CHAPTER 1

INTRODUCTION

1.1 Project Description

Labour department is a friendly philosopher as well as a guide for the working class which is the custody of the co-operative and harmonious industrial relations in the State of Karnataka. Promoting of Transparent and Accountable working environment is the motto of the labour inspection system [1]. It plays a key role in protecting and preserving the righteous interests of the employers while facilitating the growth of establishments and serve as an ultimate strong foundation for overall development of human capital. It offers a communicative platform for social partners. It creates single entry platform for communication of information and also repository of information useful for any users availing the services of the department [2]. It is monitoring & implementing various state & central enacted labour laws through its enforcement machinery in order to ensure establishment peace & harmony.

The current system adapted in the department consists of the activities and workflows which are done manually and resulting in inconvenience with respect to transparency and user friendliness for both the department as well as establishments [3]. Traceability to identify or assess the inspections conducted are tedious tasks and if conducted, whether it was conducted complying to the rules of the acts in a fair way. Records are not organized and handled which has resulted in the loss of information as well [4]. Physical presence of the establishment representative is required at the department office for submission of proofs, records and information sought which might be time consuming and manipulative [5].

The developed system focuses on overcoming the drawbacks of the existing system by allowing establishment users to login to the portal and view and download uploaded inspection reports on their establishments, to upload compliance of inspection on to the portal and to follow the different stages of inspections, notices, compliance and prosecution [6].

On the other hand, the developed system facilitates the department to enhance transparency and accountability in the working of the labour inspection system by publishing the list of establishments selected for inspection through the Random Sampling system and the list of jurisdictional inspectors assigned to inspect, also ensuring that the same establishment is not inspected twice consecutively [7].

The system also ensures uploading of notes of inspection happened within 48 hours of inspection is tracked in an efficient way through alerting mechanisms via notifications [8]. It also provides for Online Uploading and acceptance of Compliance by establishments randomly inspected thereby finally publishing Online the status of inspection notices, compliance and prosecution [9].

The Developed system provides interactive platform for social partners. It creates single window online system for exchange of information and also repository of information useful for the users of the services of the department [10].

Technical Features

Technical features of the project are:

- Tracking Mechanism through SMS & E-mails.
- Alert Indications through SMS & E-mails.
- Storing & Traversing of Documents.
- Hierarchical order Escalation Handling.
- User Access Controls & Permission Handling.

Functions

Functions of the project are:

- Administration of labour laws
- Maintenance of the industrial peace
- Registration of trade union
- Social security measure
- Registration and licensing of establishment
- Creating awareness among workers
- Co-ordination with District Administration
- Administrating labour welfare scheme
- Co – ordination with district administration and line department
- Quasi judicial function

1.2 Company Profile

Intent InfoTech is the explorer in the field of information technology and concentrates on related technology in software development. Intent InfoTech is identified by customers for continuous and repeat services. Intent devotion to be a valuable business partner to all intent customers has resulted in huge volume of business.

Return on Investment

Intent tries to create original, cost-effective and efficient solutions that drive client businesses. Intent clearly recognizes robust service, competitive Return on investment and committed client management.

Intent will use experience and resources to aid clients develop systems high business performance.

Efficiency

Intent InfoTech has been in this field for more than ten consecutive years. Hence Intent is valued as intimate service provide for customer. It maintains standard of data and document. All data base and application software files are suitably backed-up.

Accuracy

Intent not only use computerized routines but also it trained and experienced staff supervises the data performs at all levels of quality, security and accuracy.

To Develop High Business Performance Intent will use Experience and resource aid person. It also provides training of different technologies with quality solution and services.

Client Management

Intent committed to provide quality and high level service to all the clients. There all will work with their customers as partners, adding worth in all business aspects. The Intent InfoTech Management team enact personal time to all projects.

In Intent relationship with clients speaks about quality of services. Intent is financially rich company, it is effective size to provide customers with attention.

Intent not only use computerized routines but also it trained and experienced staff supervises the data performs at all levels of quality, security and accuracy.

Solution and Services

Intent is rich in finance. Some Solution and services of the Intent Infotech are as follows

- Generation of Smartcard
- Request handling

Technology and Services

- Development of Application
- processing of Information
- Information detention services
- Net Applications
- Net Services
- Quality of services
- Computerization of Services

Education

- Processing of Application
- Generation of hall ticket

1.3 Timeline

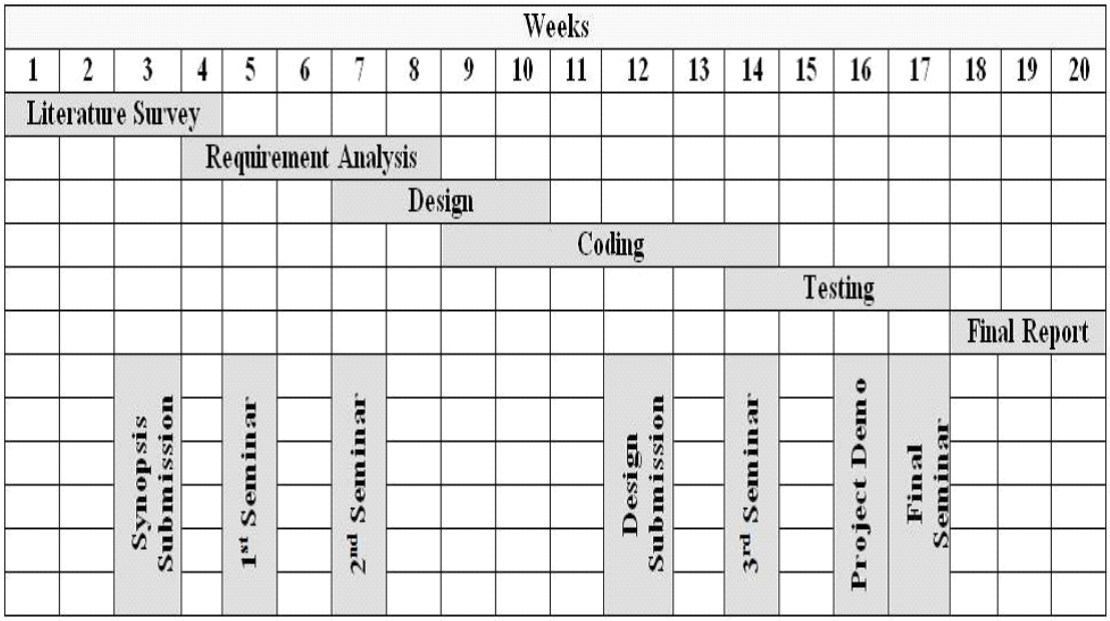

Figure 1.1- Timeline of the Project

Figure 1.1 Gives a picture of the entire timeline of the project. The Work of the whole project is divided into 20 weeks phase, each week comprising of a standard work, to achieve the designed objective within stipulated time period.

1.4 Report Organization

The report is organized into 9 different chapters each taking up certain unique features related to the work. The nine chapters are Project Description, Literature Survey, Software Requirements Specification, System Design, Detailed Design Document Specification, Implementation, Testing, Conclusion and Future Enhancement. Chapter 1 gives the brief introduction about the project and its related technologies. Chapter 2 discusses about the existing system, related tools and technologies and the requirement for the work to be carried out. Chapter 3 deals with the requirements such as functional requirements, non-functional requirements and various constraints [11]. Chapter 4 describes the design methodology and module specifications, whereas Chapter 5 describes the detailed design using UML diagrams. Chapter 6 deals with the implementation and results. Chapter 7 focuses on testing of each module. Chapter 8 deals with conclusion and Chapter 9 describes Future enhancements of the project.

CHAPTER 2

LITERATURE SURVEY

2.1 Existing System and Proposed System

The Labour Department of Karnataka is administrating and enforcing various central and state enacted labour laws through its enforcement machinery in order to ensure industrial peace and harmony [12]. The user looks into the different schemes implemented by Labour Department of Karnataka. The inspectors appointed as enforcement officers under different labour laws will conduct inspection of all establishments / factories not more than once in a year [13].

All the above activities are done manually and there is a lot of inconvenience with respect to transparency and user friendliness for both the department as well as establishments [14]. Till date there is no tracking and monitoring tool available to identify or assess the inspections conducted and if conducted, whether it was fairly conducted complying to the rules of the acts. Records are not organized and handled which has resulted in the loss of information as well [15]. Physical presence of the establishment representative is required at the location where inspector intimates for submission of proofs, records and information sought which might be time consuming [16].

The Department of Labour provides interactive platform for social partners. It creates single window online system for exchange of information and also repository of information useful for the users of the services of the department [17].

The inspectors appointed as enforcement officers under different labour laws will conduct inspections of all establishments/factories not more than once in a year, i.e, any establishment which is inspected for a respective year cannot be inspected again in the same year. During inspections, the notes of inspection covers all the observations & the violations made under various labour laws applicable to the establishment [18]. Once the inspection is conducted, a copy of the Inspection notes is served to the employer/representations of the establishment and sufficient time will be granted to comply the observations [19].

Computerised records duly signed by the employer authorized signatory under various acts will be acceptable, but they should be as per the prescribed formats under the Acts and Rules. If the inspector demands, hard / soft copy should be given. A copy of the statutory Registers and Records will have to be maintained by the employers under

various labour laws is uploaded for information and guidance to the employers in the official website of the department [20].

Inspection report may require due attention from the Employer, where inspector may have identified the discrepancy in adherence to the Acts & Rules and following the same [21]. In such case Inspectors mark a copy of the violation made by the Establishment under each applicable Act/Rule to the Employer requesting them to put a proper system/record in place within a stipulated period of time [22].

Employer in return to this request should enact responsibly and follow the guidelines to resolve the violation and thereby responding back to the respective officer for having complying to the violation with a valid record may be in a Hard/Soft form [23]. Failing to reply within stipulated time allotted to the employer, the inspector might issue a warning / notice to the employer based on the importance of the violation made by the establishment [24].

If Establishment have any grievance against The Labour Department in Karnataka, they may lodge their grievance which will go to the Inspectors and commissioners concerned for immediate redress.

2.2 Feasibility study

- **Economic feasibility**

Since the application is an internet based solution, considering 100 users, the minimum system requirements to host the application is 4 GB RAM, 100 GB Hard Disk, Pentium 4.0 or above processor and Windows / Linux Platform.

The user requires a basic system with at least 512 KBPS internet connection to access the application. This proves that the developed system is economically feasible, since there is no major cost involved in its implementation.

- **Behavioral Feasibility**

The users need not have to undergo an extensive training to use the system as there is no change is the working nature as concerned [25]. The actual workflow which is being followed by the users is converted into an electronic media which makes them to use the application with ease.

- **Technical Feasibility**

Application is developed using Light weight technologies like HTML, CSS3, PHP and MySQL which makes the responsiveness of the system as high performing. This also makes it feasible in deploying in any environment with minimum system requirements.

The source code is developed keeping in mind about the change in environment of working nature of the users and also the department. It is very easy to scale the system and to upgrade the source code with additional modules [26].

2.3 Tools and Technologies

Platform – Php My Directory (PMD) Framework

PhpMyDirectory is a script that allows a powerful website to be built. It is developed using PHP and MySQL. It can be used to create websites focused on business directory, web application etc. This Frame work is user friendly and developer friendly. It can be extended by custom forms, web pages, plug-in, email template etc. PhpMyDirectory has three built in functions called cp, members and public.

PhpMyDirectory integrates with multiple scripts to allow users to log in into PhpMyDirectory without signup for a new account if users have already an account.

Language - PHP

PHP is a waiter side scripting verbal it is used as a common resolve software design verbal. PHP is formed by RasmusLerdorf. PHP writing is fixed into external of web page beside with the HTML. That has to be invitedearlier the page is sent to the operator, Netwaiter calls PHP to do the actions called for in the PHP script. An HTML page that contains PHP writing also PHP is allowed to transfer and custom. It is typicallygoes on Apache server.

PHP can producelively page content. PHP can save form information and save it in the record. It can show and accept cookies and sessions. Using PHP you can encode the information. PHP is not partial to yield HTML. You can incomeyield images, PDF records, also Flashypictures. you can also revenuescript such as XHTML and XML. PHP runs on Boxes, Linux, UNIX, it is friendly with all waiters. It chains all records [27].

Database – MySQL

MySQL is software, it is charity to instrument the record and execute the questions. MySQL is exposedfont to RDBMS. It is all founded on structural Query Language (SQL), is used for totaling, erasing, varyinginfo in the database. ENHANCE, DESCENT, SUPPLEMENT and UPDATE are standard SQL orders which can be used with MySQL. It can be recycled for many requests, but most normally used on Net server. A website customs MySQL it may contain Web sheets that contactdata from database [28]. These pages are denoted as active, content of each sheet is made from database as sheet loads. MySQL instructions can be shaped into the PHP code which permits Web page to be produced from record information. Motive is both PHP and MySQL are exposed source.

UI Design – HTML, CSS 3

HTML (Hypertext Mark-up Language) and CSS (Cascading Style Sheets) are two fundamentalskills for constructionnet pages. Where HTML delivers structure of sheet and CSS deliversdesign for a variation of devices. Along with pictures and scripting, HTML and CSS are the fundamentals of structurenetsheets.

To labeling the arrangement of Web pages will custom the CSS language withcolors, outline and types. It allows implementing the performance to different sorts of devices such as large canopy, small canopy or pointers. CSS is not reliant of HTML that can be charity with XML based mark-up language [29]. Newest standard for CSS is CSS3 and it is fullyfriendly with CSS. CSS3 has been shared into modules. Some of the units are plannedbelow :

- Pickers
- Package
- Experience and Limits
- Image price and Swapped Content
- Text Things
- Simulation

Scripting Language- Xajax

Xajax is employment of Ajax also it is an exposed to PHP that gives capability to originators to form net based Ajax request using HTML, CSS, JavaScript and PHP. Claimsestablished by Xajax can be request server side PHP jobs and also inform the matters without restocking the page. To informing elements and innerHTML, Xajax can be used to informCSScourses, checkbox and radio button and any other feature.

Xajax is the object oriented Language which is used to retainconnection between the code and records, and it will preserveXajax code disjointedly from other code because we can increase our personal functionality to Xajax by enlarging the XajaxRejoinder class and using the addScript() process.

Limitations of Xajax:

- Xajax will not transfer data from client to server rather than using XML.
- There is a plane to allow programmers to use any other communication.
- Workaround is to use arranged function from PHP and unarranged function from php.js namespace.

2.4 Hardware and Software Requirements

Hardware Requirements

- RAM : 4 GB
- Memory : 100GB
- Processor : 4.00 GHz processor or higher

Software Requirements

- Operating System: Windows XP or higher version.
- Framework : PHPMYDIRECTORY
- Language : PHP
- UI / Design : HTML5,CSS3, Bootstrap3.3,
- Scripting Language : JavaScript, Xajax
- Database : MYSQL

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Users

- Admin / Owner

  Admin will create, edit, delete, modify and view users, assign the roles.

- Clients

  Clients are the customers of the LabourDepartment, they might be an individual person or the organization whose records are maintained by the Labour Department.

- Designated Officers

  Designated officers are the representatives of the labour department, who verify the enforcement of the acts & rules applicable to the establishment through inspections.

3.2 Functional Requirement

Module 1: Login

Introduction

The Login facilitate end users to login to the system. Then only they will get the access to the application.

- Input

  User name and the password

- Processing

  Validate the name and also validate the password.

- Output

  If both the user name and passwords are valid then the login will be successful else unsuccessful.

Module 2: Establishment Module

Introduction

Employer has to register in the web portal with few details (Name, Mobile no, Email Id etc) and System will generate the user id and password. After Logging in Employer should fill the Establishment details to generate a KAR-LIN No. Employer can later upload reports requested by department or can view reports submitted to them [30]

- Input

  Details of the employer, establishment, uploading relevant records

- Processing

  Validating all the information submitted by the employer to generate a valid Kar-Lin No, Checking the Size and format of the records uploaded before storing it.

- Output

  A KAR-LIN will be generated, Annual Reports is submitted.

Module 3: Grievance Module

Introduction

In case of establishment have any grievance against The Labour Department in Karnataka, they may lodge their grievance which will go to the inspectors and commissioners concerned for immediate redresses [31]

- Input

  Submitting the request and raising the complaint against the concerned authorities.

- Processing

  Receiving, Checking and resolving the problem by providing solution which is lodged by the customer.

- Output

  Display the resolution report.

Module 4: Inspection Module

Introduction

Inspector will inspect the establishment and collect all the required document from the establishment, If there is any violation by the establishment, inspector will ask for the compliance within a set target date and set the relevant status[32].

- Input

  Predefined Inspection Report uploaded by the inspector and requesting for compliance report from establishment if necessary.

- Processing

  check whether the report is submitted, status updating and verify the document provided by the establishment.

- Output

  Relevant Certificate is issued and status is updated.

3.3 Non Functional Requirements

- **Accessibility**:

  Users should be able to access the application at any location provided internet connection and browser is available. Ease of access by adopting light weight technologies gives a convenience to the user without impacting the performance of the system.

- **Security:**

  Application should with stand hacks and other threats by developing a strong source code on a secured framework and providing required access permissions to various users [33].

- **Reliability:**

  Application should provide prompt and required response without misbehaving to the activities performed [34]. Data and source should be backed up on a consistent basis to ensure smooth performance without downtime.

CHAPTER 4

SYSTEM DESIGN

4.1 System Perspective

Architecture plan is apprehensive with refining the abstract view of the structure, recognizing inside processing size, rundown high level jobs into sub jobs, significant internal material brooks and facts stores and establishing relationships interconnections among capacities, concentrates facts structures and packing scheme of the system. The work starts with the user module, which looks into the different schemes implemented by Labour Department of Karnataka [36]. The inspectors appointed as enforcement officers under different labour laws will conduct inspection of all establishments /factories not more than once in a year. Computerized records duly signed by the employer authorized signatory under various acts will be acceptable, but they should be as per the prescribed formats under the Acts and Rules. Establishment can register grievance against The Labour Department in Karnataka, which will go to the Inspectors and commissioners concerned for immediate redress [37].

Problem Specification

The existing system lacks transparency, consistency and also since it is done manually and is paper based, it leads to loss of important data required by the higher level officers.The proposed system reduces paper work completely and also provides more security compared to the existing system [38]. In the present system there is no way for the labours to know about the new schemes present. It also implements the labour laws for ensuring decent and qualitative living and working standards for employees. It creates decent and enabling environment in workplaces for women workers by putting in place systems, which are sensitive and cater to special needs of women workers [39].

All the above activities are done manually and there is a lot of inconvenience with respect to transparency and user friendliness for both the department as well as establishments. Till date there is no tracking and monitoring tool available to identify or assess the inspections conducted and if conducted, whether it was fairly conducted complying with the rules of the acts. Records are not organized and handled which has resulted in the loss of information as well. Physical presence of the establishment

representative is required at the location where inspector intimates for submission of proofs, records and information sought which might be time consuming [40].

Module Specification

Module 1: Admin Module

Admin in the highest authority is the usage of the system. Admin defines the users of the system and providing relevant access permissions in the usage of the system.

Certain subordinate modules associated in this module are as follows:

- Login credential: defines various types of users of the system by assigning unique credentials to each user which becomes the entry point to the system.
- Access Control: it restricts and enforces the user to perform their roles and actions.
- Activates / de-activates a/c: the users based on the need of the users of the system.

Module 2: Establishment Module

Employer has to register in the web portal with few details (Name, Mobile no, Email Id etc) and System will generate the user id and password. After Logging in Employer should fill the Establishment details to generate a KAR-LIN No. Employer can later upload reports requested by department or can view reports submitted to them. Employer sends a request for generating a valid login credentials by submitting the basic details which will pass through basic validations of the database and finally a response of the credentials is displayed on screen.

Certain subordinate modules associated in this module are as follows:

- Post Login: employer needs to first enter the establishment details as displayed in the form to generate a unique KAR-LIN no.
- View tab: Employer can add and view multiple establishments they own and view the details of entered establishment under view tab.
- Annual return: Employer can submit their annual returns to authorized representative of the department through Uploading Annual Reports.

Module 3: Inspection Module

Inspector will inspect the establishment and collect all the required document from the estblishment ,If there is any violation by the establishment, inspector will ask for the compliance within a set target date and set the relevant status. Every inspector should login with their associated login credentials and perform the duties assigned to them.

Certain subordinate modules associated in this module are as follows:

- Assign inspection: Every Inspector is assigned automatically with establishments to inspect, defined by a automated script which is a time based.
- Inspection reports are submitted to respective establishment selected after inspection and submit to respective establishment.
- Violation: Against any violation made by the establishment, a Response to / from establishment are alerted through notifications.
- Compliance: Once Establishment send compliance, response or annual reports, it will be reviewed by the inspector and necessary actions are taken.

Module 4: Grievance Module

Any Employer / Establishment having any grievance with respect to nature of work, activities, rules and acts against the Labour Department in Karnataka, they may lodge their grievance which will be assigned to the inspectors and commissioners concerned for immediate redresses.

Certain subordinate modules associated in this module are as follows:

- Selection of grievance: Any user/non-user of the system can submit a request of their grievance by selecting the respective locality of their establishment and obtain a Unique Grievance No using which they can retrieve the resolution provided by the department.
- Similarly any respective officer authorized in resolving the grievance takes necessary action by selecting the grievance submitted to them and submits a response.
- If the grievance cannot be resolved by the assigned authority, it can be forwarded to the superior authority.

4.2 Context Diagram

The context diagram aids to perfect the physical part of an Object-Oriented software scheme.

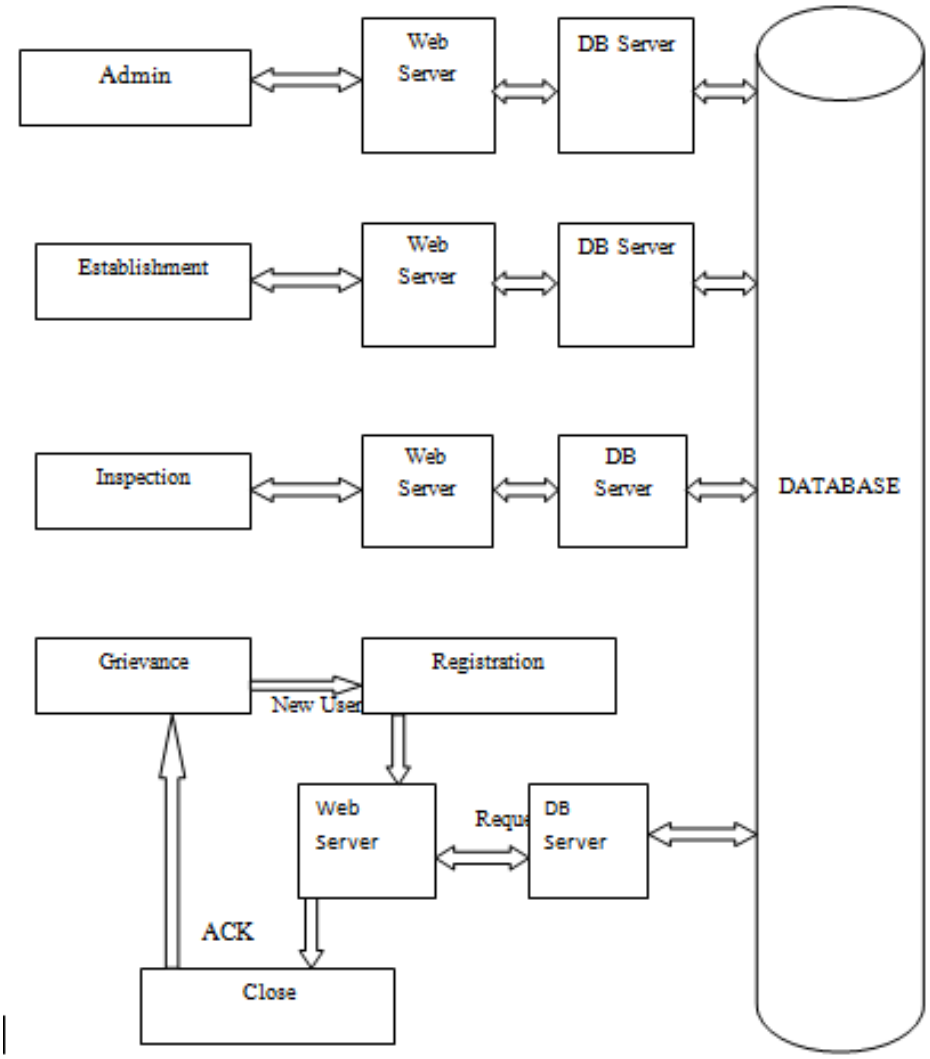

Figure 4.1 Context Diagram

The Figure 4.1 proves the building of the software factor and the needs between them

CHAPTER 5

DETAILED DESIGN DOCUMENT SPECIFICATION

5.1 Use Case Diagram: Use - casediagrams are used to identify the usage of the actors and use - cases in the System.

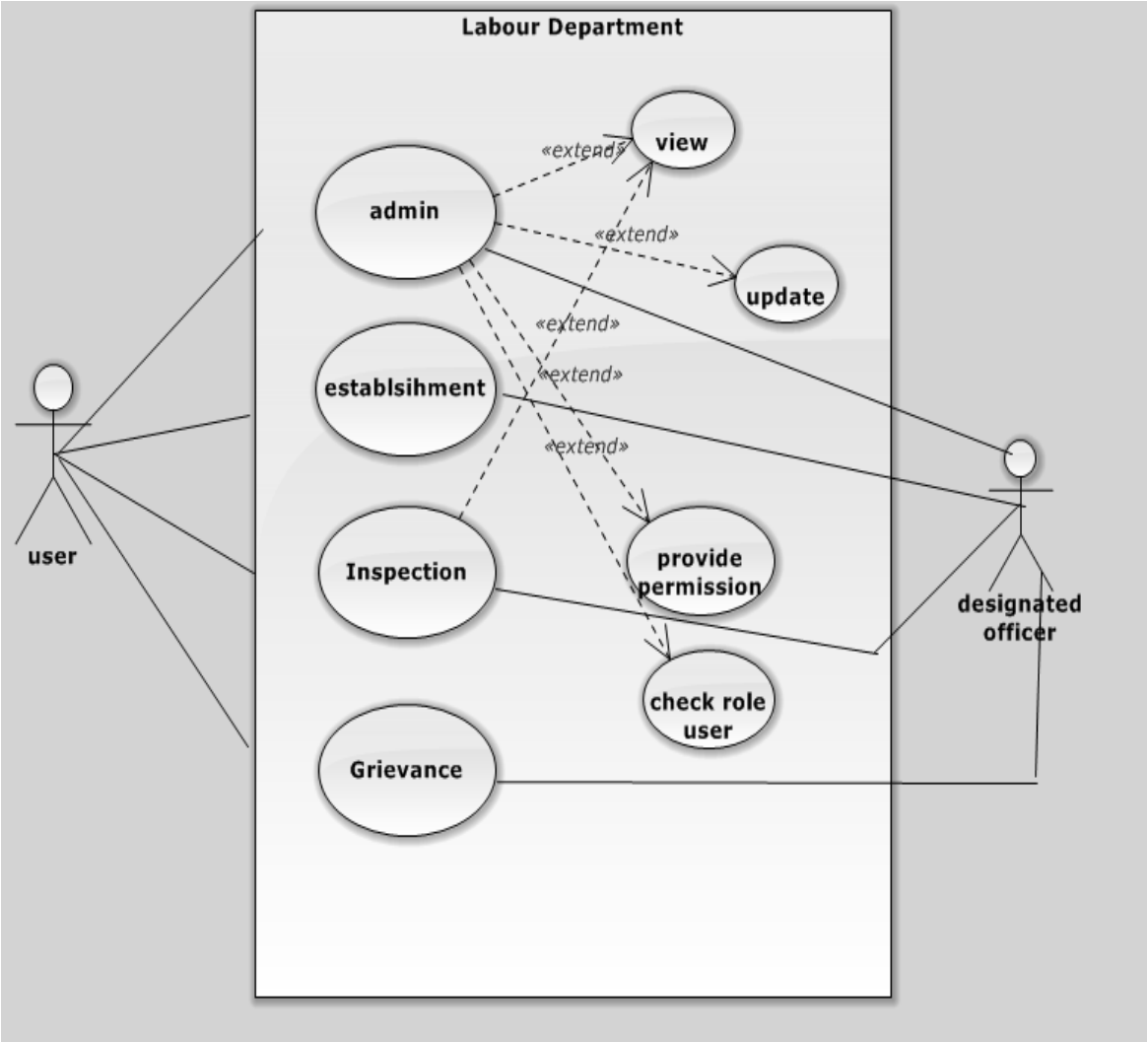

Figure 5.1 Use-Case Diagram

Figure 5.1 shows the scenario where user registers establishment information which is assigned to an inspector to inspect and then upload the inspection reports to the system. This is verified by a superior officer after this it is forwarded to the respective establishment. Similarly grievance is also submitted by the user which is assigned to a inspector who resolves the issue and sends back the response. Admin creates all the users of the system.

5.2 Class diagram: A class diagram shows its attributes and relationship between the classes.

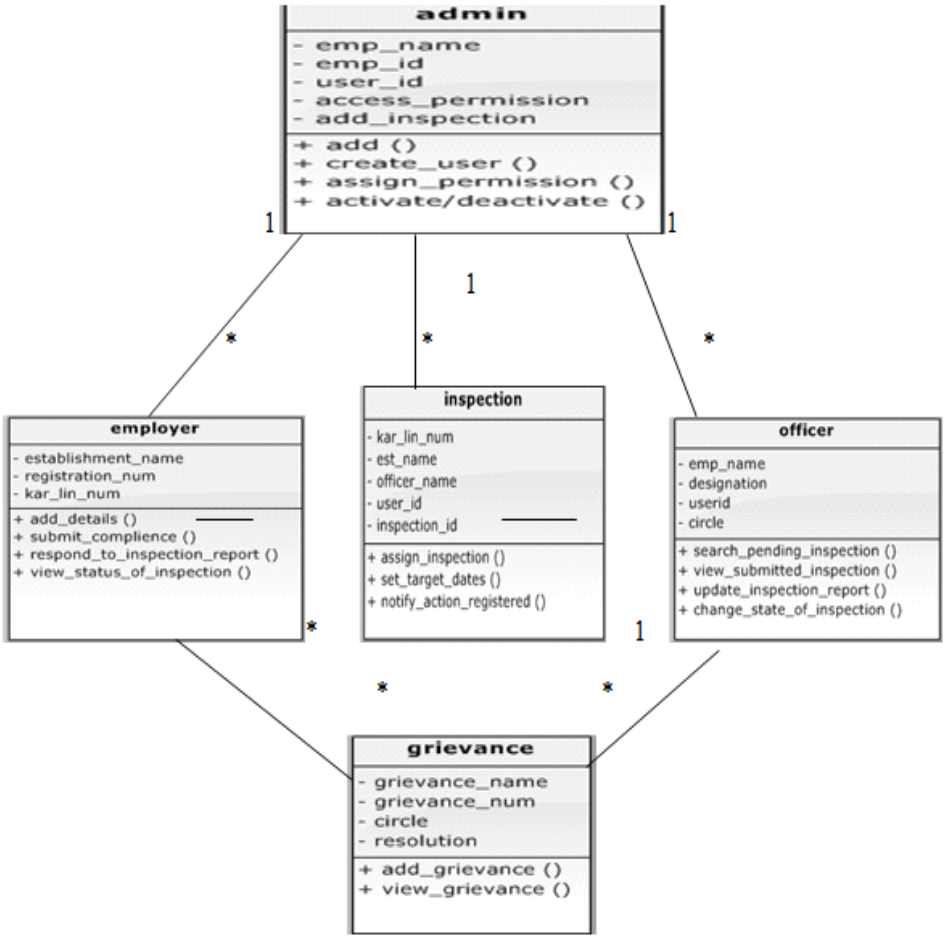

Figure 5.2 Class Diagram

Figure 5.2 depicts class diagram for Labour Establishment Management System. The Framework has 5 major classes. The admin class creates the user by getting the request from employer and Officer and also responds back with Login Credentials to respective People. The Employer class sends information to the admin also they submits grievance. The Grievance class receives grievance from employer and forwards to officer and again receives response from officer and forwards it to employer. Similarly Inspection class assigns the establishment to officer by getting the employer details and sends back the inspection report to employer getting it from the officer.

5.3 Sequence Diagram: A sequence diagram shows interaction between the objects.

Module 1: Admin

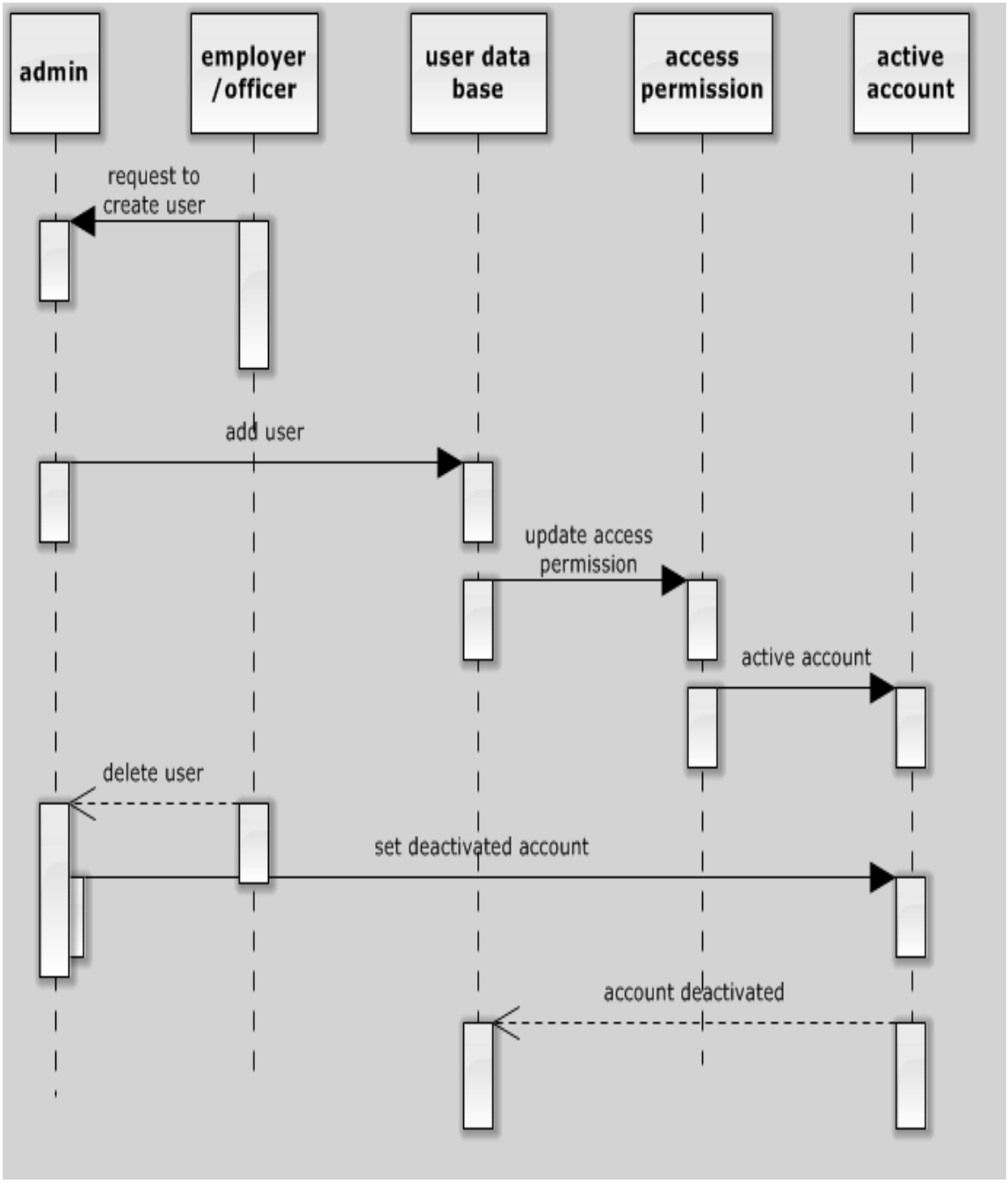

Figure 5.3 Sequence Diagram for Admin module

Figure 5.3 shows the sequence of adding / deleting a user by providing the relevant information such as user information which can be used for activating/deactivating an account.

Module 2: Establishment

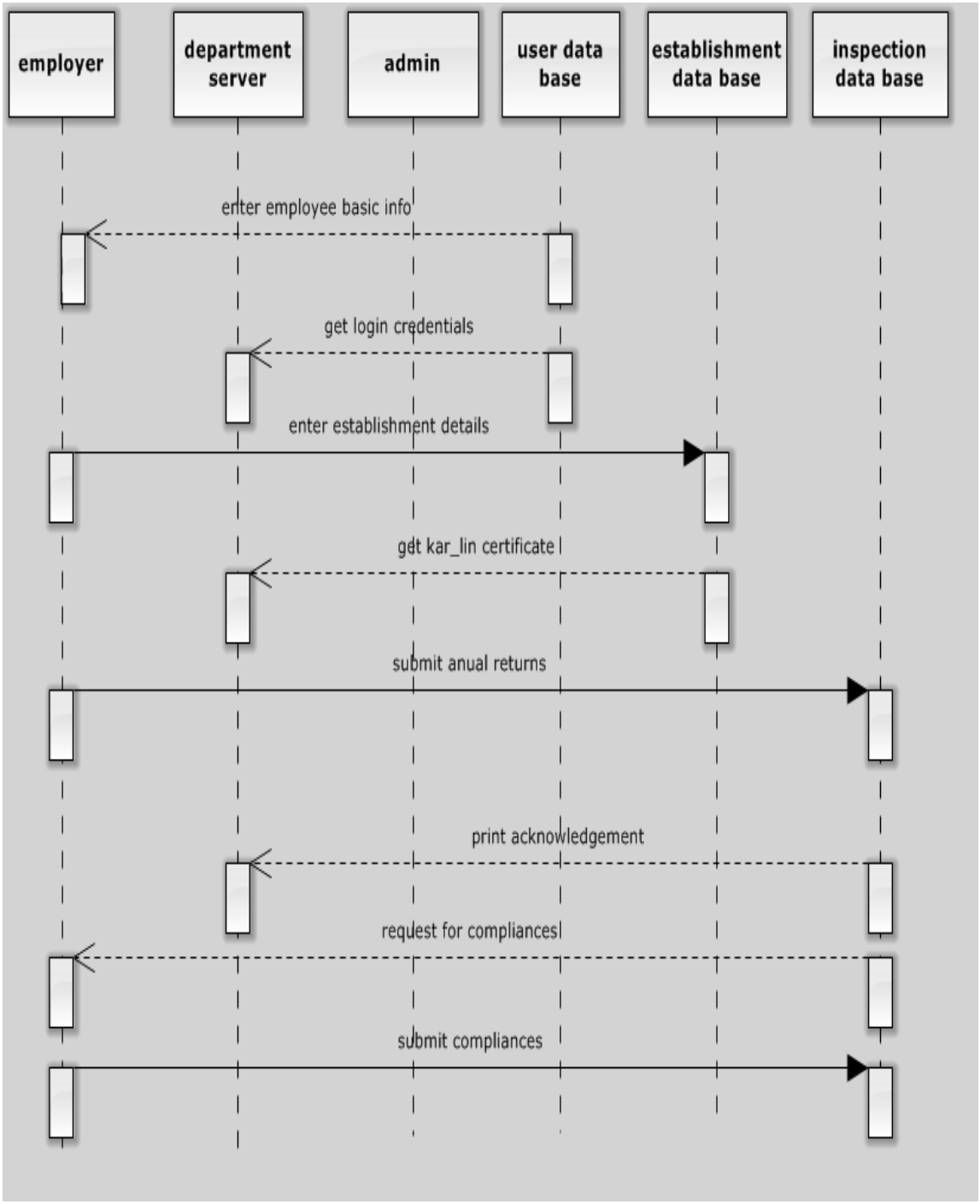

Figure 5.4 Sequence Diagram for Establishment module

Figure 5.4 shows the sequence of generating the Kar Lin No by entering the establishment information, using which further information such as uploading annual returns, viewing of inspections and replying with compliances are stored and retrieved as is the case.

Module 3: Inspection

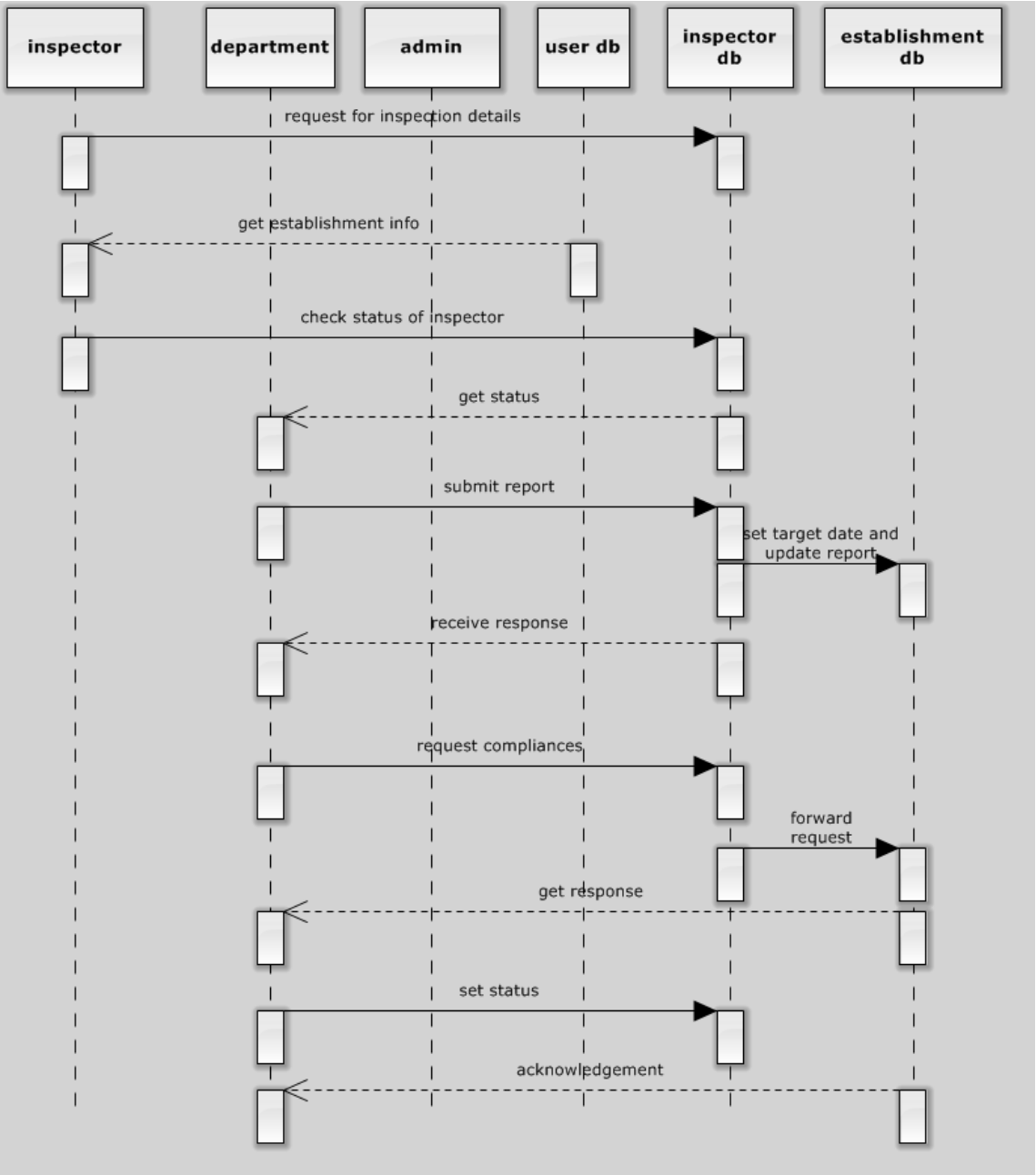

Figure 5.5 Sequence Diagram for Inspection module

Figure 5.5 shows the sequence of submitting an inspection report for the assigned inspection to an inspector within a set target date. Followed by requesting of Compliances wherever is required and receiving time based response followed by acknowledging the same.

Module 4: Grievance

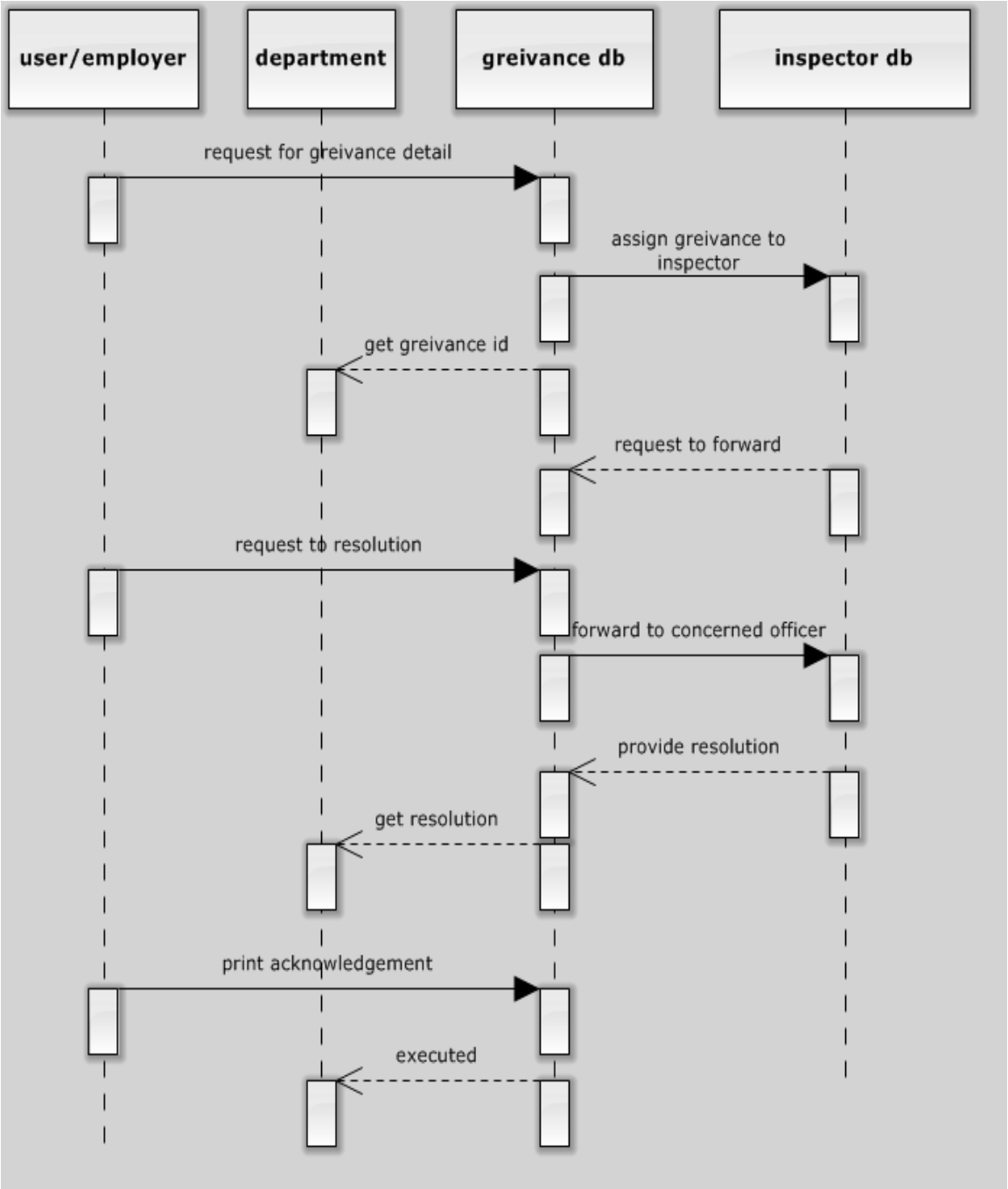

Figure 5.6 Sequence Diagram for Grievance module

Figure 5.6 shows the sequence of resolving a grievance by storing the grievance information and forwarding it to the concerned authority. The response provided is stored and responded back to the requestor.

5.4 Collaboration Diagram

Admin Module

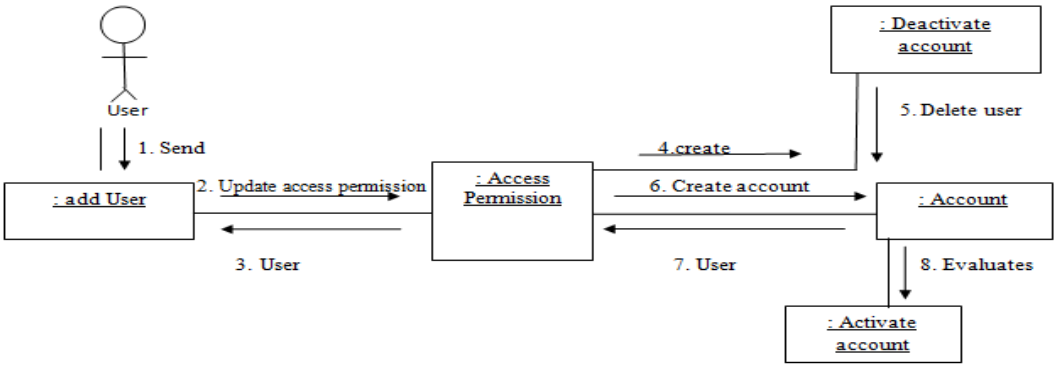

Figure 5.7 Collaboration Diagram for Admin Module

Figure 5.7 shows the collaboration of admin module. Which is used to adding / deleting a user by providing the relevant information such as user information which can be used for activating/deactivating an account.

Establishment Module

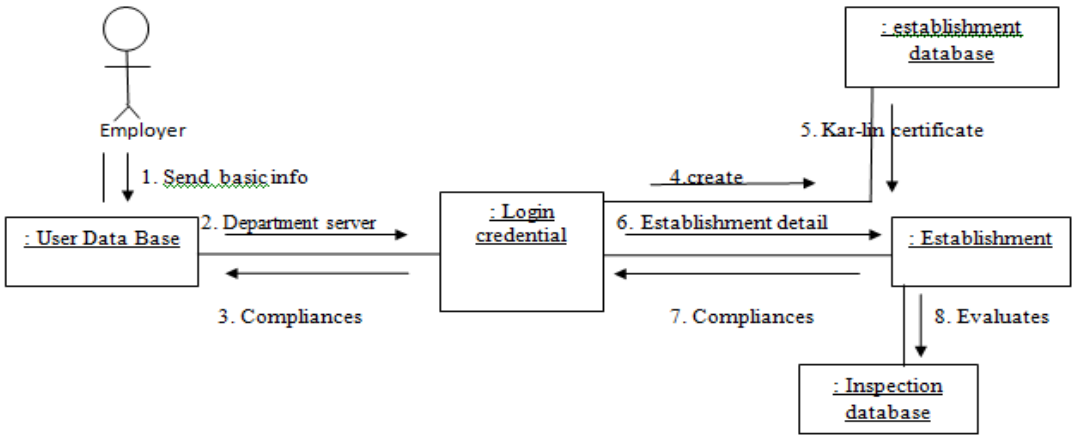

Figure 5.8 Collaboration Diagram for Establishment Module

Figure 5.8 shows the collaboration of generating the Kar Lin No by entering the establishment information, using which further information such as uploading annual returns, viewing of inspections and replying with compliances are stored and retrieved as is the case.

Inspection Module

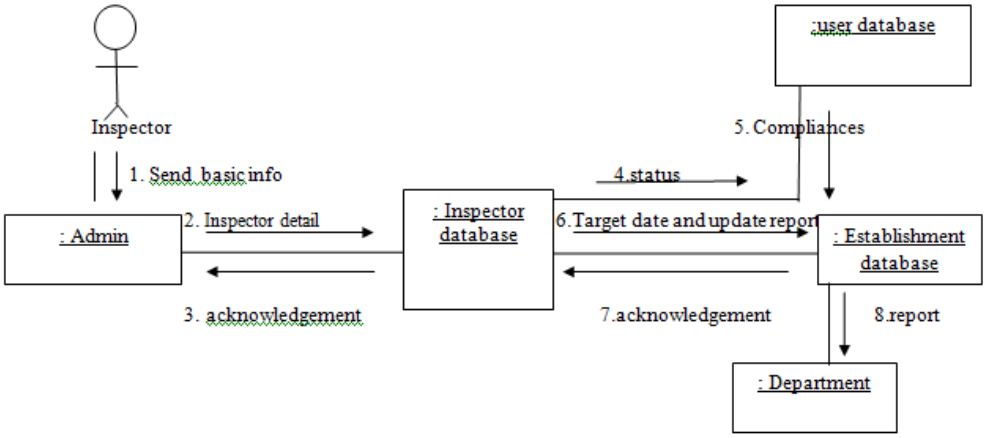

Figure 5.9 Collaboration Diagram for Inspection Module

Figure 5.9 shows the collaboration of Inspection module which is submitting an inspection report for the assigned inspection to an inspector within a set target date. Followed by requesting of Compliances wherever is required and receiving time based response followed by acknowledging the same.

Grievance Module

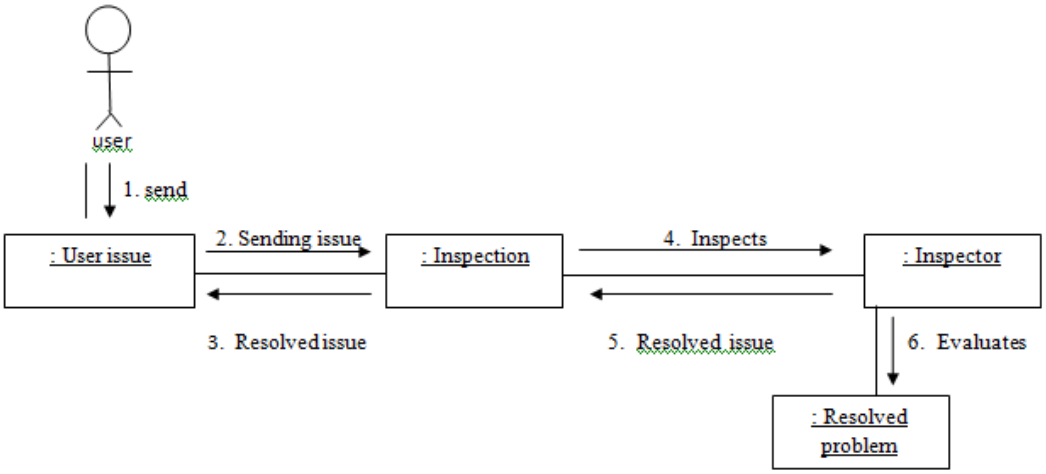

Figure 5.10 Collaboration Diagram for Grievance Module

Figure 5.10 shows collaboration of Grievance module which shows resolving a grievance by storing the grievance information and forwarding it to the concerned authority. The response provided is stored and responded back to the requestor.

5.5 Activity Diagram: Activitydiagrams are used to represents the workflow of the system .it also represents step by step flow of system.

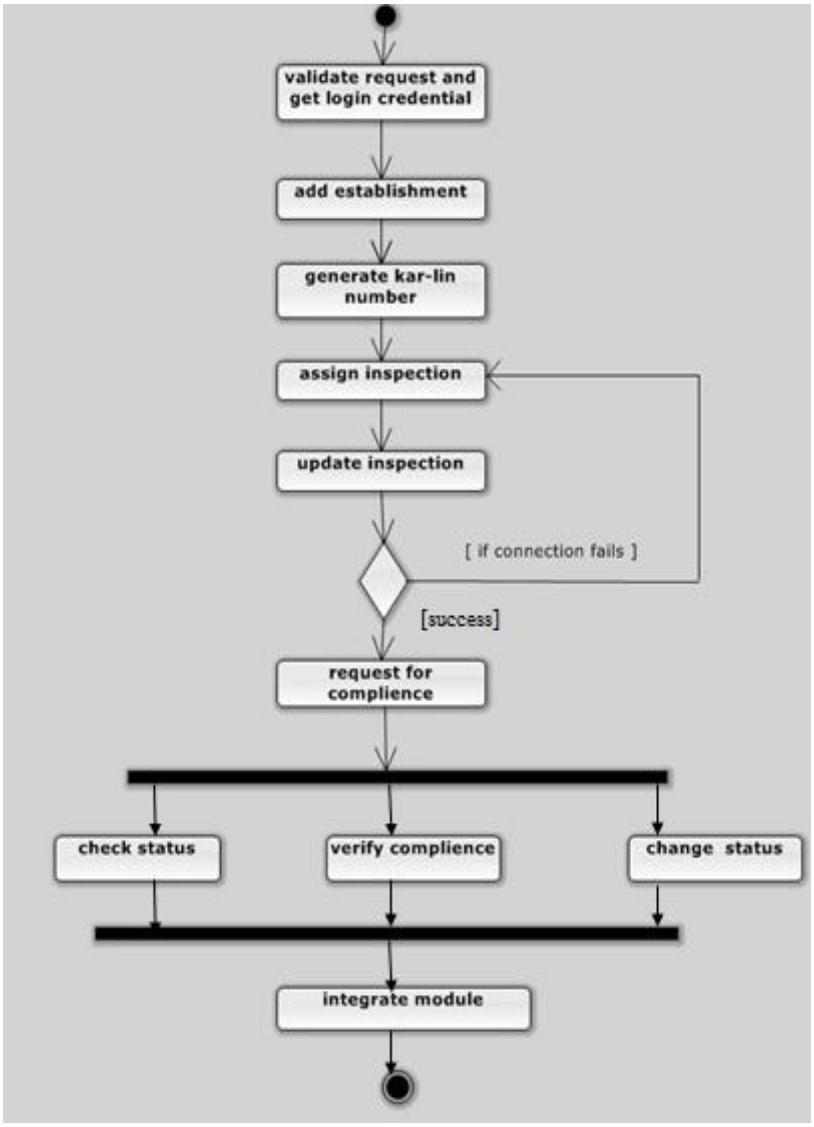

Figure 5.11 Activity Diagram for Labour Department

Figure 5.11 shows various activities of labour establishment management system such as registration of employer, submission of establishment, uploading of annual returns, assigning of inspections, submitting of inspection reports, responding of compliances, receiving and closing of grievances.

5.6 Data Base Design

Data Definition / Data Dictionary

Table 5.1 Data Base for pmd_accesscontrol

Field Name	Data Type	Constraint
access_id	Int	primary key
user_id	Int	foreign key
est_mode	Int	not null
add_est	Int	not null
file_ann	Int	not null
role_mode	Int	not null
add_role	Int	not null
insp_mode	Int	not null
submit_insp	Int	not null
access_control_mode	Int	not null
rsby_mode	Int	not null
rsby_upload	Int	not null
grievance_mode	Int	not null
pending_grievance	Int	not null

Table 5.2 Data Base for pmd_Establishment

Field Name	Data Type	Constraint
est_id	Int	primary key
lin_num	Int	foreign key
user_id	Int	foreign key
est_name	varchar(100)	not null
est_type	varchar(100)	not null
emp_name	varchar(20)	not null
Address	varchar(100)	not null
Taluk	varchar(20)	not null
District	varchar(20)	not null
Regeign	varchar(20)	not null
Devision	varchar(20)	not null
Circle	varchar(20)	not null
circle_id	Int	foreign key
inspection_id	Int	foreign key
inspect_status	varchar(50)	not null

Table 5.3 Data Base for pmd_Inspection

Field Name	Data Type	Constraint
inspection_id	Int	primary key
lin_id	Int	foreign key
lin_number	varchar(100)	not null

Table 5.4 Data Base for pmd_users

Field Name	Data Type	Constraint
user_id	Int	primary key
Login	varchar(20)	not null
user_name	varchar(20)	not null
login_id	varchar(20)	not null
Password	varchar(20)	not null
password1	varchar(20	not null
Mobile	Int	not null

5.7 Data Flow Diagram: A Data Flow Diagram is a graphical design of the flow of records. It is used to build the summary of the System [42].

Zero Level DFD

- **Context Level DFD**

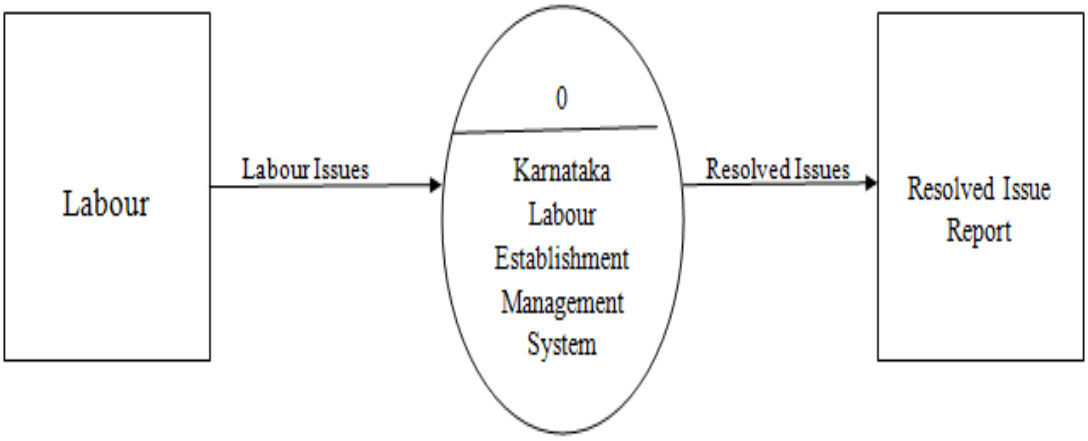

Figure 5.12 Context Level DFD

Figure 5.12 shows the broader picture of data flow in the labour establishment management system. The admin collects the information of various users, creates login credentials, assigns required permissions to perform the required roles of a user. The Login Credentials is stored as output by validating the account.

- **First Level DFD**

The first level dataflow diagram gives the more depth picture of the dataflow in the application and shows the relation between the modules.

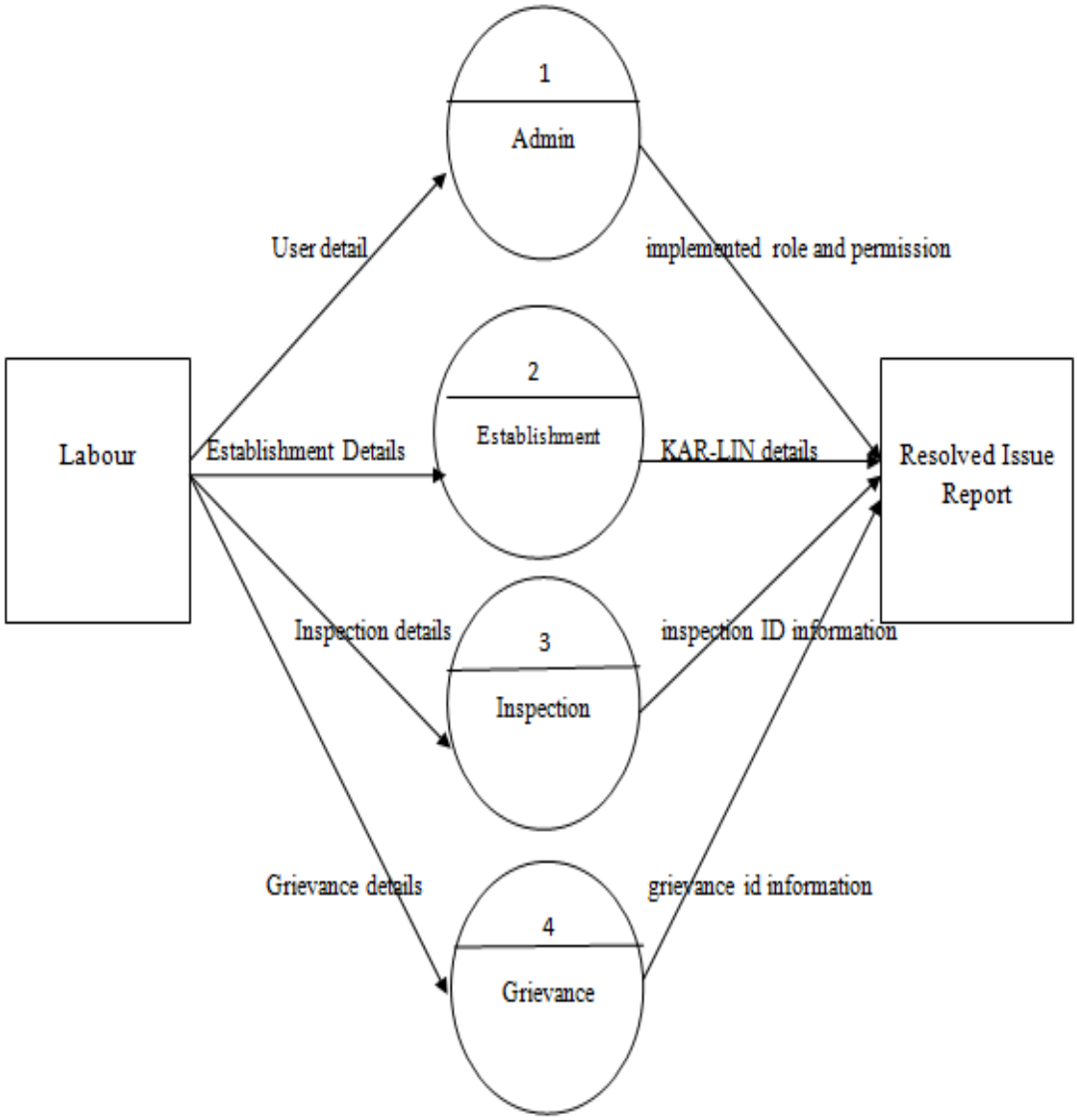

Figure 5.13 First Level DFD

Figure 5.13 depicts that the employer submits the establishment information and the grievance which is stored and assigned to respective users .

- **Second Level DFD**

Admin Module

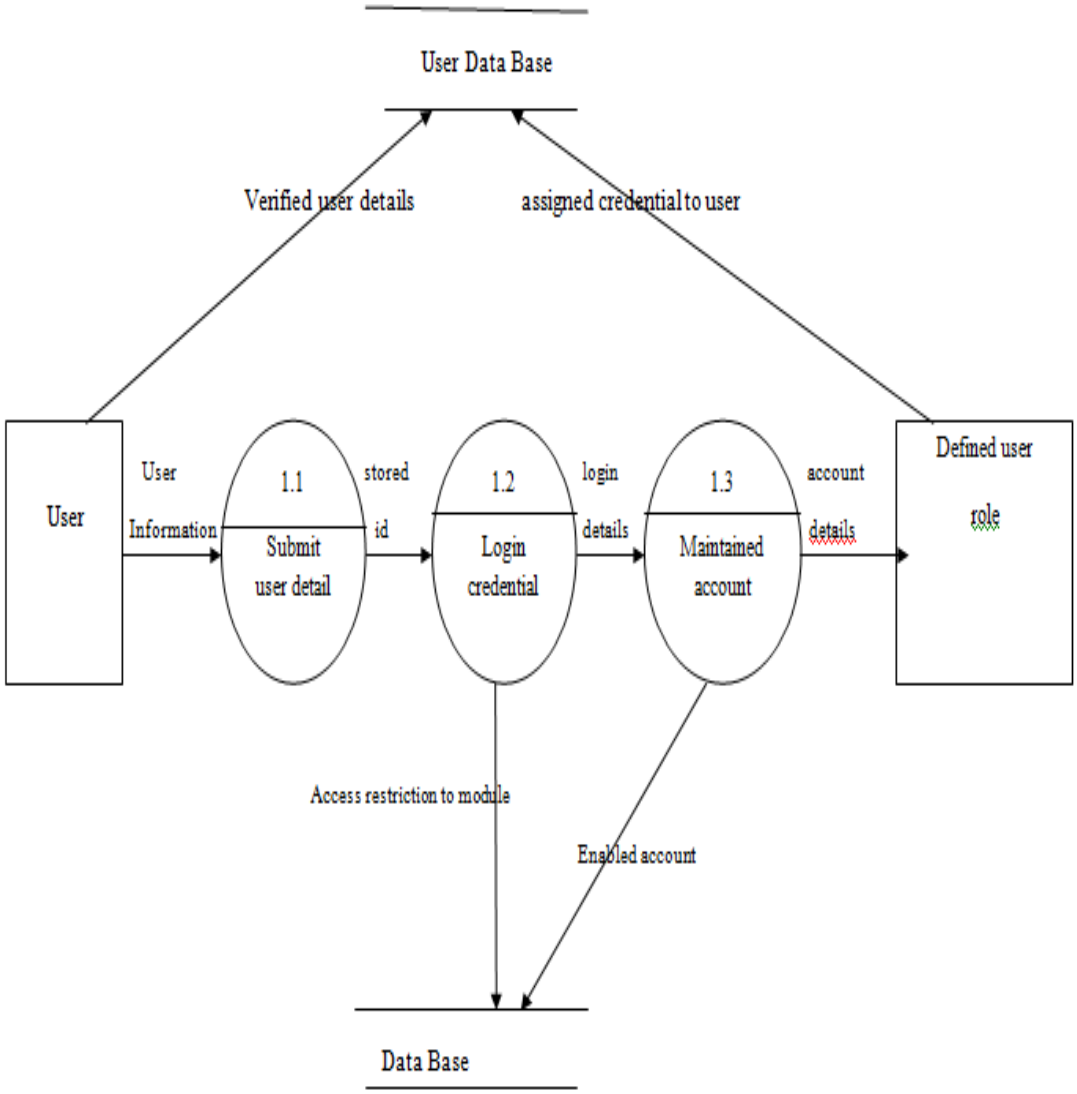

Figure 5.14 Second Level DFD for Admin

Figure 5.14 shows Admin details which includes adding / deleting a user by providing the relevant information such as user information which can be used for activating/deactivating an account.

Establishment Module

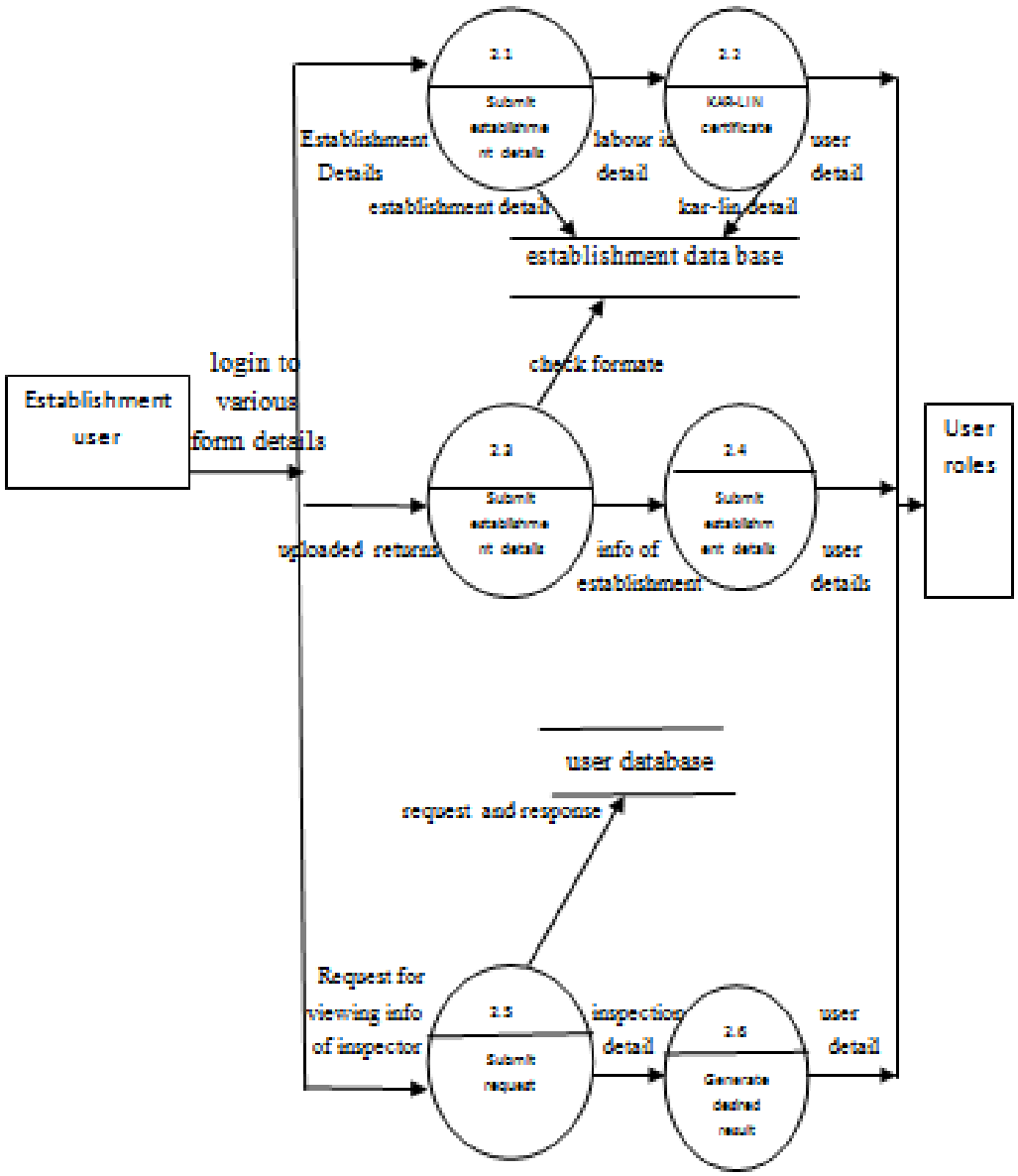

Figure 5.15 Second Level DFD for Establishment

Figure 5.15 shows Establishment and Inspection details which includes assigning of establishment to inspectors to inspect by checking their availability.

Inspection Module

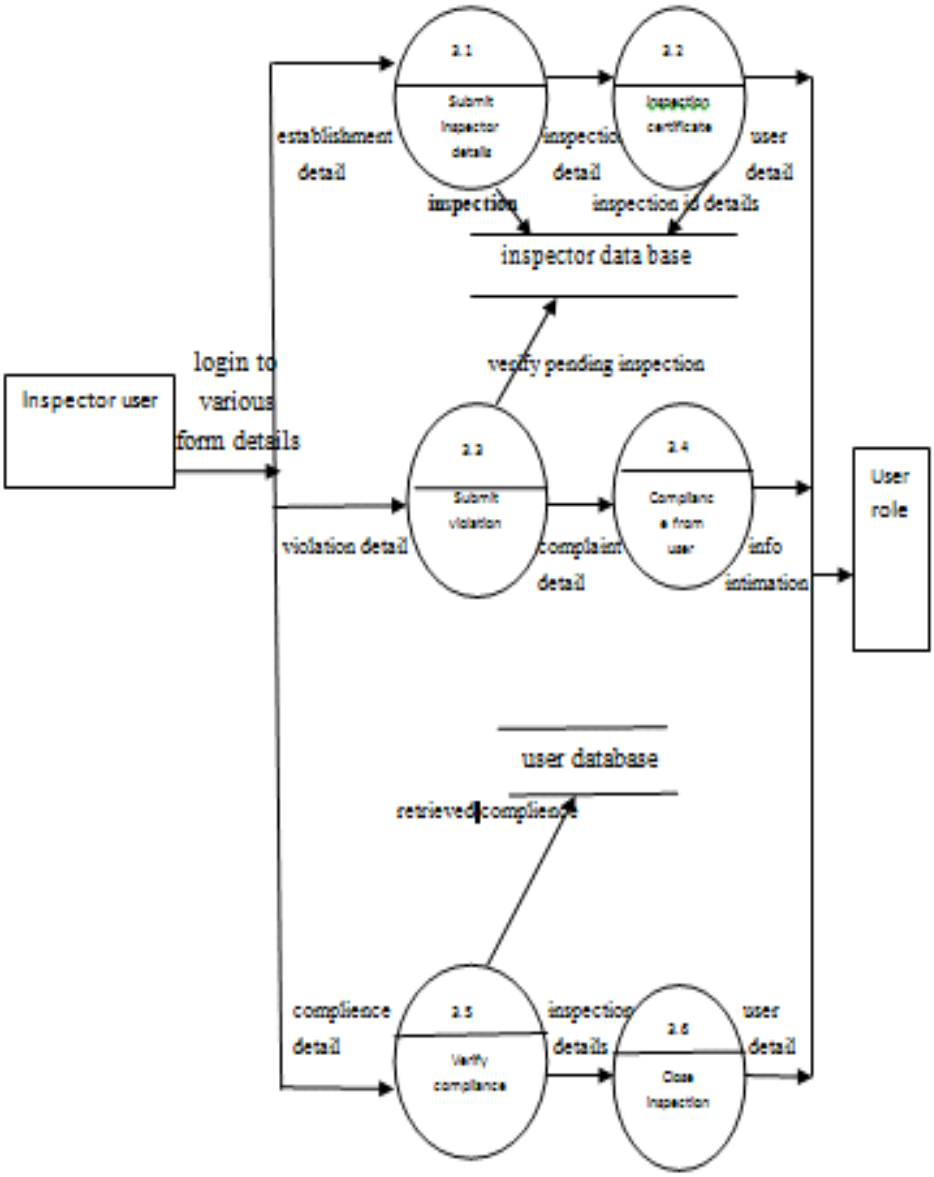

Figure 5.16 Second Level DFD for Inspection

Figure 5.16 shows Inspection details, The inspector takes necessary actions and closes the inspection by submitting the report to establishment.

Grievance Module

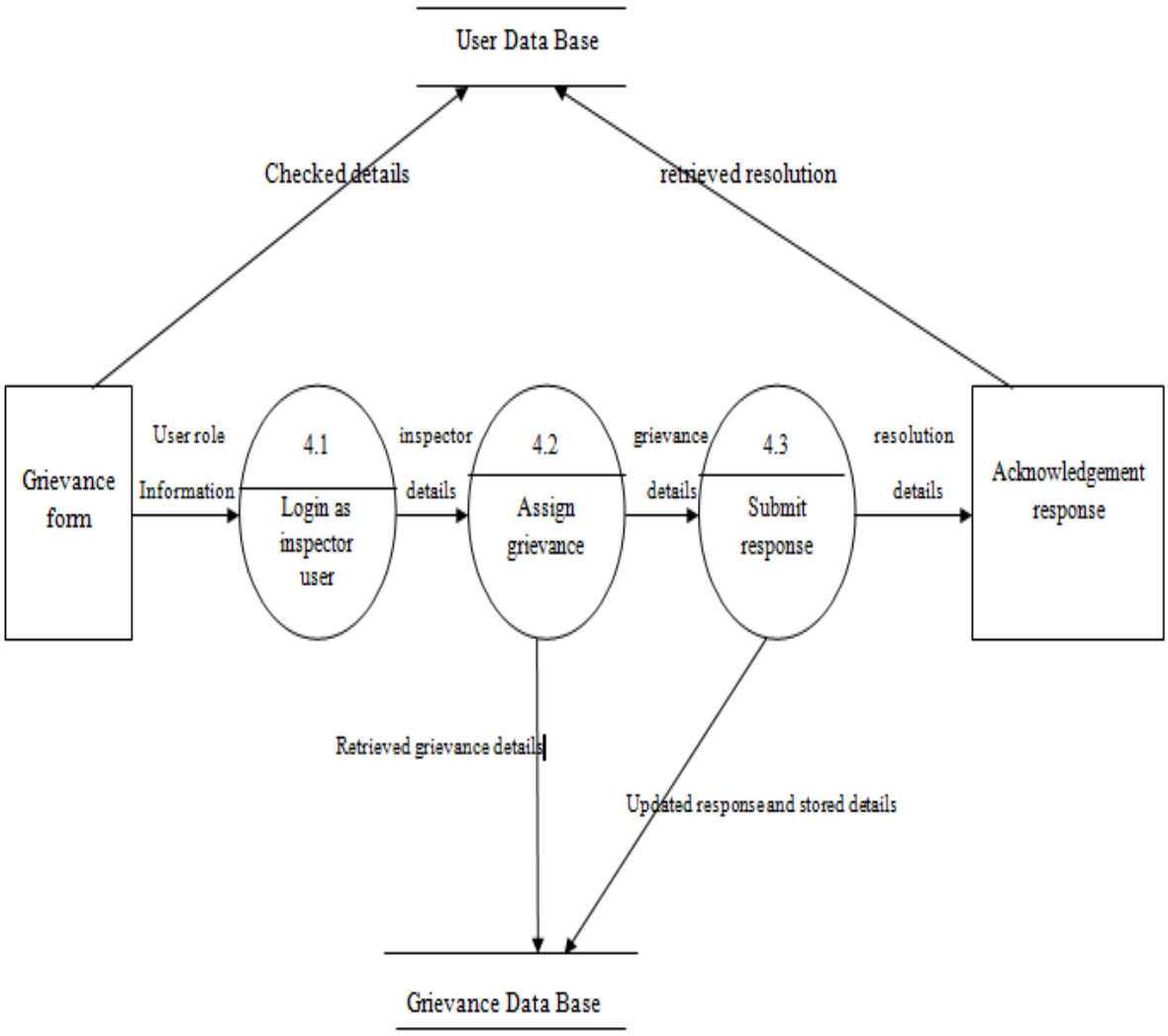

Figure 5.17 Second Level DFD for Grievance

Figure 5.17 shows Adding, Assigning and resolving of grievance in an organized way. The grievance registered is assigned to relevant authority who provides the solution. Finally the grievance is closed by submitting a reply to the requestor.

CHAPTER 6

IMPLEMENTATION

6.1 screen shots:

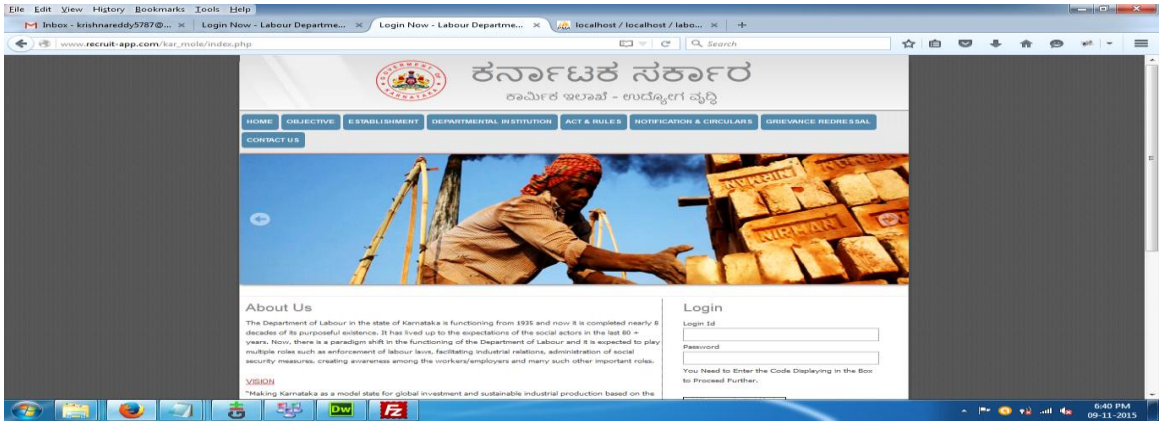

Figure 6.1 Home page

Figure 6.1 represents home page, here User has to login by using his login ID and password provided by the department. If you have forgot the password you can retrieve it by clicking on Forget Password link.

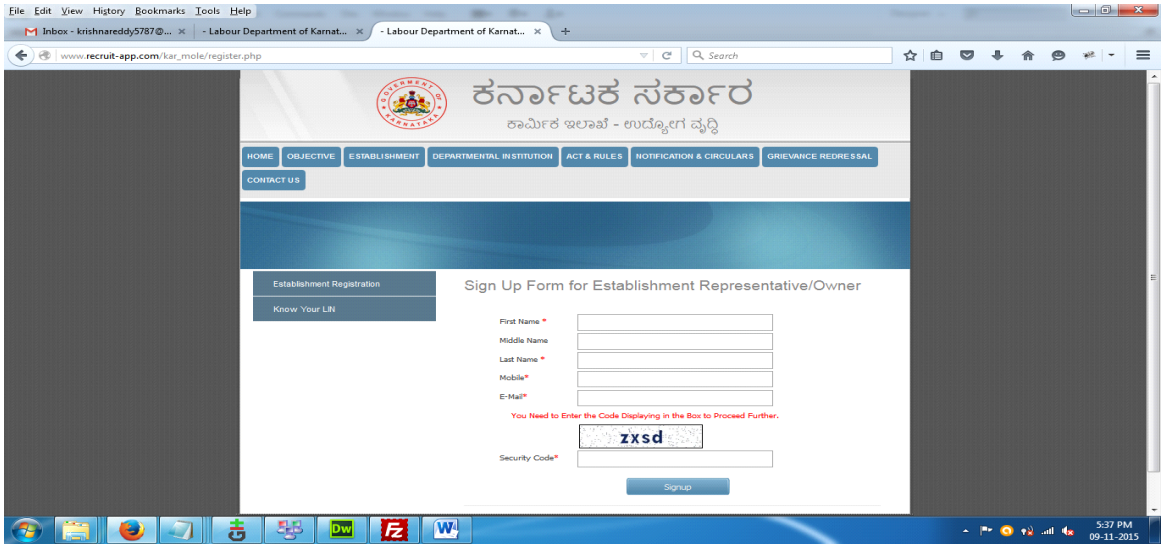

Figure 6.2 Establishment Registration

Figure 6.2 represents Establishment registration form, user should fill all the fields if any field is missing it will give error message or once we submit the form it will generate user Id and password.

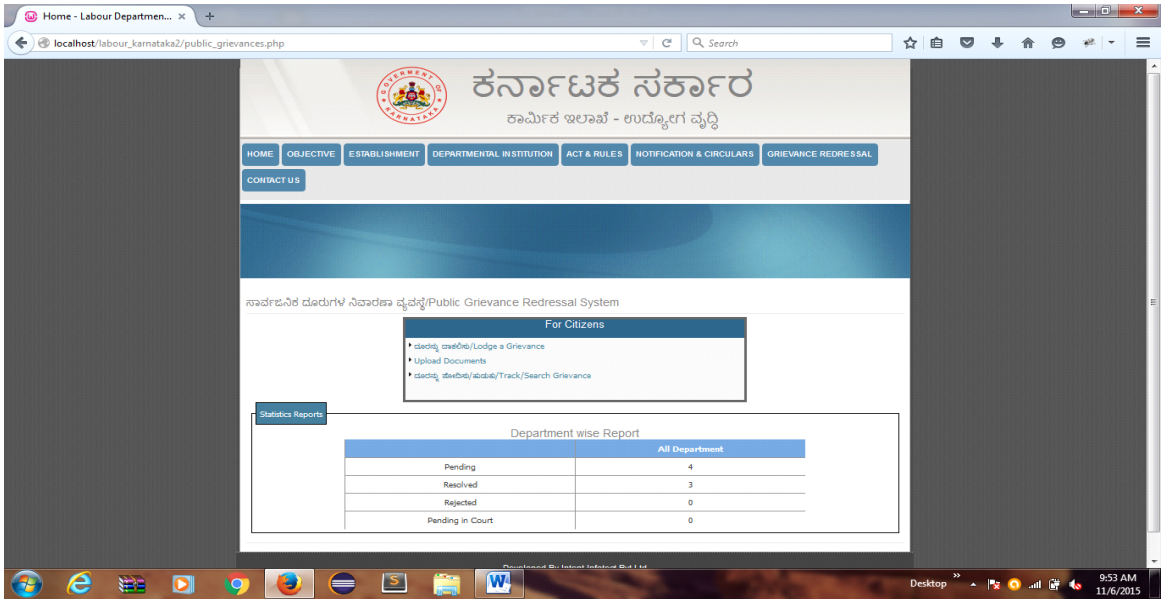

Figure 6.3 public grievance

Figure 6.3 represents public grievance where inspector can view grievance registered by the public also he can view pending and rejected grievances.

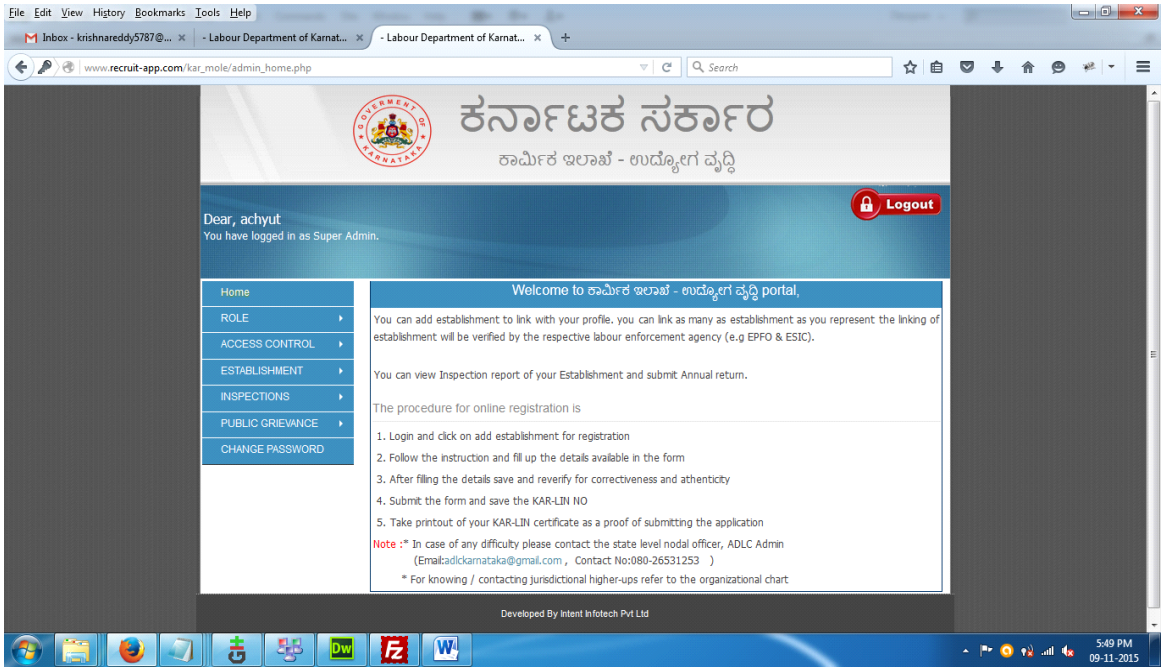

Figure 6.4Admin Home page

Figure 6.4 represents Home page of admin, Home page will be displayed for respective user's login information. Home page consists Role, Establishment, Inspections, Public Grievances, Change Password

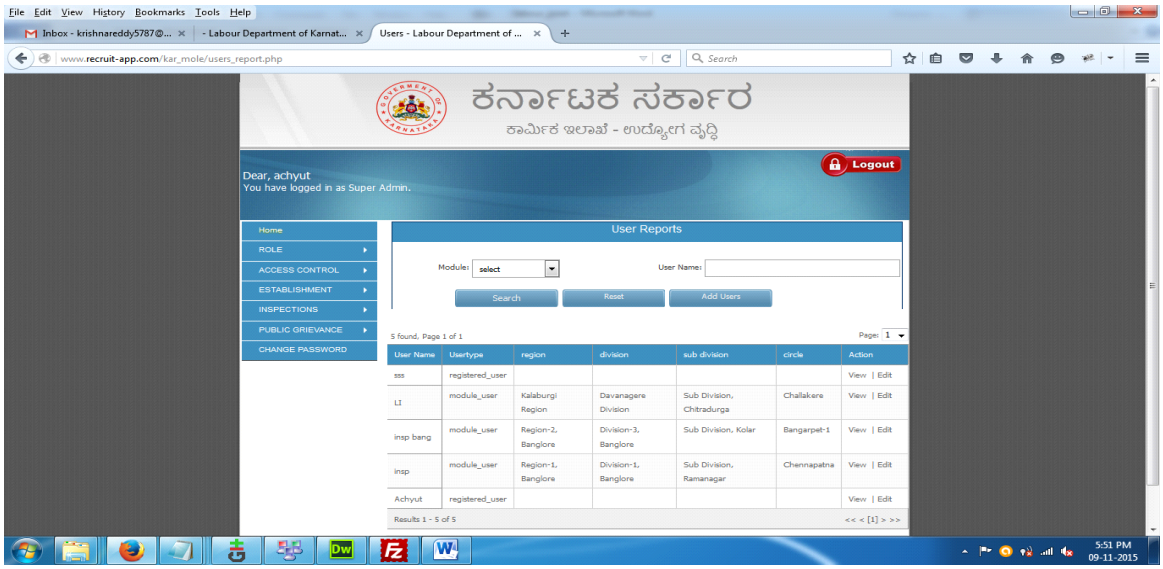

Figure 6.5 User report

Figure 6.5 represents user report where it can be generated Registered Establishment, Compliance Inspection, Show cause Notice, Charge sheet Inspection, Completed Inspection.

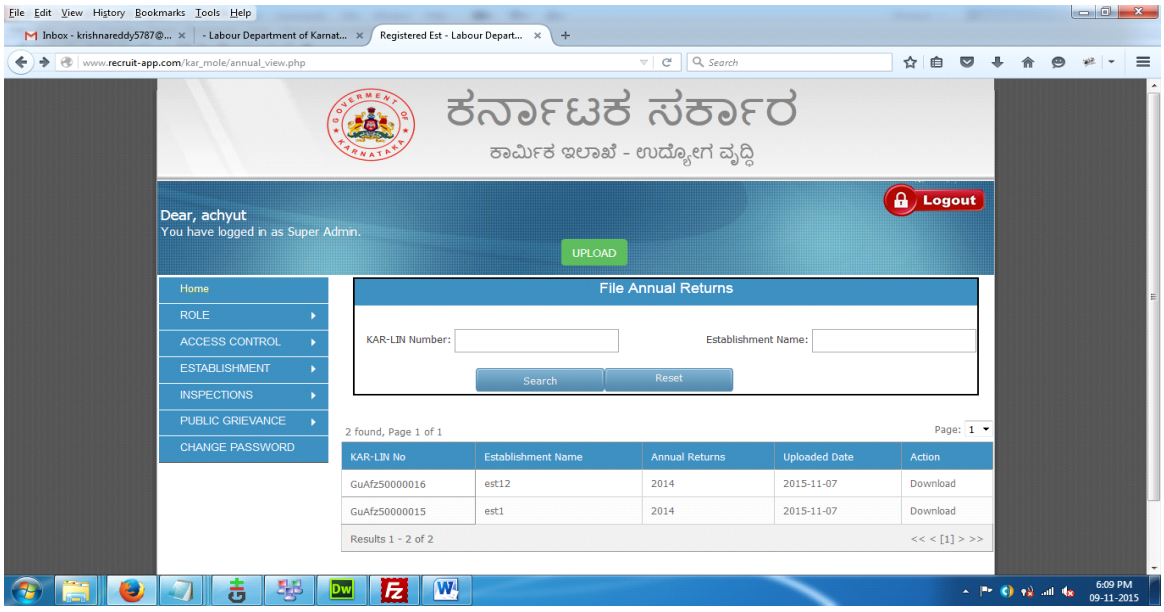

Figure 6.6 Annual returns

Figure 6.6 represents annual returns where the respective officers will have a provision to review the Annual Returns submitted by the Employer / Establishment. it will check for KAR-LIN number and establishment name based on that it will generate the annual returns .

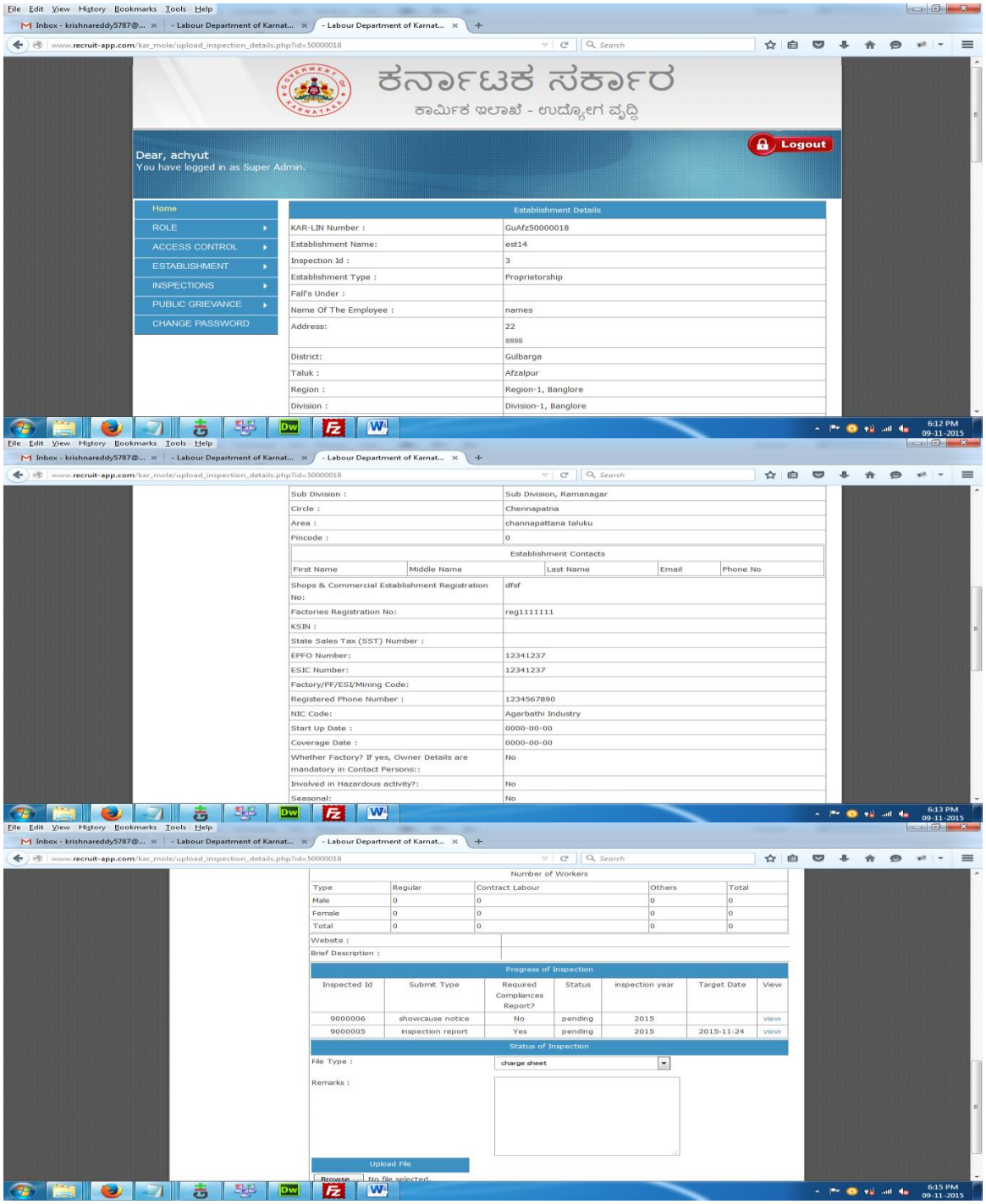

Figure 6.7 Inspection

The Figure 6.7 represents Inspection it Selects the establishment for inspection from the establishment list. Inspector will inspect the establishment and collect all the required information from the establishment.

CHAPTER 7

TESTING

7.1 Introduction

Testing takes a vital part in software development. Software development does not limit itself program advancement but includes testing as well, keeping the end goal in mind. Testing is carried out by different testers who have some predefined test cases, after performing the testing, the test outcomes are recorded in a report. If any errors are found, the developed system is sent back to the development group to redress the same. The same process is continued multiple times until the developed product works as per the user's requirement.

Test case is a group of condition where tester can identify application and features are working properly or not. Formal test cases nothing but fully testing it means there should be two test cases for one requirement. Informal test-cases means without formal requirements [46].

7.1.1 Unit Testing

Unit testing help us to recognize the errors in the algorithm. Unit testing is nothing but testing some function in the code. It will give the expected functions work. Unit testing is easy use of testing the code. It will break the functionality so that can avoid future changes. Some of the unit that are divided into unit testing are

- Widgets
- User management
- Authentication
- Multi project integration
- Connection
- Actions implementation

Unit Test Case Summary for establishment signup module:

Table – 7.1: Unit testing for establishment signup Module

Tc_Id	Feature Tested	Sample Input	Expected Output	Observed Output	Results
TC_101	Button	Button click	Proper message on each action	Message to be display for all event	Pass
TC_102	Input Field	Field value	if any field is empty then display message	Alert indicating empty submission	Pass
TC_103	Button link	Button click	Link to appropriate task on every event	Appropriate function	Pass

Figure 7.1 screenshot representing establishment signup

The Figure 7.1 describes establishment signup where user should fill all the fields if any field is missing it will give error message or once we submit the form it will generate user Id and password.

Unit Test Case Summary for inspection module:

Table – 7.2: Unit Testing For inspection Module

Tc_Id	Feature Tested	Sample Input	Expected Output	Observed Output	Results
TC_201	No input	No data to be submitted	Message to be displayed that no user input	Alert message indicating input error	Pass
TC_202	Improper input submission	Improper data to be submitted	Message to be displayed invalid user input	Alert message indicating input error	Pass
TC_203	Appropriate action on click ok	Button click	Link to appropriate task	Redirection back to same page	Pass

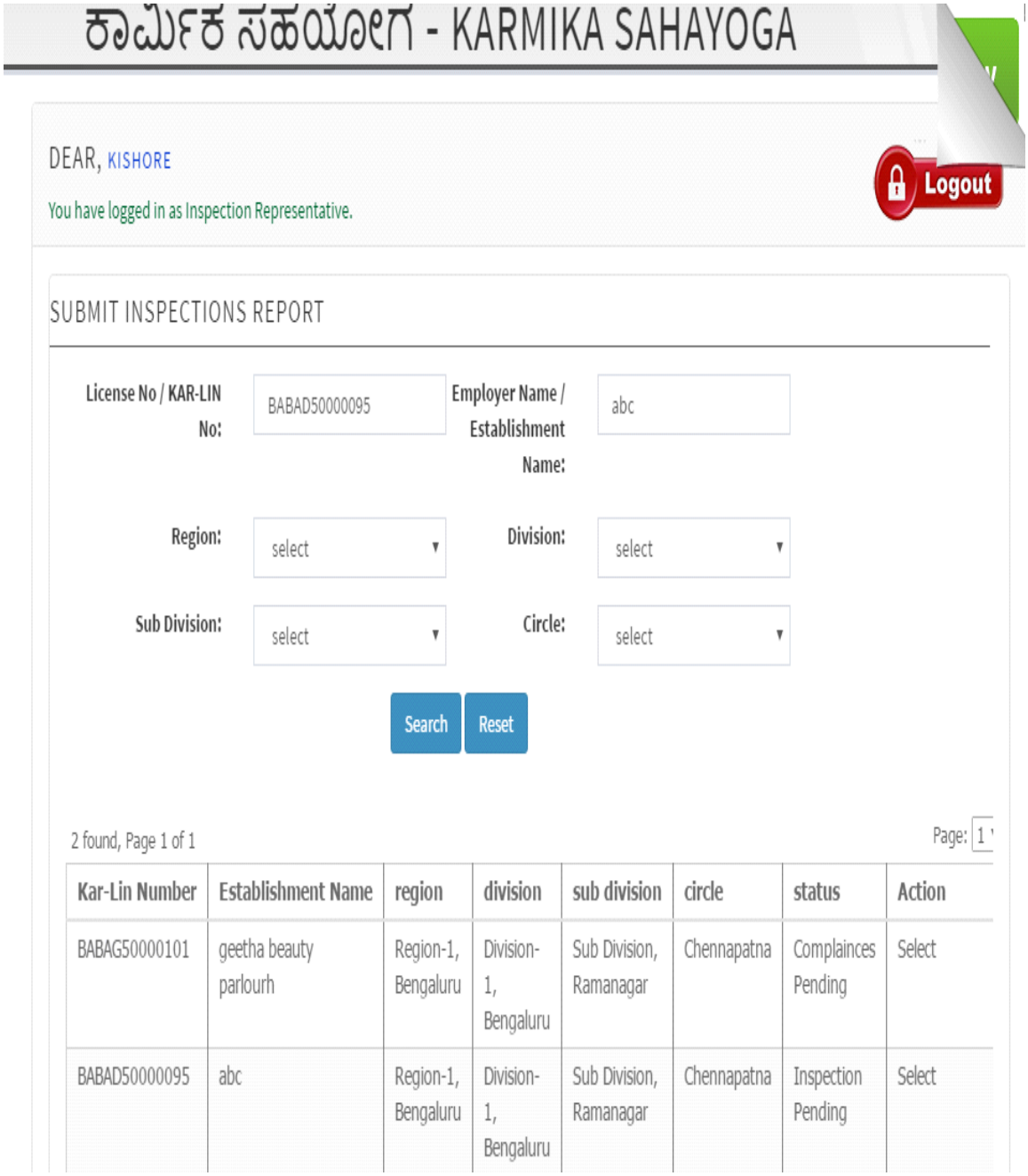

Figure 7.2 screenshot representing inspection

The Figure 7.2 describes submitting an inspection report for the assigned inspection to an inspector within a set target date. Followed by requesting of Compliances wherever is required and receiving time based response followed by acknowledging the same.

Unit Test Case Summary for grievance module:

Table – 7.3: Unit testing for grievance Module

Tc_Id	Feature Tested	Sample Input	Expected Output	Observed Output	Results
TC_301	No input	No data to be submitted	Message to be displayed that no user input	Alert message indicating input error	Pass
TC_302	No proper input submission	Improper data to be submitted	Message to be displayed invalid user input	Alert message indicating input error	Pass
TC_304	Appropriate action on click ok	Button click	Link to appropriate task	Redirection back to same page	Pass

Figure 7.3 grievance

The Figure 7.3 describes resolving a grievance by storing the grievance information and forwarding it to the concerned authority. The response provided is stored and responded back to the requestor.

Unit Test Case Summary for Admin module:

Table – 7.4: Unit Testing For Admin Module

Tc_Id	Feature Tested	Sample Input	Expected Output	Observed Output	Results
TC-401	Null input	No data to be submitted	Message to be display no data to be submitted	Alert message indicating input error	Pass
TC-402	Improper input	Improper data to be submitted	Message to be display invalid input	Alert message indicating input error	Pass

Figure 7.4 Admin Module

The Figure 7.4 describes admin module, where the respective officers will have a provision to review the Annual Returns submitted by the Employer / Establishment.

7.1.2 Integration Testing

Integration testing means single units are now integrated and verified as a collection. It will appear after element testing and before justification testing. Integration testing will execute according to the (SDLC) Software Development Life Cycle. Intention of the integration testing is to verify functional requirements.

Integration Test Case Summary for Karnataka labour establishment system :

Table – 7.5: Integration testing

Tc_Id	Feature Tested	Sample Input	Expected Output	Observed Output	Results
TC-I10	Working of admin module	Runs with all necessary input	Application to work as expected by user	Smooth working of application incorporating all requirements	Pass
TC-I11	Working of establishment registration	Runs with all necessary input	Application to work as expected by user	Smooth working of application	Pass
TC-I12	Working of inspector	Check with grievances	Solution of problem	Completely success without any flaws	Pass

CHAPTER 8

CONCLUSION

The application developed is course work carried out for a span of six months which is consists of five stages collecting information, gathering requirements, development, testing and implementation.

Credits in the developed system holds light weight user interface, with enhanced security feature to enable communication between various entities. Since the application holds lighter Graphical user interface, it makes feels convenient to work with. It also enables interaction between the users at a faster rate and each interaction is being recorded and maintained in database for further usage.The developed system is an online interactive platform for exchange of information, between users who provide the service and users who avail the service, within the boundaries of the set acts and rules by the labour department.

Benefit of the developed system is to provide the ease of submission of applications and reports, collection of consolidated information and also knowing the unknown facts related to the labour department laws at one place. In short, one can call this application as a one stop shop tool, which facilitates every stakeholder of the labour department, to perform their respective roles at the convenience of their door step, by providing maximum transparency in the performed roles among all the stake holders of the labour department.

Since the developed application is built using light weight web technologies and also, as it is accessible through any browsers with minimum system requirements, it is believed to become one of the productive and useful application for the labour department to manage and monitor the necessary functions. The developed system help to bring excellence in public service delivery and to redress grievances of Karnataka labour department in a meaningful manner by effectively coordinating with Inspectors and commissioners thereby eliminated the cause of grievances. In addition, it also provides solution for grievances of establishment section.

CHAPTER 9

FUTURE ENHANCEMENTS

The developed application meets the basic requirement of labour department, but due to time constraint some of the major features that adds glories to the system are left unimplemented.

Upon extension of time one can add following features to the existing system:

- Future enhancement can be developing the Mechanism where user can send their problem report through SMS as well as E-mails and it is reviewed in the sequence order and solved accordingly
- Alert Indications of the problem solution to the problem reported by the labours has to be sent through SMS & E-mails replies to the respective labours, so that manual storage of the documents will be reduced and tracking will be easier
- Hierarchical order Escalation Handling
- User Access Control and Permission Handling should be provided for all the labours regardless of their position in the organization and their time period of work
- Smart dashboard has to be developed to store all the reports of the labours
- Mobile Application can be developed as future enhancement where labours can use the application at any time and any place.

Appendix A

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