Software Requirements Specification Document

<Abuse report web application>

Version 1.0

February 20, 2014

Course CS509 – Design of Software Systems

Group2:
Chengjiao Yang
Mohammed Ayub
Qiukun Lin
Rui Jin
Rundong Yu
Wenxin Zhao
Yichen Lin

Document History and Distribution

1. Revision History

Revision #	Revision Date	Description of Change	Author
1	02/19/2014	Changed the ER Diagram	Mohammed Ayub

2. Distribution

Table of Contents

1 Introduction

1.1 Purpose

The purpose of this document is to outline a detailed description pertaining to the development of Web Application. It will explain the functionality of the system being built, the software, hardware and design constraints under which the system operates and the system responses to external stimuli. This document will serve as a reference to both the stakeholders and the developers of the system and will be proposed to the Third Party Health Care Organization for its approval.

1.2 Scope

This software system will be a Web application which helps Group Home staff and supervisors to report incidents of abuse to the Disabled Persons Protection Commission (DPPC) and in turn report to Department of Developmental Services (DDS). This system will help the Health Organization efficiently manage and track all the abuse reports, smoothen the investigation process and also help the Human Rights Committee in their decision to make appeals by providing them the details of initial report.

The administrator of this system will also have the ability to print, email or FAX the reports through the web application to different Agencies. This system also contains a database to store abuse report information of reporter, victim and abuser for efficient retrieval and tracking.

1.3 Definitions, Acronyms, and Abbreviations.

- Abuse Report: A report which contains the details of the abuser, victim and other additional details about the incident.
- Health Care Organization(HCO): The organization reposible for providing day care services to the disabled people.
- DDS: Department of Developmental Services has a tie-up with the Health Care Organization.
- DPPC: Disabled Persons Protection Commission, forwards the abuse report to the DDS
- Group Home: Is managed by the Health Care Orgainzation and contains staff and supervisors.
- Staff: The person who give care to the patient and person reporting the incident.
- Supervisor: Person responsible for managing the staff of the group home.
- User: The person interacting with the system.
- Software Requirement Specification: The document which will help the customers and developers understand the working of the system.
- Administrator: The person who will be responsible for maintaining the system.
- Datatype: The type of data entererd by the user and also handled by the system.
- GUI: Graphical User Interface with which the user interacts withn the system.
- Database: Place to store all the information related to reports, reporter etc.
- ER Diagram: The diagrammatic representation of key elements of the system and their relationship with each other.
- CSS: Cascading Style Sheets used improve the usabllity and experience of the user.

- MySQL: Language used to communicate with the database to update and retrieve information.

1.4 References

1. IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.
2. HIPAA. Health Insurance Portability and Accountability Act enacted - National Standards for the Security of Electronic protected Health information, US Congress, 1996.
3. Section 508. Design Standards for disable persons using the system, Rehabilitation Act of 1973, as amended in 1998
4. 201 CMR 17.00: Standards for the Protection of Personal Information of Residents of the Commonwealth, March 1, 2010.

1.5 Overview

The following section of SRS; Overall Description, given the overview of the entire system and also the breakdown system into multiple sub-systems. It describes the functional requirements in brief and establishes a good link to the Requirements Specification.

The third section Requirements specification deals with the specifics of the system such as the application design constraints, interfaces, performance, subsystem requirements and standards and organization of specific requirements according to Object/Classes mode. This section is primarily written for the developers to help them build the system accordingly and hence uses different language. Both the following sections describe the system in detail and they are intended for different audiences.

2 The Overall Description

2.1 Product Perspective

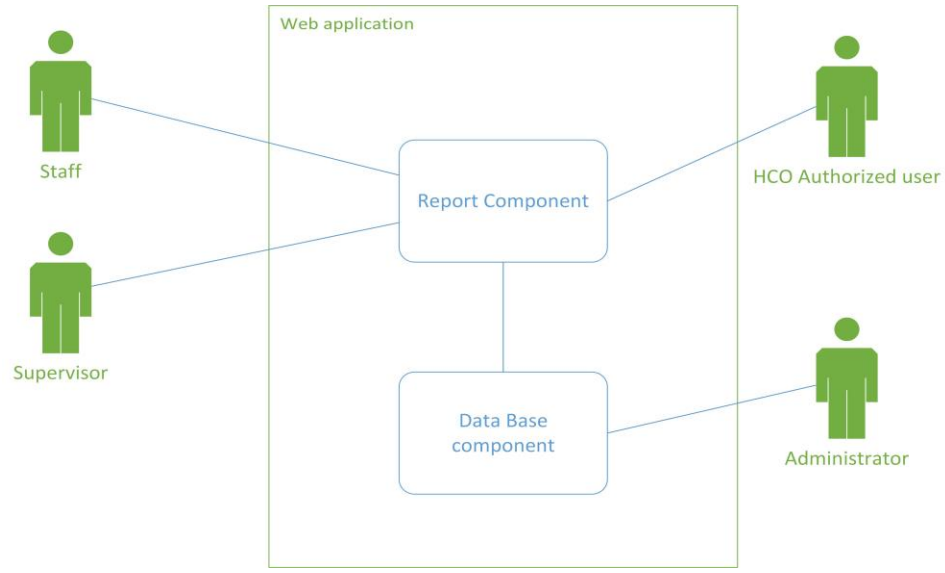

Figure 1

Our system is a standalone application designed for a focused audience of Health Care Organization(HCO) who maintain all the confidential data. The system is divided majorly into two components; the Report Component and the Database Component. The Report component interacts with the database component whenever there are new abuse report logged or old report needs to be retrieved.

The main actors of our system are the workers of the health care organization who frequently interact with the system.

2.1.1 System Interfaces

This software is a web application. It should be accessible to anyone who can log onto the World Wide Web using a browser. A combination of standard HTML and java script, Jsp, CSS 3 for web application is used in developing the web page interfaces.

2.1.2 User Interfaces

- There is a login interface where all the users should login the web application by username and password.
- The interface with direct staff includes the write report, submit report, and send report archived by text area and several buttons where direct staff can easily follow.
- The interface with supervisor include review report, print report, track status of investigation report achieved by several interface pages and obvious buttons.
- The interface with system manager includes system maintenance achieved by manager page and buttons.
- The interface with database manager includes database maintenance achieved by database maintenance button and access to database.
- For all the process of the system, if there is an error there would be a pop-up window to remind there is an error.

2.1.3 Software Interfaces

This software is required to interface with MySQL database and connected to a server.

2.1.4 Communications Interfaces

The software use HTTPS protocol for communicating to the server.

2.1.5 Memory Constraints

The server system should have minimum of 512MB RAM, 2.7 GHz Processor for running the application.

2.1.6 Operations

All the users of this software need to have a facility (computer, mobile phone, smart terminal) to access the LAN network. For database manager, all of the data is stored in the MYSQL database, the recovery and backup operation is based on the counterpart of MYSQL database.

2.2 Product Functions

1. Products provide different interface for different users to login, has the ability to differentiate users through user name and password.
2. Direct Support Staff can input pertinent information about an abuse incident following the required form which this product provides.
3. Supervisors can review, correct, and add information to a report before it is printed and sent to the DPPC.
4. The product has the ability to verify that all necessary information is provided.
5. The application redacts information that should not be displayed or preserved, even if the user enters confidential information.
6. The names of alleged victims and alleged abusers and other information that would affect related people should not be provided in any printed or viewed documents.
7. Reports that are in the process of being reviewed and investigated are maintained on a central computer for the organization.
8. Supervisors can track the status of abuse reports, the products provide list of active reports and their status.
9. Supervisors can print reports which can be mailed or Faxed to the DPPC.
10. The product tracks investigation reports by the Public Log Number that provided on the investigation report.
11. The product can provide hard copies of the initial abuse report for use by the Human Rights Committee.
12. The product provides the ability to purge documents based on established retention criteria.

2.3 User Characteristic

We have classified the Users into the following:
Domain Users: This includes the vendor/customer, staffs and supervisors of health care organization or any authorized user from the Agency.

Human Rights Committee Chairman:

- Able to read and understand English.
- Should be familiar to Internet Browsing
- Familiarity with the operation of the basic Graphical User Interface (GUI)

Staff:

- Ability to read and understand English.
- Should be familiar to Internet Browsing
- Familiarity with the operation of the basic Graphical User Interface (GUI)
- Beyond the above, no further facility with computer technology can be assumed.

Supervisor:

- Ability to read and understand English.
- Should be familiar to Internet Browsing.
  Familiarity with the operation of the basic Graphical User Interface (GUI).

DPPC:

- Although they will not be using our system, they will be in constant touch with the users of the system.
- The requests by the DPPC will be served by the system such as Printing of reports.

Administrator:
Due to the client/server/concurrent nature of the system, this role is responsible for security and maintenance of the system. The Administrator of the system, project or model need not be a member of the any of the other roles identified here. Need not have any particular characteristic.

2.4 Constraints

1. Higher-order language requirements: For multi-platform user requirement and better system compatibility, the application adopts Java as development language, be built using web,middleware and database combination.

2. Operate system and database constraints: Since the application has numbers of users and quite amount of data, plus all the history data must archive into database, the application should use medium or large magnitude software tools window.

3. Interface requirements: User visit application with both mobile device and computer, the application should be able to run browser version in computer, meanwhile the system interface or the simple web version for mobile device is required.

4. User interface requirement: Since our clients are funded by the State of Massachusetts the web design style and user interface operation must abide by section 508 accessibility standard. In addition, all users are English users, the user interface should adopt pure English version.

5. Legal: The transaction processing and data processing must satisfy the Massachusetts data security laws, mass 201 CMR17.00 “Standards for the Protection of Personal Information of Residents of the Commonwealth”. The Design of the web page also has to comply with Section 508 of the Rehabilitation Act, which deals with providing training to the disable persons.

2.5 Assumptions and Dependencies

System Assumptions:
We assume that our server will support the software application tools for development. Our database server storage capacity is large enough to handle large amount of health care data necessary to store and track report from various sources.

Time dependencies:
As mentioned previously, the features of our application are divided into two groups: core features and additional features. Core features are crucial to the basic functionality of the application. These features must all be implemented in order for the application to be useful. Optional features, however, are not critical to the function of the application. The final decision on whether or not to implement these features will be made during the later stages of the design phase.

Hardware dependencies:
The system will require basic hardware devices as follows: Optical mouse for clicks, Keyboard to enter text inputs, several computers with minimum configuration as mentioned in section 2.1.5 as the terminals, Modem to connect to the internet, a terminal server to act as the database terminal.

2.6 Apportioning of Requirements:

These functional requirements will be delayed till the future version of the system

1. Introduce tracking of appeals by the Human Rights Committee.
2. Virtual Investigation File which includes the scan copies of Disposition letter and Decision Letters for each investigation.
3. Adding calendar display to the system for providing notifications to the investigation and appeal deadlines.
4. Audit trail of user accesses to the system.

3. Specific Requirements

3.1 External Interfaces

Infrastructure Interfaces:

The client server communication will be establied thorught HTTPS protocols to comply with the data security laws. We have also used several other API's like pdfjs, itext and Calender.js to provide extended functionality to users to track dates and print reports. MySQL 5.6 is used as the data base and Connector/J converts JDBC (Java Database Connectivity) calls into the network protocol used by the MySQL database.

Exernal Entities:

As described in section 2.1 we will have different entites interacting with our system using a keyboard where inputs are in text or date format. Size of the inputs varies from few characters to text, as we donot have any other form of media input such as video or audio the size of inputs remain in few kilobytes. Since the number of users are in few hundreds the frequency of inputs given to the sytem are occasional.

3.2 Functional Specifications:

Following are the Use Cases of the system

3.2.1 Login Use Case

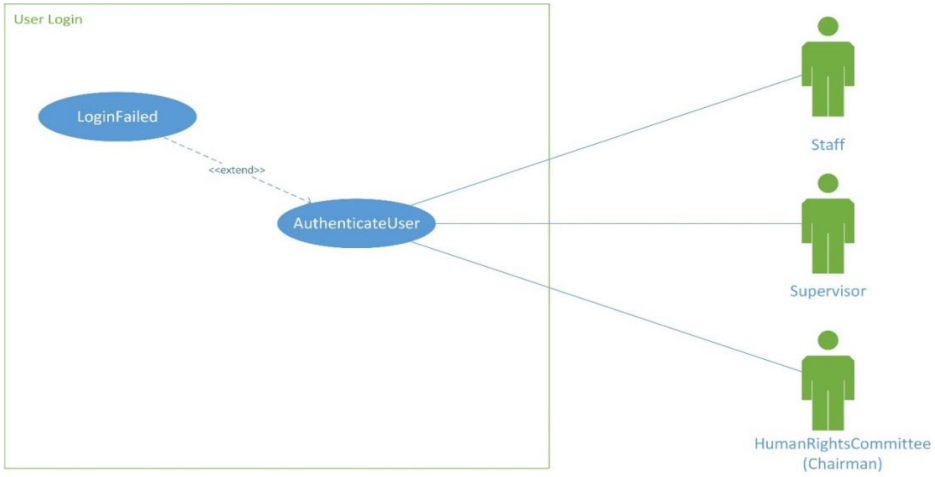

Figure 2

Use case name	User Login
Participants actor	Staff, Supervisor, HumanRightComittee(Chairman)
Flow of events	1. User connects to the Application URL. 2. He is presented with a login page which contains two fields Username and password. 3. The user enters the Username and password in the fields. 4. The system authenticates both the username and the password. 5. If the details are correct, the system present the user with the home age or the search page depending on the user type (i.e. if the user is staff, supervisor or Chairman). 6. If the details are incorrect, the system prompts the user to enter the correct details. 7. If the user fails to enter the correct details after three attempts, it locks the user and prompts the user to contact admin.
Entry condition	User is connected to the internet from his computer with either one of the internet explorer (Firefox, IE, Chrome, Safari).
Exit condition	1. User is presented with a success login message. 2. User is presented with an error message if the login fails. If the login attempts fail after three time, he is presented with an appropriate message to contact admin.
Nonfunctional/ Quality requirement	1. The application must be stable when the reporter is writing the initial report. 2. The home page should be shown within 3 seconds independent of the user browser.

Table 1

3.2.2 Write report Use Case

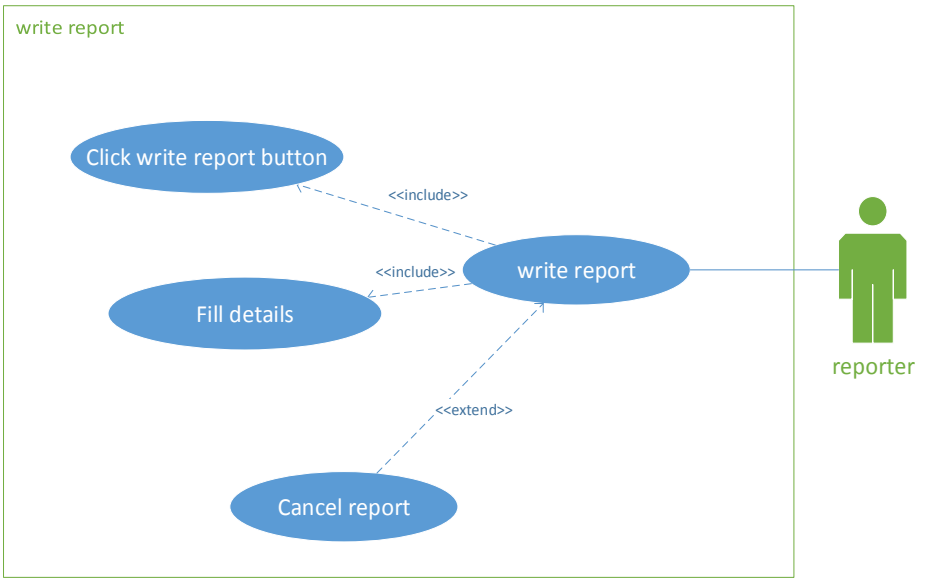

Figure 3

Use case name	Write Report
Participants actor	Direct staff(reporter)
Flow of events	1. The reporter after logging into the system he performs the following tasks. 2. Reporter clicks the “Write report” button 3. The application provides the empty abuse report to fill the details. 4. The reporter enters the necessary details of victim and abuser (name, address etc.) and the abuse description. 5. Reporter clicks the submit button to send it to the supervisor. 6. The application saves the report to the server with the partial details of the incident. 7. The application could invoking the initial report where supervisor could edit or check the status
Entry condition	The reporter has already logged into the system with his credentials successfully.
Exit condition	1. The application saved the initial abuse report to the server 2. The reporter logs out the application after writing the report or without writing report
Nonfunctional/Quality requirement	1. The reporter should be able to use the application independent of any browser. 2. The application must be stable when the reported is writing the initial report. 3. The application must be able to save the report to database. 4. The reporter can save the partial report and enter rest of the details later before submitting it.

Table 2

3.2.3 Modify report

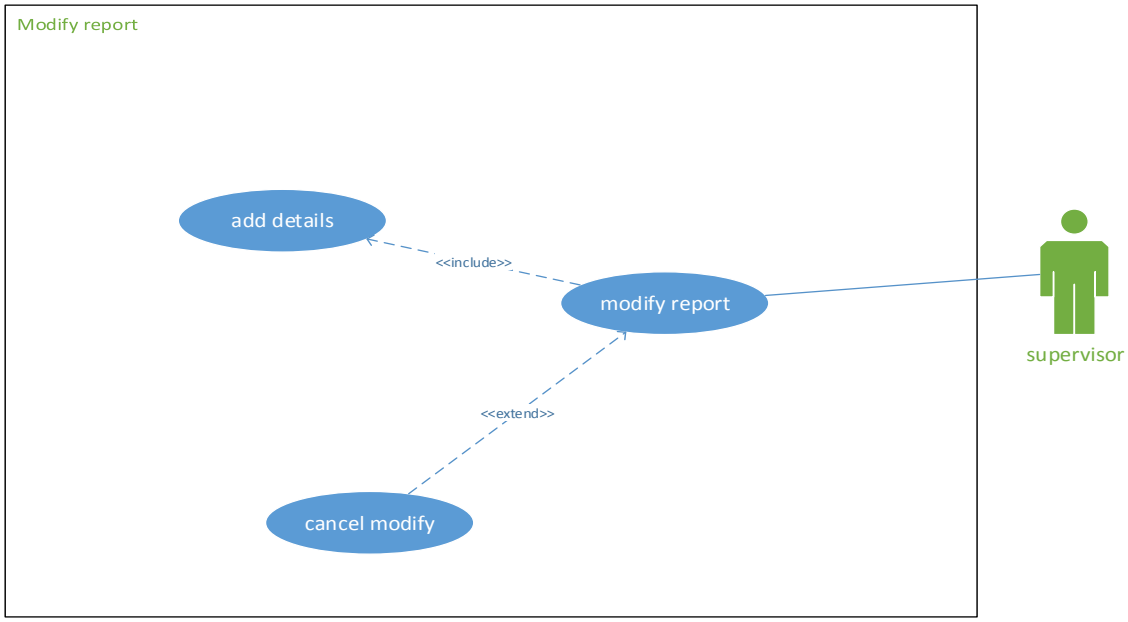

Figure 4

Use case name	Modify Report
Participants actor	Supervisor
Flow of events	1. Supervisor searches the desired report by entering the report number into the search field. 2. Supervisor chooses the report by report number to view. 3. The application presents the user with the partially filled details of the abuse report. 4. Supervisor clicks 'edit' button besides the item he or she wants to modify. 5. Supervisor modifies or add additional details to the report. 6. Supervisor clicks 'save' button. 7. The application inserts the details into the database. 8. System saves the revised abuse report to central computer (server). 9. Supervisor notifies the DPPC that a report has been created.
Entry condition	The supervisor has logged into the application with his credentials.
Exit condition	1. The Supervisor successfully modifies and inserts the report into the database. 2. The supervisor logs out of the application.
Quality requirement	1. The Web application must be stable when the supervisor is modifying the abuse report 2. Abuse reports that are in the process of being modified or reviewed are maintained in server

Table 3

3.2.4 Send Report Use Case

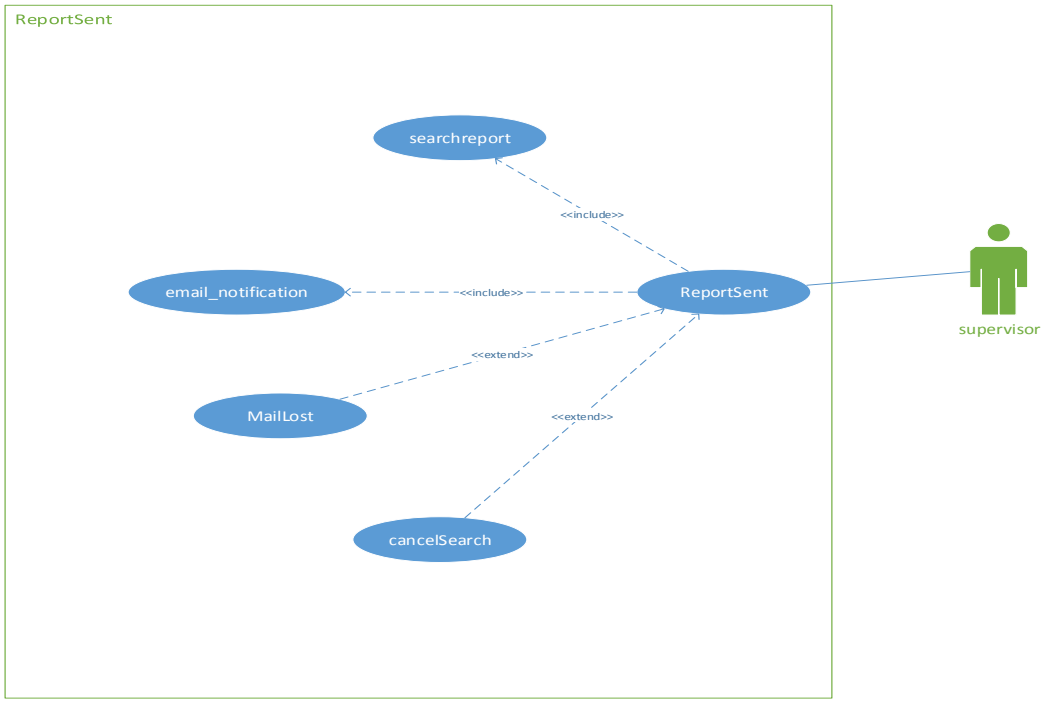

Figure 5

Use case name	SendReport
Participate Actors	Supervisor
Flow of events	1. After the supervisor logins into the system, he performs the following tasks. 2. Supervisor clicks on the report sent button, and opens the report sent web page. 3. Supervisor opens pushdown menu which lists the most recent abuse report, and selects the abuse report that he/she wants. Or supervisor enters an abuse report ID in a text frame and finds the abuse report that he/she wants. 3. Supervisor prints the abuse report for mailing or faxing. 4. Supervisor sends the abuse report to DPPC by mail or fax. 5. Supervisor receives the confirmation that the abuse report is received.
Entry condition	Supervisor clicks on the report sent button.
Exit condition	1. The report is sent out by mail or fax 2. The Supervisor cancels sending the abuse report or the abuse report is lost when it is mailing or faxing
Nonfunctional/Quality requirement	1. The supervisor should be able to use the application independent of the browser. 2. The Web application must be stable when supervisor is searching the desired abuse report. 3. The desired Abuse report is in the database. 4. The mailing process or the faxing process is successful.

Table 4

3.2.5 View report

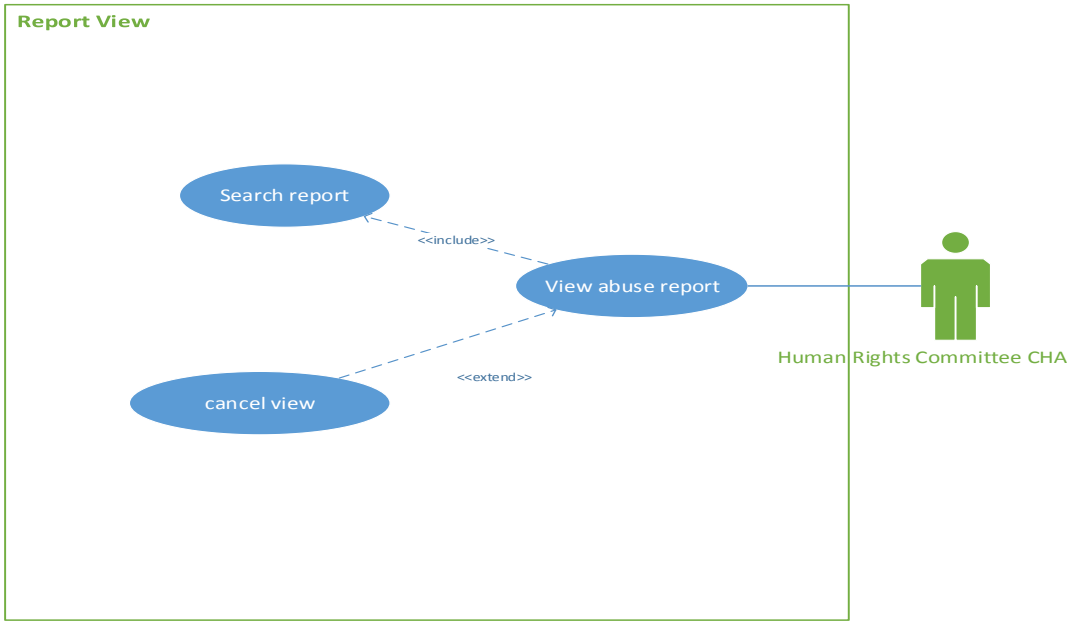

Figure 6

Use case name	View Report
Participate Actors	Human Rights Committee Chairman, Supervisor, Staff,
Flow of events	1. Users enter valid report ID into the search field provided in the main menu. 2. Users click on “search” button. 3. Web retrieves the abuse report submitted by the user if it is present in the database, otherwise prompts to enter the correct report id. from database. 4. Report title is displayed on screen with options to view. 5. User click on ”view” button. 6. Application displays the detail description of the report.
Entry condition	The user has already logged in the Web application
Exit condition	User is presented with the details of the report. Authorized users log out the Web application.
Quality requirement	1. The Web application must be stable when the abuse report is being viewed 2. Abuse reports that are in the process of being viewed are maintained in server 3. Reports should be displayed in short time after user submit request.

Table 5

3.2.6 Print report

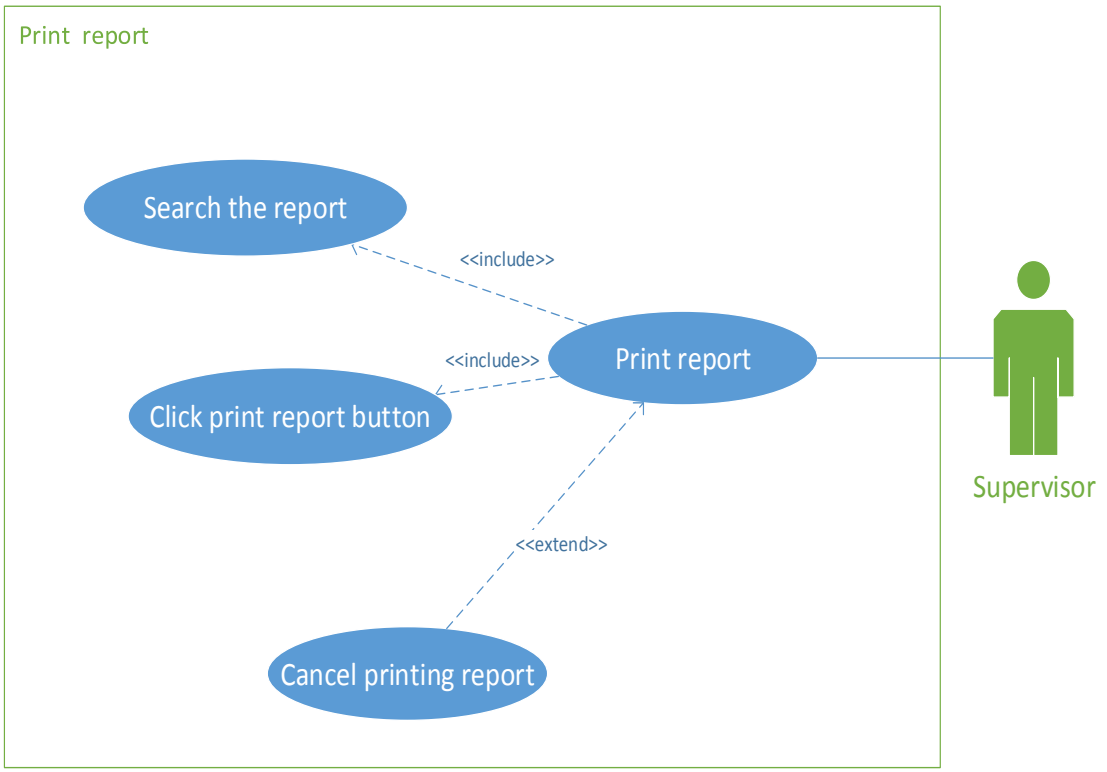

Figure 7

Use case name	Print Report
Participating Actors	Supervisor
Flow of event	1. The supervisor after logging into the system he performs the following tasks. 2. Supervisor types in the public log number to view the report. 3. Application responds by showing the appropriate report to the user with available options to return or print. 4. Supervisor clicks “Print Report” button. 5. The application shows the pdf form of the official report to the user by encrypting the important details of the reporter, abuser and victim. 6. Application sends signal to the user system’s connected printers. 7. If there is any local printer connected to the user system then it prints the report, if there is no printer connected it displays a message to the user.
Entry condition	Supervisor has logged into the application with his credentials.
Exit condition	The user gets a hard copy of the report from the application.
Nonfunctional/Quality requirements	1. The system is stable while the user is printing the hard copy of report. 2. After supervisor selects “Print Report”, system sends printer signal no later than 3 seconds.

Table 6

3.2.7 Track report

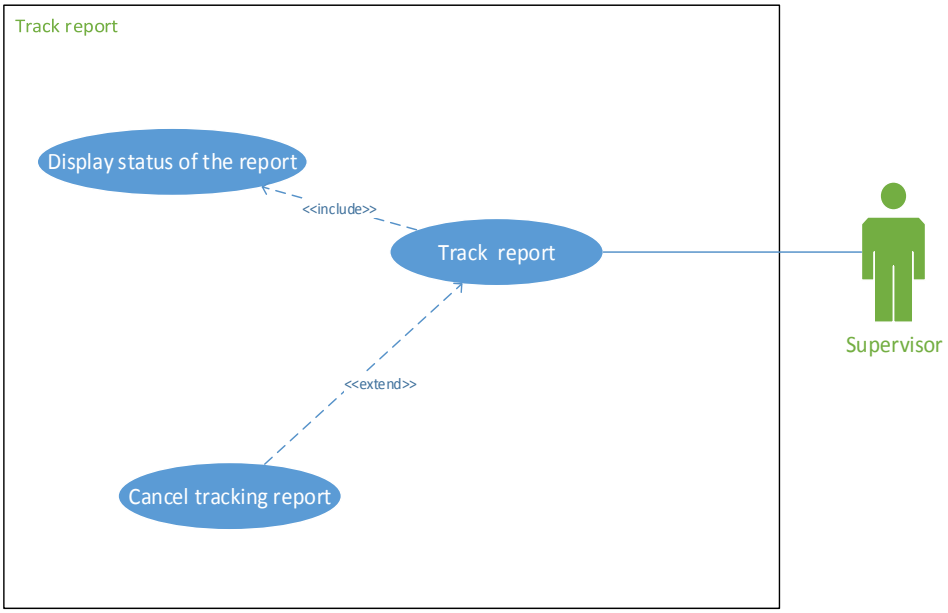

Figure 8

Use Case Name	Track Report

Participate Actors	Supervisor
Flow of events	1. Supervisor selects the “Track Report” button. 2. The system redirects the user to the track report page. 3. Supervisor inputs the Public Log Number of the report, then click the “Search” button. 4. The application recognizes the tracking number and connects with the database to match the report number and shows the report along with its status in the same page, if the number is correct, or displays the error message and prompts the user to input the correct tracking number again. 5. Supervisor can now checks the status of the report or type the tracking number to search again.
Entry Condition	Supervisor has already logged into the system with his credentials.
Exit Condition	Supervisor is shown the details of the report and its status.
Quality Requirement	Application should be stable when user is checking the status of the report. The user should be connected to the internet while tracking the report. Application should shows the status of report or display error information within 3 seconds.

Table 7

3.2.8 Scan report

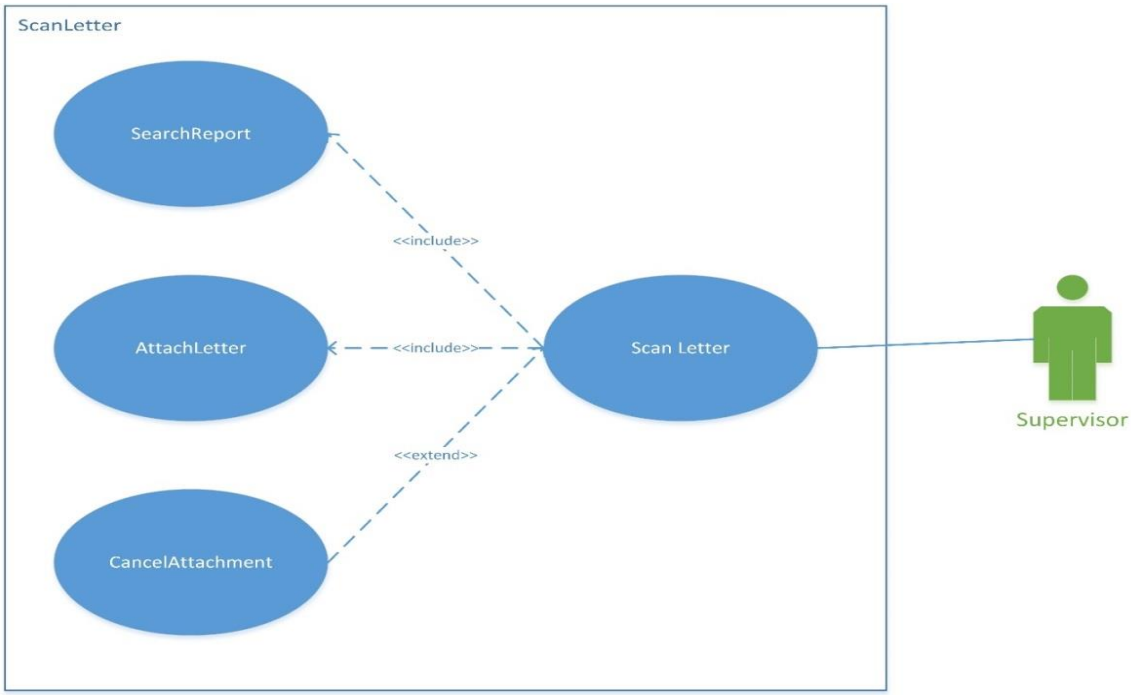

Figure 9

Use Case Name	ScanLetter
Participants actor	Supervisor

Event Flow	1. The supervisor logs into the application successfully with his credentials. 2. Supervisor retrieves the appropriate report from database by entering the report number into the search report field. 3. If the report is present, the supervisor is presented with the options of view, print and attaching the document/letters to that report. 4. The supervisor clicks on Attach button. 5. The application then presents the user with the dialog box to browse and select the Disposition/Decision from his local system depending on the status of the report. 6. The supervisor then selects the attachment and uploads it in that report. 7. If the file size of the attachment is less than 5MB the supervisor successfully attaches the file to the report. 8. If the file size is more than 5MB then the user is prompted to upload an optimal size file. 9. Supervisor then saves the report.
Entry Condition	Supervisor is logged into the system with his credentials
Exit Condition	1. Supervisor successfully attaches the letter and can view the letter, also is presented with the success message. 2. Supervisor is prompted to attach the file with less size.
Nonfunctional/ Quality Requirements	1. The system is connected to the internet. 2. Attaching the scan letter should be within 3-7 seconds depending on the size of the file.

Table 8

3.2.9 Track appeal

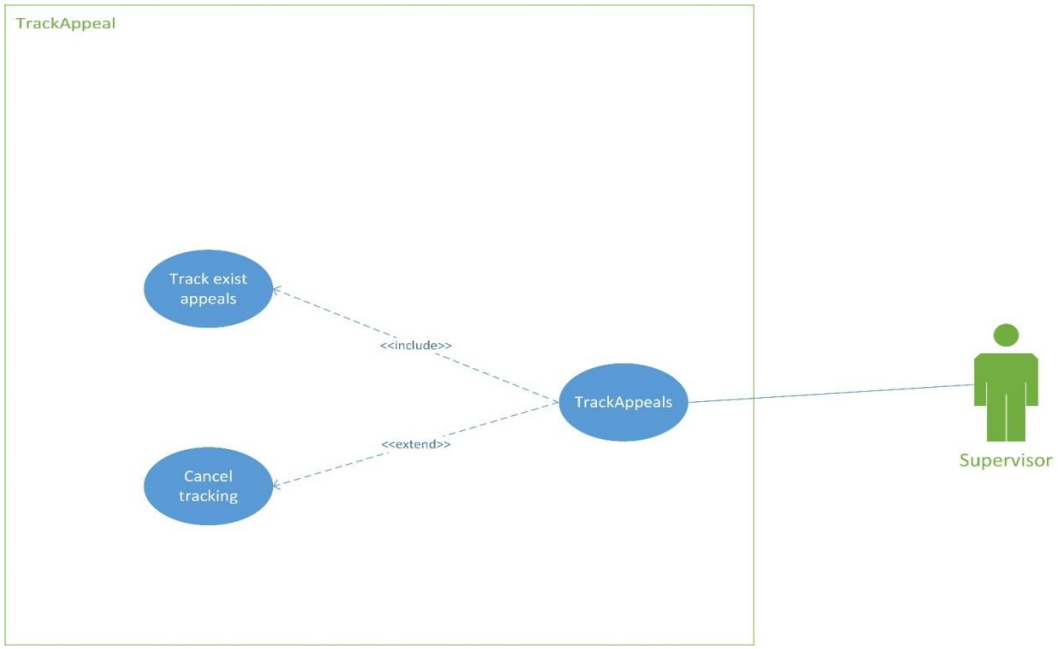

Figure 10

Use Case Name	TrackAppeal
Participate	Supervisor
Event Flow	1. Supervisor enters the report id in the search field and clicks on the Search Button. 2. The application fetches a record for that report displaying the options of view and attach. 3. He clicks on that report to view the details of the report including the status. 4. If the status is not yet moved to investigation complete then there will be no appeals for that report. 5. Otherwise, the report details will show the number of appeals attached with the dates to the supervisor. 6. Supervisor then reports the results to the Human Rights Committee.
Entry Condition	1. Supervisor gets a request from HRC to track. 2. Supervisor is logged into the system.
Exit Condition	Supervisor makes note of the number of appeals done by Human Rights Committee.
Quality Requirements	1. The system return the report within 3 seconds. 2. Supervisor could input the new appeals without deleting the exist appeals.

Table 9

3.2.10 AuditTrail

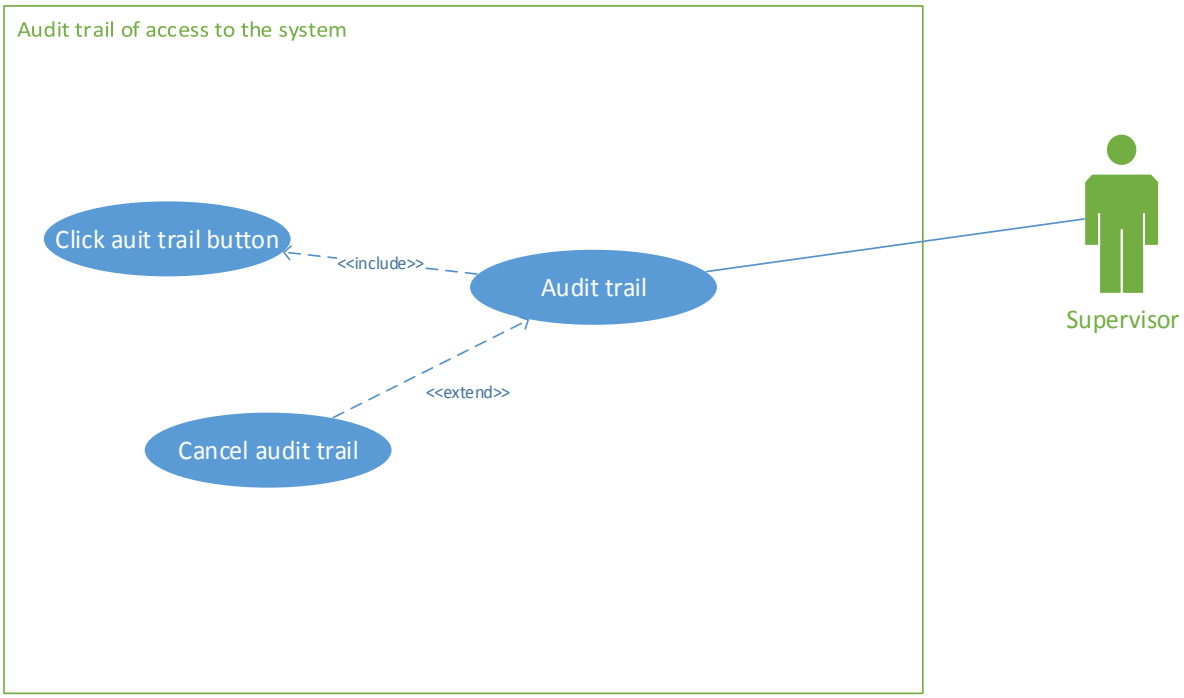

Figure 11

Use Case Name	AuditTrail

Participate	Administrator
Event Flow	1. User clicks on the “Get Audit Trail” Button. 2. The web application fetches all the details of the users accessing the system by invoking the records in database. 3. List of trail of access is displayed on screen with all the details including Date, time, etc.
Entry Condition	Supervisor has already logged into the application with his credentials.
Exit Condition	User is presented with the audit trails of all the users accessing the system.
Quality Requirements	1. The application shows the list all trail of accesses done within past month 2. The response time of the displaying all results is less than 15 seconds.

Table 10

3.2.11 Calendar Display

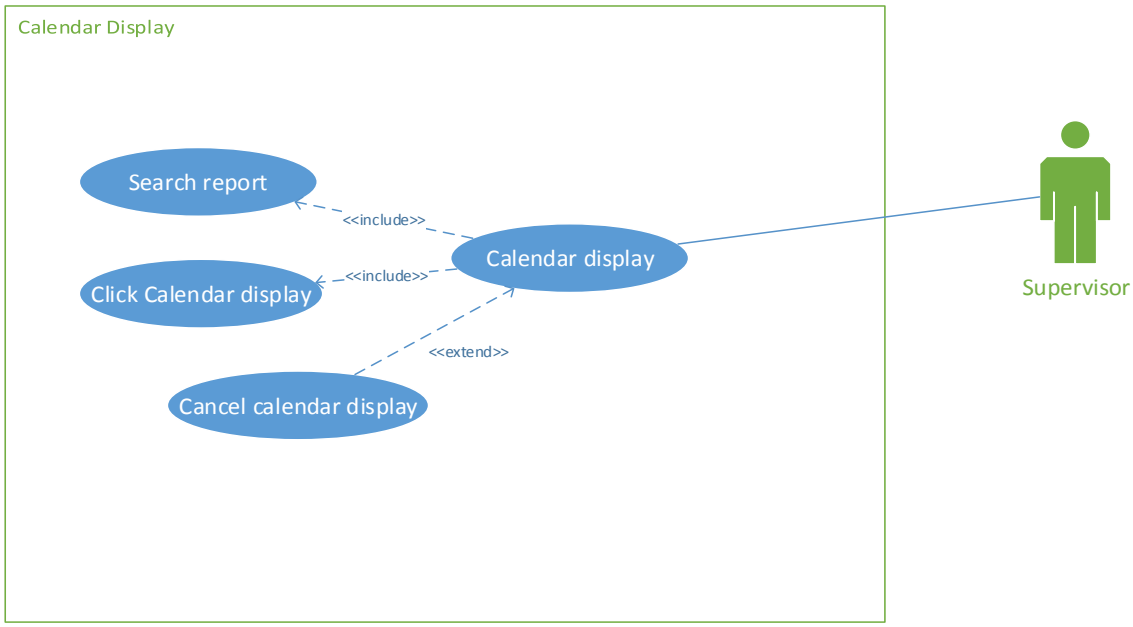

Figure 12

Use Case Name	Calendar Display
Participate	Supervisor
Event Flow	Supervisor type in the report track number User click “search” button. The application shows the status of report Supervisor click “Calendar Display” button The application invoking all the dates of initial report submit date and modified date and deadline of attached appeals from HRC from the database

	The application display the Calendar of related report
Entry Condition	Supervisor log in the application
Exit Condition	Supervisor log out the system after viewing the list
Quality Requirements	The application shows the detailed calendar information in 30 seconds.

Table 11

3.3 Performance Requirements

The system will support simultaneously multiple users (>100) on multiple terminals with a central database server. The overall users in the system will depend on the organization size.

The time of accessing the system will be determined by the local network conditions and may vary on the speed and type of different Internet access. Under the premise of standard network condition, 90% of the transactions shall be processed in less than 2 seconds.

3.4 Logical Database Requirements:

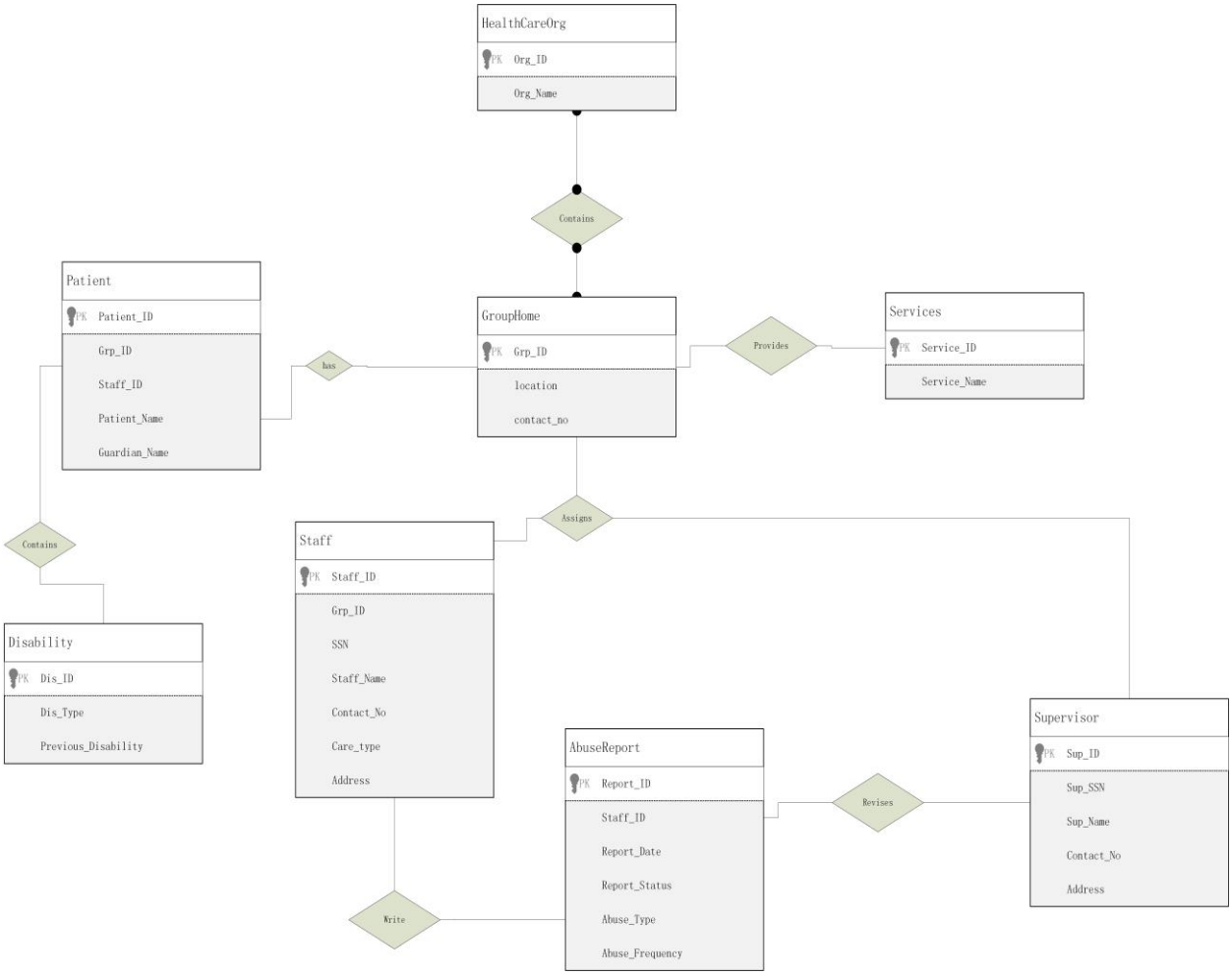

Figure 13

1. The database should handle various data formats such as String; Numeric and Alphanumeric data input and store them accordingly.

2. The frequently used activity will be writing/retrieving to/from the database and will be frequently used by the direct staff and supervisor of the organization; hence it will be stable for most handling frequent users from different machines.

3. The ER diagram will help us to establish the relationship between the entities and key attributes of different entities. Any changes to the database will be cascaded along the entities for maintaining the integrity of the database.

4. The database should have the ability to purge reports which cross the retention criteria.

3.5 Design Constraints

1. The application will develop using the standard web development tools, the computer must be equipped with web browsers, and the user interface shall be compatible to any browser such as Internet Explorer, Mozilla or Chrome. A general knowledge of basic computer skills is required to use the application.

2. The application use protocol HTTPS for Client Server Communication. CSS and JavaScript for designing the web page, software package like Java Applet, EJB etc. shall be implemented to improve the asthetics of the front end..

3. If it is required to run application at intranet environment for the security reason, the user must have appropriate network infrastructure like firewalls etc. set up.

Standards Compliance
The entire abuse report and approval document format in application must satisfy the official format and print in accordance with the prescribed format.

3.6 Software System Attributes/Non Functional Requirements

3.6.1 Reliability

1. The system can support more than 60 active users at once.
2. The response time for the users wil be not more than 3 secs and a progress bar or other indication will be shown visually if there is a delay in response.
3. System will provide detailed description of the fields and other user interactions visually to decrease training curve.

3.6.2 Availability

1. The software system can be available within an hour after the checkpoint.
2. Monthly Backups will be taken to restore the system to use in case of crash or natural disaster.
3. The software system can be available immediately after the recovery and restart.

3.6.3 Security

1. Encrypt certain data pertaining to reporter, victim and Abuser to preserve the confidentiality and abide by the HIPAA rules.
2. Keep specific log or history of the abuse reports for reference.
3. Provide differential access controls to different users of the system to maintain integrity of the data.
4. Complying with the Section 508 rules data validation/security will be of atmost importance to preserve the medical information.

3.6.4 Maintainability

1. The system will use Java EE 7 SDK, jquery1.9.0 for coding the subsytems, we will try to increase cohesion and decrease the coupling between the subsystems.
2. The interface of the software system is concise.
3. The fault and failres can be detected easily using the JUnit functions, which will help in reducing defects and correting faults.
4. The updates to the system, if any, will be in the form of Plug-ins which will not interfere the operation of the existing system.

3.6.5 Portability

1. The server will be installed on a windows machine but client can be from any machine Windows, Linux or Mac.
2. Most of our components and code will be hosted on server side and hence contributes to host independence.
3. Use of Java compiled byte code can be run on any machine.
4. We will be operating on the Windows Operating System.

4. Supporting Information

Appendix A: Glossary

Abuse Report: A report which contains the details of the abuser, victim and other additional details about the incident.
Health Care Organization(HCO): The organization reposible for providing day care services to the disabled people.
DDS: Department of Developmental Services has a tie-up with the Health Care Organization.
DPPC: Disabled Persons Protection Commission, forwards the abuse report to the DDS
Group Home: Is managed by the Health Care Orgainzation and contains staff and supervisors.
Staff: The person who give care to the patient and person reporting the incident.
Supervisor: Person responsible for managing the staff of the group home.
User: The person interacting with the system.
Software Requirement Specification: The document which will help the customers and developers understand the working of the system.
Administrator: The person who will be responsible for maintaining the system.
Datatype: The type of data entererd by the user and also handled by the system.
GUI: Graphical User Interface with which the user interacts withn the system.
Database: Place to store all the information related to reports, reporter etc.
ER Diagram: The diagrammatic representation of key elements of the system and their relationship with each other.

CSS: Cascading Style Sheets used improve the usabllity and experience of the user.
MySQL: Language used to communicate with the database to update and retrieve information.

Appendix B: Analysis Model
Use case diagram
Class/Objects organize mode

Appendix C: To be determined list