

NUMERIC BUG TRACKING TOOL

By

P-2261

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Of

KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE

A PROJECT REPORT

Submitted to the

FACULTY OF INFORMATION AND COMMUNICATION ENGINEERING

In partial fulfillment of the requirements

for the award of the degree

of

MASTER OF COMPUTER APPLICATION

June 2008

BONAFIDE CERTIFICATE

Certified that this project report titled “**NUMERIC BUG TRACKING TOOL**” is the bonafide work of **Ms. S.Geetha (Reg No: 71205621012)** who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Amy M. P.
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Submitted to Project and Viva Examination held on 01-07-2008


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ABSTRACT

The purpose of this project entitled “Numeric Bug Tracking Tool” is to monitor the day-to-day bugs or problems that occur in the concern and to solve those problems in the order of priority. The System Admin undertakes each issue and assigns it to the IT supporters. The IT supporters solves the issues assigned to them and reports to the System Admin. The overall process is controlled by the IT head.

This project counts the day-to-day IT issues and names it as a ticket. The tickets are posted by the users in the departments. Initially the named ticket is in the open state, it moves on to the assigned state by assigning the ticket to the IT supporters. The System Admin can also edit the tickets before assigning them to the supporters. Finally the tickets enter into the closed state on closing up of the call by supporters. We categorize the problems into five types. Based on the category of the problem the ticket will be assigned to the concerned IT supporters through the System Admin. By doing this, the IT head tracks all the issues on time.

Finally data reports and bar charts are generated and viewed by the system administrator. So that the System Admin can analyse the problems and take measures to control and reduce the problems.

The front end screen of this project is developed using Java Server Pages and the back end of this project is maintained using Oracle 9i. This project is implemented in LAN environment.



31-May-2008

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. S. Geetha**, Registration No. 71205621012, a student of Kumaraguru College of Technology - Coimbatore, doing her Final Year M.C.A (Master of Computer Applications) course, had undertaken the project entitled "**Numeric Bug Tracking Tool**" in our company from December 2007 to May 2008. She has completed the project in all aspects on 31-May-2008.

Her work involvement is highly appreciable. We wish her all the best in her future endeavours.

For Numeric Power Systems Limited,



V. C. RAGHUNATH





31-May-2008

To
 The Coordinator,
 Department of Computer Applications,
 Kumaraguru College of Technology,
 Coimbatore – 641 006.

Dear Sir,

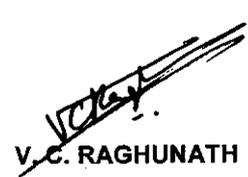
Sub: Non-disclosure of source code and application for project reports and demo

Ms. S. Geetha (Reg. No: 71205621012), the final year student of MCA, Kumaraguru College of Technology was involved actively in the project "**Numeric Bug Tracking Tool**" in our company as a part of her curriculum.

While Ms. Geetha's efforts, involvement and commitment in the project are recognized and appreciated, it would not be possible for us to release the source code and application of her work to be added in her reports or for showing in software demonstration, as the above-mentioned project is of commercial value and hence is a property of Numeric Power Systems Limited.

However, it would be possible for us to only permit certain screen shots and sample codes of the software to be added in her reports.

For Numeric Power Systems Limited,


V. C. RAGHUNATH



ACKNOWLEDGEMENT

My endeavour stands incomplete without dedicating my gratitude to a few people who have contributed a lot towards the successful completion of this project work. My heart full thanks are due to my beloved parents without who sustained support my debut in Computer Applications would only have been a dream.

I express my grateful thanks to our Principal, **Dr.Joseph.V.Thanikal**, Kumaraguru College of Technology, Coimbatore for giving me an opportunity to take up this project.

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I great fully acknowledge my indebtedness to **Mr.V.C.Ragunath**, Executive – Resources Planning and Development, Numeric Technologies Private Limited, Chennai for his kind support and guidance.

And I would like to thank friends and all those who helped me in this project and whose names are leftover.

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CHAPTER 1

INTRODUCTION

1.1 COMPANY PROFILE

ABOUT NUMERIC

Numeric Power Systems Ltd, a corporate house with established nationwide presence, is the single largest source for a wide range of UPS systems. Ever since its advent in 1984, NUMERIC focus has always been the excellence in quality of products and dedication in service. And this has facilitated NUMERIC to carve a niche for itself in the Indian UPS market and has made the brand NUMERIC a legend in the country. NUMERIC has been the "No.1 Online UPS Manufacturer in India" for the Fourteenth consecutive year.

NUMERIC MISSION

NUMERIC will continue to strive towards excellence in Power Quality Management solutions and is the One-Stop-Solution provider in the field of Power conditioning, through:

- Offering comprehensive solutions in conditioning
- Closeness to customers through offices all over the country
- Dedicated and trained human resources for efficient support
- Transparency in all transactions
- Pro-active and Cost effective services
- Tailor-made solutions for unique applications

NUMERIC ACHIEVERS

To set our standards high, eight world-class UPS Manufacturing units are located in Chennai, Pudhucherry, Salem, Parwanoo and Colombo (Sri Lanka). In order to support the bulk production of UPS systems, NUMERIC has excellent backward integration facility. The state-of-the-art CNC fabrication plant in Chennai produces quality sheet metal cabinets for the UPS systems.

The Magnetic plant in Pudhucherry manufactures all wound components such as transformers and chokes. NUMERIC has recently commissioned a plant in Chennai for the manufacture of Servo Stabilizers and Isolation Transformers and has Nation wide sales and service network in 215 locations. Quality being the priority at NUMERIC, the company has the accreditation of ISO 9001, certified by BVQI.

1.2 PROJECT OVERVIEW

This project entitled “Numeric Bug Tracking Tool” is an application that address day to day IT issues regarding the

- Hardware
- Software
- Network
- Email
- Others

and to provide IT level support to prevent the downtime and ensure productivity with reduced amount of interruption. It should track all the sort of problems faced by the users in the day to day work activity which need to be logged.

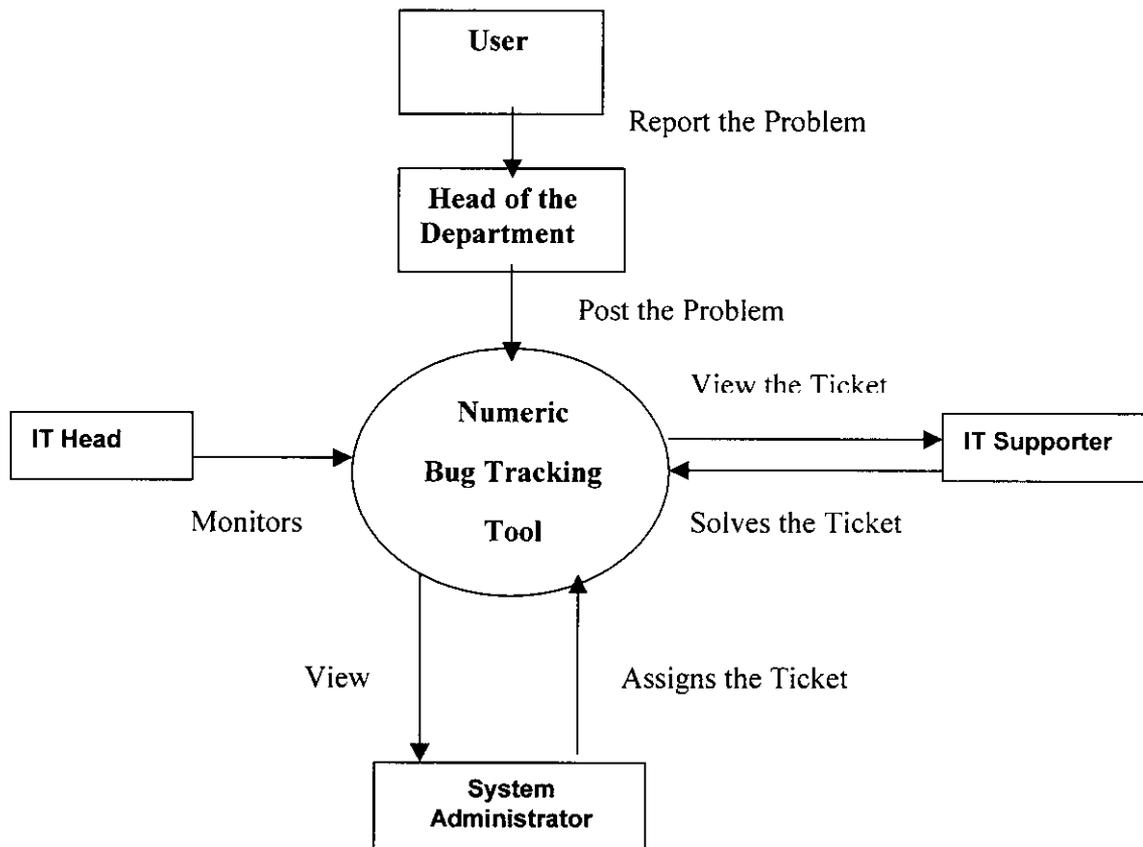


Figure 1.2.1 Project Overview

CHAPTER 2

SYSTEM ANALYSIS

System Analysis is the process by which we can obtain one or more solutions. It helps us to make a guess of how the system will look. System analysis involves the process of diagnosing, interpreting and helps us to propose a new system.

2.1 EXISTING SYSTEM

Presently each and every IT issues are being addressed through phone calls. Due to this the call status cannot be overviewed by the system administrator. This leads to delay in assigning and closing the calls on the existing system.

The system administrator may not able to assign priority and also the criticality of the issues. Here the number of problems and its completion status is being logged in the ordinary excel sheet without any acknowledgement from the call locked uses. no streamline is available in the existing system. The overall control of the system administrator is unmanageable.

2.2 PROPOSED SYSTEM

The key idea of proposed system is to have a centralized server to maintain all the day-to-day issues faced by the users in all the department of the company. By logging all the issues as tickets it is being assigned the priority and criticality based on the business critical issues.

Here by doing so it reveals the issue and the corresponding solution for that. This lead to over all control of the IT supporters by the system administrator. The business productivity is ensured by maintaining the system level performance.

2.3 USER INTERFACE REQUIREMENT

The user interface requirements are specified module wise as follows

TICKET PROCESSING

- ◆ The user posts the problem as a ticket by using this module.
- ◆ Initially the ticket is in the open state.
- ◆ The ticket can be edited by the system admin before it is been assigned.
- ◆ The ticket is assigned to appropriate IT supporters.
- ◆ The IT Supporters views the ticket and completes the task and enters the status.
- ◆ The System admin view the status and if it is not completed then it is been reassigned to other IT supporters.
- ◆ The ticket status can be edited by the system administrator.

VIEWS

- ◆ The tickets in the open state which are in red colour can be viewed
- ◆ The tickets in the assigned state which are in blue colour can be viewed.
- ◆ The tickets in the assigned and completed state which are in green colour can be viewed
- ◆ The tickets in the open state, assigned state and completed state can also be viewed.

REPORTS

- ◆ This module focuses on two types of reports. They are data report and bar chart report.
- ◆ The data report can be done on the open state, assigned state and completed state of the tickets.
- ◆ The users can select the from date and to date and specify the state and generate the reports
- ◆ The bar chart report can be generated
 - Month wise by choosing the year, which display summary of all the months in that year.
 - Month wise detailed by choosing corresponding month and the year.
 - Year wise and it specifies generation of the report in each and every year.
 - Category wise report is generated by choosing the category month and year .

ADMINISTRATION

- ◆ The IT head monitors the status of the tickets and the users.
- ◆ In this module the users can be added, modified and deleted.
- ◆ The User login details can also be viewed by the IT head

CHAPTER 3

DEVELOPMENT ENVIRONMENT

This chapter describes the hardware and software requirements of the application.

3.1 HARDWARE REQUIREMENTS

The hardware support required for deploying the application

Server Configuration

Processor	:	Pentium 3/4 Processor or above
RAM	:	1GB
Hard Disk	:	40GB or more

Client Configuration

Processor	:	Pentium 3/4 Processor
RAM	:	Minimum 512 MB
Hard Disk	:	40GB or more
Mother Board	:	Intel Board
Monitor	:	17" dell monitor
Keyboard	:	Multimedia Keyboard
Mouse	:	Logitech

3.2 SOFTWARE REQUIREMENTS

The software support required for deployment is:

Operating System	:	Windows XP, Windows 2000 Server
Front End	:	Java Server Page 2.0
IDE	:	Net Beans 6.0
Runtime Environment	:	JRE 6.0
Scripting Language	:	JavaScript
Database	:	Oracle 9i
Web Server	:	Apache Tomcat 6.0.14
Web browser	:	IE 6.0

3.2 PROGRAMMING ENVIRONMENT

JSP

Java Server Pages (JSP) technology enables Web developers and designers to rapidly develop and easily maintain, information-rich, dynamic Web pages that leverage existing business systems. As part of the Java technology family, JSP technology enables rapid development of Web-based applications that are platform independent. JSP technology separates the user interface from content generation, enabling designers to change the overall page layout without altering the underlying dynamic content.

COMPONENTS OF JSP

JSP syntax is almost similar to XML syntax. The following general rules are applicable to all JSP tags.

1. Tags have either a start tag with optional attributes, an optional body, or a matching end tag or they have an empty tag possibly with attributes.
2. Attribute values in the tag always appear quoted. The special strings ' and “ can be used if quotes are a part of the attribute value itself.

JavaServer Pages are text files that combine standard HTML and new scripting tags. JSPs look like HTML, but they get compiled into Java servlets the first time they are invoked. The resulting servlet is a combination of HTML from the JSP file and embedded dynamic content specified by the new tags.

Everything in a JSP page can be divided into two categories:

1. Elements that are processed on the server
2. Template data or everything other than elements, that the engine processing the JSP engines.

Element data or that part of the JSP which is processed on the server, can be classified into the following categories:

1. Directives
2. Scripting elements
3. Standard actions

JSP directives serve as messages to the JSP container from the JSP. They are used to set global values such as class declaration, methods to be implemented, output content type, etc. They do not produce any output to the client. All directives have scope of the entire JSP file. That is, a directive affects the whole JSP file, and only that JSP file. Directives are characterized by the @ character within the tag and the general syntax is:

Scripting elements are used to include scripting code (Java code) within the JSP. They allow declaring variables and methods include arbitrary scripting code and evaluate an expression. The three types of scripting element are: Declaration, Scriptlets and Expressions.

A declaration is a block of Java code in a JSP that is used to define class-wide variables and methods in the generated class file. Declarations are initialized when the JSP page is initialized and have class scope.

A scriptlet consists of one or more valid Java statements. A scriptlet is a block of Java code that is executed at request-processing time. A scriptlet is enclosed between "<%" and "%>". What the scriptlet actually does depends on the code, and it can produce output into the output stream to the client. Multiple scriptlets are combined in the compiled class in the order in which they appear in the JSP. Scriptlets like any other Java code block or method, can modify objects inside them as a result of method invocations.

JSP Standard Tag Library (JSTL)

The Java Server Pages Standard Tag Library (JSTL), is a component of the Java EE Web application development platform. It extends the JSP specification by adding a tag library of JSP tags for common tasks, such as XML data processing, conditional execution, loops and internationalization.

Advantages Of JSP

- **JSP compared to ASP.NET.** ASP.NET is based on the Microsoft .NET framework. The .NET framework allows applications to be developed using different programming languages such as Visual Basic, C# and JavaScript. JSP and Java still has the advantage that it is supported on many different platforms and the Java community has many years of experience in designing and developing Enterprise quality scalable applications. This is not to say that ASP.NET is bad, actually it is quite an improvement over the old ASP code.
- **JSP compared to Servlets .** A Servlet is a Java class that provides special server side service. It is hard work to write HTML code in Servlets. In Servlets you need to have lots of println statements to generate HTML. JSP pages are converted to Servlets so actually can do the same thing as old Java Servlets.
- **JSP compared to JavaScript.** JavaScript can generate HTML dynamically on the client. This is a useful capability, but only handles situations where the

dynamic information is based on the client's environment. With the exception of cookies, HTTP and form submission data is not available to JavaScript. And, since it runs on the client, JavaScript can't access server-side resources .

ORACLE

Oracle 9i is used as the database for the CPR application. Oracle 9i provides the support of efficient PL/SQL procedures to fetch bulk amount of data from the CPR database.

PL/SQL

The PL/SQL procedures are used to fetch bulk data from the database and send them to the front-end in order to display the data. PL/SQL (Procedural Language/Structured Query Language) is Oracle Corporation's proprietary procedural extension to the SQL database language. The key strength of PL/SQL is its tight integration with the Oracle database. PL/SQL supports variables, conditions, arrays, and exceptions. Implementations from version 8 of Oracle Database onwards have included features associated with object-orientation.

SQL statements can make explicit in-line calls to PL/SQL functions, or can cause PL/SQL triggers to fire upon pre-defined Data Manipulation Language (DML) events.



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CHAPTER 4

SYSTEM DESIGN

4.1 DATA MODEL

4.1.1 TABLE STRUCTURE

The following tables have been created for Numeric Bug Tracking Tool.

Table Name: Tic_det

Description: This table stores all the information about the tickets.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Tno	N	Number	10	Primary Key
2	Summary	N	Varchar2	100	
3	Status	N	Varchar2	25	
4	Type	N	Varchar2	25	
5	Enter_dt	N	Date		
6	Entered by	N	Varchar2	25	
7	Criticality	N	Varchar2	25	
8	Priority	N	Varchar2	25	
9	Found by	N	Varchar2	25	
10	Found_dt	N	Date		
11	Description	N	Varchar2	1000	
12	Department	N	Varchar2	50	
13	Location	N	Varchar2	50	

Table 4.1.1.1 Tic_Det

Table Name: Tic_assign_det

Description: This table contains the ticket assign details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Tno	N	Number	10	Unique, Not Null
2	Assign_by	N	Varchar2	50	
3	Assign_to	N	Varchar2	50	
4	Assign_dt	N	Date		

Table 4.1.1.2: Tic_assign_det

Table Name: Tic_assign_det

Description: This table contains the ticket reassign details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Tno	N	Number	10	Unique, Not Null
2	Reassign_by	N	Varchar2	50	
3	Reassign_to	N	Varchar2	50	
4	Reassign_dt	N	Date		
5	Reassign_from	N	Varchar2	50	

Table 4.1.1.3: Tic_reassign_det

Table Name: Tic_edit_det

Description: This table contains the ticket edit details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Tno	N	Number	10	Unique, Not Null
2	Summary	N	Varchar2	100	
3	Status	N	Varchar2	25	
4	Type	N	Varchar2	25	
5	Enter_dt	N	Date		
6	Entered by	N	Varchar2	25	
7	Criticality	N	Varchar2	25	
8	Priority	N	Varchar2	25	
9	Found by	N	Varchar2	25	
10	Found_dt	N	Date		
11	Description	N	Varchar2	1000	
12	Department	N	Varchar2	50	
13	Location	N	Varchar2	50	

Table 4.1.1.4: Tic_edit_det

Table Name: Tic_editbkup_det

Description: This table contains the backup of ticket edit details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Tno	N	Number	10	Unique, Not Null
2	Summary	N	Varchar2	100	
3	Status	N	Varchar2	25	
4	Type	N	Varchar2	25	
5	Enter_dt	N	Date		
6	Entered by	N	Varchar2	25	
7	Criticality	N	Varchar2	25	
8	Priority	N	Varchar2	25	
9	Found by	N	Varchar2	25	
10	Found_dt	N	Date		
11	Description	N	Varchar2	1000	
12	Department	N	Varchar2	50	
13	Location	N	Varchar2	50	

Table 4.1.1.5: Tic_editbkup

Table Name: Team_det

Description: This table contains the Team members details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Entered_by	N	Varchar2	50	
2	Reassign_by	N	Varchar2	50	
3	Reassign_to	N	Varchar2	50	
4	Found_by	N	Varchar2	50	
5	Assign_by	N	Varchar2	50	
6	Assign_to	N	Varchar2	50	

Table 4.1.1.6: Team_det

Table Name: Tic_statuseditdet

Description: This table contains the ticket status edit details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Actsrt_dt	N	Date		
2	Actend_dt	N	Date		
3	Timeutilized	N	Varchar2	100	
4	Uname	N	Varchar2	50	Unique
5	Status	N	Varchar2	25	
6	Status_updatetime	N	Date		

Table 4.1.1.7: Tic_statuseditdet

Table Name: Tic_backup

Description: This table contains the backup of the ticket details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Tno	N	Number	10	Unique, Not Null
2	Summary	N	Varchar2	100	
3	Status	N	Varchar2	25	
4	Type	N	Varchar2	25	
5	Enter_dt	N	Date		
6	Entered by	N	Varchar2	25	
7	Criticality	N	Varchar2	25	
8	Priority	N	Varchar2	25	
9	Found by	N	Varchar2	25	
10	Found_dt	N	Date		
11	Description	N	Varchar2	1000	
12	Department	N	Varchar2	50	
13	Reassign_by	N	Varchar2	50	
14	Reassign_to	N	Varchar2	50	
15	Reassign_dt	N	Date		
16	Reassign_from	N	Varchar2	50	
17	Assign_by	N	Varchar2	50	
18	Assign_to	N	Varchar2	50	
19	Assign_dt	N	Date		
20	Actsrt_dt	N	Date		
21	Actend_dt	N	Date		

Table 4.1.1.8: Tic_backup

Table Name: Login_det

Description: This table contains the Login details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Uname	N	Varchar2	50	Primary Key
2	Password	N	Varchar2	50	
3	User_categ	N	Varchar2	50	

Table 4.1.9: Login_det

Table Name: Login_log

Description: This table contains the Login log details.

S.NO	NAME	PERMITS NULL?	DATA TYPE	SIZE	CONSTRAINT
1	Uname	N	Varchar2	50	Unique
2	Password	N	Varchar2	50	
3	User_categ	N	Varchar2	50	
4	IPaddress	N	Varchar2	15	
5	Login_time	N	Timestamp		
6	Logout_time	Y	Timestamp		

Table 4.1.10: Login_log

4.2 PROCESS MODEL

This section describes use case diagram, sequence diagram, activity diagram and Data Flow Diagram of the application.

4.2.1 USE CASE DIAGRAM

Use case diagrams give a picture of the different scenarios wherein users interact with the different components of the system. It gives a general idea on the requirements to be addressed by the system and the sequence of operations happening.

The diagram below gives the overall context of the Numeric Bug Tracking Tool.

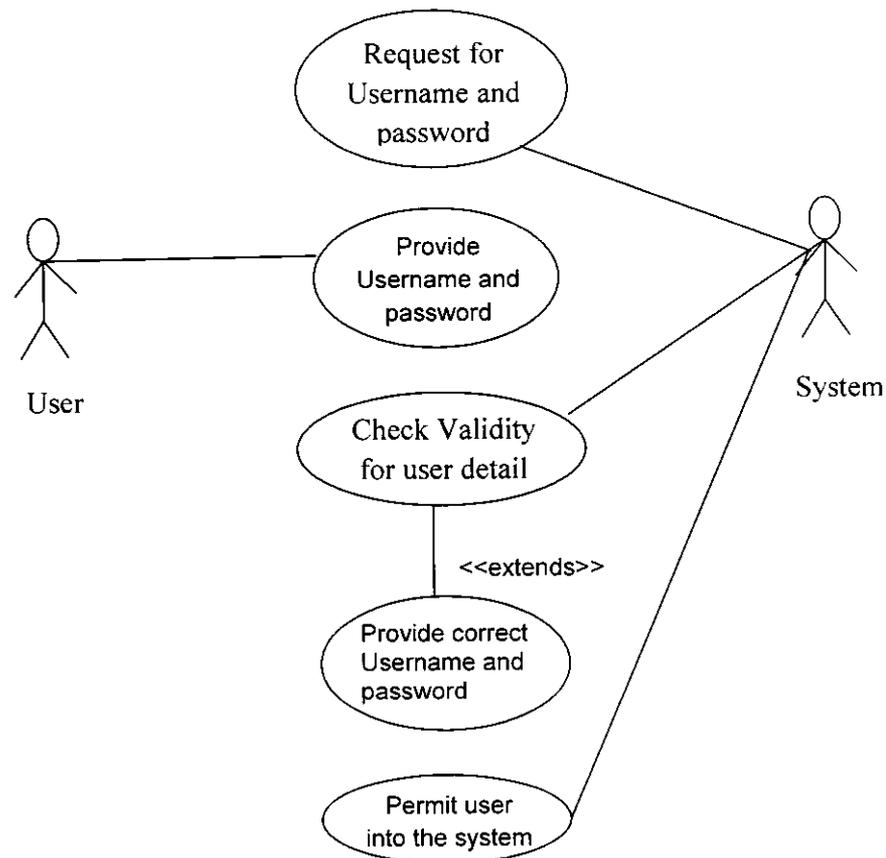


Figure 4.2.1.1 Use Case Diagram for Login

The Figure 4.2.1.1 describes how the user login the system. First the system will ask for the user details and hence user will provide their details. The input data will be validated and after the validation the user will allowed to enter into the system

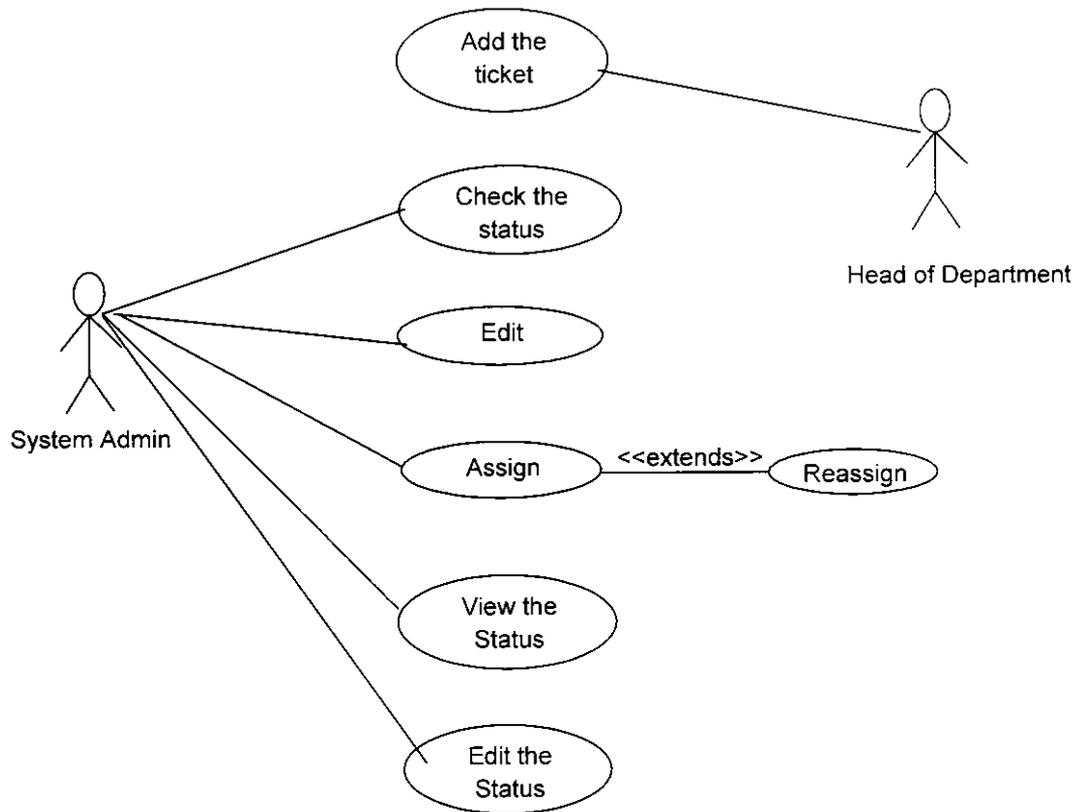


Figure 4.2.1.2 Use Case Diagram for Ticket Processing

The Figure 4.2.1.2 describes how the user posts the ticket and accordingly how the System Admin checks the status of the ticket and edits the ticket if needed and then it is being assigned. If particular ticket which is assigned is not completed then it is reassigned. The status of the ticked is being viewed and if needed then it is edited..

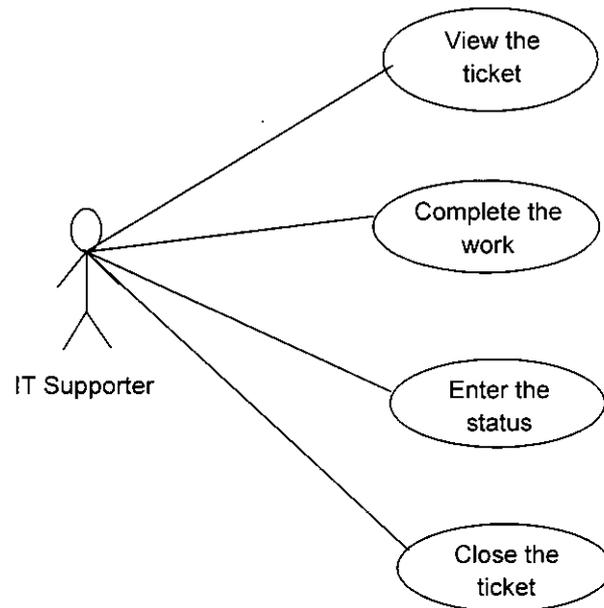


Figure 4.2.1.3 Use Case Diagram for Closing the Ticket

The Figure 4.2.1.3 describes how the IT supporters view the ticket that are assigned for them by entering into their login and complete the task and enter the status for the completion and closes the ticket.

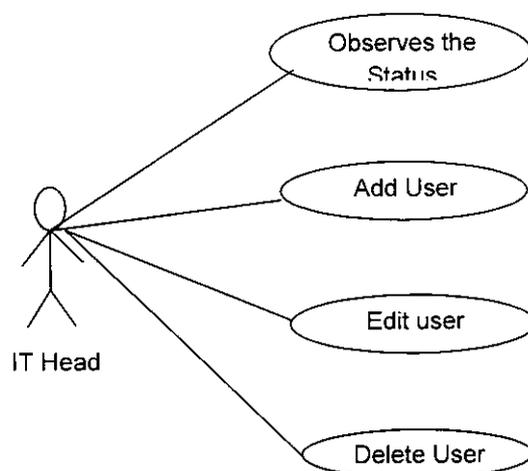


Figure 4.2.1.4 Use Case Diagram for Monitoring

The Figure 4.2.1.4 describes how Monitoring the status of the application is done by the IT head and also observation of the user details. IT head can add the user, edit the user and also delete the user.

4.2.2 SEQUENCE DIAGRAM

Sequence diagram are an easy and intuitive way of describing the behavior of a system by viewing the interaction between the system and environment. A sequence diagram shows an interaction arranged in time sequence.

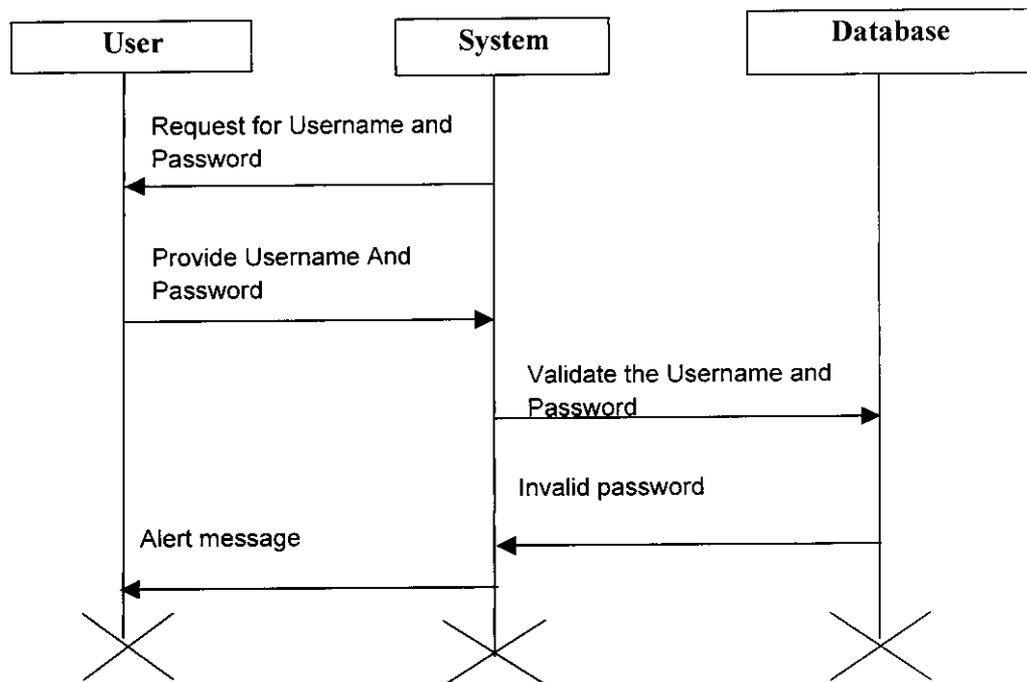


Figure 4.2.2.1 Sequence Diagram for Invalid User Login

The Figure 4.2.2.1 sequence diagram explains the steps that the user followed to encounter the Invalid Login. If either username or password or both username and password goes wrong then the system will not allow to login the system. It displays the corresponding alert message which helps the user to identify the mistake.

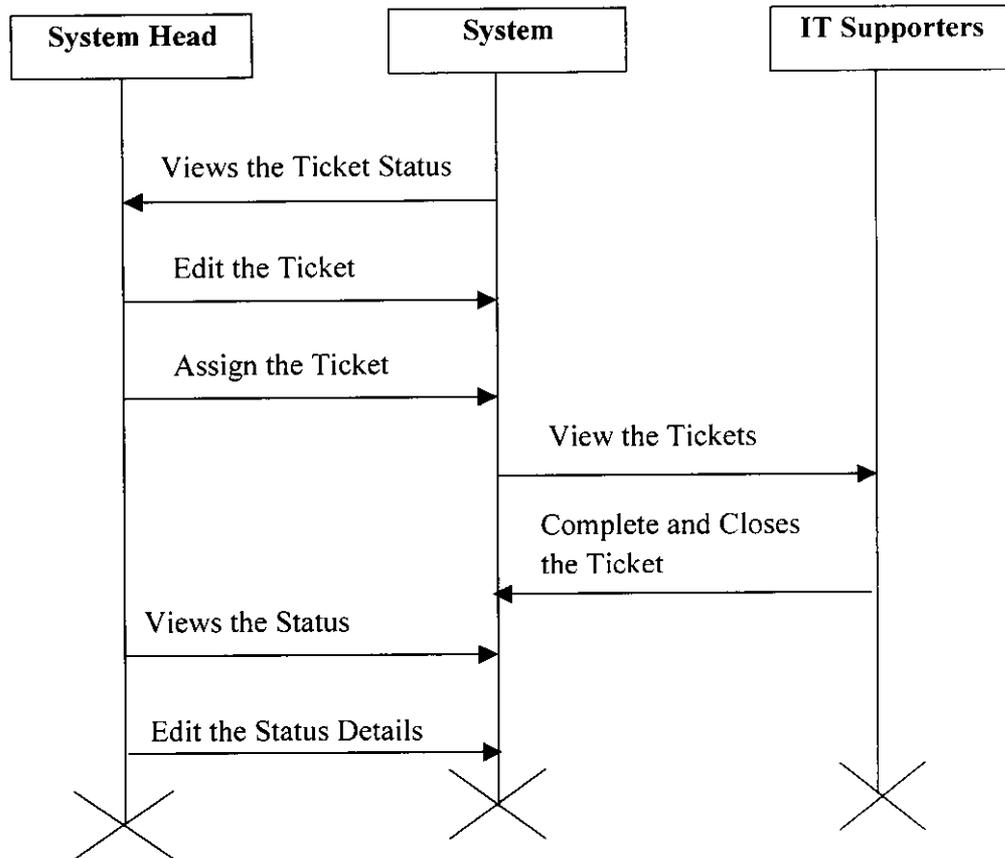


Figure 4.2.2.2 Sequence Diagram for Ticket Processing

The Figure 4.2.2.2 explains the steps that the user followed by viewing the ticket status and then assigns the ticket to particular IT supporters. The IT supporters views the ticket assigned to them and completes the task by entering the completion status. The system admin view the status and if need to be edit then they edit the status.

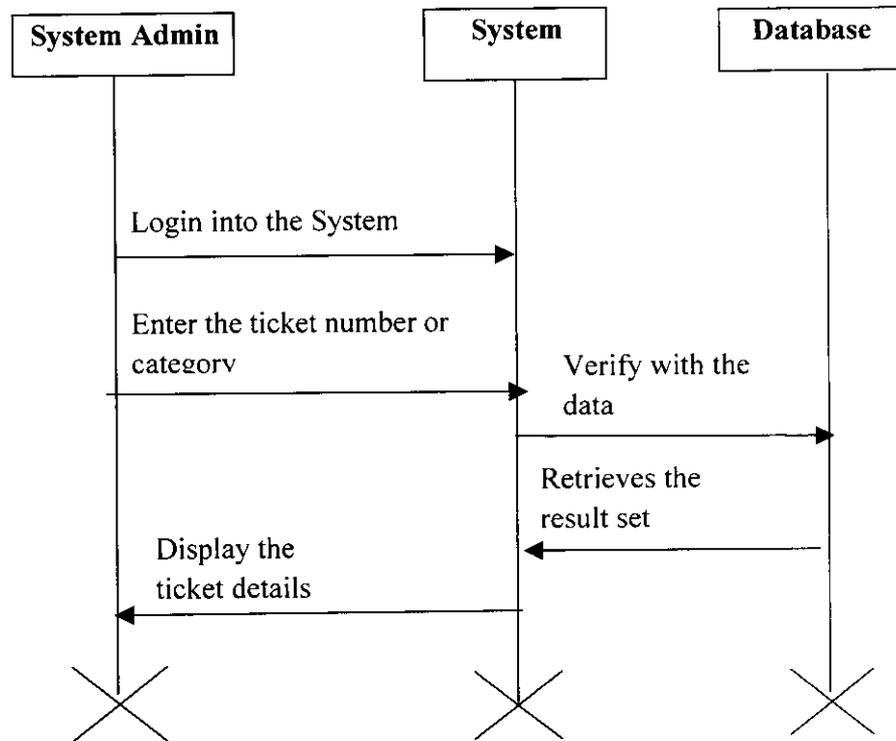


Figure 4.4.2.3 Sequence Diagram for Searching Ticket details

The Figure 4.4.2.3 explains the steps that the System admin followed to search the ticket details. Ticket details will be provided and then these input values will be checked with the database values.

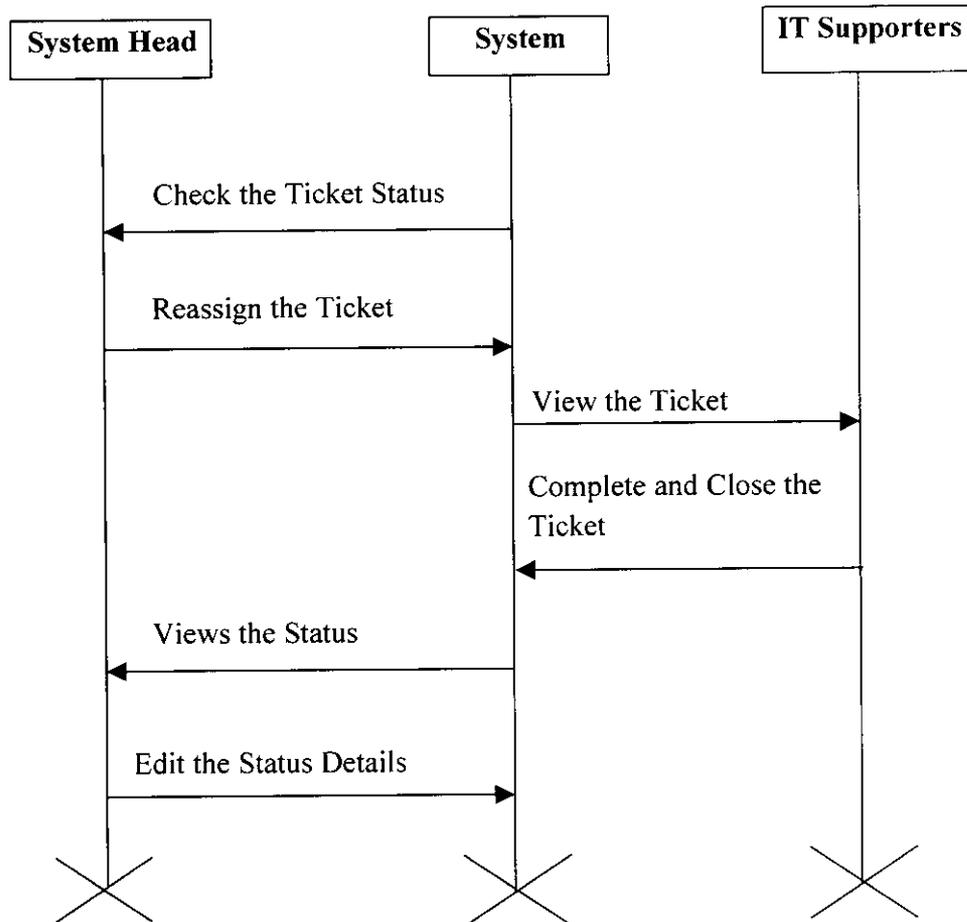


Figure 4.2.2.4 Sequence Diagram for Re assigning tickets

The Figure 4.2.2.4 explains the steps that the user followed to reassigning the tickets to the supporters which are not completed on time by particular IT supporters.

4.2.3 ACTIVITY DIAGRAM

Activity diagram is used to show the internal state of an object but the external events may appear in the diagram. In this diagram, activities represent the performance of the operations and transitions are triggered by the completion of the operations.

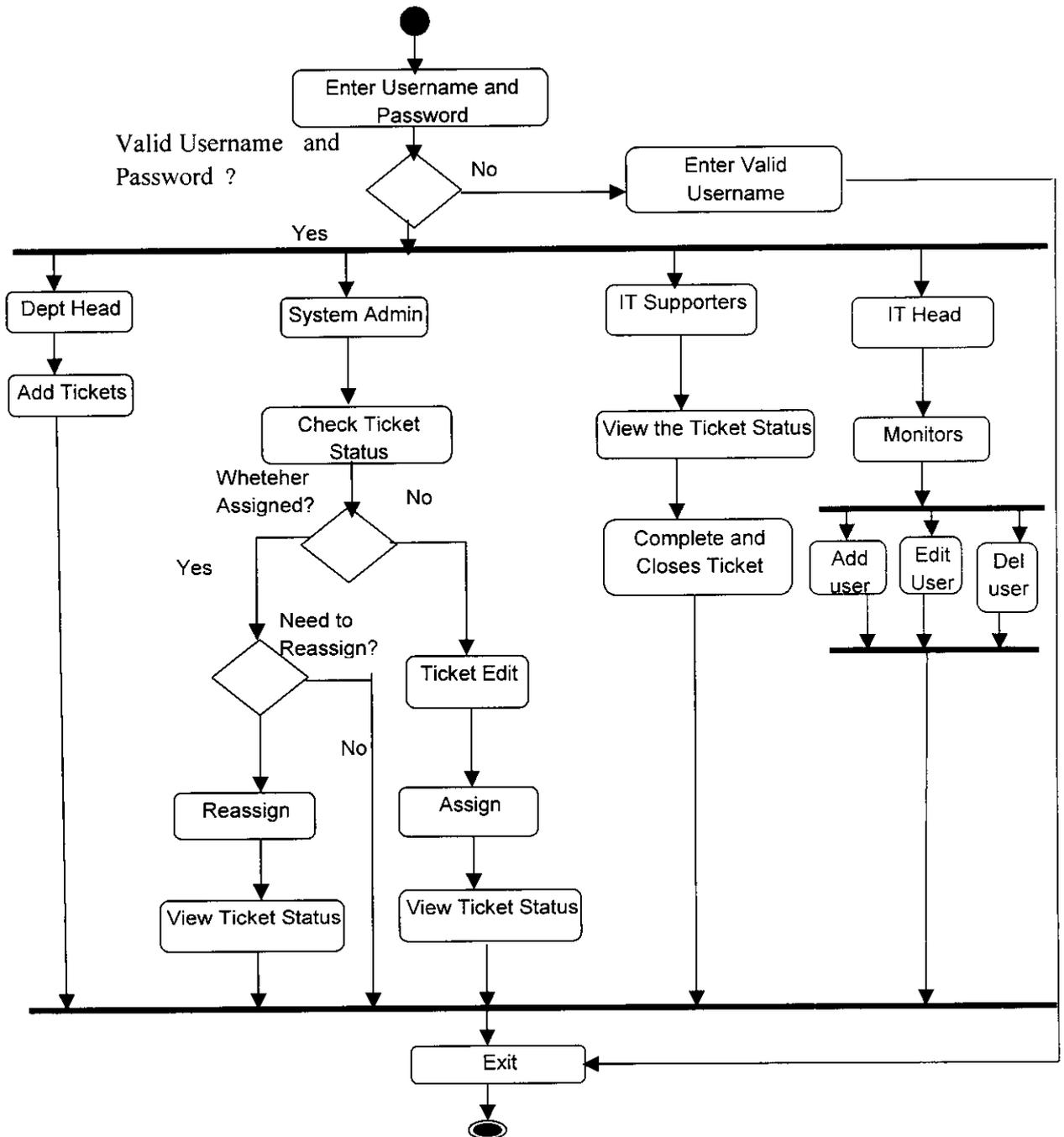


Figure 4.2.3.1 : Activity System For Entire System

The Figure 4.2.3.1 explains the operations that are carried in the entire system. This specifies about each user and their responsibilities. The ticket is posted by the department head and then it is assigned by the system admin and the IT supporter view the status and completes the task. The IT head monitors the system.

4.2.4 Data Flow Diagram

Data Flow Diagrams play an important role in structural analysis. The DFD takes an input-process-output view of a system. Data Objects flow into the software are transformed by the processing elements and resultant data objects flow out of the system

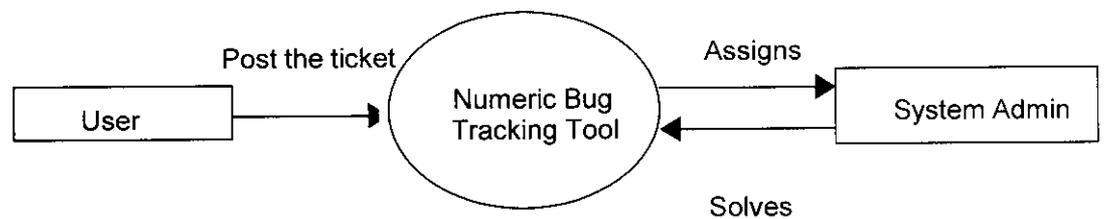


Figure 4.2.4.1 : LEVEL 0 DFD

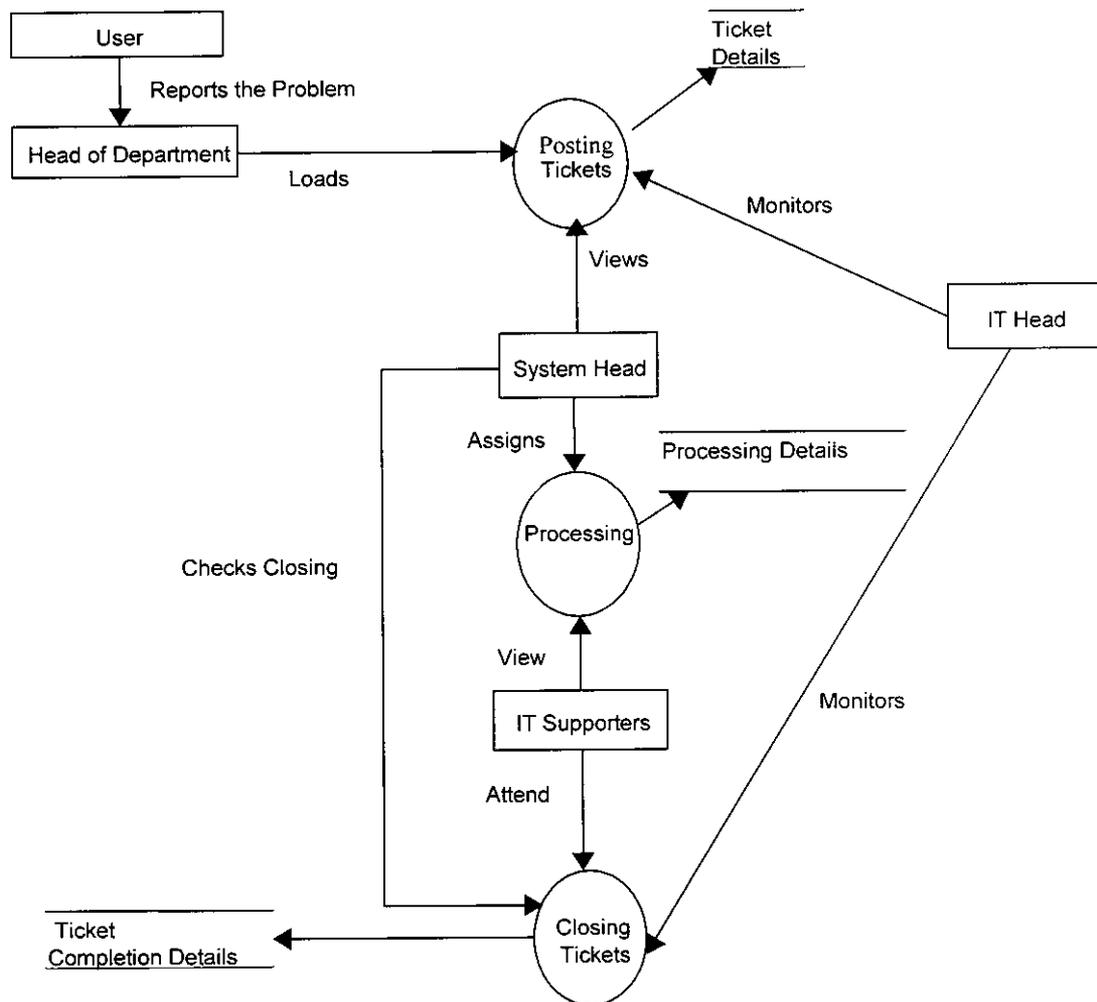


Figure 4.2.4.2 : LEVEL 1 DFD

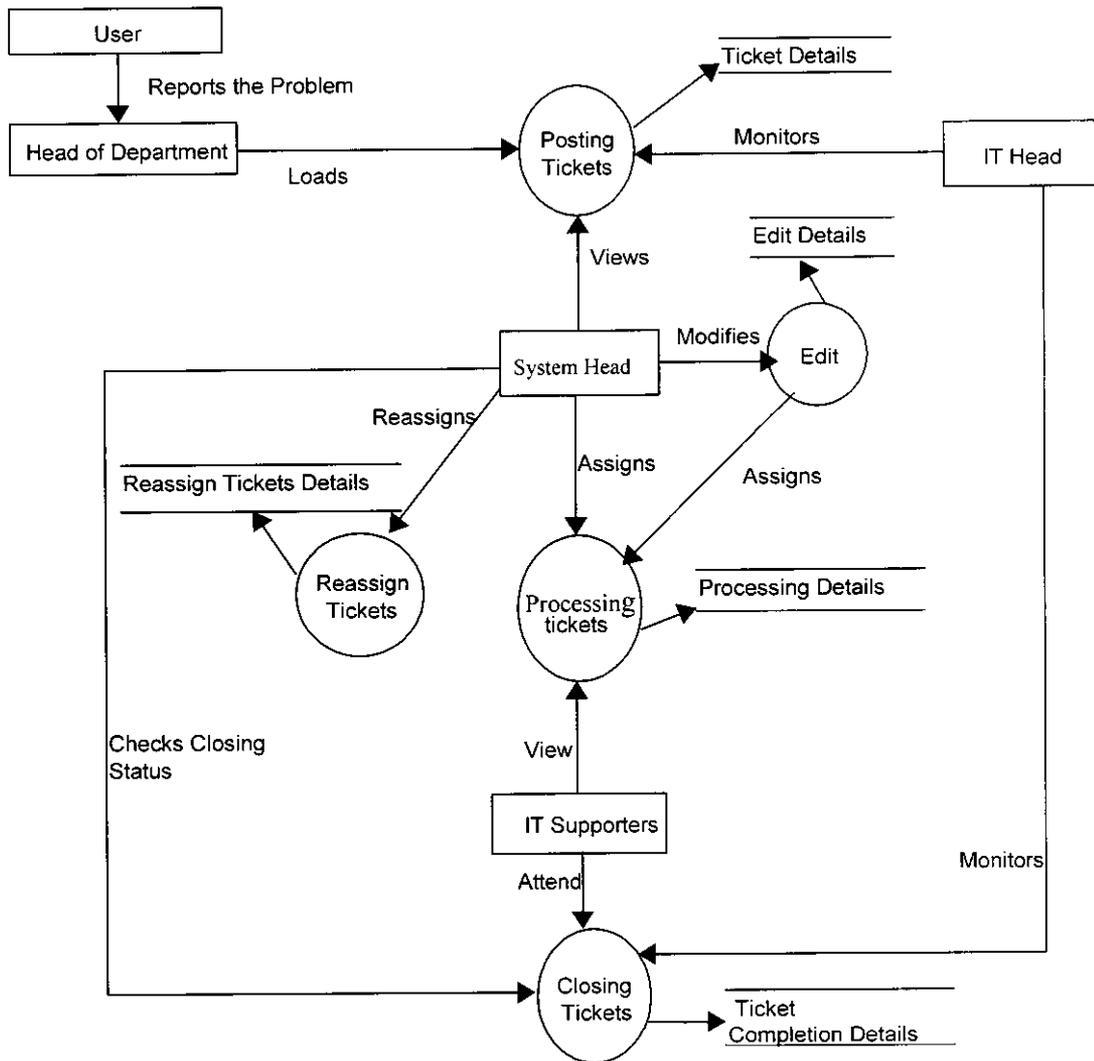


Figure 4.2.4.3 : LEVEL 2 DFD

CHAPTER 5

SYSTEM IMPLEMENTATION

System implementation is the final phase i.e., putting the utility into action. Implementation is the state in the project where theoretical design turned into working system. In this stage the installation of the software in the real environment, to the satisfaction of the intended user and the operation of the system. If the implementation is not carefully planned and controlled it can cause chaos and confusion.

5.1 IMPLEMENTATION PROCESS

System Implementation is the final stage of the project. Once the user is satisfied with the system, it is implemented and ready to use.

- ❖ Implementation of a computer system to replace a manual system.
- ❖ Implementation of a new computer system to replace an existing system with demerits.
- ❖ Implementation of a modified application to replace an existing one.

In this application the first type of implementation was undergone. The users are provided with a user manual and a live demo is done to depict the usage of the system. The users are said about the benefits of the new system and how it differs from the existing system. If the system works properly and up to the user satisfaction then the system is implemented for the usage of users forever.

5.2 CLIENT SIDE CODING

```

<%@page contentType="text/html"%>
<%@page pageEncoding="UTF-8"%>
<%@page language="java" import="java.sql.*"%>
<%@page language="java" import="java.lang.*"%>
<%@page language="java" import="java.text.*"%>
<html>
<head>
    <script language = "javascript" >
        function disable_true_form()
        {
            document.bar_report_io_frm.yr.disabled = true;
            document.bar_report_io_frm.cate.disabled = true;
            document.bar_report_io_frm.months.disabled = true;
        }
        function disable_false_form()
        {
            if (document.bar_report_io_frm.report.value == "MonthWiseSummary")
            {
                document.bar_report_io_frm.yr.disabled = false;
                document.bar_report_io_frm.cate.disabled = true;
                document.bar_report_io_frm.months.disabled = true;
                return false;
            }
            else
            {
                document.bar_report_io_frm.yr.disabled = true;

```

```
        document.bar_report_io_frm.cate.disabled =false;}
if (document.bar_report_io_frm.report.value == "MonthWiseDetailed")
{
    document.bar_report_io_frm.yr.disabled = false;
    document.bar_report_io_frm.cate.disabled =true;
    document.bar_report_io_frm.months.disabled = false;
    return false;
}
else
{
    document.bar_report_io_frm.yr.disabled = true;
    document.bar_report_io_frm.cate.disabled =false;
}
if (document.bar_report_io_frm.report.value == "CategoryWise")
{
    document.bar_report_io_frm.cate.disabled = false;
    document.bar_report_io_frm.yr.disabled = false;
    return false;
}
else {
    document.bar_report_io_frm.cate.disabled = true;
    document.bar_report_io_frm.yr.disabled = true;
}
}
</script>
</html>
```



```

while(r.next())
{
    float fe=r.getFloat("days");
    String ra=r.getString("mon");
    mon1[i]=(int)fe;
        ran[j]=ra;
    ran1[k]=fe;
}
}
for(int m=0;ran[m]!=null;m++)
{
    if(ran[m].indexOf("jan")!= -1)
    {
        mon2[0]=mon1[m]/2;
        rann[0]=ran[m];
        ran2[0]=ran1[m];
    }
    else (ran[m].indexOf("feb")!= -1)
    {
        mon2[1]=mon1[m]/2;
        rann[1]=ran[m];
        ran2[1]=ran1[m];
    }
}

%>
</html>

```

CHAPTER 6

TESTING

Software testing is a critical element of software quality assurance. This overlaps with all the phase of development right from the requirement analysis. This quality requirement of the software system must be clearly extracted during the requirement. There are number of quality parameters like correctness, accuracy, reliability, robustness, efficiency, effectiveness, reusability etc... The state of each of these parameters will vary depending upon the name and domain of the application. The testing should be done at the end of all development steps.

6.1 Validation Testing

Software validation is achieved through a series of black box test that demonstrate conformity with requirements. Both plan and procedure are designed to ensure that all functional requirements are achieved.

Numeric Bug Tracking Tool had undergone validation testing for all the forms. The user should not leave any mandatory input area blank and in places where only numbers can be given as input, characters should not be entered. The forms are tested with the some valid and invalid data's. If there were any invalid data the system would give a alert message box specifying the type of data that is to be entered in the box. All forms are found to be working properly.

6.2 Unit Testing

Unit testing is exercising a unit by the programmer for testing a unit of source code during its implementation. Module or Unit Testing is the process of testing all the program units that make up a system. Unit testing focuses on an individual module thus allowing one to uncover all the errors made logically and while coding in the module.

In Numeric Bug Tracking Tool each page is tested separately as a unit. Initially the flow of control and data through that page is checked. When considering a module as a unit, the flow of data and control through the whole module is tested. The result is stored in the test plan. In a page, each control is further tested in unit testing. The process is done in all the pages of the system. Once the errors are rectified, the testing procedure is repeated with same test cases to ensure this hasn't produced new errors. Hence this is a continuous process.

6.3 Integration Testing

Integration testing tests the process of integrating the various modules to form the completed system. Integration starts with a set of units each individually tested in isolation and ends when the entire application has been built. Integration testing verifies that the combined units function together correctly. It facilitates in finding problem that occur at interface or communication between the individual parts.

Numeric Bug Tracking Tool followed bottom-up integration testing. Modules from the bottom most level are taken up individually, tested integrated and again tested. This process is continued from the page level to module level, finally to the system level. In the final stage, the whole system is taken together and tested for integration. This tests if the change has affected any part of Numeric Bug Tracking Tool negatively after the change was made. The whole set of test cases need to be run again to do the regression testing.

6.4 System Testing

System testing is actually a series of different tests, whose primary purpose is to fully exercise the computer-based system. This helps in verifying that all the system elements have been properly integrated and perform the allocated functions. It verifies the entire product after having integrated all software and hardware components, and validates it according to the original project requirement.

6.4.1 Security Testing

Security testing is important in system testing. Testing is done to ensure that a user with respective rights can only view the various forms and reports presented by Claim for Mobile Part Repairs. If users try to perform something beyond his assigned rights corresponding messages should be displayed. Then the system displays in such cases displays an error message.

Another security issue involves the sensitive data in the system. The system is highly secure with authentication fixed at various levels of the hierarchy.

6.4.2 Stress Testing

Stress Testing executes a system in a manner that demands resources in abnormal quantity, frequency or volume. Claim for Mobile Part Repairs was stress tested by all internal users of authorized service vendors in the project and accessing simultaneously to various modules in the system.

6.4.3 Output Testing

After the performance of validation testing the next step is output testing. Thus output format on the screen is found to be correct when the format was designed in the system phase according to the users need.

CHAPTER 7

PERFORMANCE AND LIMITATIONS

7.1 MERITS OF THE SYSTEM

- Simple and easy to use.
- Serves as the data source for several other applications.
- Flexible and Scalable.
- Efficient data security and integrity.
- Quickens the servicing process.

- New modules can be added with ease without many modifications to the existing system.
- Data available on demand.
- Retrieval of data and reports will be much simpler.

7.2 LIMITATIONS

- There is no time limitation to complete the task allotted for particular IT supporters. Currently the System Admin checks by verifying the status and then he reassigns the task to another IT supporters
- The problems or the issues for the users cannot be attached and send with this application.

7.3 CONCLUSION AND FUTURE ENHANCEMENT

7.3.1 CONCLUSION

This project Numeric Bug Tracking Tool has been developed and run to satisfy the requirements and needs of the organisation as well as the end users. The system reduces the manual work of the records. The business productivity is ensured by maintaining the system level performance.

The information in the system should be maintained upto date with periodic updates. The security feature of the system allows the Authorized service vendors with appropriate rights to make updates to important and sensitive data. It prevents unauthorized access to important data.

7.3.2 FUTURE ENHANCMENT

The following features if introduced can more enhance the benefits for the organization:

It can be implemented in a WAN environment so that all branches of the concern can access the application from anywhere.

The Time duration to complete the task by the IT supporters can be specified automatically by the System Admin when he assigns the ticket

At present, the IT head can view the problem description by logging into bug tracking system. In future it is planned to sent the problem description to the IT head through email as well as by logging the description in bug tracking tool.

CHAPTER 8

APPENDICES

8.1 SAMPLE SCREENS

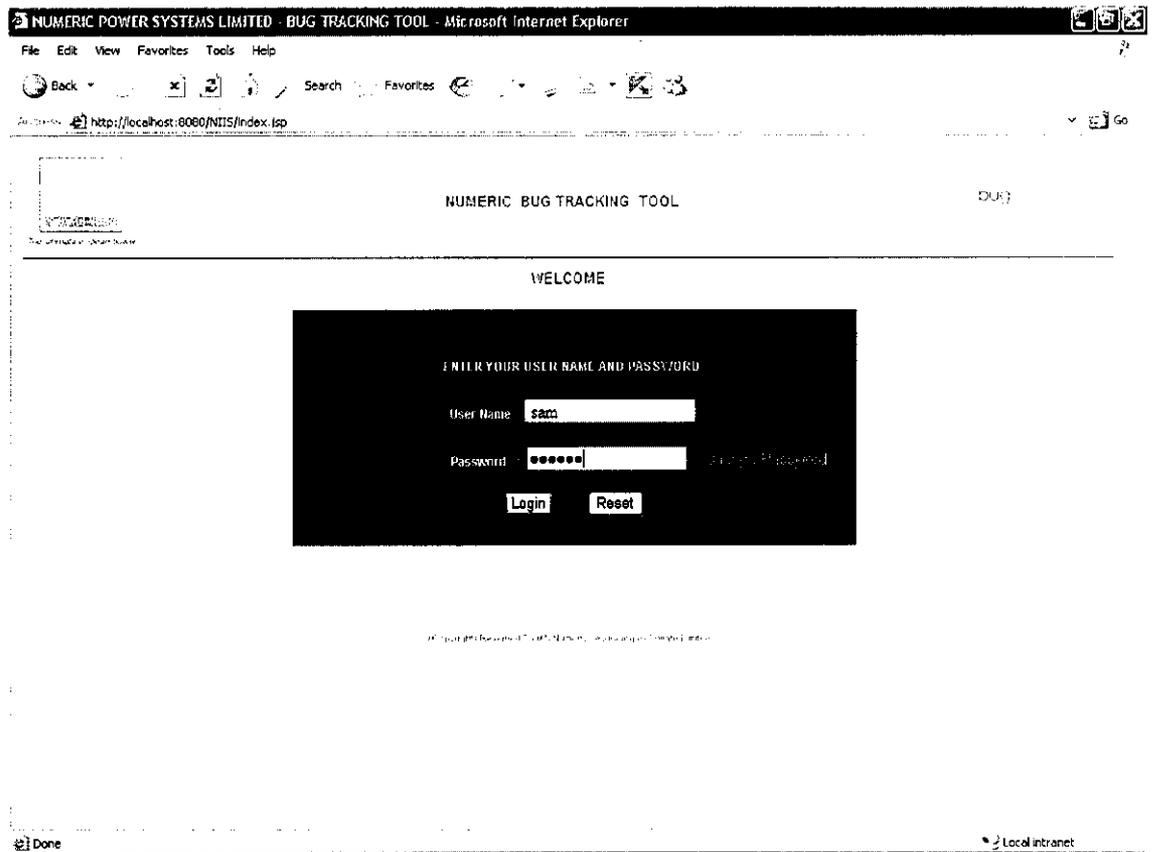


Figure A.1 Login Screen

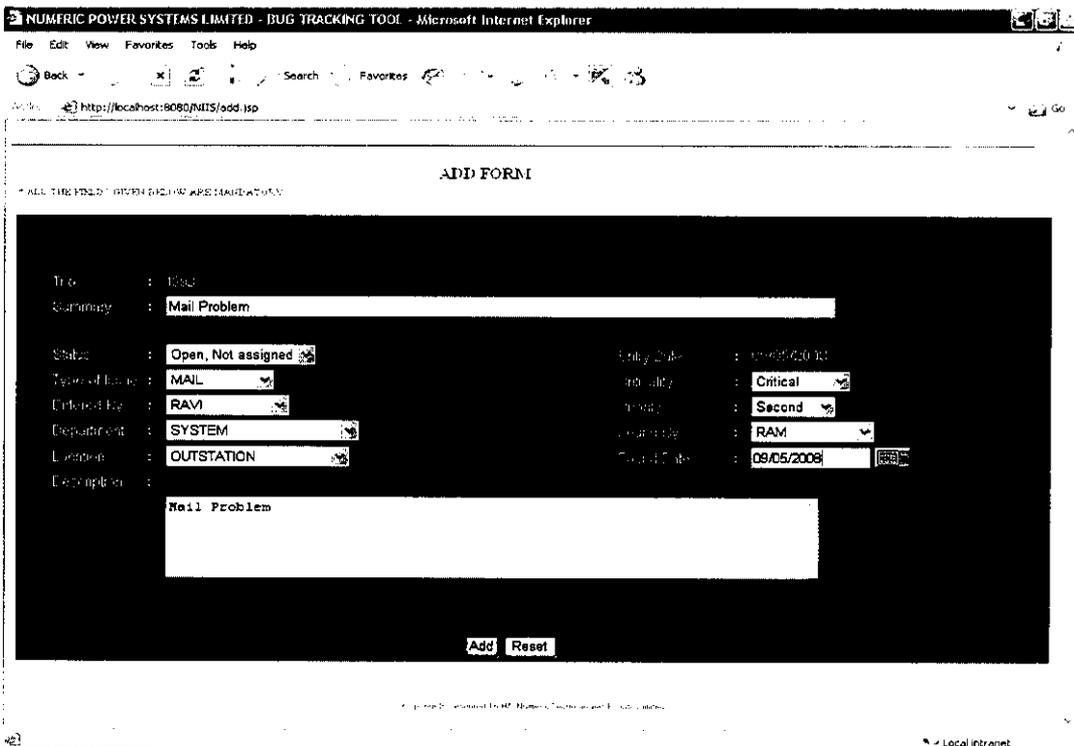


Figure A.2 Add form

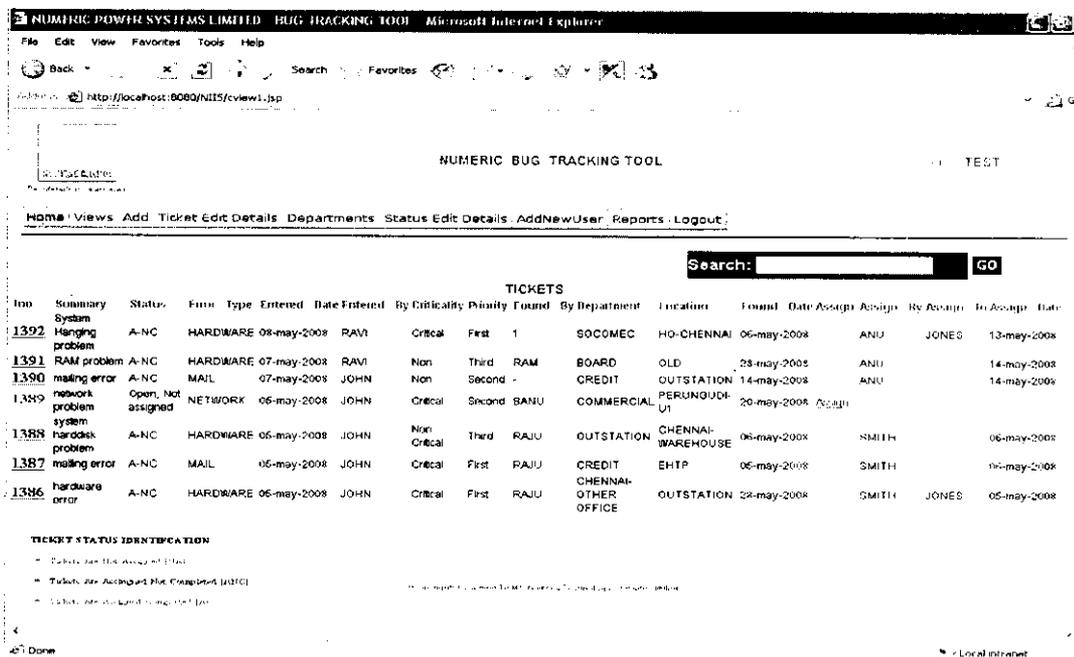


Figure A.3 Home page

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://localhost:8080/NIIS/edit.jsp?tno=1389

NUMERIC BUG TRACKING TOOL TEST

Home Views Add Ticket Edit Details Departments Status Edit Details AddNewUser Reports Logout

EDIT FORM

Tno : 1389

Summary : network problem

Status : Open, Not assigned

Type of Issue : NETWORK

Entered By : JOHN

Department : COMMERCIAL

Location : PERUNGUDI-U1

Description : ip conflict

Date of Issue : 05/05/2008

Priority : Critical

Phase : Second

Found By : RAM

Found Date : 20/05/2008

Save

Figure A.4 Edit form

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://localhost:8080/NIIS/assign.jsp?tno=1389

NUMERIC BUG TRACKING TOOL TEST

Home Views Add Ticket Edit Details Departments Status Edit Details AddNewUser Reports Logout

ASSIGN FORM

Tno : 1389

Summary : network

Description : ip conflict

Assigned By : REENA

Assigned To : RAMYA

Assign Date : 05/05/2008

Assigner : ANC

SAVE Reset

Figure A.5 Assign form

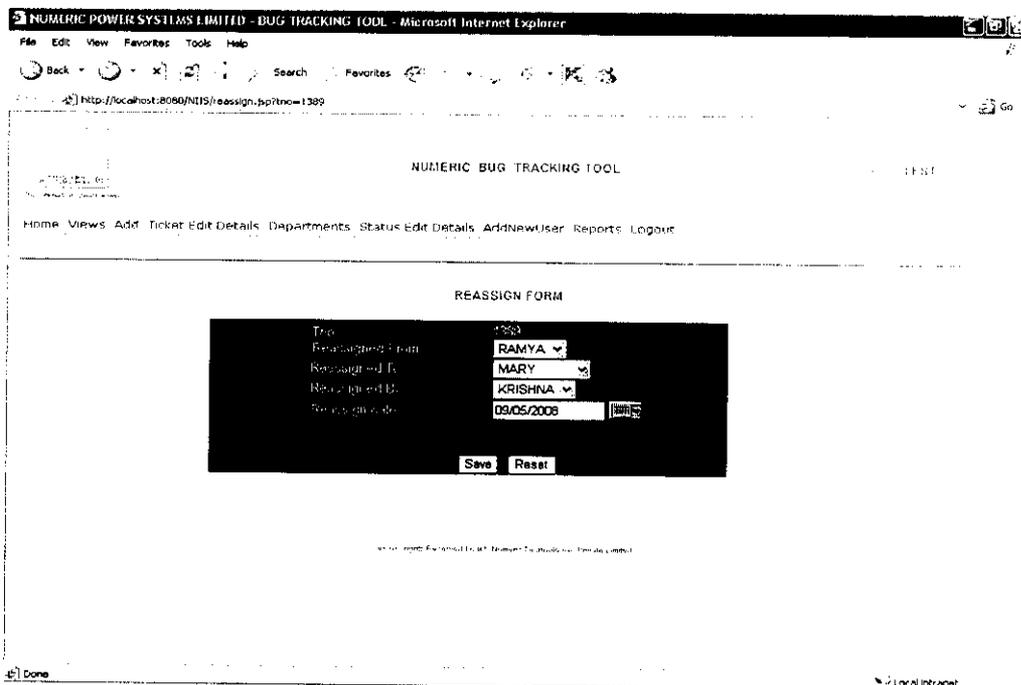


Figure A.6 Reassign form

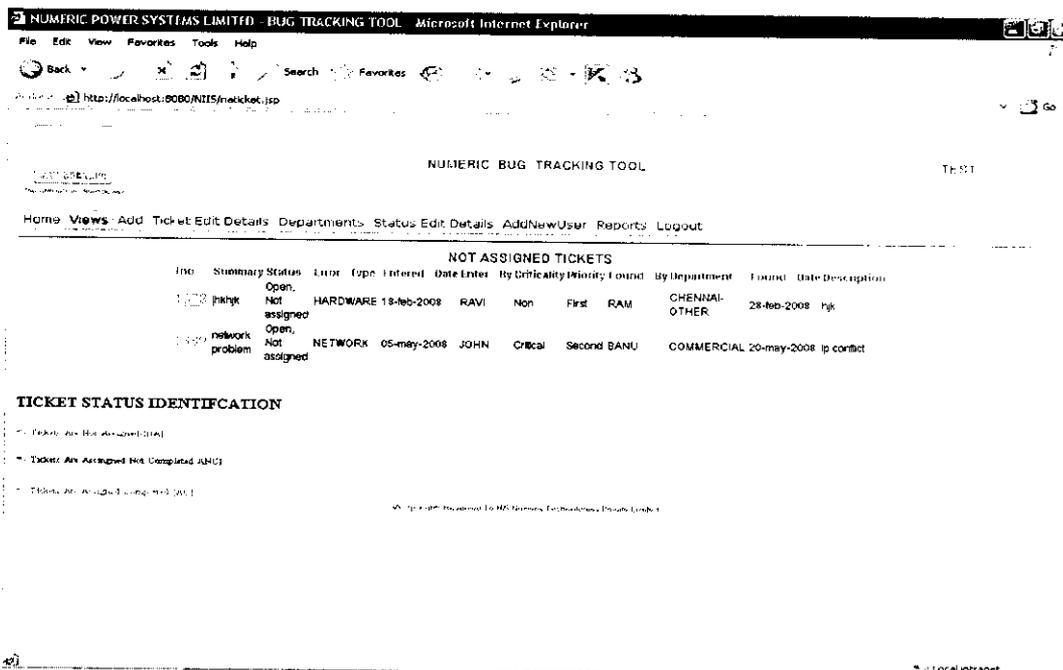


Figure A.7 Not Assigned Ticket View

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

http://localhost:8080/NIS/nc/ticket.jsp

NUMERIC BUG TRACKING TOOL

Home Views Add Ticket Edit Details Departments Status Edit Details AddNewUser Reports Logout

UNCLOSED TICKETS

Id	Summary	Status	Error	Type	Entered	Date Entered	By	Criticality	Priority	Found	By	Department	Found	Date	Description	Assign	By Assign	To Assign	Date	Reassign	By	Reassign	
1332	System Hanging problem	A-NC	HARDWARE	08-may-2008	RAVI			Critical	First	1		SOCOMECC	06-may-2008	ANU	JONES	13-may-2008							
1331	RAM problem	A-NC	HARDWARE	07-may-2008	RAVI			Non Critical	Third		RAM	BOARD	28-may-2008	ANU					14-may-2008	KRISHNA		RADHA	
1330	mailing error	A-NC	MAIL	07-may-2008	JOHN			Non Critical	Second			CREDIT	14-may-2008	ANU					14-may-2008	SAM		RADHA	
1328	system harddisk problem	A-NC	HARDWARE	05-may-2008	JOHN			Non Critical	Third		RAJU	OUTSTATION	06-may-2008	SMITH					06-may-2008	KRISHNA		MARY	
1327	mailing error	A-NC	MAIL	05-may-2008	JOHN			Critical	First		RAJU	CREDIT	06-may-2008	SMITH					06-may-2008	SAM		RADHA	
1325	hardware error	A-NC	HARDWARE	05-may-2008	JOHN			Critical	First		RAJU	CHENNAI OTHER OFFICE	28-may-2008	SMITH			JONES	05-may-2008					
1324	hardware error	A-NC	SOFTWARE	26-mar-2008	JOHN			Critical	Third		RAJU	OUTSTATION	29-mar-2008	SMITH					28-mar-2008	SAM		MARY	
1324	hardware error	A-NC	HARDWARE	25-mar-2008	JOHN			Critical	First		RAJU	3G TECH SUPPORT	25-mar-2008	SMITH					18-mar-2008	KRISHNA		MARY	
1324	System Booting Problem-Winxp	A-NC	HARDWARE	26-mar-2008	JOHN			Critical	First		RAJU	ACCOUNTS	12-mar-2008	SMITH			JONES	12-mar-2008					
1323	System Booting Problem	A-NC	HARDWARE	26-mar-2008	JOHN			Critical	First		RAJU	ACCOUNTS	12-mar-2008	SMITH			JONES	12-mar-2008					

Figure A.8 UnClosed Ticket View

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

http://localhost:8080/NIS/c/ticket.jsp

NUMERIC BUG TRACKING

Home Views Add Ticket Edit Details Departments Status Edit Details AddNewUser Reports Logout

CLOSED TICKETS

Id	Summary	Status	Error	Type	Entered	Date Entered	By	Criticality	Priority	Found	By	Department	Found	Date	Description	Assign	By Assign	To Assign	Date	Reassign	By	Reassign
1332	System Hanging problem	A-C	HARDWARE	08-may-2008	RAVI			Critical	First	1		SOCOMECC	06-may-2008	hanging system problem	ANU	JONES	13-may-2008					
1331	RAM problem	A-C	HARDWARE	07-may-2008	RAVI			Non Critical	Third		RAM	BOARD	28-may-2008	RAM Problem	ANU				14-may-2008	KRISHNA		RADHA
1330	mailing error	A-C	MAIL	07-may-2008	JOHN			Non Critical	Second			CREDIT	14-may-2008	mailing error	ANU				14-may-2008	SAM		RADHA
1329	network problem	A-C	NETWORK	05-may-2008	JOHN			Critical	Second		RAM	COMMERCIAL	26-may-2008	ip conflict	REENA				09-may-2008	KRISHNA		MARY
1328	system harddisk problem	A-C	HARDWARE	05-may-2008	JOHN			Non Critical	Third		RAJU	OUTSTATION	06-may-2008	harddisk problem	SMITH				06-may-2008	KRISHNA		MARY
1327	mailing error	A-C	MAIL	05-may-2008	JOHN			Critical	First		RAJU	CREDIT	06-may-2008	mailing error	SMITH				06-may-2008	SAM		RADHA
1325	hardware error	A-C	SOFTWARE	26-mar-2008	JOHN			Critical	Third		RAJU	OUTSTATION	29-mar-2008	hardware error	SMITH				28-mar-2008	SAM		MARY
1324	hardware error	A-C	HARDWARE	25-mar-2008	JOHN			Critical	First		RAJU	3G TECH SUPPORT	25-mar-2008	hardware Error	SMITH				18-mar-2008	KRISHNA		MARY
1324	System Booting Problem-Winxp	A-C	HARDWARE	26-mar-2008	JOHN			Critical	First		RAJU	ACCOUNTS	12-mar-2008	Os is not loading due to bad sectors in the booting C drive	SMITH	JONES	12-mar-2008					
1323	System Booting Problem	A-C	HARDWARE	26-mar-2008	JOHN			Critical	First		RAJU	ACCOUNTS	12-mar-2008	Os is not loading due	SMITH	JONES	12-mar-2008					

Figure A.9 Closed Ticket View

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

http://localhost:8080/NITS/cview.jsp

NUMERIC BUG TRACKING TOOL TEST

Home Views Add Ticket Edit Details Departments Status Edit Details AddNewUser Reports Logout

All

ALL TICKETS

No	Summary	Status	Error	Type	Entered	Date Entered	By	Criticality	Priority	Found	By	Department	Location	Found	Date Recd	Assign	By	Assign	Date Recd	
1394	Closed Tickets	Open																		
1394	Not Assigned Tickets	Not assigned																		
1392	Tickets of Users																			
1391	RAM problem	A-NC	HARDWARE		08-may-2008		RAVI	Critical	First	1		SOCOMEQ BOARD	HO-CHENNAI	06-may-2008			ANU	JONES		
1390	mailing error	A-C	MAIL		07-may-2008		JOHN	Non Critical	Second			CREDIT	OUTSTATION	14-may-2008			ANU			
1389	network problem	A-C	NETWORK		05-may-2008		JOHN	Critical	Second			COMMERCIAL	PERUNGUDI	20-may-2008			REENA			
1388	system hardware problem	A-NC	HARDWARE		05-may-2008		JOHN	Non Critical	Third			OUTSTATION	CHENNAI WAREHOUSE	06-may-2008			SMITH			
1387	mailing error	A-C	MAIL		05-may-2008		JOHN	Critical	First			CREDIT	EHTP	05-may-2008			SMITH			
1386	hardware error	A-NC	HARDWARE		05-may-2008		JOHN	Critical	First			CHENNAI-OTHER OFFICE	OUTSTATION	23-may-2008			SMITH	JONES		
1385	#	A-NC	SOFTWARE		26-mar-2008		JOHN	Critical	Third			OUTSTATION	FAB2	29-mar-2008			SMITH			
1384	hardware error	A-C	HARDWARE		26-mar-2008		JOHN	Critical	First			3rd TECH SUPPORT	HO-CHENNAI	26-mar-2008			SMITH			
1383	System Booting Problem - Winxp	A-C	HARDWARE		26-mar-2008		JOHN	Critical	First			ACCOUNTS	CHENNAI WAREHOUSE	12-mar-2008			SMITH	JONES		
1382	System Booting Problem - Winxp	A-NC	HARDWARE		26-mar-2008		JOHN	Critical	First			ACCOUNTS	CHENNAI WAREHOUSE	12-mar-2008			SMITH	JONES		
1381	System Booting Problem - Winxp	A-C	HARDWARE		26-mar-2008		JOHN	Critical	First			ACCOUNTS / FINANCE	HO-CHENNAI	12-mar-2008			SMITH	JONES		
1380	mailing	A-NC	MAIL		18-feb-2008		SELVAKUMAR	Non Critical	Third			SELVAKUMAR	NTPL	HO-CHENNAI	18-feb-2008			SELVAKUMAR		

Local intranet

Figure A.10 All Ticket View

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

http://localhost:8080/NITS/cview1.jsp

NUMERIC BUG TRACKING TOOL TEST

Home Views Add Ticket Edit Details Departments Status Edit Details AddNewUser Reports Logout

Search: 12 GO

TICKETS

No	Summary	Status	Error	Type	Entered	Date Entered	By	Criticality	Priority	Found	By	Department	Location	Found	Date Recd	Assign	By	Assign	Date Recd
2606	Cable re-dressing in server room racks(before 30-05-2008 and)	A-NC	NETWORK		31-may-2008		JOHN	Critical	First	DD		SYSTEMS	PONDY-LI	08-may-2008			JONE	ANU	14-may-2008
2605	hardware error	A-NC	SOFTWARE		31-may-2008		JOHN	Critical	First	DD		3rd TECH SUPPORT	CHENNAI-WAREHOUSE	01-may-2008			JONE	DSK	21-may-2008
2473	Cable re-dressing in server room racks(before 30-05-2008 and)	A-NC	NETWORK		13-may-2008		SELVAKUMAR	Critical	First	VCR		SYSTEMS	HO-CHENNAI	13-may-2008			VCR	DSK	13-may-2008
2472	Refund for buyback monitors	A-NC	OTHERS		13-may-2008		SELVAKUMAR	Critical	First	VCR		SYSTEMS	HO-CHENNAI	13-may-2008			VCR	DSK	13-may-2008
2469	ID base 1 login Demo in FW(before 17-5-08)	A-NC	NETWORK		13-may-2008		SELVAKUMAR	Critical	First	VCR		SYSTEMS	HO-CHENNAI	13-may-2008			SELVAKUMAR	DSK	13-may-2008
2467	Dell Monitor despatch to ROs	A-NC	OTHERS		13-may-2008		SELVAKUMAR	Non Critical	First	VCR		SYSTEMS	HO-CHENNAI	13-may-2008			VCR	DSK	13-may-2008

Local intranet

Figure A.11 Search Option

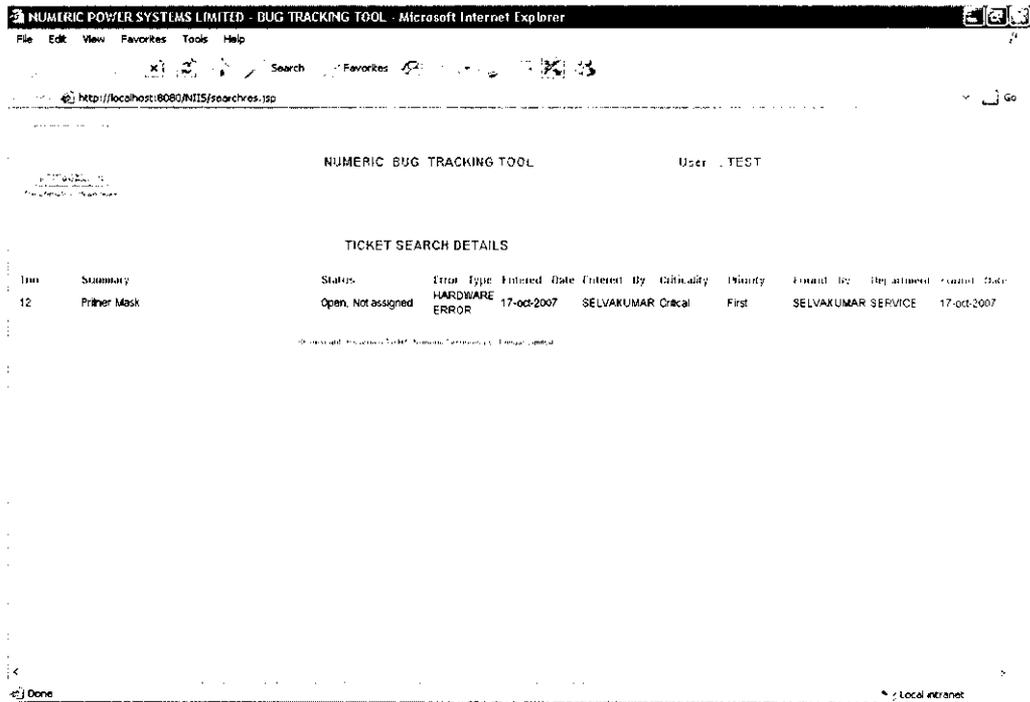


Figure A.12 Search Details

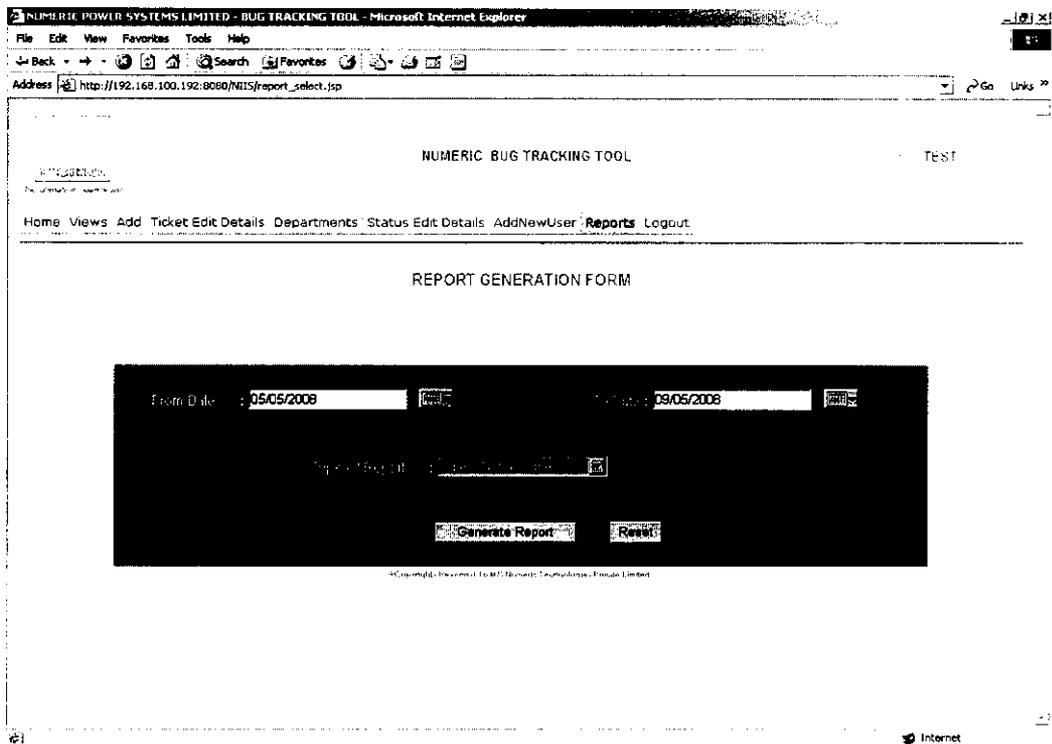


Figure A.13 Data Report

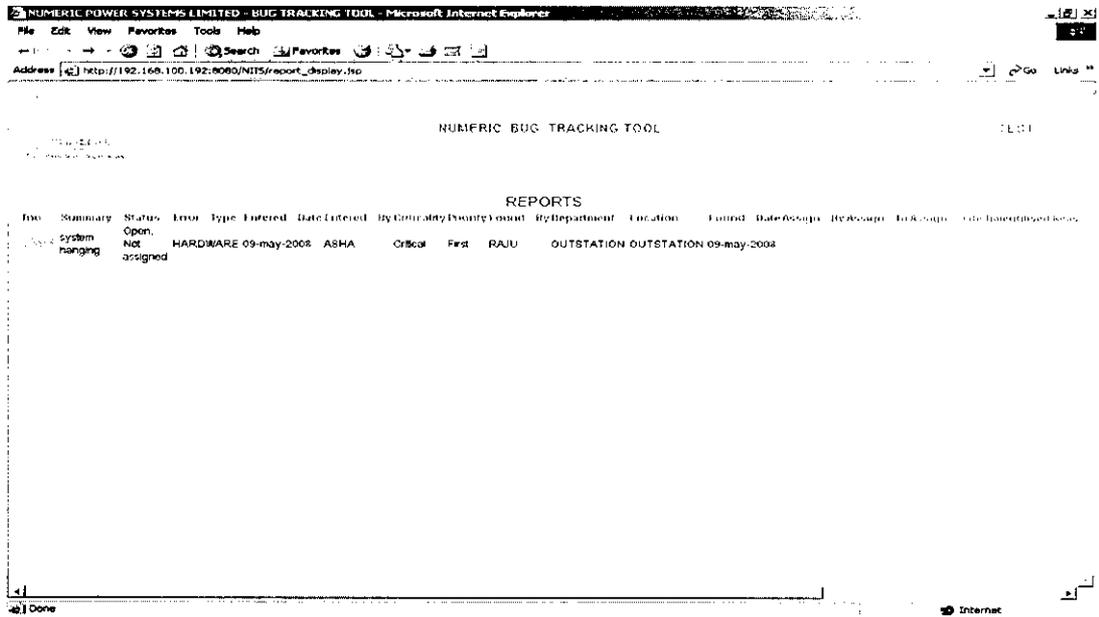


Figure A.14 Not Assigned Ticket Report

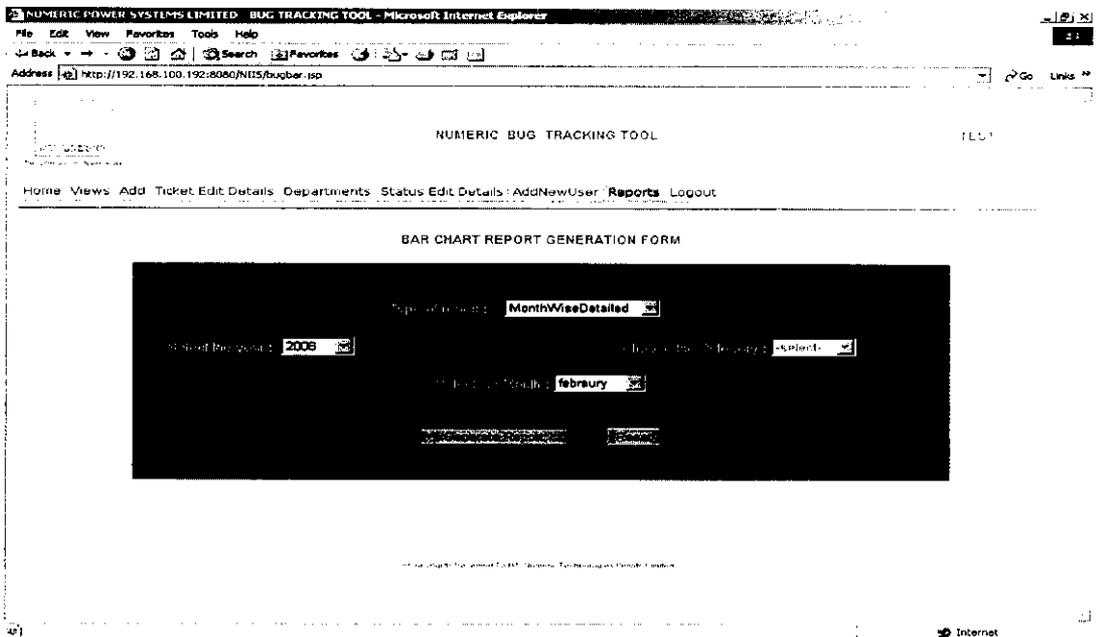


Figure A.15 Bar Chart-Month Wise Detailed

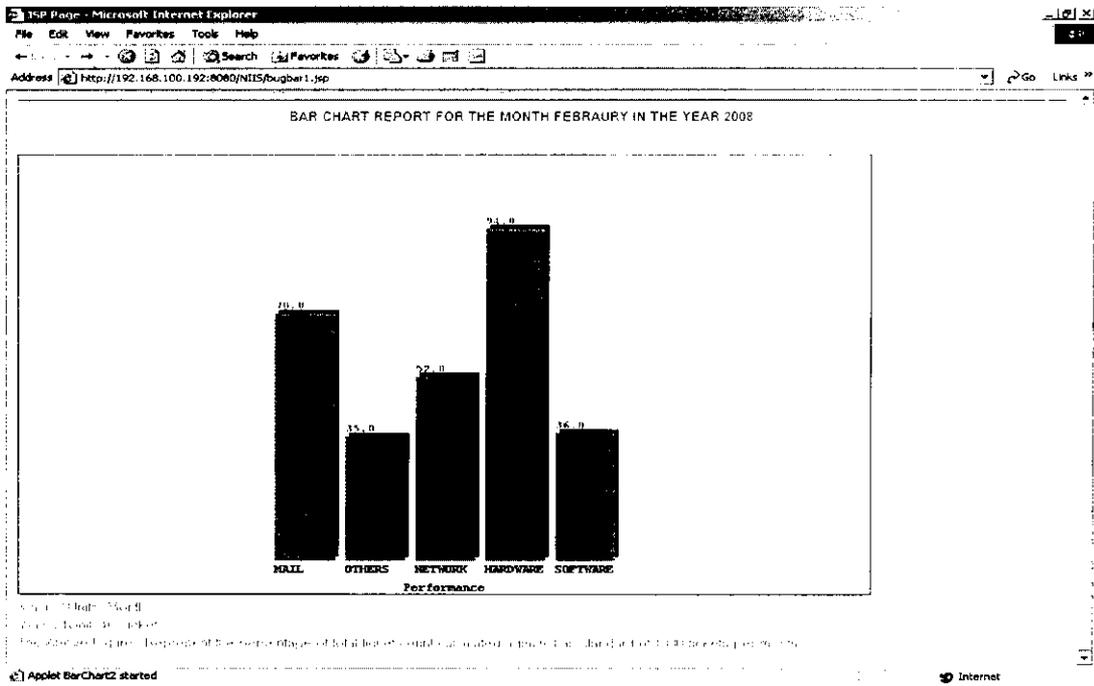


Figure A.16 Month Wise Detailed Report

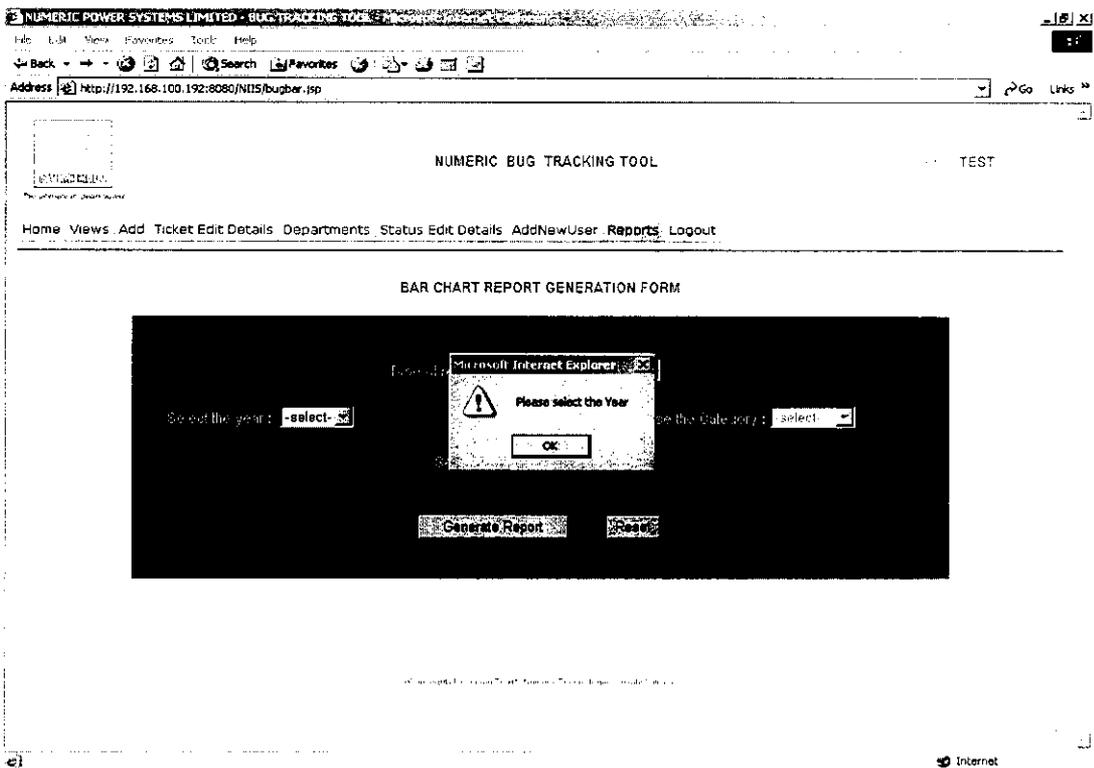


Figure A.17 Bar Chart Report Validation

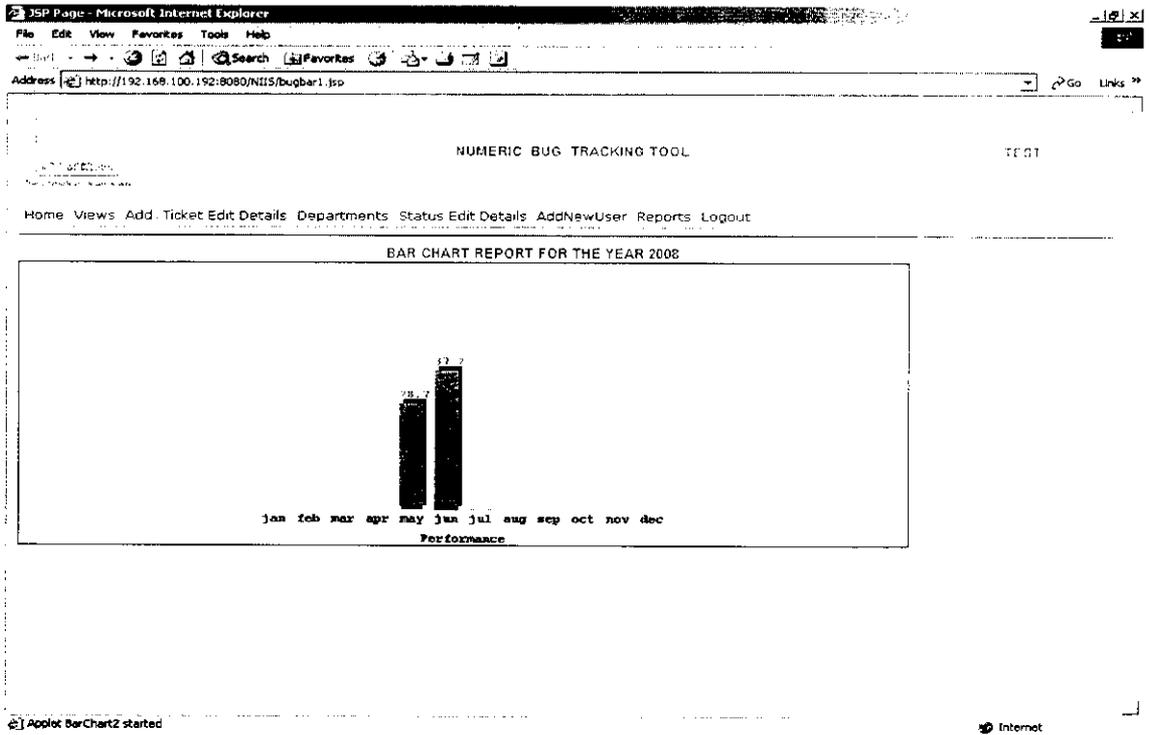


Figure A.18 Month Wise Summary Report

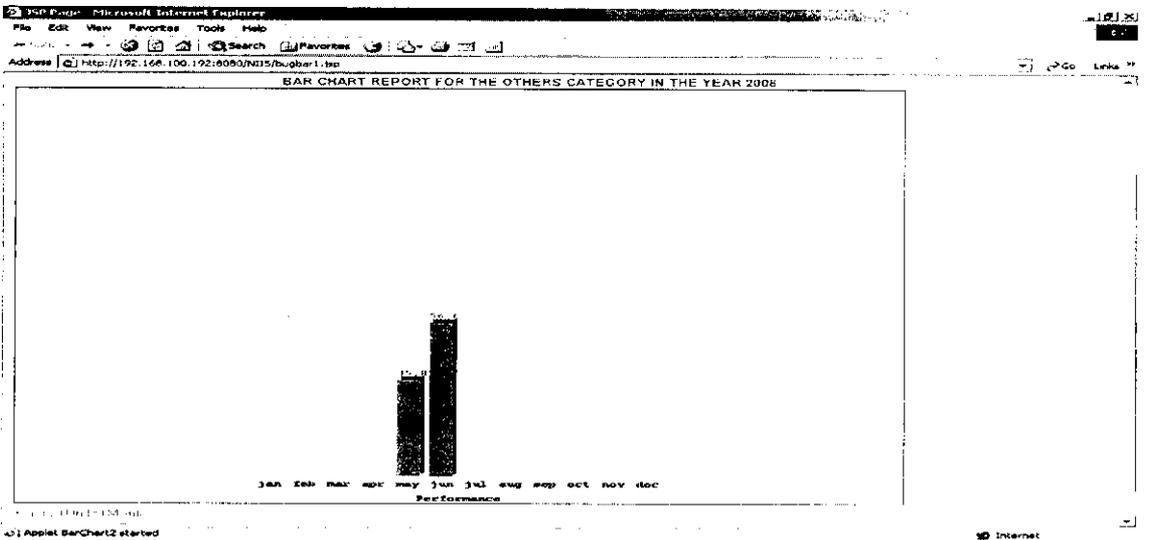


Figure A.19 Category Wise Report

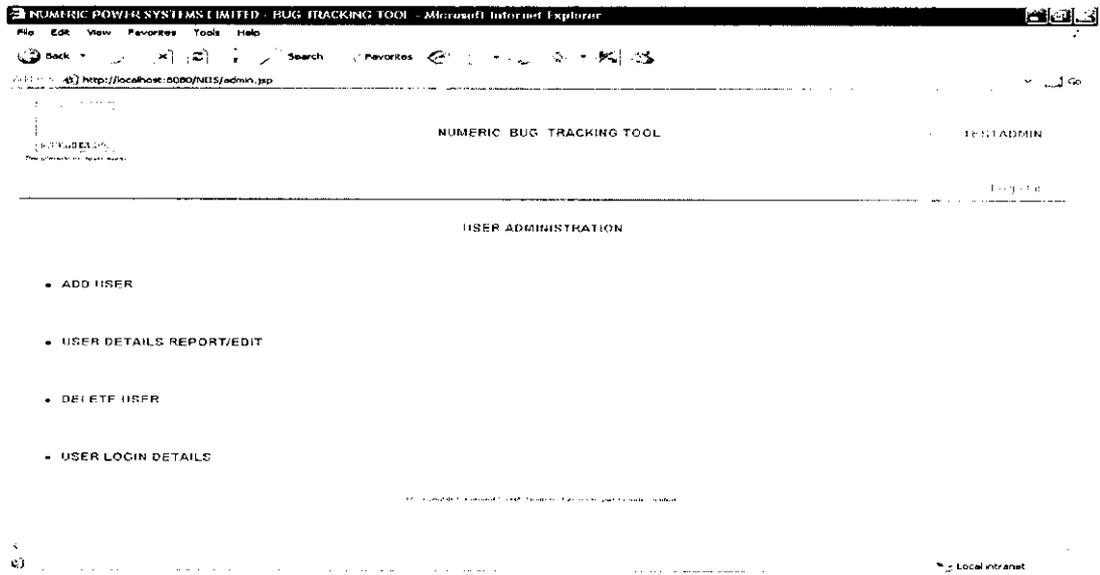


Figure A.20 User Administration Form

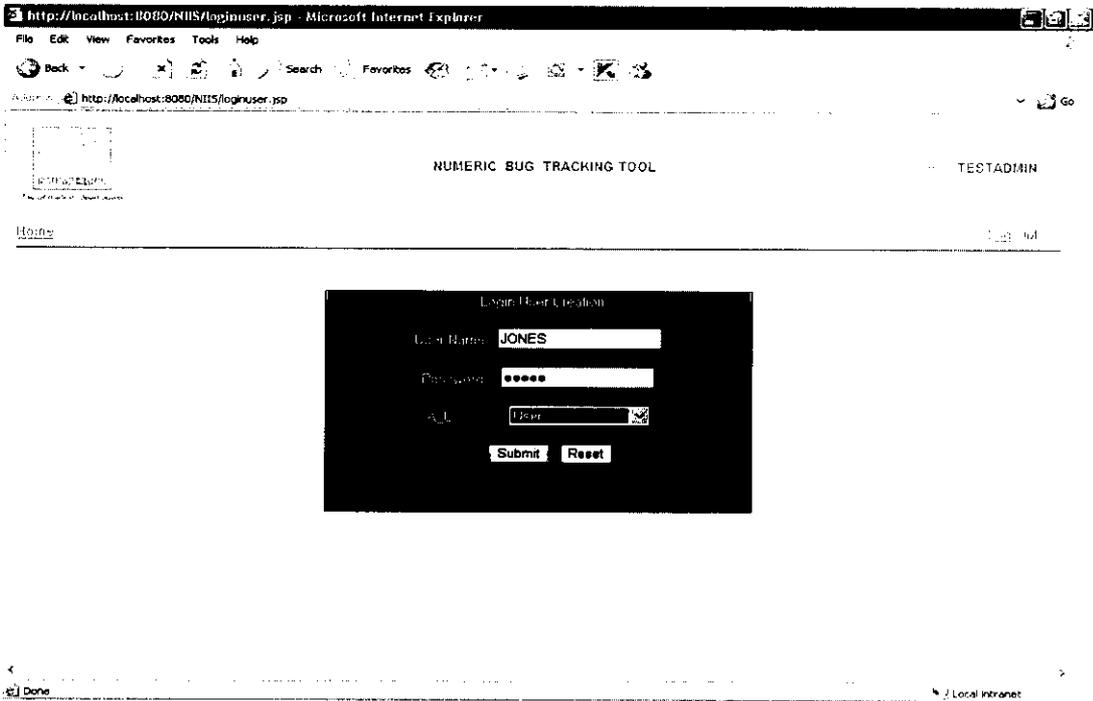


Figure A.21 User Add Form

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address: http://localhost:8080/NIIS/userdelete.jsp

NUMERIC BUG TRACKING TOOL TESTADMIN

Home

USERS DETAILS

TEST	USERNAME	CATEGORY	DELETE
TESTADMIN	a		Delete
RAV	u		Delete
JONR	u		Delete
JONN	u		Delete
A	#		Delete
S	#		Delete
VCR	#		Delete
NU	nu		Delete
DBK	u		Delete
US	u		Delete
SRIKANTH	u		Delete
VCAPE	u		Delete
BEJAYAKUMAR	s		Delete
SURESH	u		Delete

Address: http://localhost:8080/NIIS/userdelete.jsp?username_str=jONN

Figure A.22 User Delete Form

NUMERIC POWER SYSTEMS LIMITED - BUG TRACKING TOOL - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address: http://localhost:8080/NIIS/userstatus.jsp?no=1392

NUMERIC BUG TRACKING TOOL JONES

Home

STATUS FORM

Title	1392
Description	Big Jam Hanging broken
Actual Start Date	06/05/2006
Actual End Date	09/05/2006
Time-Completion Status	72 [HH:MM:STATUS]
Status	A C

Save Reset

Address: http://localhost:8080/NIIS/userstatus.jsp?no=1392

Figure A.23 Status Form

http://localhost:8080/NIIS/login_log.jsp - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

http://localhost:8080/NIIS/login_log.jsp

NUMERIC BUG TRACKING TOOL TESTADMIN

Home LOGIN

USER LOG DETAILS

USERNAME	IP ADDRESS	LOGIN DATE
selvakumar	192.168.100.191	01-dec-2007 07:15:18 pm
hu	192.168.100.250	01-dec-2007 07:17:08 pm
hu	192.168.100.191	01-dec-2007 07:18:30 pm
dinesh	192.168.100.191	01-dec-2007 07:25:42 pm
hu	192.168.100.191	01-dec-2007 07:27:10 pm
selvakumar	192.168.100.250	01-dec-2007 07:27:42 pm
dinesh	192.168.100.191	01-dec-2007 07:28:20 pm
dinesh	192.168.100.191	01-dec-2007 07:28:24 pm
dinesh	192.168.100.191	01-dec-2007 07:28:37 pm
dinesh	192.168.100.191	01-dec-2007 07:28:50 pm
dinesh	192.168.100.250	01-dec-2007 07:30:06 pm
prikanth	192.168.100.191	01-dec-2007 07:36:58 pm
selvakumar	192.168.100.191	01-dec-2007 07:37:30 pm
prikanth	192.168.100.191	01-dec-2007 07:38:27 pm
s	127.0.0.1	01-dec-2007 10:00:32 am
selvakumar	192.168.100.192	01-feb-2008 04:25:42 pm
vcare	192.168.100.192	01-feb-2008 04:30:22 pm
selvakumar	192.168.100.192	01-feb-2008 04:30:42 pm
vcare	192.168.100.192	01-feb-2008 04:32:27 pm
selvakumar	192.168.100.192	01-feb-2008 05:22:41 pm
vcare	192.168.100.192	01-feb-2008 06:24:23 pm
selvakumar	192.168.100.191	01-feb-2008 07:47:44 pm
dk	192.168.100.191	01-feb-2008 09:21:30 pm
SELVAKUMAR	192.168.100.190	01-feb-2008 09:26:19 pm
puush	192.168.100.190	01-feb-2008 08:36:32 pm
selvakumar	192.168.100.191	01-feb-2008 08:38:14 pm
prikanth	192.168.100.191	01-feb-2008 08:47:26 pm
vcare	192.168.100.191	01-feb-2008 09:38:48 am

Done Local intranet

Figure A.24 User Log Details

CHAPTER 9

REFERENCES

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- <http://www.w3schools.com>
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- <http://www.roseindia.net>