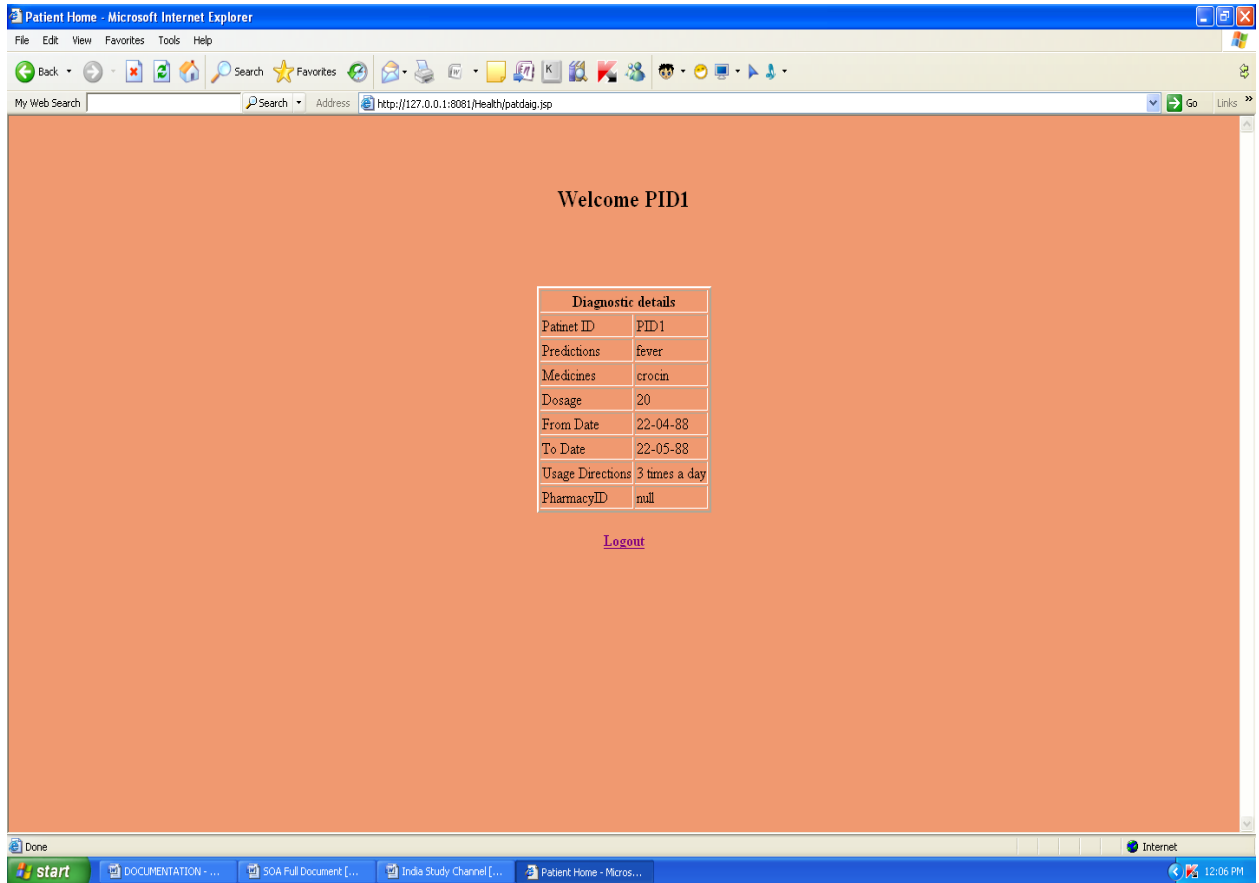
Pharmacy Id:

Done Internet

start DOCUMENTATION - ... SOA Full Document ... India Study Channel ... http://127.0.0.1:808...

12:05 PM

Diagnostic details of patient



9 .CONCLUSION

The growing quality demand in the hospital sector makes it necessary to exploit the whole potential of stored data efficiently, not only the clinical data, in order to improve diagnoses and treatments, but also on management, in order to minimize costs and improve the care given to the patients.

In this sense, Data Mining (DM) can contribute with important benefits to the health sector, as a fundamental tool to analyze the data gathered by hospital information systems (HIS) and obtain models and patterns which can improve patient assistance and a better use of resources and pharmaceutical expense.

