

Enterprise Monitoring Agent

A PROJECT REPORT

SUBMITTED BY

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In fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

In

COMPUTER ENGINEERING



GOVERNMENT ENGINEERING COLLEGE

SECTOR -28, GANDHINAGAR

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD

GORVERNMENT ENGINEERING COLLEGE
SECTOR 28 , GANDHINAGAR



CERTIFICATE

This is to certify that the dissertation entitled "Enterprise Monitoring Agent" has been carried out by Khyati Chaudhary(130130107016) under my guidance in fulfillment of the degree of Bachelor of Engineering in COMPUTER ENGINEERING (7TH Semester) of Gujarat Technological University , Ahmedabad during the academic year 2016-2017.

Internal Guide

Prof. Pinal Patel

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By:

Manan Prajapati

Khyati Chaudhary

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03/04/2017

TO WHOM IT MAY CONCERN

This is to certify that **Manan Prajapati**, a student of **Government Engineering College, Gandhinagar** has successfully completed his project titled "**Enterprise Monitoring Agent**" on **J2EE with Cloud Computing Amazon Web Services** in our company. He has taken training in our company during June 2016 to March 2017. During his stay at the company he was found to be sincere and hardworking.

We wish him all the very best in all his future endeavors.

Thanking You,



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ABSTRACT

“Enterprise Monitoring Agent” is a Web Application for small and medium companies that need to automate processes, connect employees, and gain business insight when you need it. Get the tools you need to manage products, orders, customers, finances, and operations. Owner can get into the business to need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

When the user/Owner will enter the details of the company the system will provide free access to the site that owner can manage whole work from the site. The owner can add employee as well as give access of authorization rights according to their position. Owner can view the hierarchy structure of the all employees basis on the position level.

Owner will allocate task to employee virtually and employee can also respond to that task with task status. Owner can look the progress of task as well as inventory daily or monthly.

Enterprise Resource Planning is a System that automate the business planning that helps to grow the business. Each Largest companies have their own software that can lead them to automation of their processes. The Enterprise Monitoring Agent is free web application that will help small to medium business owners to experience the actual automatic and fast working of their processes. They can look after on their inventory on daily basis and can also manage different client orders.

“Enterprise Monitoring Agent” will help the owner to reduce workload as well as provide the same experience as work directly to virtually.

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CHAPTER 1: INTRODUCTION

1.1 OVERVIEW OF PROJECT

1.1.1 PROJECT DEFINITION

1.1.2 PURPOSE

1.1.3 PROJECT PROFILE

1.2 LIST OF FEATURES

1.3 PROPOSED EXISTING SYSTEM

1.4 SCOPE OF PROJECT

1.5 LIMITATION OF PEOJECT

1.6 INTRODUCTION TO FRONT-END & BACK-END

1.1 OVERVIEW OF PROJECT

1.1.1 PROJECT DEFINITION

Enterprise Monitoring Agent is a complete solution for small and medium companies that need to operate automatically processes, connect employees, and gain business access when you need it. Get the tools you need to manage products, orders, customers, finances, and operations. And get the insight you need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

1.1.2 PURPOSE

Purpose of our Enterprise Monitoring Agent is to provide virtual environment for small to medium business owners to connect with employees and allocate work. Enterprise Monitoring Agent is willing to give the virtual experience for small business hub. Enterprise Monitoring Agent is free of cost for life time.

1.1.3 PROJECT PROFILE

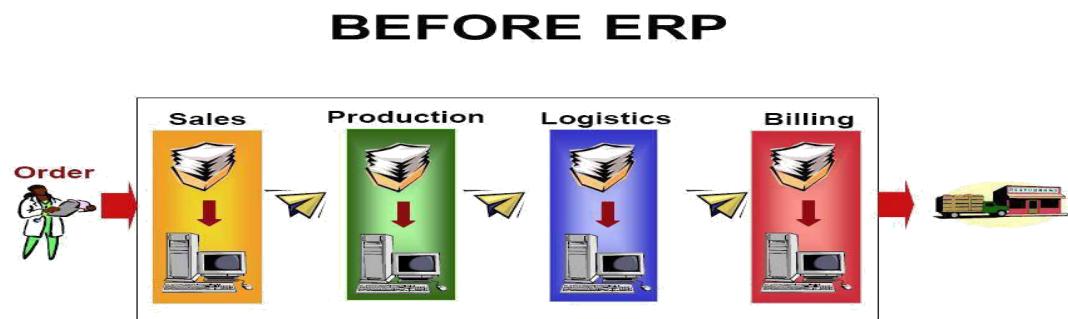
Table 1.1: Project Profile

Project title:-	Enterprise Monitoring Agent
Main Function:-	Enterprise Resource Planning
Project Category:-	Web Application
Developed For:-	Client
Team Member:-	Khyati Chaudhary (130130107016) Manan Prajapati (130130107095)
Technology:-	JSP, Servlet, Hibernate, JavaScript, Apache Tomcat, Eclipse J2EE
Front End:-	HTML, CSS, Bootstrap
Database:-	MySQL, MongoDB
Guide:-	Prof. Pinal Patel

1.2 LIST OF FEATURES

- Reliability
- Scalability
- User Satisfaction
- User Desire Service
- Performance Enhancement

1.3 PROPOSED EXISTING SYSTEM



Problems:

Delays, Lost Orders, Keying into different computer systems invites errors

Figure 1.1: Existing System Architecture

1.4 SCOPE OF PROJECT (AIMS & OBJECTIVES SHOULD INCLUDE)

Enterprise Resource Planning is a System that automate the business planning that helps to grow the business. Each Largest companies have their own software that can lead to automation of their processes. The Enterprise Monitoring Agent is free web application that will help small to medium business owners to experience the actual automatic and fast working of their processes. They can look after on their inventory on daily basis and can also manage different client orders. We will provide hierarchy structure of rights & authorities for each level of employee. This will help the owner to reduce workload as well as provide the same experience as work directly to virtually.

1.5 LIMITATION OF PROJECT

- ❖ User is not aware about system

1.6 INTRODUCTION TO FRONT END & BACK END

FRONT-END:

1) JSP (Java Server Page)

JSP is used for server side programming. Java Server Pages (JSP) technology allows us to create web content that has both static and dynamic components. JSP is a scripting language that generates dynamic content.

The main features of JSP technology are:

- ❖ How to process a request and construct a response is the main feature.
- ❖ Construct for the actual accessing of server-side objects.
- ❖ JSP can build custom tags.

Once the page has been translated and compiled, the JSP page's Servlet follows the Servlet Life Cycle:

1. If an instance of the JSP page's Servlet is not existing, the container:
 - Loads the JSP page's Servlet class.
 - Instantiates an instance of the Servlet class.
 - Initializes the Servlet instance by calling the init method of JSP.
2. Invokes the JSP service method, passing a request and response object.

JSP Architecture:

The Model 2 architecture is a hybrid approach for serving dynamic content, since it combines the use of both Servlet and JSP. Here, the Servlet acts as the controller and is in charge of request processing and the creation of any beans or objects used by the JSP, as well as deciding, depending on the user's actions. This approach typically results in the separation of presentation from content, leading to clear description of the roles and responsibilities.

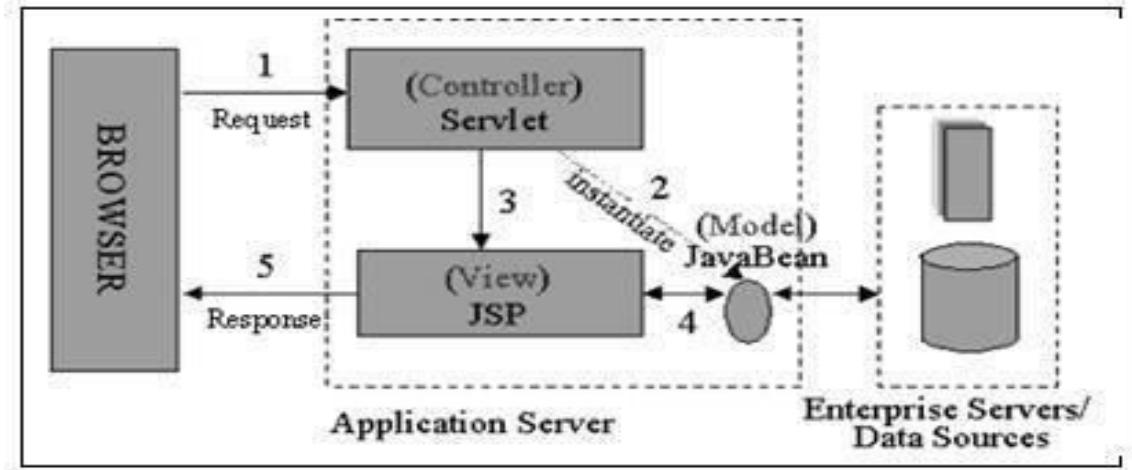


Figure 1.2: JSP Model Architecture

2) Servlet

Java Servlet is program that run on a Web or Application server. Servlet act as a middle layer between a requests comes from a Web browser or other HTTP client and databases or applications on the HTTP server.

Using Servlet, you can collect input from users through web page forms, current records from a database or another source and construct web pages dynamically by creating a separate process to handle each client request.

The main purpose of Servlet is to add up the functionality to a web server with CGI (Common Gateway Interface). The CGI is language independent interface that allows a server to start an external process.

Servlet have many advantages over CGI:

- ❖ There is no need to generate a process for serving each request in case of servlets.
- ❖ Servlet is more secure than CGI.
- ❖ Performance of Servlet is better than CGI.

Servlet Architecture:

Following diagram shows the position of Servlet in a Web Application.

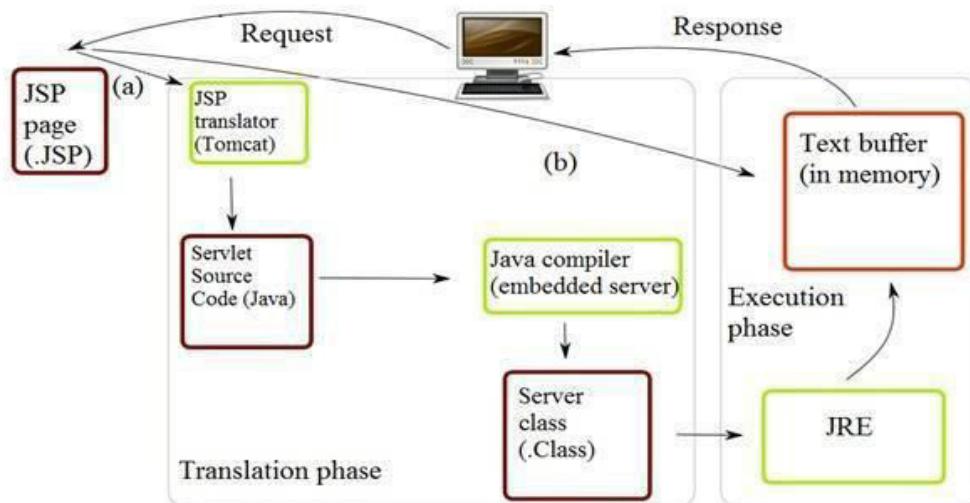


Figure 1.3: Servlet architecture

3) Hibernate

Hibernate is an Object-Relational Mapping(ORM) solution for JAVA and it raised as an open source persistent framework created by Gavin King in 2001. It is a powerful, high performance Object-Relational Persistence and Query service for any Java Application.

Hibernate maps Java classes to database tables and from Java data types to SQL data types and relieve the developer from 95% of common data persistence related programming tasks.

Hibernate sits between traditional Java objects and database server to handle all the work in persisting those objects based on the appropriate O/R mechanisms and patterns.



Figure 1.4: Hibernate architecture

What is Hibernate?

- Hibernate is an Object Relational Mapping (ORM) Solution for JAVA.
- It maps the Java classes to the Database Tables.
- It is a powerful, high performance object/relational persistence and Query service.
- Hibernate Provides 3 full featured query facilities :
 - Hibernate Query Language
 - Hibernate Criteria Query
 - Support for Query in native SQL dialect
- Take less development time
- Support Automatic key Generation
- XML binding
- Has Eclipse support

❖ **Advantages Over JDBC:**

- Relational Persistence for JAVA
- Transparent Persistence
- Database independent code
- Support for Query Language
- Optimize performance with caching

4) Java Script

Java Script is a client side scripting language that is dynamic, weakly typed and has first-class functions. It allows to changing the contents of the web page depending upon the user input.

Filename extension	.js
Developed by	Netscape Communications Corporation, Mozilla Foundation
Type of format	Scripting language

Table 1.2 JSP

Java script is not an object oriented programming language. In JavaScript variables need not be declared before their use. Checking the compatibility of type can be done dynamically. In JavaScript objects are dynamic. It means we can change the total data members and method of an object during execution.

- Unlike the relationship between VBScript and VB, Java script is not a subset of Sun's Java language. The two languages share some common syntax, but Netscape developed use Jscript, not Sun. Jscript is a powerful scripting language. Developers commonly use Jscript to write client-server script because it's the common standard for browser scripting, and not all browsers can run VBScript.
- You don't have limit yourself to Jscript on the client; you can use it on the server as well. To use Jscript on the server, you can change the default ASP.NET language to Jscript by making it run at server.
- JavaScript is a compact, object-based scripting language for developing client and server Internet applications. Netscape Navigator 2.0 interprets JavaScript statements embedded directly in an HTML page, and Live wire enables you to create server-based applications.
- In a client application for Navigator, JavaScript statements embedded in an HTML page can recognize and respond to user events such as mouse clicks, form input, and page navigation. For example, you can write a JavaScript function to verify that users enter valid information into a form requesting a telephone number or zip code or Date or Email ID. Without any network transmission, an HTML page with embedded.
- JavaScript can interpret the entered text and alert the user with a message dialog if the input is invalid. Or you can use JavaScript to perform an action (such as play an audio file, execute an applet, or communicate with a plug-in) in response to the user opening or exiting a page.

5) Apache Tomcat

Apache Tomcat (or Jakarta Tomcat or simply Tomcat) is an open source Servlet container developed by the Apache Software Foundation (ASF). Tomcat implements the Java Servlet and the Java Server Pages (JSP) specifications from Sun Microsystems, and provides a "pure Java" HTTP web server environment for Java code to run.

Tomcat should not be confused with the Apache web server, which is a C implementation of an HTTP web server; these two web servers are not bundled together. Apache Tomcat includes tools for configuration and management, but can also be configured by editing XML configuration files.

6) ECLIPSE J2EE

Eclipse is a toolkit which is designed for the creation of complex projects, providing **fully dynamic web application utilizing EJB's. This consist of EJB tools, CMP, data mapping tools & a universal test client that is designed to aid testing of EJB's.**

7) HTML

Hyper Text Markup Language (HTML) is the markup language for displaying web pages and other information that can be displayed in a web browser.

Markup language is language of writing layout information within documents. html document is a plain text file. It contains text with tags.

HTML is written in the form of HTML elements consisting of tags enclosed within angular brackets (like <html>), such strings are called tags. HTML tag is written within <html> and </html>, although some tags known as empty elements are unpaired for example . The first tag is starting or opening tag and second tag is ending or closing tag.

Table 1.3 HTML

Filename extension	.html, .htm
Internet media type	text/html
Type code	TEXT
Developed by	World Wide Web Consortium & WHATWG
Type of format	Markup language
Extended to	XHTML

HTML elements form the building blocks of all websites. HTML allows images and

objects to be embedded and can be used to create interactive forms. It provides structural semantics for text such as headings, paragraphs, lists, links, quotes and other items.

The World Wide Web is composed primarily of HTML documents transmitted from web servers to web browsers using the Hypertext Transfer Protocol (HTTP).

8) CSS

Cascading Style Sheet (CSS) is a markup language used in the web document for presentation purpose. If a small change needs to be done in the style of web content, then CSS makes it more convenient.

It's most common application is to style web pages written in HTML and XHTML, but the language can also be applied to any kind of XML document, including plain XML, SVG and XUL.

Table 1.4 CSS

Filename extension	.css
Internet media type	text/css
Developed by	World Wide Web Consortium
Type of format	Style sheet language

The primary intension of CSS was to separate out the web content from the web presentation. Various elements such as text, font and color are used in CSS for presentation purpose. Thus CSS specification can be applied to bring the styles in the web document.

9) Bootstrap

- Bootstrap is a free front-end framework for faster and easier web development
- Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins
- Bootstrap also gives you the ability to easily create responsive designs.

BACK-END:

1) My SQL

My SQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by My SQL.

My SQL Features:

- My SQL is a database management system.
- My SQL is a relational database management system.
- My SQL software is Open Source.
- The My SQL Database Server is very fast, reliable, and easy to use.
- My SQL Server works in client/server or embedded systems.
- A large amount of contributed My SQL software is available.
- It is very fast thread based memory allocation system.
- My SQL written in C and C++ language.
- My SQL code is tested with different compilers.

Programming libraries for java, PHP etc. are available to connect My SQL Database.

2) MongoDB

MongoDB (from humongous) is a Free and open-source cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB avoids the traditional table-based relational database structure in favour of JSON-like documents with dynamic schemas (It calls the format BSON), making the integration of data in certain types of applications easier and faster.

MongoDB is developed by MongoDB Inc. and is free and open-source, published under a combination of the GNU Affero General Public License and the Apache License.

CHAPTER 2: PROJECT MANAGEMENT

2.1 INCLUDE PROJECT PLAN

- 2.1.1 INITIATION**
- 2.1.2 PLANNING**
- 2.1.3 DEVELOPMENT**
- 2.1.4 CONTROL & MONITOR**
- 2.1.5 CLOSURE**

2.2 PROJECT PLANNING TASK

2.3 RISK MANAGEMENT

2.1 INCLUDE PROJECT PLAN

SDLC

The software development life cycle (SDLC) is the process of creating or altering software Systems, and the models and methodologies that people use to develop these systems. In any such lifecycle, people, process and technology all play a role in success. Various phases of SDLC:

- Initiation
- Planning
- Development
- Control & monitor
- Closure

2.1.1 INITIATION

Requirement analysis: As a heart of a system analysis is a detailed understanding of all important phases of the existing system it requires study of manuals and reports actual observation of work activities and collection of samples of forms and documents to fully understand the process

System analysis:

This phase provides the overall requirement for the system what is to be done. Input for this phase is the information collected through several data collection schemes such as survey cross-questioning-answering etc. and the raw data obtained which is not properly ordered and not in the precise manner. So reducing the total development cost and also established the various points for validation and verification.

2.1.2 SYSTEM DESIGN:

After the analysis phase we have with us the details of the existing system and the requirement of the user for the new system. This phase diverts focus from the problem domain to the solution domain it acts as a bridge between the requirement phase and its solution the design phase focused on the detailed implementation of the system recommended in the feasibility study.

2.1.3 PLANNING

Define the project objective and the plan to meet those objectives reappraised the projects intended functionality and the risk associated with achieving that functionality as the

capabilities and risk are better understood the requirements should be updated other aspects to consider in this group are time/cost estimated and resource allocation.

2.1.4 SYSTEM DEVELOPMENT

Once the code is generated the software program testing begins. Different testing methodologies are available to bugs that were committed during the previous phase some companies build their own testing that is tailor made for their own development operation.

2.1.5 CONTROL AND MONITOR

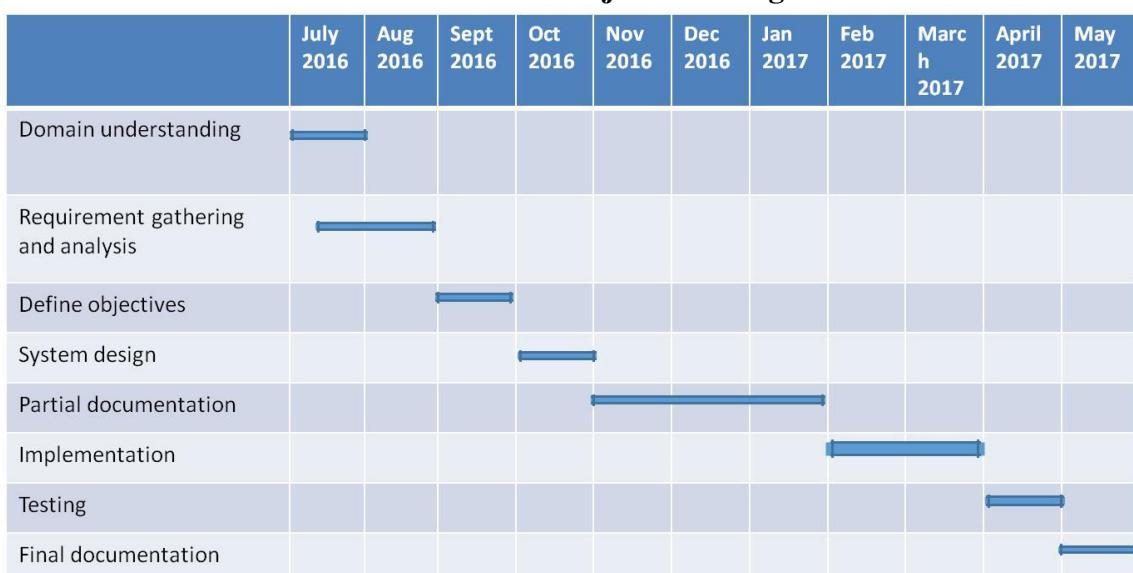
Monitor the progress of the project and make necessary adjustment to ensure it is delivered within scope schedule and cost this include managing change requests monitoring risk, and dealing with various issues and problems as they arise. Quality control, schedule control and cost control and overall performance reporting are important consideration during this process.

2.1.6 CLOSURE

Close the project by ensuring all major issues have been resolved and the documentation has been distributed and filed appropriately.

2.2 PROJECT PLANNING TASK:

Table 2.1 Project Planning



2.3 RISK MANAGEMENT

Risk management is the process of measuring or assessing risk and developing strategies to manage it. Strategies include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk.

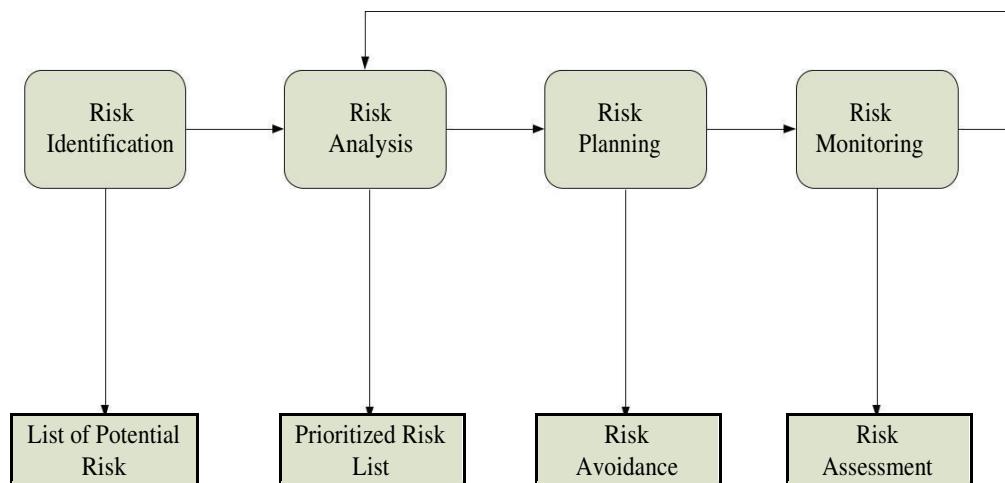


Figure 2.1: RISK Architecture

Establishing the context involves

1. Planning the remainder of the process.
2. Mapping out the following: the scope of the exercise, and objectives of stakeholders.
3. Defining a framework for the process and an agenda for identification.
4. Developing an analysis of risk involved in the process.

2.3.1 RISK IDENTIFICATION

After establishing the context, the next step in the process of managing risk is to identify potential risks. Risks are about events that, when triggered cause problems. Hence, risk identification can start with the source of problems, or with the problem itself.

In this project there can be following risks.

- The other risk is associated with the software.
- There can be risk of natural threats.

2.3.2 RISK PLANNING

This can include a combination of plans to either:

- Risk avoidance: minimize the potential for those risks to materialize
- Mitigation of the consequences: minimize the severity of risks if they do occur

How to improve the quality of the developers to develop for risk planning?

- To develop the project plan, the assessment of the development time to be as appropriate as possible. Reasonable development times have a great impact on the development of quality.
- A set of strict and workable code specifications, strict compliance with coding, code review strict assessment.
- Before encoding, the developers of the framework to master.
- A good system design is a very important document guiding development.
- **Resources risk: the required human resources can't be in place on time, leading to resource risk.**

CHAPTER 3: SYSTEM REQUIREMENTS & SPECIFICATION

3.1 USER CHARACTERISTICS

3.2 SYSTEM CHARACTERISTICS

3.3 PRODUCT PERSPECTIVE

 3.3.1 HARDWARE REQUIREMENT

 3.3.2 SOFTWARE REQUIREMENT

 3.3.3 MEMORY REQUIREMENT

3.4 CONSTRAINTS

3.1 USER CHARACTERISTICS

This application is developed such that total appearance of the product to make it more user friendly.

User:

Owner:

- Owner will use our application for manage the employees, task, inventory.
- Owner will also generate the invoice for orders, allocate the task per employee and can look upto on task and its status regularly.
- Owner will generate a report on progress for monthly/yearly that will help him/her to guess the company progress and analyse the inventory, workload, etc.

Employee:

- Employee will upload his/her task completion or data of the work.

Administrator:

- The Admin has the entire control over the entire system.
- The Administrator will generate the result for the given input and display in the hierarchy format of employees to owner.
- Admin will also calculate the input of workload based on the user input and generate the chart or report for progress analysis.
- Administrator will provide the rights and authorization to add employees and upload data.

3.2 SYSTEM CHARACTERISTICS

The system characteristics have been divided into the following categories:

- User account handling.
- Add employees on the level of position.
- Create the multiple task and allocate it to the employee.
- A page that show the monthly/yearly progress of the task and its status.
- Graphical representation of result.

3.3 PRODUCT PERSPECTIVE

3.3.1 H/W REQUIREMENT

Processor	2.20 GHz
RAM	1 GB
Hard Disk	500GB

Table 3.1 HARDWARE REQUIREMENT

3.3.2 S/W REQUIREMENT

Operating System	Windows Server 2003 or any compatible server OS
Framework	JAVA
Web Server	APACHE TOMCAT
Front End	JavaScript , Html , css
Back End	Oracle / MYSQL

Table 3.2 SOFTWARE REQUIREMENT

3.3.3. MEMORY REQUIREMENT

- Just Any browser can be used to access the project.
- A very less amount of memory is consumed.

3.4 CONSTRAINTS

3.4.1 Hardware constraints:

We have used HIBERNATE framework to build the application and for that Minimum 512 MB RAM is required with 800MB of Hard Disk Space with minimum 1 GHz processor. This is one time hardware requirement. Because after hosting the site, client does not need extra hardware specification.

3.4.2 Design constraints:

To avoid duplication in the database we have used primary key as well as

some times also used unique key. To establish relationship between columns of multiple tables, we have used foreign key constraints.

3.4.3 Reliability:

This application must be reliable means it should not be crashed during the execution. We have cared properly no to crash the software. We have used unlimited bandwidth to give high performance in the heavy traffic on the application site.

3.4.4 Availability:

We have considered all the basic requirements of the users before developing the site. So we have provided most of the features to be useful in the application, like submit requirements, updation in requirements, analysis of requirements, project management.

3.4.5 Security:

Security is also a prime requirement of any application. For the security purpose we have used Login authentication before using any feature of the application. We have also encrypted the password of the user in the database to make more secure database.

3.4.6 Maintainability:

The application is online when we want to maintain anything we have to put site offline. The maintainability of site will be little bit hard but we have designed the application in a way that it will be easy to maintain the application.

3.4.7 Portability:

We have used JAVA, HIBERNATE as a back end language and SERVLET and JSP as front end. For business login, JAVA compiler compiles any of the syntaxes written in JAVA language.

CHAPTER 4: SYSTEM ANALYSIS DESIGN

4.1 SYSTEM ANALYSIS

4.1.1 STUDY OF CURRENT SYSTEMS

4.1.2 PROBLEMS AND WEAKNESS OF CURRENT SYSTEM

4.1.3 REQUIREMENTS OF NEW SYSTEM

4.2 REQUIREMENT ANALYSIS

4.3 REQUIREMENT VALIDATION

4.4 SYSTEM DESIGN

4.5 DATA DICTIONARY

4.1 SYSTEM ANALYSIS

4.1.1 STUDY OF CURRENT SYSTEM

- **Bitrix24**

Bitrix24 is very popular, actively maintained and free trial given to each user till 100 employees and one month validity. Bitrix24 is based on very large organization. It is designed to make its users pretty happy by using different graphics and animations.

4.1.2 PROBLEMS AND WEAKNESS OF CURRENT SYSTEM

- **Bitrix24**

It is giving free trial for one month only. Bitrix24 is too complex to understand it whole. It is not reachable to small to medium business organization. It can not be maintained easily by owner as well because it is for more than 5000 employees.

4.1.3 REQUIREMENTS OF THE NEW SYSTEM

❖ Functional Requirements

- **Administration**

It is the function of the person who has the authority to bring about any changes, decide what data should be there and what should not be the part of the project

- **Software**

It is the part that provides the information about the process which is done by the project.

- **Services**

Services provide with the information about the various functions and the services offered and provided by the site which can be availed by the users or the members.

❖ Non-Functional Requirements

- System should work efficiently even on slow internet connections.
- System should be user friendly and user can understand how to use it efficiently.
- Secure Database.
- Communication between owner and employee easily.
- Allow requirements changes and can request for updating.
- Provide customer support and feedback facility.
- Customer satisfaction

4.2 REQUIREMENT ANALYSIS

❖ FEASIBILITY STUDY

Feasibility is the measure of how beneficial the development of an information system will be to an organization. A process by which we measure feasibility is called as the feasibility analysis.

The Feasibility analysis is categorized under four different types.

- Operational Feasibility.
 - Technical Feasibility.
 - Schedule Feasibility.
 - Economical Feasibility.
-
- **Operational Feasibility**

Operational feasibility is measures of how will the solutions work in the organization and is mostly people oriented. The problem is worth serving, as it would let the users download and upload. The solution would definitely work. The simple reason being that the problems are dealt with the help of good books and expert faculties & also very useful to search topics in the internet.

- **Technical feasibility**

It is a measure of practically of a specific technical solution and the availability of technical resource and expertise .The analyst must find out whether current technical resources, which are available in the system is capable of handling **the visitor's requirements or not. If not, then the analyst with the help of developers** should confirm whether the technology is available and capable or not.

Factor Considering:-

- Here we have to consider those tools, which will be requiring for developing the project.
- The tools which are available and the tools, which will be required, have to take in account.
- As far as basic knowledge is concerned we have studied we have basic knowledge of JAVA and ORACLE/MYSQL
- Dealing with database is the main issues in our system. Using MYSQL and MongoDB as backend provided this functionality.

- **Schedule feasibility**

Schedule feasibility corresponds to whether sufficient time is available to complete the project.

Factor considered:

- Schedule of the project.
- Time by which the project has to be completed.
- Reporting period.

Considering all above factors it was decided that we have sufficient time and we decide to start the project. By marinating the schedule we were able to complete the project on time.

- **Economical Feasibility**

Economic feasibility is a measure of cost effectiveness of a project or solution. For declaring that the system is economically feasible the benefits from the project should exceed or at least be equal to the cost of development. The cost spent in the making of the project is categorized into two parts:

i. Direct cost:

This is in terms of money.

- Hardware (Computer)
- Software (Eclipse IDE)
- System study

ii. Indirect cost:

This is in terms of labour or the manual work.

- Time spent in system analysis
- Managing time
- Referring other sources like the internet.

4.3 REQUIREMENT VALIDATIONS

This project contains the following validations: These validations include input validation for the members or the users while registration.

- Some fields are compulsory to be filled by the owner.
- At the time of Login, User-id & Password must be required.
- **The email id should contain symbols like '@' and '.'**
- Compare validation is used to compare and confirm the password.

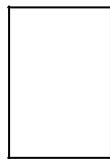
CHAPTER 5: SYSTEM DESIGN

5.1 Use case Diagram:

A use case is triggered by an actor. Actors and use cases are connected through binary associations indicating that the two communicate through message passing.

An actor must be associated with at least one use case. Similarly, a given use case must be associated with at least one actor. Association among the actors are usually not shown. However, one can depict the class hierarchy among actors.

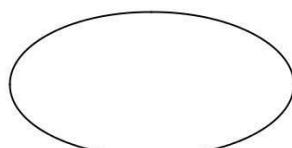
USE-CASE DIAGRAM NOTATION



System Boundary



Actors



Use cases

5.1.1 Use Case of System

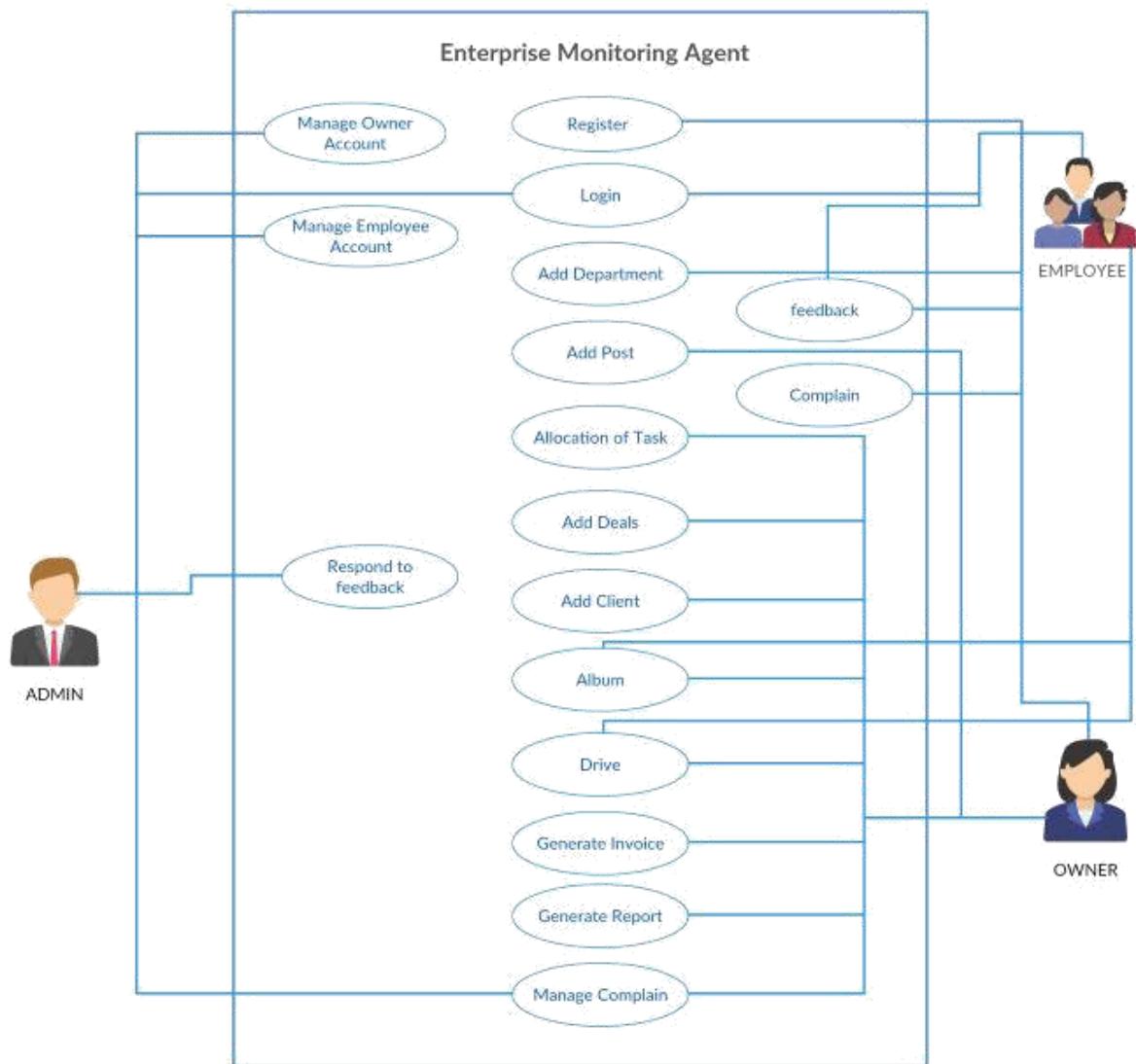


Figure 5.1: Use Case Diagram

5.2 Data Flow Diagrams

One of the tools of Structured Analysis is the data flow diagram. A Data Flow Diagram is a graphical representation of the System. The analyst can use Data Flow Diagram to explain his understanding about the System.

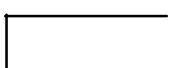
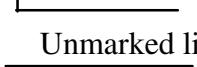
Application:-

- Data flow models are an intuitive way of showing how data is processed by a system.
- At analysis level analyst should be used to model the way in which data is processed in the existing system
- Data flow models are used to show how data flows through a sequence of processing steps.

Description:-

- A graphical tool used to describe and analyze the movement of data through a system manual or automated including the process store of data and delays in the system
- The transformation of data from input to output through processes may be described logically and independently of the physical component associated with system
- The data transformation at each step before moving on to the next stage. These processing steps or transformation are programs function when data flow diagrams are used to document a software design

The Symbols that are used in the data flow diagram carry the following meaning:

	Rectangle	It symbolizes the source
	Ellipse/circle	It symbolized a process
	Open Rectangle	It symbolized a store data
	Unmarked line	It symbolizes connectivity without a dataflow
	Marked line	It symbolizes connectivity with dataflow.

5.2.1 Context Level

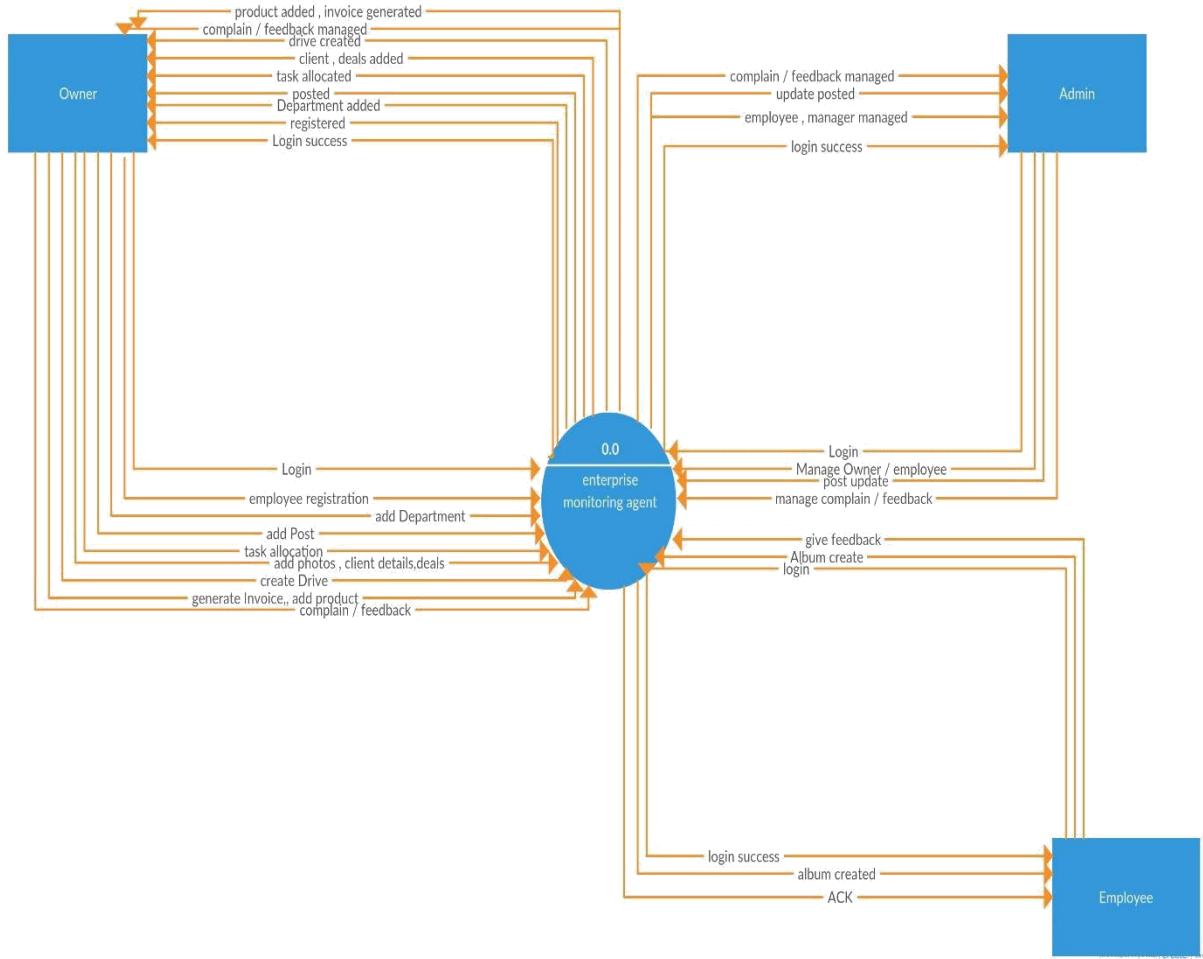


Figure 5.2: DFD-Context Level

5.2.2 First Level: Admin

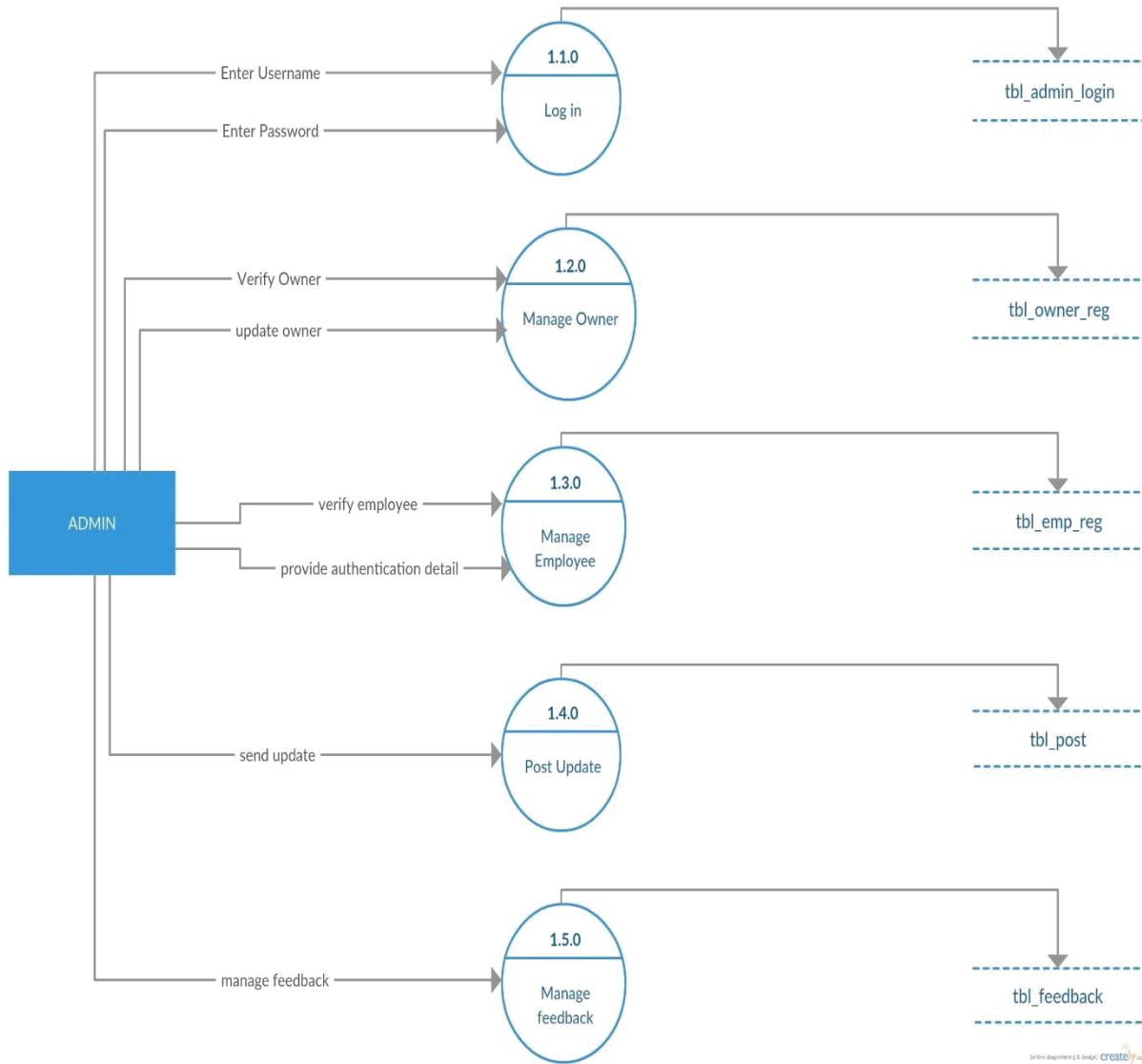


Figure 5.3: DFD-First Level: Admin

5.2.3 First Level: Owner

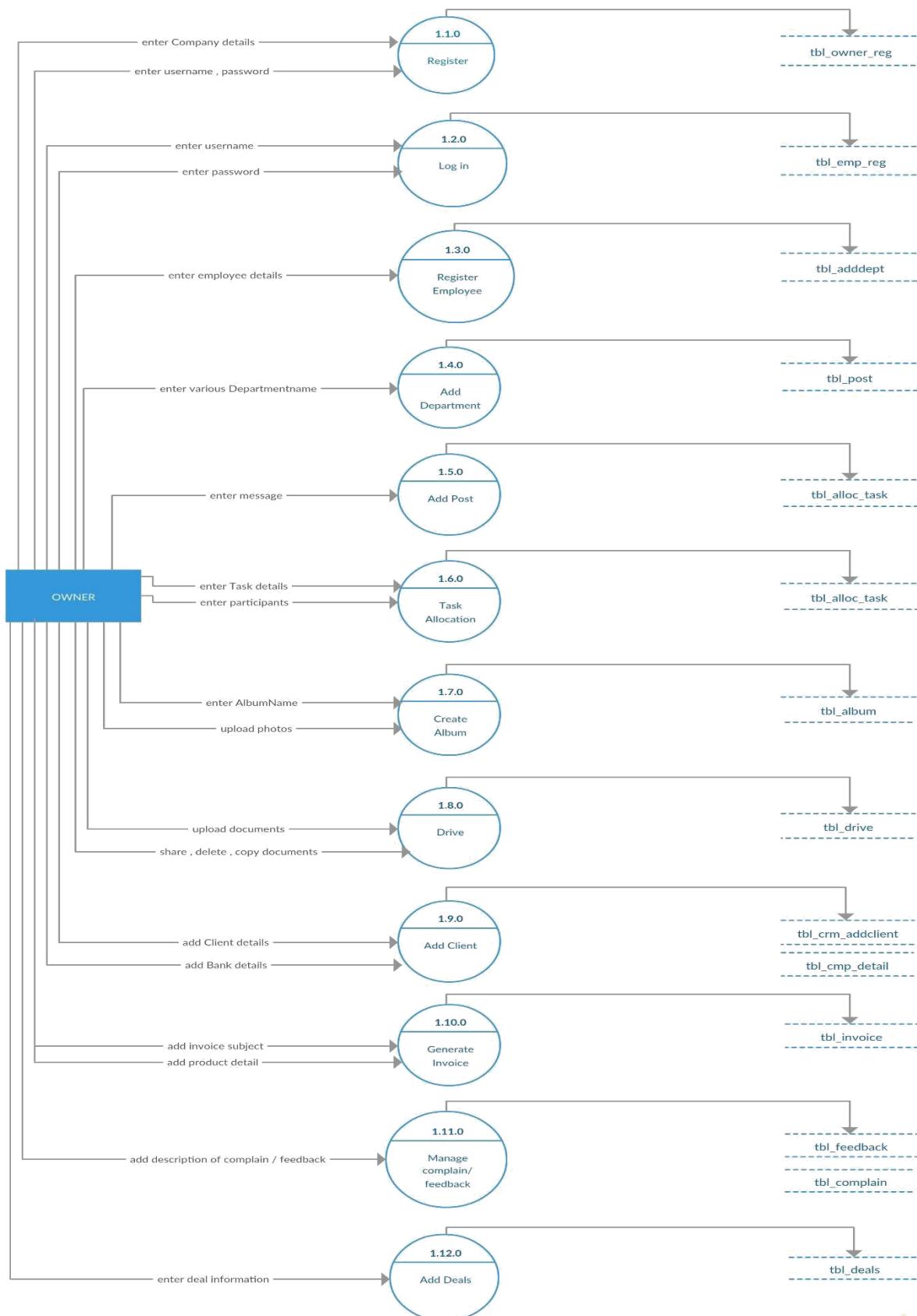


Fig. 5.4 DFD: First Level: owner

5.2.4 First Level: Employee

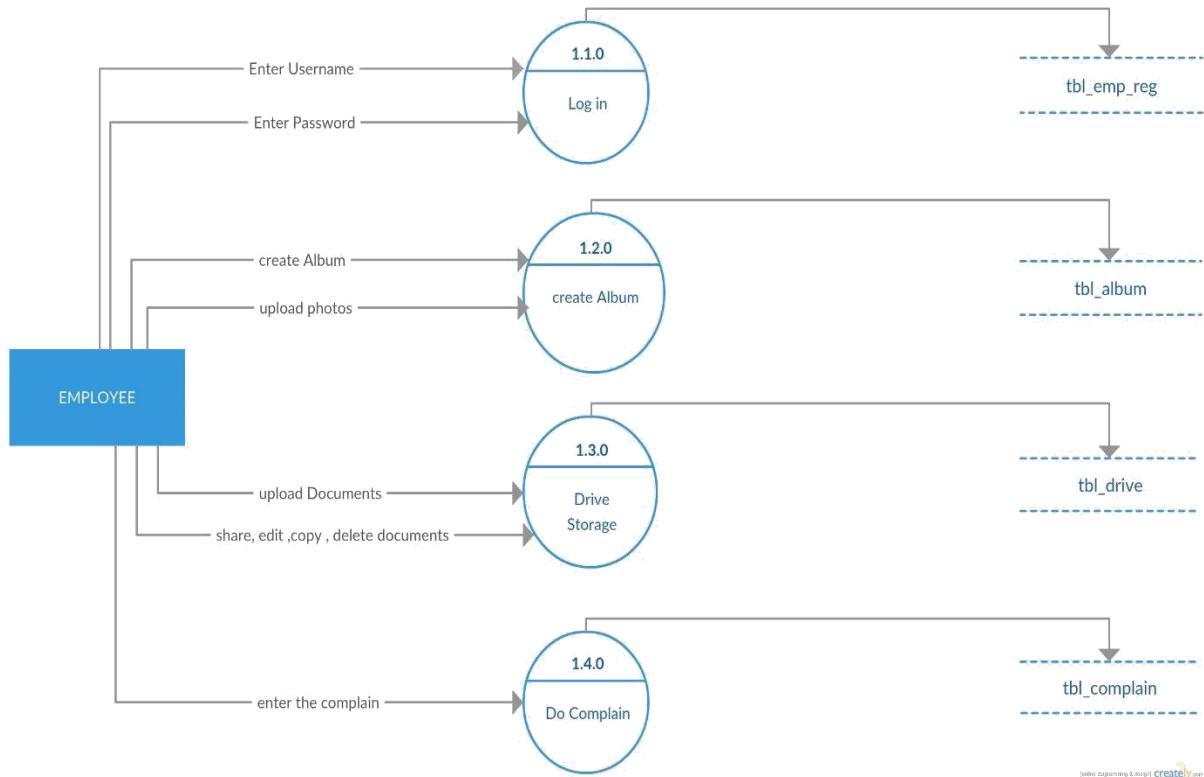


Fig. 5.5 DFD: First Level: Employee

5.3 Class Diagram:

It is a graphical representation for describing a system in context of its static construction.

❖ Elements in class diagram

Class diagram contains the system classes with its data members, operations and relationships between classes.

➤ Class

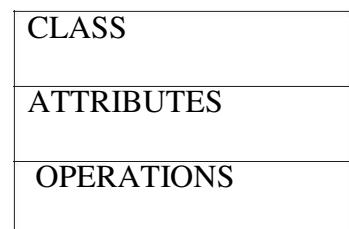
A set of objects containing similar data members and member functions is described by a class. In UML syntax, class is identified by solid outline rectangle with three compartments which contain

- Class name
- Attributes
- Operations

➤ **Relationships**

Existing relationships in a system describe legitimate connections between the classes in that system.

❖ **CLASS DIAGRAM NOTATIONS**

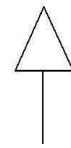


CLASS

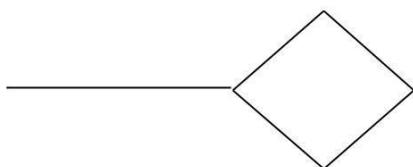
END 1

Binary Association

END 2



Generalization



Aggregation

5.3.1 Class Diagram of System

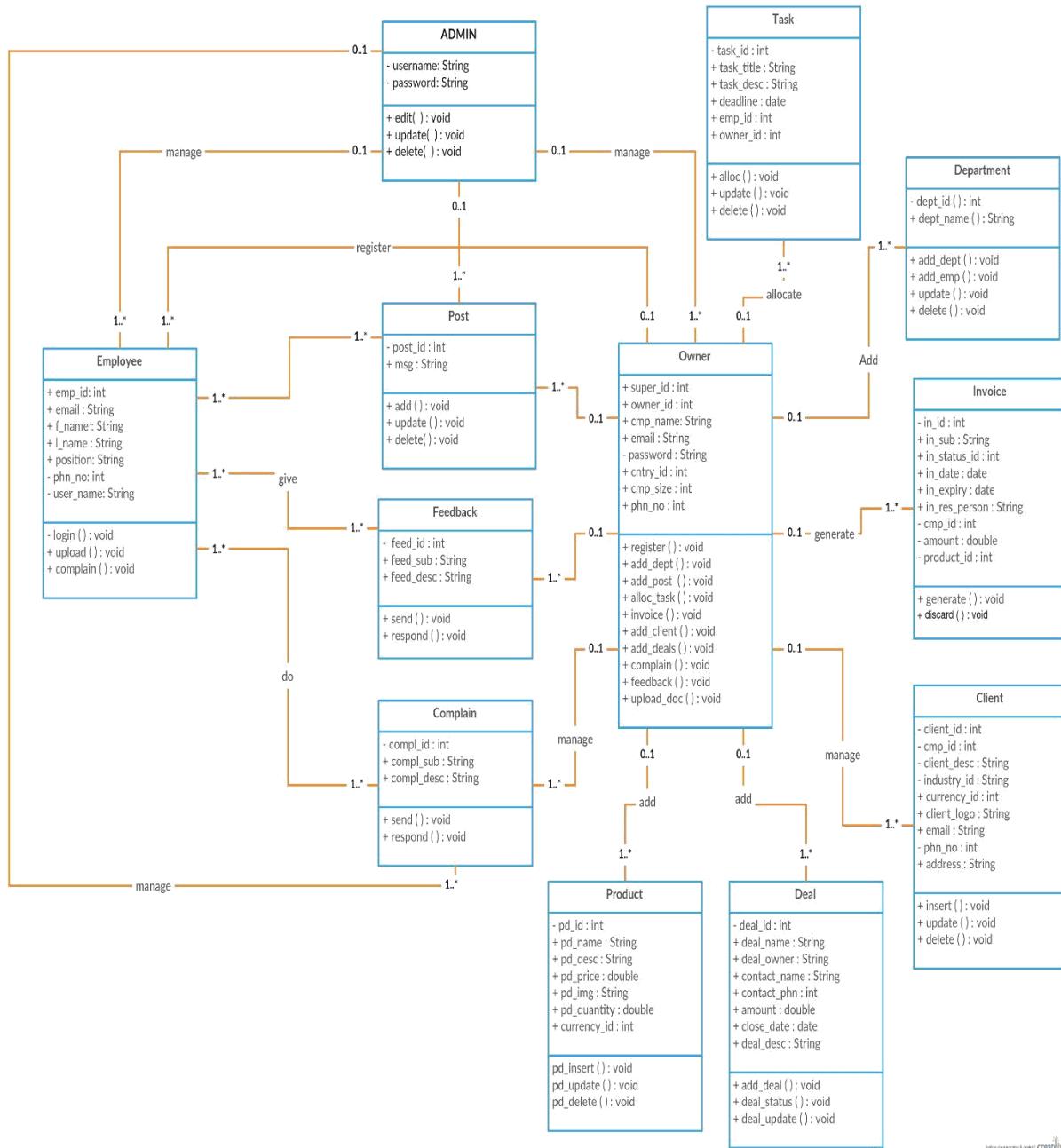


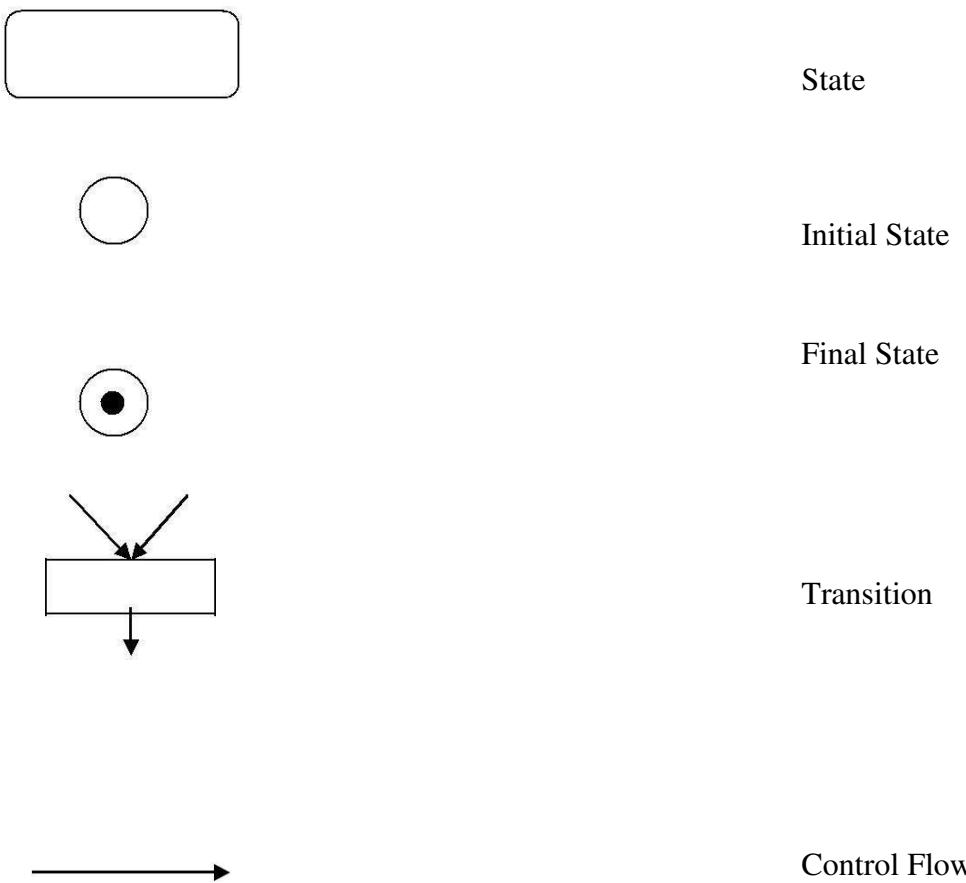
Figure 5.6: Class Diagram

5.4 Activity Diagram:

Activity diagrams fall under the category of behavioral diagrams in Unified Modeling Language. It is a high level diagram used to visually represent the flow of control in a system. It has similarities with traditional flow charts. However, it is more powerful than a simple flow chart since it can represent various other concepts like concurrent activities, their joining, and so on.

Activity diagrams, however, cannot depict the message passing among related objects. As such, it can't be directly translated into code. These kinds of diagrams are suitable for confirming the logic to be implemented with the business users. These diagrams are typically used when the business logic is complex. In simple scenarios it can be avoided entirely.

ACTIVITY DIAGRAM NOTATIONS



5.4.1 Activity diagram for Admin:

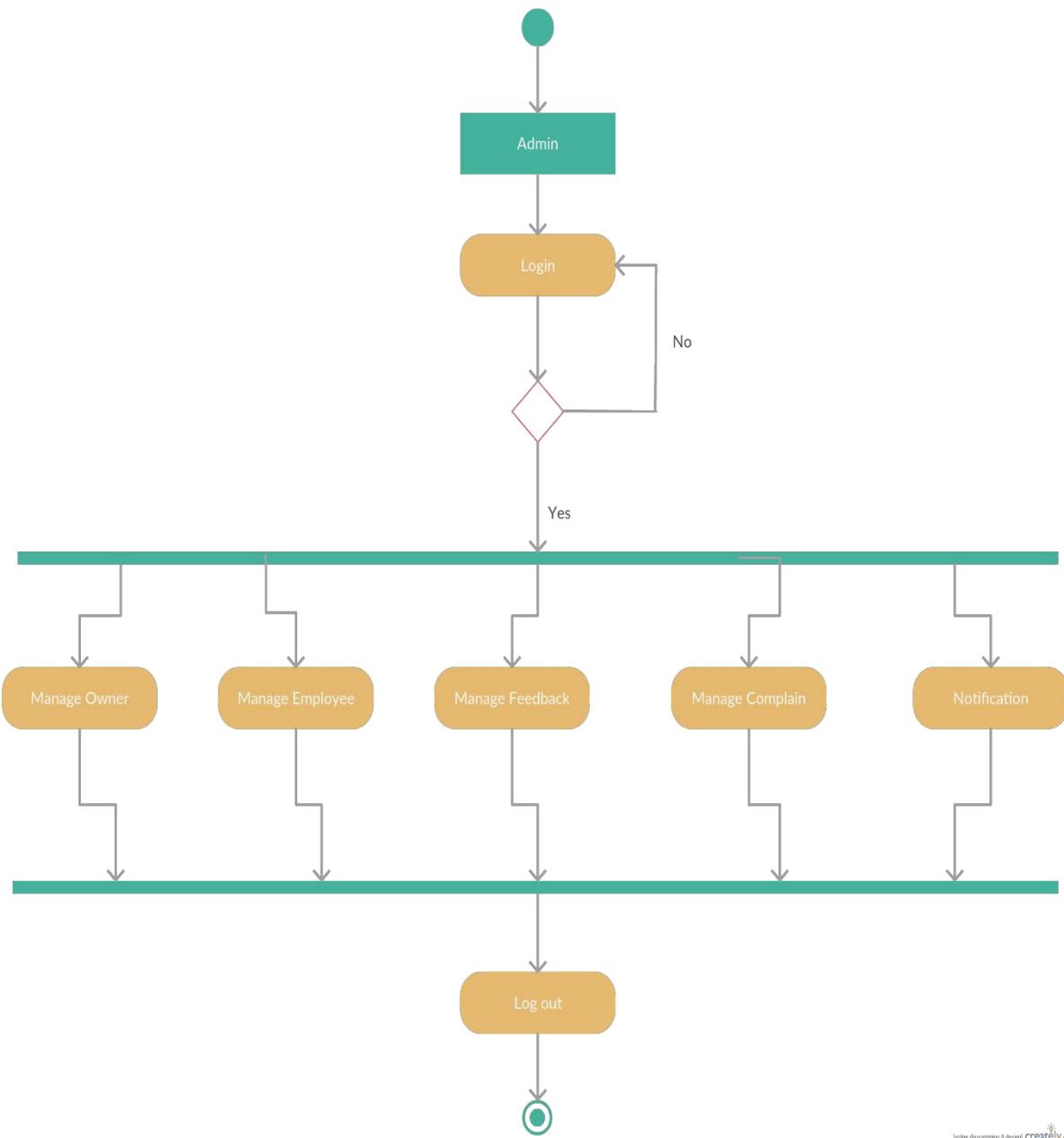


Figure 5.7: Activity Diagram : Admin

5.4.2 Activity diagram for Owner

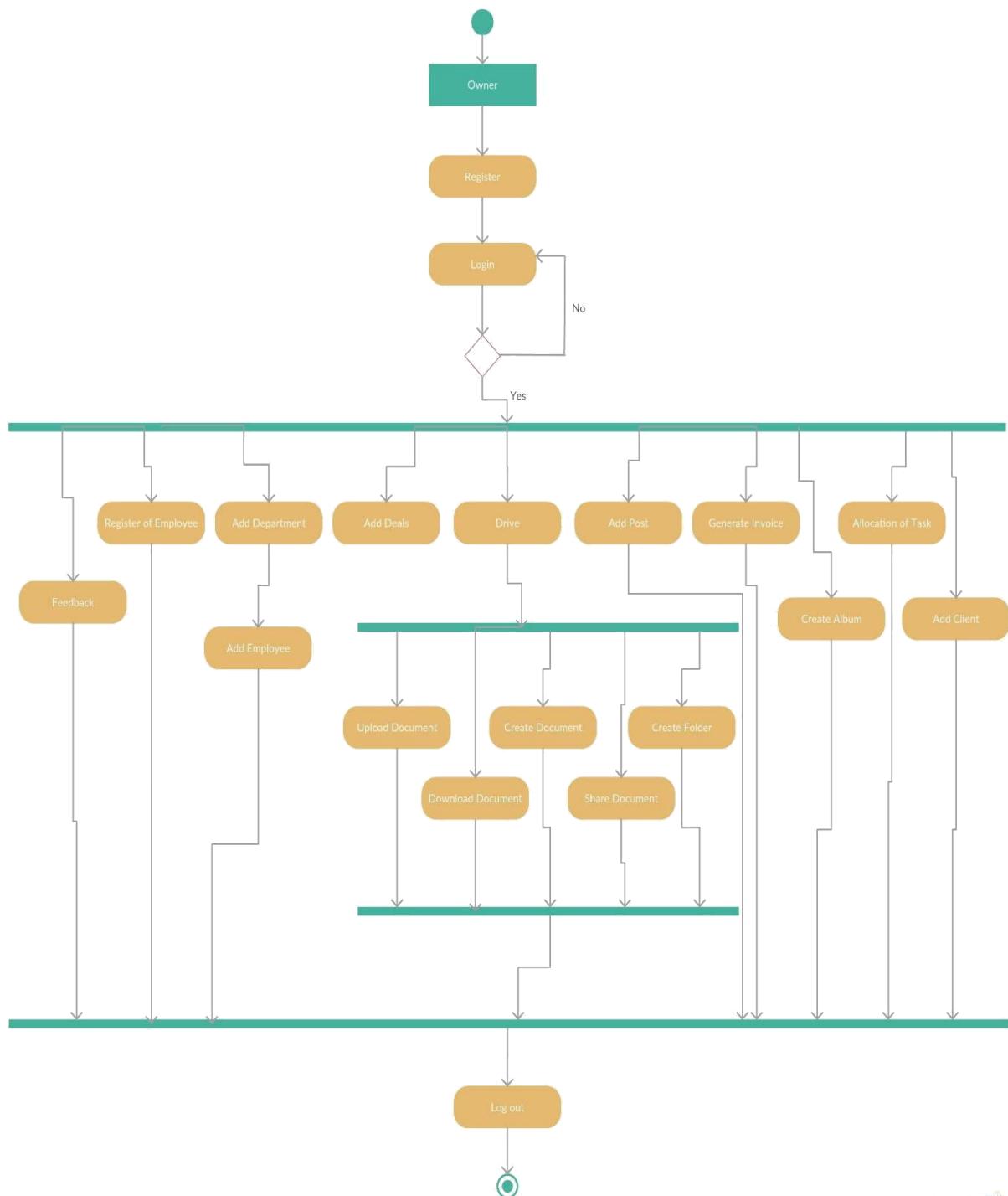


Figure 5.8: Activity Diagram : Owner

5.4.3 Activity diagram for Employee

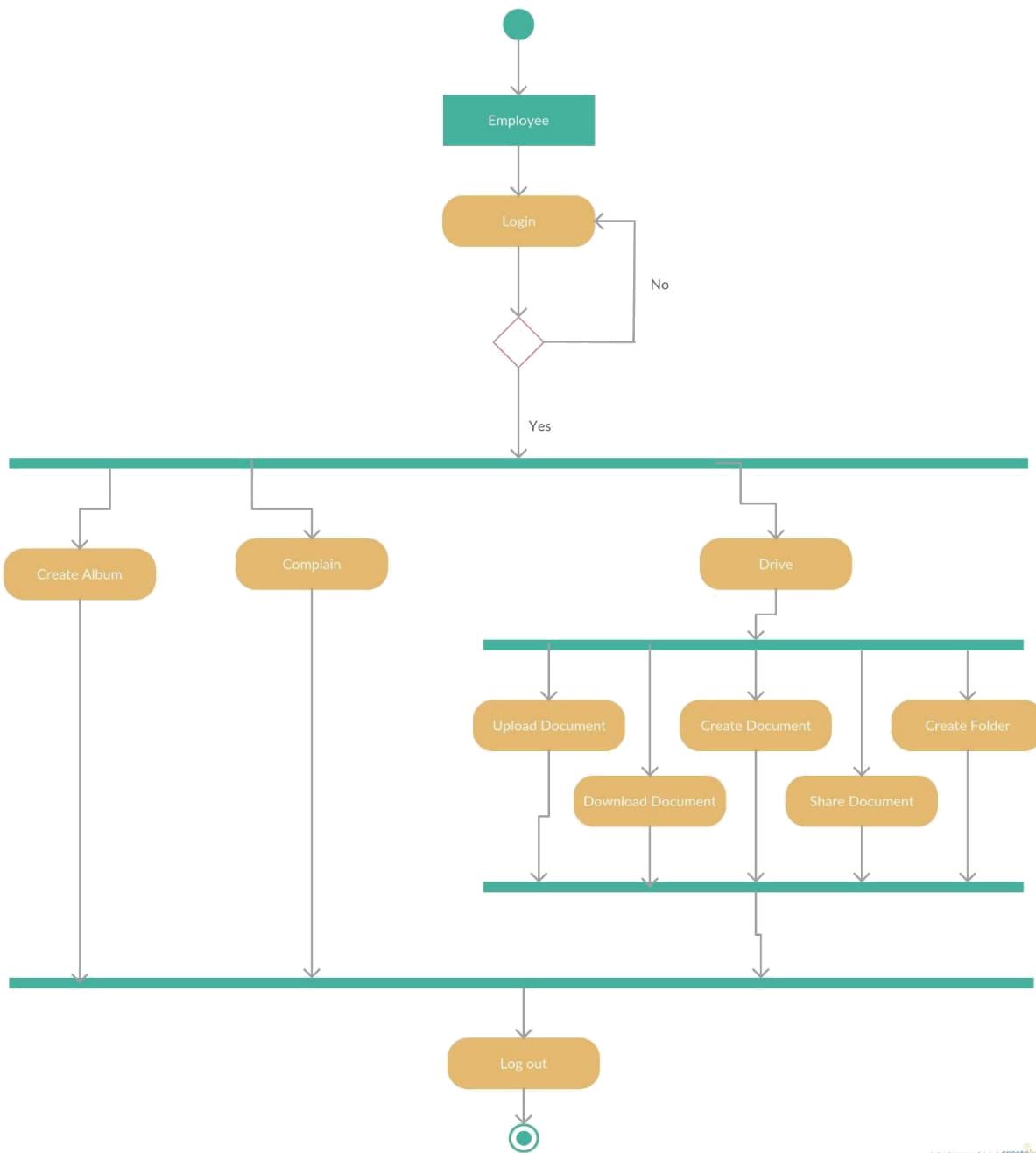


Figure 5.9: Activity Diagram : Employee

5.5 E-R DIAGRAM

Entity-Relationship model is used to represent a logical design of a database to be created. In ER model, real world objects (or concepts) are abstracted as entities, and different possible associations among them are modeled as relationships

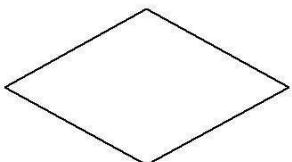
- **E-R DIAGRAM NOTATIONS**



An Entity set



An Attribute set



A Relationship set



Link between an Attribute set & Entity set

5.5.1 E-R DIAGRAM of System

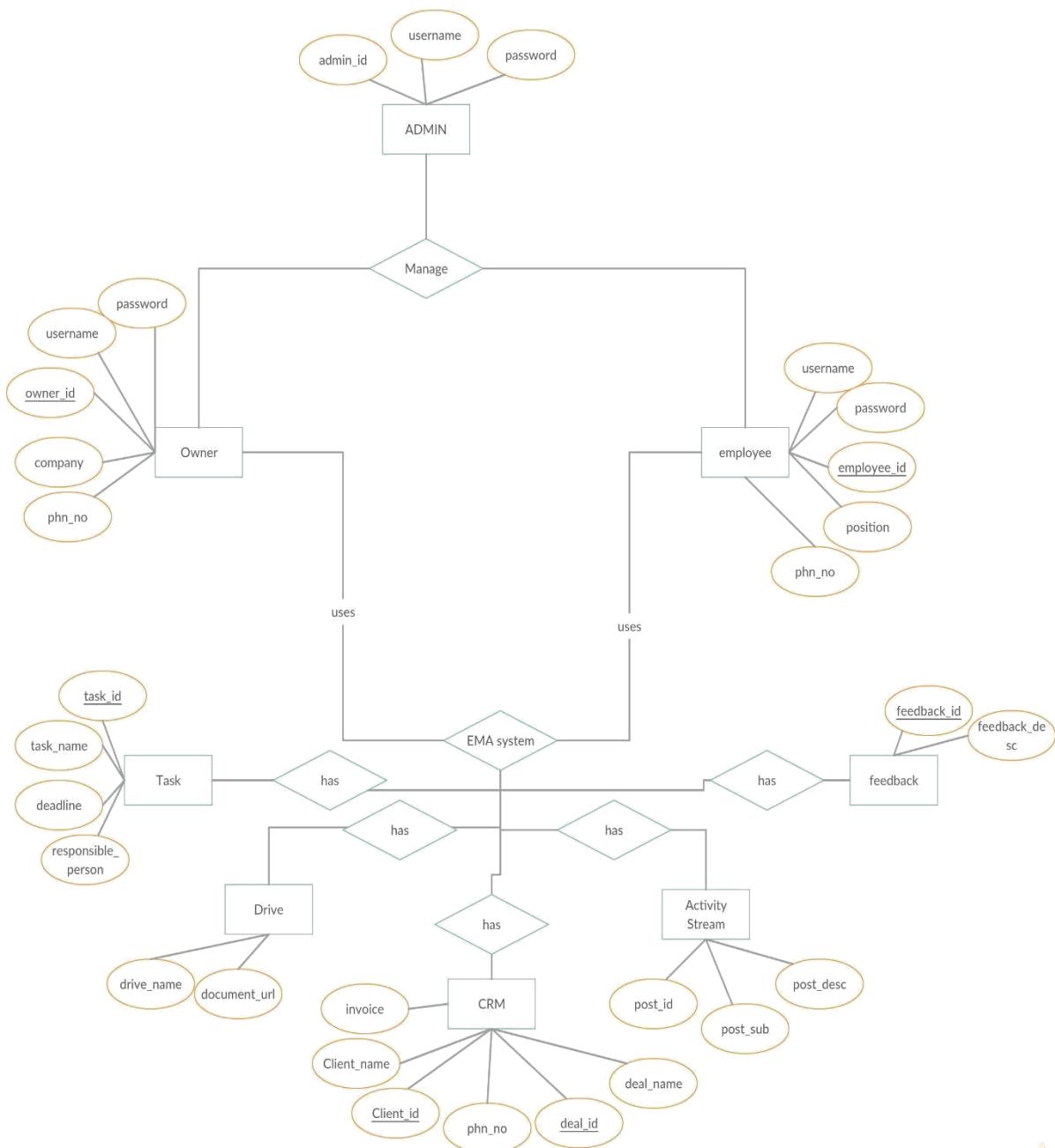


Fig. 5.10 E-R Diagram

5.6 SEQUENCE DIAGRAM

It represents the behavioral aspects of a system. Sequence diagram shows the interactions between the objects by means of passing messages from one object to another with respect to time in a system.

Elements in sequence diagram

Sequence diagram contains the objects of a system and their life-line bar and the messages passing between them.

- **Object**

- Objects appear at the top portion of sequence diagram. Object is shown in a rectangle box.
- Name of **object precedes a colon ‘:’ and the class name, from which the object** is instantiated.
- The whole string is underlined and appears in a rectangle box. Also, we may use only class name or only instance name.
- Objects which are created at the time of execution of use case and are involved in message passing , are appear in diagram, at the point of their creation.

- **Life-line bar**

A down-ward vertical line from object-box is shown as the life-line of the object. A rectangle bar on life-line indicates that it is active at that point of time.

- **Messages**

Messages are shown as an arrow from the life-line of sender object to the life-line of receiver object and labeled with the message name. Chronological order of the **messages passing throughout the objects’ life-line** show the sequence in which they occur. There may exist some different types of messages:

- **Synchronous messages:** Receiver start processing the message after receiving it and sender needs to wait until it is made. A straight arrow with close and fill arrow-head from sender life-line bar to receiver end, represent a synchronous message.
- **Asynchronous messages:** For asynchronous message sender needs not to wait for the receiver to process the message. A function call that creates thread can be represented as an asynchronous message in sequence diagram. A straight arrow with open arrow-head from sender life-line bar to receiver end,

represent an asynchronous message.

- **Return message:** For a function call when we need to return a value to the object, from which it was called, then we use return message. But, it is optional, and we are using it when we are going to model our system in much detail. A dashed arrow with open arrow-head from sender life-line bar to receiver end, represent that message.
- **Response message:** One object can send a message to self. We use this message when we need to show the interaction between the same object.

Message Type	Notation
Synchronous message	→
Asynchronous message	→
Response message	← - - - .

TABLE 5.1 SEQUENCE TABLE

➤ **SEQUENCE DIAGRAM NOTATIONS**



Object



Lifeline



Activation



Message

5.6.1 Sequence Diagram: Admin

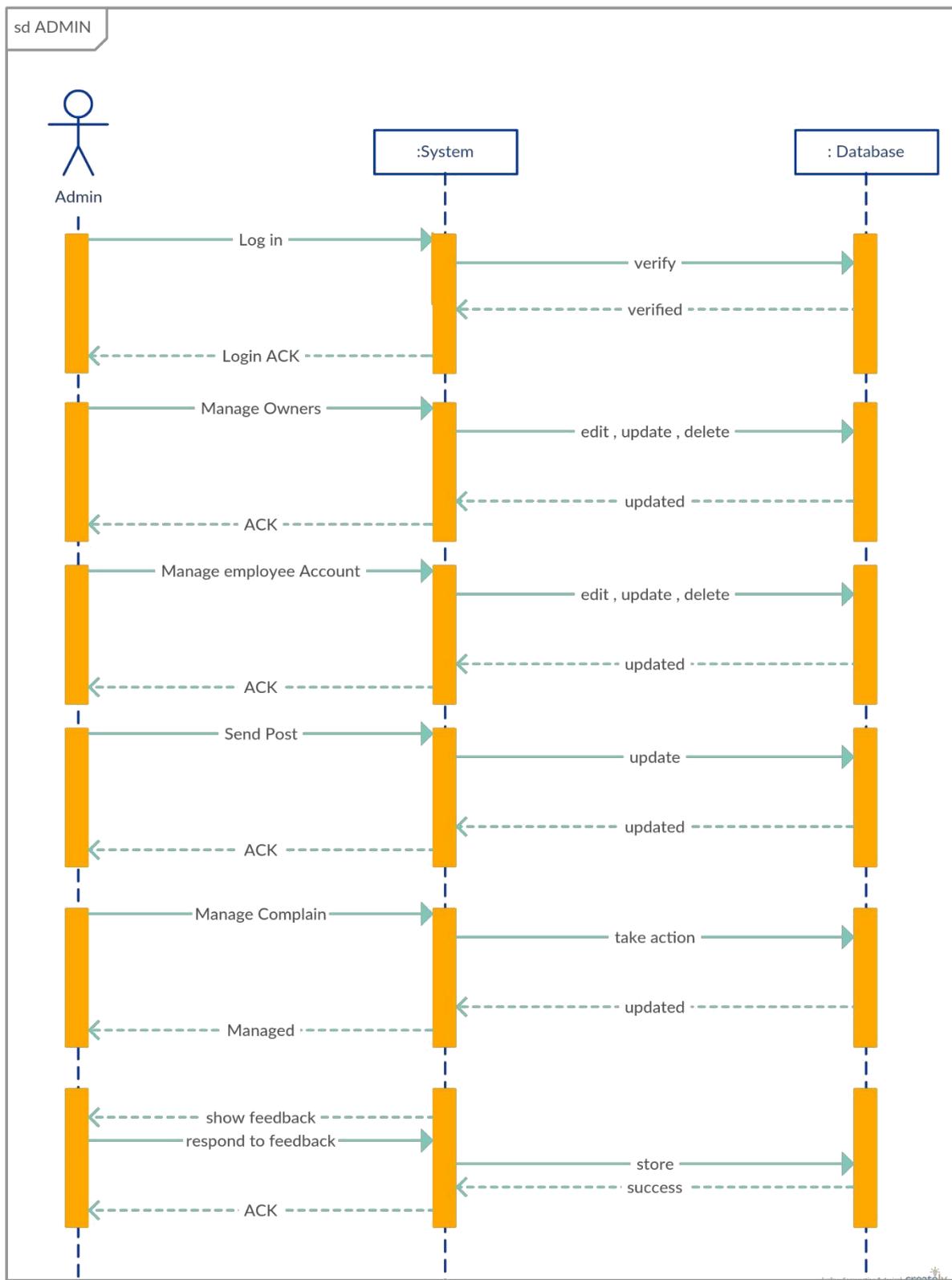


Fig. 5.11 Sequence Diagram: Admin

5.6.2 Sequence Diagram: Owner

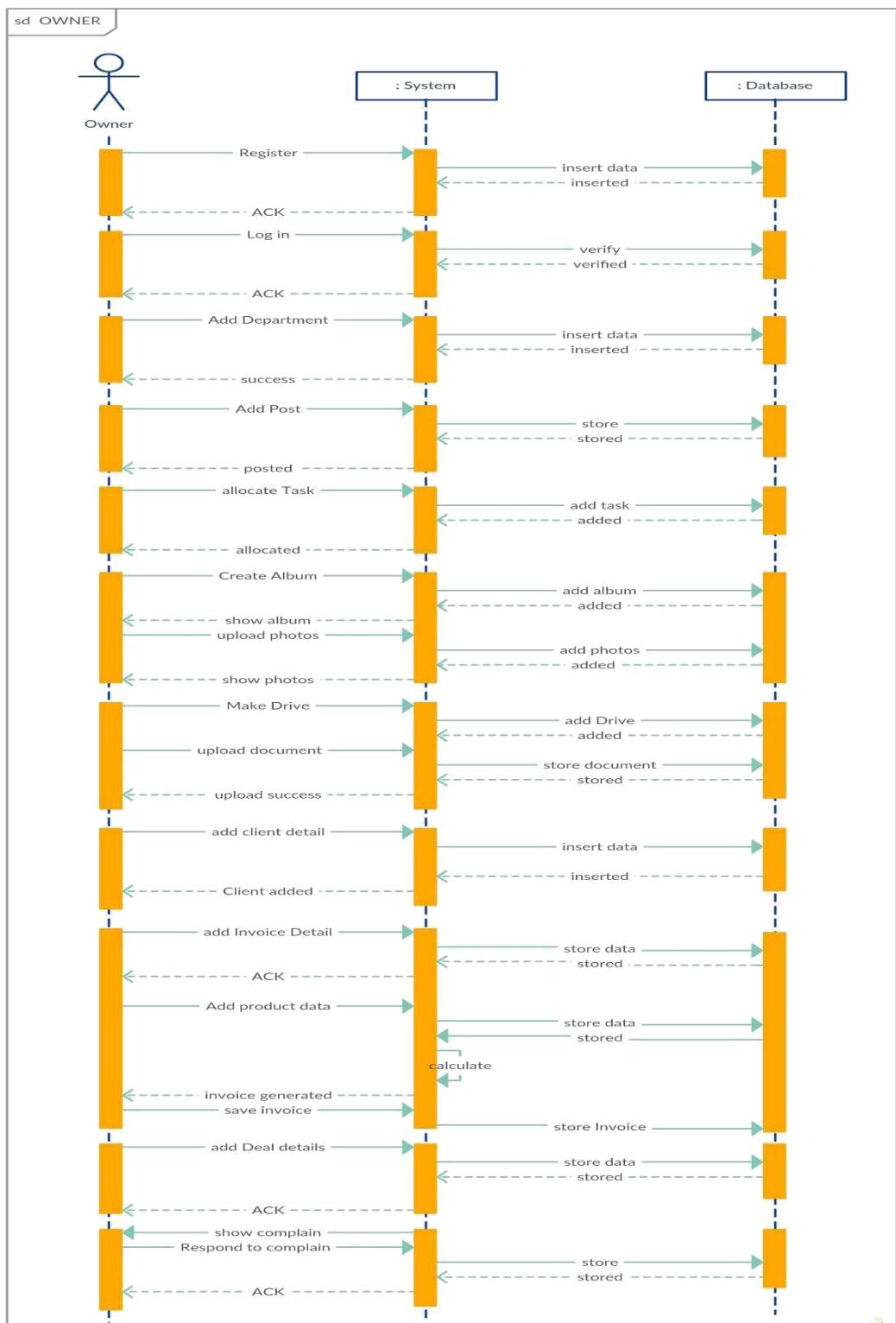


Fig. 5.12 Sequence Diagram: Owner

5.6.3 Sequence Diagram : Employee

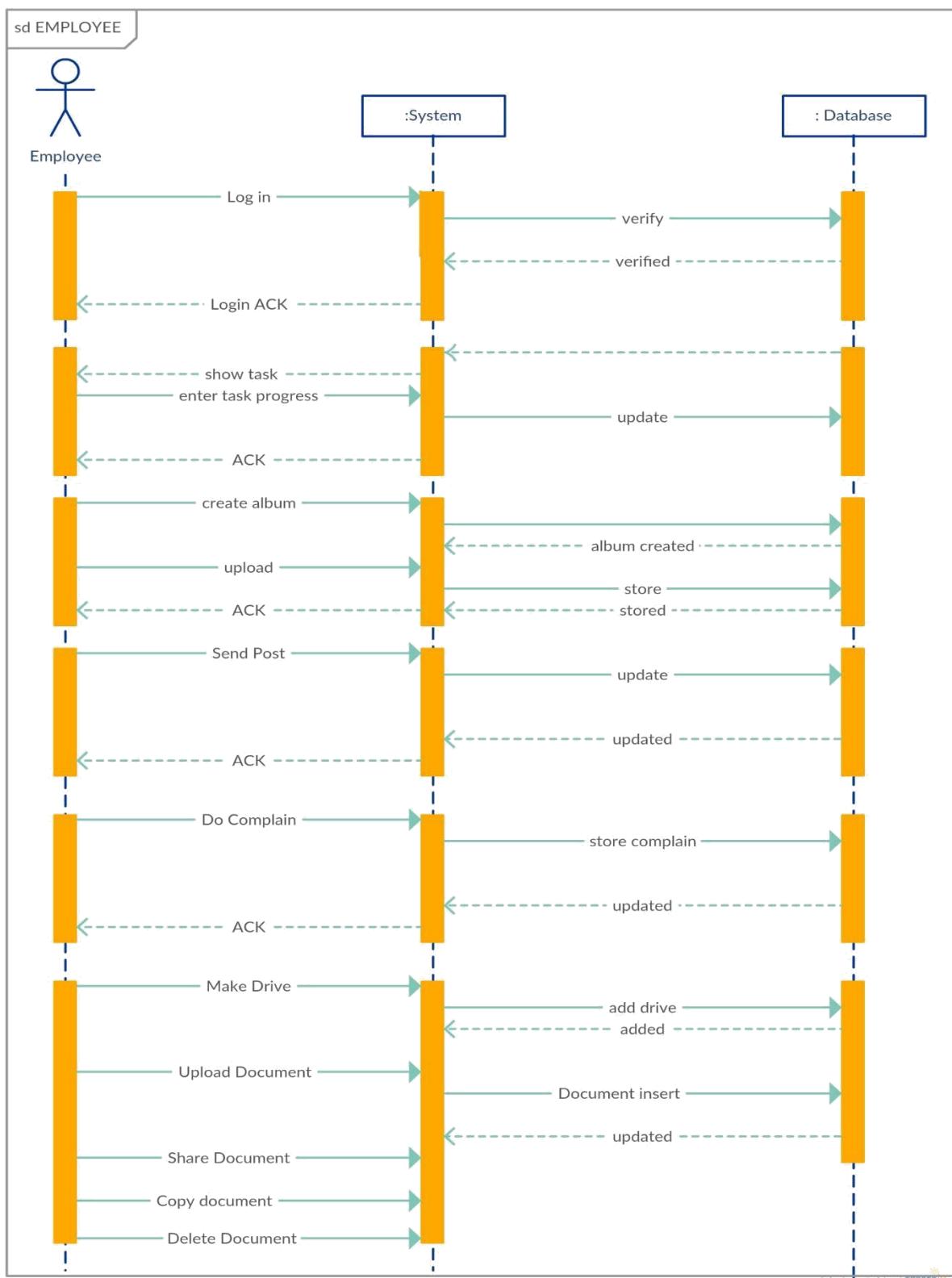


Fig. 5.13 Sequence Diagram: Owner

5.7 DATA DICTIONARY

What is Data Dictionary?

A Data Dictionary is catalog a repository of the elements in a system. As the name suggest, this element centers on data the way they are structured to meet user requirements and organization needs. In a Data Dictionary you will find a list of all the elements composing the data flowing through a system. The measure elements are data flows, data storage and processes. The Data Dictionary stores details and description of these elements.

Why is a Data Dictionary Important?

Analysis use Data Dictionary for five important reasons:

- To manage the details in large system
- To communicate a common meaning for all System elements
- To documents the features of the system
- To facilitate analysis of the detail in order to evaluate characteristics and determine Where system changes should be made
- To locate errors and omissions in the system.

5.7.1 Data Dictionary Tables

Owner Details

Column Name	Data Type	Length	Default	PK?	Not Null?
cmp_name	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
email	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
password	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
cntry_id	int	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
cmp_size	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
phn_no	int	10		<input type="checkbox"/>	<input checked="" type="checkbox"/>
owner_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
super_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Fig. 5.14 Data Dictionary : tbl_owner_reg

Employee Details

Column Name	Data Type	Length	Default	PK?	Not Null?
emp_id	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
email	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
password	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
fname	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
lname	varchar	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
phn_no	int	10		<input type="checkbox"/>	<input checked="" type="checkbox"/>
position	varchar	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
dept_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Fig. 5.15 Data Dictionary : tbl_emp_reg

Invoice Details

Column Name	Data Type	Length	Default	PK?	Not Null?
invoice_id	int	20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
in_subject	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
in_status_id	int	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
in_date	datetime			<input type="checkbox"/>	<input checked="" type="checkbox"/>
in_expiry	datetime			<input type="checkbox"/>	<input checked="" type="checkbox"/>
in_resperson	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
currency_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
deal_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
product_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
comments	varchar	30		<input type="checkbox"/>	<input type="checkbox"/>
amount	double	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
cmp_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Fig. 5.16 Data Dictionary : tbl_invoice

Product Details

Column Name	Data Type	Length	Default	PK?	Not Null?
product_id	int	20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
product_name	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
pd_desc	varchar	50		<input type="checkbox"/>	<input type="checkbox"/>
currency_id	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>
pd_price	double	40		<input type="checkbox"/>	<input checked="" type="checkbox"/>
unit_id	int	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
pd_img	text	50		<input type="checkbox"/>	<input checked="" type="checkbox"/>
pd_quantity	int	30		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Fig. 5.17 Data Dictionary : tbl_product

Task Details

Column Name	Data Type	Length	Default	PK?	Not Null?
task_id	int	20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
owner_id	int	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
emp_id	int	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
task_title	varchar	20		<input type="checkbox"/>	<input checked="" type="checkbox"/>
deadline	datetime			<input type="checkbox"/>	<input checked="" type="checkbox"/>

Fig. 5.18 Data Dictionary : tbl_task_alloc

5.8 SYSTEM'S SNAPSHOT

Owner Dashboard

The dashboard displays the following real-time statistics:

- 12 + NEW DEALS
- 2 + NEW CONTACTS
- 5 + NEW TASK
- 15 + NEW DOCUMENTS

Below the statistics, there is a bar chart titled "Deal Statistics" showing the count of deals over time.

Time Period	Count
March 7, 2017 - April 5, 2017	2
March 7, 2017 - April 5, 2017	2
March 7, 2017 - April 5, 2017	1
March 7, 2017 - April 5, 2017	2
March 7, 2017 - April 5, 2017	1
March 7, 2017 - April 5, 2017	1
March 7, 2017 - April 5, 2017	1

Contact Profile

The contact profile for Manan Prajapati shows the following details:

- Profile Picture:** Placeholder image of a man.
- Basic Information:**
 - Name: Manan Prajapati
 - Title: Owner
 - Email: manan96.mb@gmail.com
 - Phone: 9601440488
- Company Information:**
 - Company Name: Apple
- Tags:**
 - CEO
- Address:**
 - 20, umiyadham society, near navyug school, naroda

On the right side, a list of deals associated with Manan Prajapati is displayed:

Deals from Manan Prajapati
manan home \$56,0000 Manan Prajapati Close Date : 2011-08-05 00:00:00.0
Donuts \$50,000 Manan Prajapati Close Date : 2018-08-02 00:00:00.0
Nike Endorsement2 \$25000 Manan Prajapati Close Date : 2061-08-01 00:00:00.0
manan \$20,000 Manan Prajapati Close Date : 2017-08-04 00:00:00.0
Lenovo \$56,000 Manan Prajapati Close Date : 2091-08-01 00:00:00.0
man software 25000 Manan Prajapati

Owner Deals

Deals

New	Prospect	Proposal	Won	Lost
manan home \$56,0000 Manan Prajapati Close Date : 2011-08-05 00:00:00.0	Donuts \$50,000 Manan Prajapati Close Date : 2081-08-01 00:00:00.0	software \$50,000 Khyati Chaudhary Close Date : 2081-08-11 00:00:00.0	Nike Endorsement2 \$25000 Manan Prajapati Close Date : 2061-08-01 00:00:00.0	manan \$20,000 Manan Prajapati Close Date : 2017-08-04 00:00:00.0
man software 25000 Manan Prajapati Close Date : 2017-02-09 00:00:00.0	AWS Software 205555 Manan Prajapati Close Date : 2017-01-12 00:00:00.0	Lenovo \$56,000 Manan Prajapati Close Date : 2091-08-01 00:00:00.0	Dell 24666 Khyati Chaudhary Close Date : 2017-02-10 00:00:00.0	Bike \$2000 Khyati Chaudhary Close Date : 2018-08-12 00:00:00.0
Cloud \$2000 Khyati Chaudhary Close Date : 2017-10-12 00:00:00.0	java \$50,000 Khyati Chaudhary Close Date : 2017-02-05 00:00:00.0			

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Owner Tasks

Tasks

Add your task

Overdue	Today	Tomorrow	Later
Deal Low Manan Prajapati Close Date : 2018-08-05 00:00:00.0	Cloud Learning Low Manan Prajapati Close Date : 2019-01-04 00:00:00.0	Send Project Low Manan Prajapati Close Date : 2019-04-04 00:00:00.0	Complete Project Medium Khyati Chaudhary Close Date : 2017-09-05 00:00:00.0
Delete Contacts Low Khyati Chaudhary Close Date : 2018-08-05 00:00:00.0			

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Owner Calendar

The screenshot shows a calendar interface for the month of April 2017. The days of the week are labeled from Sunday to Saturday. Specific events are highlighted with colored boxes: 'manan home' on Monday, April 3rd (red box); 'Donuts' and 'software' on Tuesday, April 4th (yellow box); and 'manan home' on Wednesday, April 5th (red box). The sidebar on the left includes navigation links for Dashboard, Contacts, Companies, Deals, Documents, Calendar, and Tasks.

Deals Report

The screenshot displays a bar chart titled 'Deal Statistics'. The Y-axis represents numerical values from 0 to 2. The X-axis lists categories numbered 1 through 12. The bars show the following approximate values: Category 1: 2.0, Category 2: 2.0, Category 3: 1.0, Category 4: 2.0, Category 5: 1.0, Category 6: 2.0, Category 7: 0.7, Category 8: 1.0, Category 10: 1.0, and Category 12: 1.0. The sidebar on the left includes navigation links for Dashboard, Contacts, Companies, Deals, Documents, Calendar, and Tasks.

Category	Value
1	2.0
2	2.0
3	1.0
4	2.0
5	1.0
6	2.0
7	0.7
8	1.0
10	1.0
12	1.0

Conclusion

Enterprise Resource Planning is a System that automate the business planning that helps to grow the business. Each Largest companies have their own software that can lead them to automation of their processes. The Enterprise Monitoring Agent is free web application that will help small to medium business owners to experience the actual automatic and fast working of their processes. They can look after on their inventory on daily basis and can also manage different client orders. Owner can get into his business to need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

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APPENDIX

1. PERIODIC PROGESS REPORT (PPR)

1.1 PPR - 1

Welcome Prajapati Manan Bharathbai
Sign Out

Share your Feedback

[My Account](#) [Student](#)

Periodic Progress Report (PPR) Details

[PRINT](#) [BACK](#)

Enrollment No :	130130107095	College :	Government Engineering College, Sector - 28, Gandhinagar
Student Name :	Prajapati Manan Bharathbai	Department :	Computer Engineering
Mobile No :	9601440488	Discipline :	BE
Email :	manan96.mb@gmail.com	Semester :	Semester 7

PPR Details

Time Interval : -
Periodic Progress Report : First PPR

Project : Enterprise Monitoring Agent
Status : Reviewed (Freeze)

1. What Progress you have made in the Project ?
We have done requirement analysis and requirement gathering of our project. We have also defined the modules and functionality of each and every module.

2. What challenge you have faced ?
We have faced the challenge to define modules and functionality of each module, and how to implement those functionalities into particular modules.

3. What support you need ?
We need support to understand that how to use various tools and technologies to implement into our project.

4. Which literature you have referred ?
We have referred www.w3school.com for designing purpose and referred various websites related to our topic.

Document : No document uploaded

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

1.2 PPR - 2

 GTU - Project Monitoring and Mentoring System 

Welcome Prajapati Manan Bharatbhai
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Periodic Progress Report (PPR) Details

[PRINT](#) [BACK](#)

Enrollment No :	130130107095	College :	Government Engineering College, Sector - 28, Gandhinagar.
Student Name :	Prajapati Manan Bharatbhai	Department :	Computer Engineering
Mobile No :	9601440488	Discipline :	BE
Email :	manan96.mb@gmail.com	Semester :	Semester 7

PPR Details

Time Interval : 19 days, 8 hours
Periodic Progress Report : Second PPR

Project : Enterprise Monitoring Agent
Status : Submitted (Freeze)

1. What Progress you have made in the Project ?
We have done canvas designing and forms designing.

2. What challenge you have faced ?
We have faced the challenge to understand Canvas Design and to decide that what should be the content we should write for each module.

3. What support you need ?
We need support to learn deeply about our system and existing system that how they differ from each other.

4. Which literature you have referred ?
We have referred some websites and watched some videos for canvas designing , and some existing websites for forms designing.

Document : [No document uploaded](#)

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

1.3 PPR – 3

 GTU - Project Monitoring and Mentoring System

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Periodic Progress Report (PPR) Details

PRINT BACK

Enrollment No :	130130107095	College :	Government Engineering College, Sector - 28, Gandhinagar
Student Name :	Prajapati Manan Bharatbhai	Department :	Computer Engineering
Mobile No :	9601440488	Discipline :	BE
Email :	manan96.mb@gmail.com	Semester :	Semester 7

PPR Details

Time Interval : 8 days, 23 hours
Periodic Progress Report : Third PPR

Project : Enterprise Monitoring Agent
Status : Submitted (Freeze)

1. What Progress you have made in the Project ?
We have created UML Diagrams and designed the Data Dictionary.

2. What challenge you have faced ?
We have faced the challenges in deciding data flow of the system, defining the user and activity of that user in various UML diagrams.

3. What support you need ?
We need support to understand UML diagrams and how they are related to each other, and how to use various tools like MS Visio, Star UML, createy.com to create various diagrams.

4. Which literature you have referred ?
We have referred various videos for understanding UML diagrams and used www.createy.com for creating UML Diagrams.

Document : No document uploaded

Comments:

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

1.4 PPR - 4

 GTU - Project Monitoring and Mentoring System

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Periodic Progress Report (PPR) Details

PRINT BACK

Enrollment No :	130130107095	College :	Government Engineering College, Sector - 28, Gandhinagar
Student Name :	Prajapati Manan Bharatbhai	Department :	Computer Engineering
Mobile No :	9601440488	Discipline :	BE
Email :	manan96.mb@gmail.com	Semester :	Semester 7

PPR Details

Time Interval : 6 days, 15 hours
Periodic Progress Report : Forth PPR

Project : Enterprise Monitoring Agent
Status : Submitted (Freeze)

1. What Progress you have made in the Project ?
We made project report.

2. What challenge you have faced ?
We have faced challenges that which content should be included in the report and which content is more important.

3. What support you need ?
We took the support of our internal guide for making project report.

4. Which literature you have referred ?
We have referred various videos for making project report. Video link : 1) https://www.youtube.com/watch?v=H_b4Bh8lt8o 2) <https://www.youtube.com/watch?v=w-vvrcQdpZQ>

Document : No document uploaded

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

1. PATENT DRAFTING EXERCISE (PDE)

PDE 1

GIC Patent Drafting Exercise		Team ID: 80140																		
GTU Innovation Council Patent Drafting Exercise (PDE)																				
FORM 1 THE PATENTS ACT 1970 (39 OF 1970) & THE PATENTS RULES, 2003 APPLICATION FOR GRANT OF PATENT		(FOR OFFICE USE ONLY) Application No: Filing Date: Amount of Fee paid: CBR No: _____																		
1. Applicant(s) : <table border="1" style="width: 100%;"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Nationality</th> <th>Address</th> <th>Mobile No.</th> <th>Email</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Prajapati Manan Bharatbhai</td> <td>Indian</td> <td>Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.</td> <td>9601440488</td> <td>manan96.mb@gmail.com</td> </tr> <tr> <td>2</td> <td>Chaudhary Khyatibahen Pragajibhai</td> <td>Indian</td> <td>Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.</td> <td>9662752729</td> <td>khyatikhyati389@gmail.com</td> </tr> </tbody> </table>			ID	Name	Nationality	Address	Mobile No.	Email	1	Prajapati Manan Bharatbhai	Indian	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.	9601440488	manan96.mb@gmail.com	2	Chaudhary Khyatibahen Pragajibhai	Indian	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.	9662752729	khyatikhyati389@gmail.com
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2. Inventor(s): <table border="1" style="width: 100%;"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Nationality</th> <th>Address</th> <th>Mobile No.</th> <th>Email</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Prajapati Manan Bharatbhai</td> <td>Indian</td> <td>Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.</td> <td>9601440488</td> <td>manan96.mb@gmail.com</td> </tr> <tr> <td>2</td> <td>Chaudhary Khyatibahen Pragajibhai</td> <td>Indian</td> <td>Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.</td> <td>9662752729</td> <td>khyatikhyati389@gmail.com</td> </tr> </tbody> </table>			ID	Name	Nationality	Address	Mobile No.	Email	1	Prajapati Manan Bharatbhai	Indian	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.	9601440488	manan96.mb@gmail.com	2	Chaudhary Khyatibahen Pragajibhai	Indian	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.	9662752729	khyatikhyati389@gmail.com
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3. Title of Invention/Project: Enterprise Monitoring Agent																				
4. Address for correspondence of applicant/authorized patent agent in india <p>Name: Prajapati Manan Bharatbhai Address: Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University. Mobile: 9601440488</p>																				
Note : This is just a mock Patent Drafting Exercise (PDE) for semester 8, BE students of GTU.These documents are not to be submitted with any patent office.		Page 1																		

Email ID:	manan96.mb@gmail.com													
5. Priority particulars of the application(S) filed in convention country														
<table border="1"> <thead> <tr> <th>Country</th> <th>Application No.</th> <th>Filing Date</th> <th>Name of the Applicant</th> <th>Title of the Invention</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>					Country	Application No.	Filing Date	Name of the Applicant	Title of the Invention	N/A	N/A	N/A	N/A	N/A
Country	Application No.	Filing Date	Name of the Applicant	Title of the Invention										
N/A	N/A	N/A	N/A	N/A										
6. Particulars for filing patent co-operation treaty (pct) national phase Application														
<table border="1"> <thead> <tr> <th>International application number</th> <th>International filing date as allotted by the receiving office</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>					International application number	International filing date as allotted by the receiving office	N/A	N/A						
International application number	International filing date as allotted by the receiving office													
N/A	N/A													
7. Particulars for filing divisional application														
<table border="1"> <thead> <tr> <th>Original(First) Application Number</th> <th>Date of filing of Original (first) application</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>					Original(First) Application Number	Date of filing of Original (first) application	N/A	N/A						
Original(First) Application Number	Date of filing of Original (first) application													
N/A	N/A													
8. Particulars for filing patent of addition														
<table border="1"> <thead> <tr> <th>Original(First) Application Number</th> <th>Date of filing of Original (first) application</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>					Original(First) Application Number	Date of filing of Original (first) application	N/A	N/A						
Original(First) Application Number	Date of filing of Original (first) application													
N/A	N/A													
9. DECLARATIONS:														
(i) Declaration by the inventor(s)														
I/We, the above named inventor(s) is/are true & first inventor(s) for this invention and declare that the applicant(s). herein is/are my/our assignee or legal representative.														
Date : 15 - April - 2017														
Name		Signature & Date												
1 Prajapati Manan Bharatbhai		_____												
2 Chaudhary Khyatibahen Pragajibhai		_____												
(ii) Declaration by the applicant(s) in the convention country														
I/We, the applicant (s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.applicant(s)														
(iii) Declaration by the applicant(s)														
I/We, the applicant(s) hereby declare(s) that:-														
<p><input checked="" type="checkbox"/> I am/We in possession of the above mentioned invention.</p> <p><input checked="" type="checkbox"/> The provisional/complete specification relating to the invention is filed with this application.</p> <p><input checked="" type="checkbox"/> The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.</p> <p><input checked="" type="checkbox"/> There is no lawful ground of objection to the grant of the patent to me/us.</p>														
Note : This is just a mock Patent Drafting Exercise (PDE) for semester 8, BE students of GTU.These documents are not to be submitted with any patent office.														
				Page 2										

I am/we are the assignee or the legal representative of true & first inventors.

The application or each of the application,particulars of each are given in the para 5 was the first applicatin in the convention country/countries in respect of my/our invention.

I/we claim the priority from the above mentioned applications(s) filed in the convention country/countries & state that no application for protection in respect of invention had been made in a convention country before that date by me/us or by any person

My/Our application in india is based on international application under Patent Cooperation Treaty (PCT) as mentioned' in para 6

The application is divided out of my/our application(s) particulars of which are given in para 7 and pray that this application may be treated as deemed to have been filed on _____ under section 16 of the Act.

The said invention is an improvement in or modification of the invention particulars of ehivh are given in para 8.

10. Following are the attachments with the application:

(a) Provisional specification/Complete specification

(b) Complete specification(In confirmation with the international application) / as amended before the international Preliminary Examination Authority (IPEA),as applicable(2 copies),No.of pages.....No.of claims.....

(c) Drawings (In confirmation with the international application)/as amended before the international Preliminary Examination Authority(IPEA),as applicable(2 copies),No.of sheets....

(d) Priority documents

(e) Translations of priority documents/specification/international search reports

(f) Statement and undertaking on Form 3

(g) Power of Authority

(h) Declaration of inventorship on Form 5

(i) Sequence listing in electronic Form

(j) Fees Rs.XXX in Cash /Cheque/Bank Draft bearin No.XXX Date: XXX on XXX Bank.

I/We hereby declare that to the best of my /our knowledge, information and belief the fact and mters stated herein are correct and I/We request that a patent may be granted to me/us for the said invention.

Dated this 15 day of April , 2017

Name	Signature & Date
1 Prajapati Manan Bharatbhai	_____ लान
2 Chaudhary Khyatibahen Pragajibhai	_____

PDE 2

GIC Patent Drafting Exercise		Team ID: 80140																		
FORM 2 THE PATENTS ACT, 1970 (39 OF 1970) & THE PATENTS RULES, 2003 PROVISIONAL SPECIFICATION																				
<p>1. Title of the project/invention : Enterprise Monitoring Agent</p> <p>2. Applicant(s) :</p> <table> <tr> <td>1) (a) NAME</td> <td>:</td> <td>Prajapati Manan Bharatbhai</td> </tr> <tr> <td>(b) NATIONALITY</td> <td>:</td> <td>Indian</td> </tr> <tr> <td>(c) ADDRESS</td> <td>:</td> <td>Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.</td> </tr> <tr> <td>2) (a) NAME</td> <td>:</td> <td>Chaudhary Khyatibhen Pragajbhai</td> </tr> <tr> <td>(b) NATIONALITY</td> <td>:</td> <td>Indian</td> </tr> <tr> <td>(c) ADDRESS</td> <td>:</td> <td>Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.</td> </tr> </table> <p>3. Preamble to the description : The following specification describes the invention.</p> <p>Note : This is just a mock Patent Drafting Exercise (PDE) for semester 8, BE students of GTU.These documents are not to be submitted with any patent office.</p>			1) (a) NAME	:	Prajapati Manan Bharatbhai	(b) NATIONALITY	:	Indian	(c) ADDRESS	:	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.	2) (a) NAME	:	Chaudhary Khyatibhen Pragajbhai	(b) NATIONALITY	:	Indian	(c) ADDRESS	:	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.
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(b) NATIONALITY	:	Indian																		
(c) ADDRESS	:	Computer Engineering , Government Engineering College, Sector - 28, Gandhinagar , Gujarat Technological University.																		
Page 1																				

4. Description :**a. Field of Application / Project / Invention :**

Computer Science

b. Prior Art / Background of the Invention / References :

The purpose of our Enterprise Monitoring Agent is to provide the virtual environment for small to medium business owners to connect with employees and allocate work. Enterprise Monitoring Agent is willing to give the virtual experience for a small business hub. Enterprise Monitoring Agent is free of cost for life time.

c. Summary of the Invention/Project :

Enterprise Monitoring Agent is a complete solution for small and medium companies that need to automate processes, connect employees, and gain business insight when you need it. Get the tools you need to manage products, orders, customers, finances, and operations. And get the insight you need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

d. Objects of the Invention/Project :

- Registration
- Login
- Add Contacts/Clients
- Add Companies
- Add Deals
- Add Task
- Cloud Storage
- Monthly Report
- Calendar
- Add specific notes to Contacts/Deals/Task

e. Drawing(s) :**f. Description of the Invention :**

Registration - company's owner can register to manage their business.

Login - Owner can log in after successful registration and do their further process.

Add Contacts/Clients - the owner can add/update/delete the details of their contacts or connected clients.

Add Companies - the owner can add/update/delete the details of the companies from which they get a deal.

Add Deals - the owner can add/update/delete the details of the deals, from which they get a deal, close date, deal value etc.

Add Task - the owner can add details of task related to each deal.

Cloud Storage - the owner can upload their important documents which are attached to deals and tasks to EMA's Cloud storage.

Monthly Report - the owner can show the report of the deals by month wise onto the EMA's Dashboard.

Calender - show the detailed information of deals on a calendar by date/month wise.

Add specific notes to Contacts/Deals/Task - add/delete a specific notes to each clients,deals,task.

g. Examples :

Agile CRM

h. Unique Features of the Project :

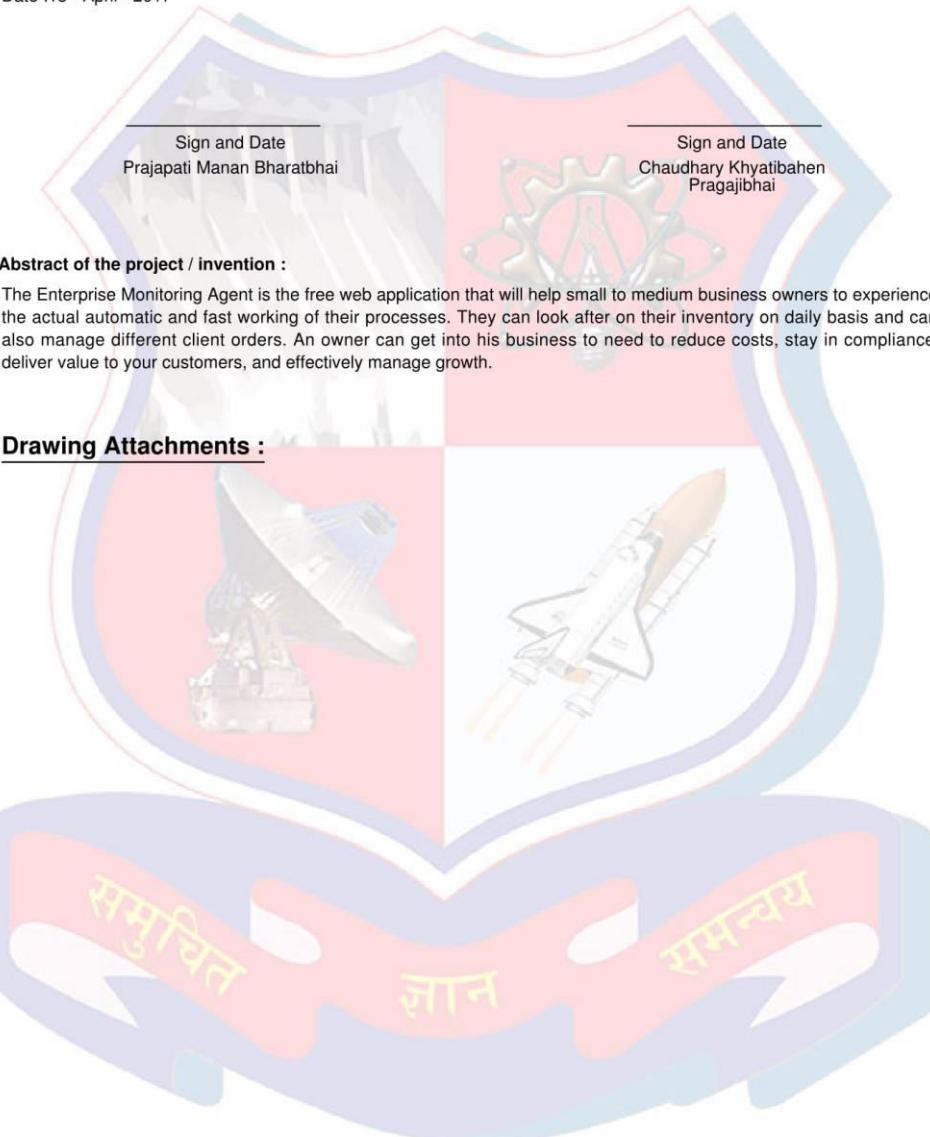
Note : This is just a mock Patent Drafting Exercise (PDE) for semester 8, BE students of GTU. These documents are not to be submitted with any patent office.

Page 2

Cloud Storage
Monthly Report
Calendar - show the detailed information of deals on a calendar by date/month wise.
Free access to all features without any cost for lifetime.

5. Date & Signature :

Date :15 - April - 2017



6. Abstract of the project / invention :

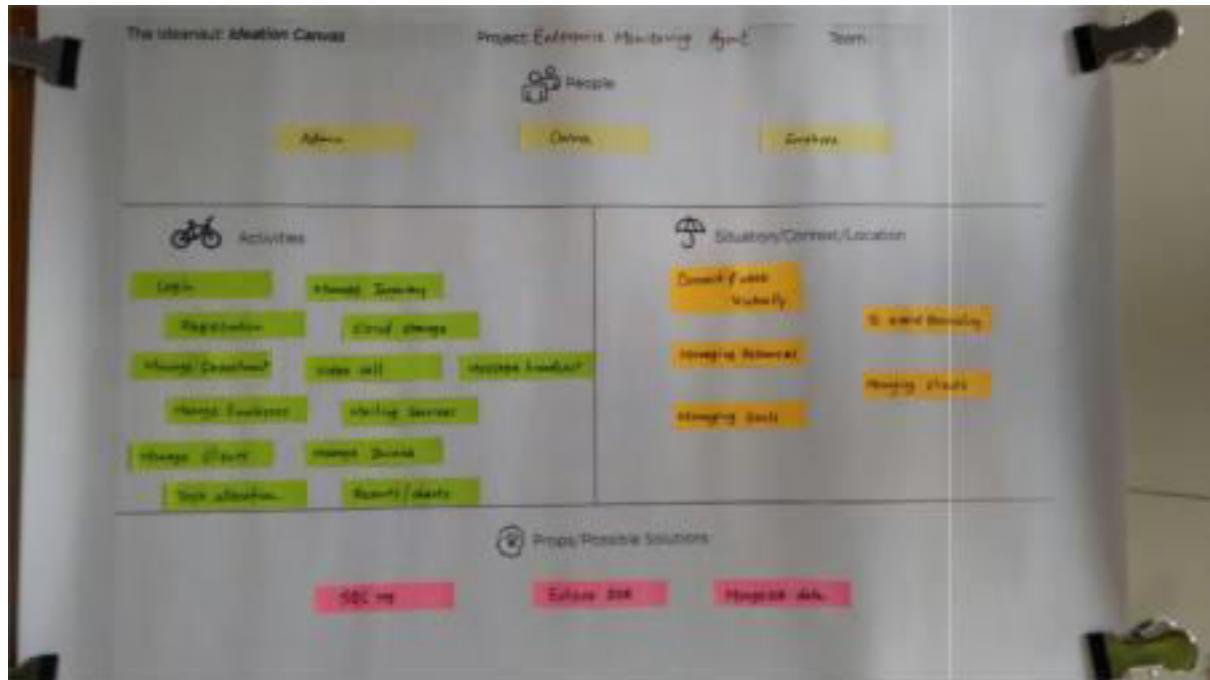
The Enterprise Monitoring Agent is the free web application that will help small to medium business owners to experience the actual automatic and fast working of their processes. They can look after their inventory on daily basis and can also manage different client orders. An owner can get into his business to need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

Drawing Attachments :

Note : This is just a mock Patent Drafting Exercise (PDE) for semester 8, BE students of GTU. These documents are not to be submitted with any patent office. Page 3

3. CANVAS SHEETS

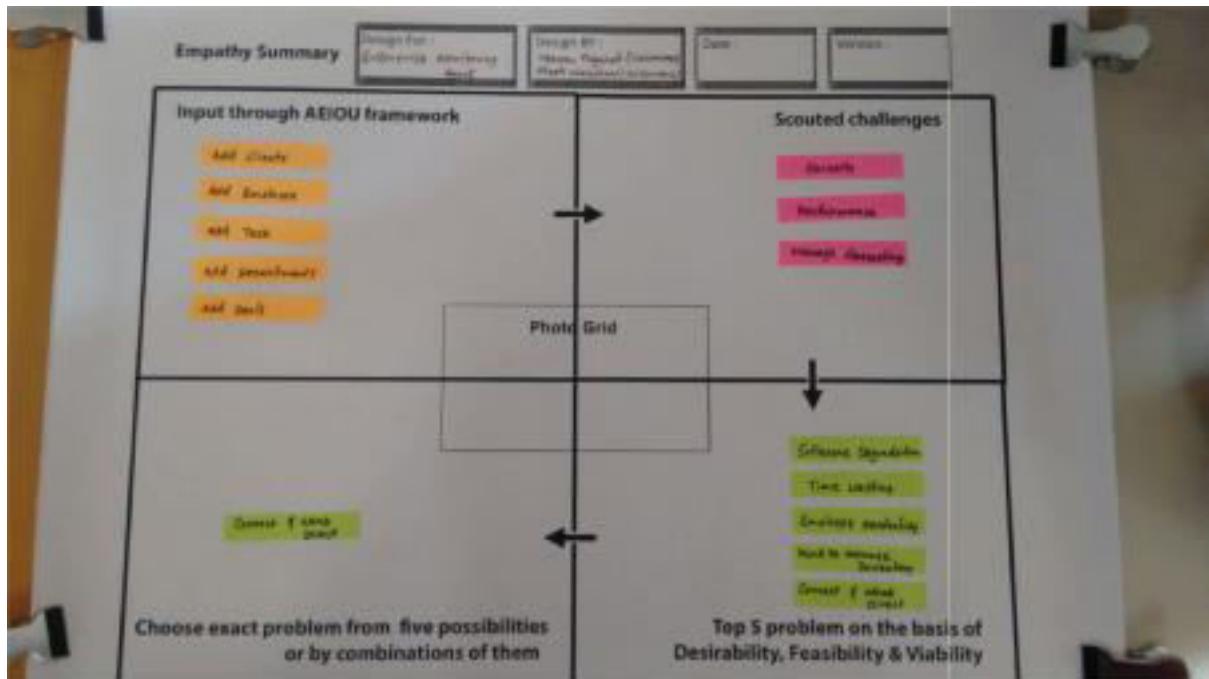
3.1 IDEATION CANVAS



3.2 PRODUCT DEVELOPMENT CANVAS



3.3 EMPATHY SUMMARY



3.4 AEIOU SUMMARY CANVAS

AEIOU Summary:		Group ID: CE-23 Domain Name: Enterprise Monitoring Agent	Date: _____	Version: _____
Environment:	- General impressions/observations (Style, material & atmosphere) - Floor plan - Elements, features and special notes - Scenes Corporate Hub Company Warehouses Individual Educational / Institute	Interactions: - General impressions / observations (Who is interacting with whom, what?) - Scene of interaction (How it is being done) - Elements, features and special notes Owner Interactive Admin Interactive Employee Interactive	Objects: - General impressions / observations (What components are involved? How?) - Inventory of key objects - Elements, features and special notes System Servers Platform	
Activities:	Users:			
<ul style="list-style-type: none"> - General impressions / observations - Sketch/photo Summary of activity - Elements, features and special notes Login Manage Clients Registration Monthly Report Manage Employees Task allocation		<ul style="list-style-type: none"> - General impressions / observations (Who is present? Roles and responsibilities) - Scene of user in context - Elements, features and special notes Admin Owner Employee		

4. PLAGARIISM REPORT

Plagiarism Scan Report	
Summary	
Report Generated Date	16 Apr, 2017
Plagiarism Status	94% Unique
Total Words	740
Total Characters	4736
Any Ignore Url Used	

Content Checked For Plagiarism:

“Enterprise Monitoring Agent” is a Web Application for small and medium companies that need to automate processes, connect employees, and gain business insight when you need it. Get the tools you need to manage products, orders, customers, finances, and operations. Owner can get into the business to need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

Owner will allocate task to employee virtually and employee can also respond to that task with task status. Owner can look the progress of task as well as inventory daily or monthly.

Enterprise Resource Planning is a System that automate the business planning that helps to grow the business. Each Largest companies have their own software that can lead them to automation of their processes. The Enterprise Monitoring Agent is free web application that will help small to medium business owners to experience the actual automatic and fast working of their processes. They can look after on their inventory on daily basis and can also manage different client orders.

“Enterprise Monitoring Agent” will help the owner to reduce workload as well as provide the same experience as work directly to virtually.

When the user/Owner will enter the details of the company the system will provide free access to the site that owner can manage whole work from the site. The owner can add employee as well as give access of authorization rights according to their position. Owner can view the hierarchy structure of the all employees basis on the position level.

1.1 OVERVIEW OF PROJECT

1.1.1 PROJECT DEFINITION

Enterprise Monitoring Agent is a complete solution for small and medium companies that need to operate automatically processes, connect employees, and gain business access when you need it. Get the tools you need to manage products, orders, customers, finances, and operations. And get the insight you need to reduce costs, stay in compliance, deliver value to your customers, and effectively manage growth.

1.1.2 PURPOSE

Purpose of our Enterprise Monitoring Agent is to provide virtual environment for small to medium business owners to connect with employees and allocate work. Enterprise Monitoring Agent is

Project title:- Enterprise Monitoring Agent

Main Function:- Enterprise Resource Planning

Project Category:- Web Application

Developed For:- Client

Team Member:- Khyati Chaudhary (130130107016)

Manan Prajapati (130130107095)

Technology:- JSP, Servlet, Hibernate, JavaScript, Apache Tomcat, Eclipse J2EE

Front End:- HTML, CSS, Bootstrap

Database:- MySQL, MongoDB

Guide:- Prof. Pinal Patel

1.2 LIST OF FEATURES

- Reliability
- Scalability
- User Satisfaction
- User Desire Service
- Performance Enhancement

1.3 PROPOSED EXISTING SYSTEM

Figure 1.1: Existing System Architecture

1.4 SCOPE OF PROJECT (AIMS & OBJECTIVES SHOULD INCLUDE)

Enterprise Resource Planning is a System that automate the business planning that helps to grow the business. Each Largest companies have their own software that can lead to automation of their processes. The Enterprise Monitoring Agent is free web application that will help small to medium business owners to experience the actual automatic and fast working of their processes. They can look after on their inventory on daily basis and can also manage different client orders. We will provide hierarchy structure of rights & authorities for each level of employee. This will help the owner to reduce workload as well as provide the same experience as work directly to virtually.

1.5 LIMITATION OF PROJECT

- User is not aware about system

1.6 INTRODUCTION TO FRONT END & BACK END

FRONT-END:

- 1) JSP (Java Server Page)

JSP is used for server side programming. Java Server Pages (JSP) technology allows us to create web content that has both static and dynamic components. JSP is a scripting language that generates dynamic content.

The main features of JSP technology are:

- How to process a request and construct a response is the main feature.
- Construct for the actual accessing of server-side objects.
- JSP can build custom tags.

Once the page has been translated and compiled, the JSP page's Servlet follows the Servlet Life Cycle:

1. If an instance of the JSP page's Servlet is not existing, the container:
 - Loads the JSP page's Servlet class.
 - Instantiates an instance of the Servlet class.
 - Initializes the Servlet instance by calling the init method of JSP.
2. Invokes the JSP service method, passing a request and response object.

JSP Architecture:

The Model 2 architecture is a hybrid approach for serving dynamic content, since it combines the use of both Servlet and JSP. Here, the Servlet acts as the controller and is in the request processing and the creation of any beans or objects used by the JSP, as well as deciding, depending on the user's actions. This approach typically results in the separation of presentation from content, leading to clear description of the roles and responsibilities.

3.1 USER CHARACTERISTICS

This application is developed such that total appearance of the product to make it more user friendly.

User:

Owner:

- Owner will use our application for manage the employees, task, inventory.
- Owner will also generate the invoice for orders, allocate the task per employee and can look upto on task and its status regularly.
- Owner will generate a report on progress for monthly/yearly that will help him/her to guess the company progress and analyse the inventory, workload, etc.

Employee:

- Employee will upload his/her task completion or data of the work.

Administrator:

- The Admin has the entire control over the entire system.
- The Administrator will generate the result for the given input and display in the hierarchy format of employees to owner.
- Admin will also calculate the input of workload based on the user input and generate the chart or report for progress analysis.
- Administrator will provide the rights and authorization to add employees and upload data.

Report generated by smallseotools.com

Plagiarism Scan Report

Summary	
Report Generated Date	16 Apr, 2017
Plagiarism Status	100% Unique
Total Words	821
Total Characters	5173
Any Ignore Url Used	

Content Checked For Plagiarism:

3.2 SYSTEM CHARACTERISTICS

The system characteristics have been divided into the following categories:

- User account handling.
- Add employees on the level of position.
- Create the multiple task and allocate it to the employee.
- A page that show the monthly/yearly progress of the task and its status.
- Graphical representation of result.

3.3.3. MEMORY REQUIREMENT

- Just Any browser can be used to access the project.
- A very less amount of memory is consumed.

3.4 CONSTRAINTS

3.4.1 Hardware constraints:

We have used HIBERNATE framework to build the application and for that Minimum 512 MB RAM is required with 800MB of Hard Disk Space with minimum 1 GHz processor. This is one time hardware requirement. Because after hosting the site, client does not need extra hardware specification.

3.4.2 Design constraints:

To avoid duplication in the database we have used primary key as well as

GEC Gandhinagar Page 19

Enterprise Monitoring Agent

hardware requirement. Because after hosting the site, client does not need extra hardware specification.

3.4.2 Design constraints:

To avoid duplication in the database we have used primary key as well as some times also used unique key. To establish relationship between columns of multiple tables, we have used foreign key constraints.

3.4.3 Reliability:

This application must be reliable means it should not be crashed during the execution. We have cared properly no to crash the software. We have used unlimited bandwidth to give high performance in the heavy traffic on the application site.

3.4.4 Availability:

We have considered all the basic requirements of the users before developing the site. So we have provided most of the features to be useful in the application, like submit requirements, updation in requirements, analysis of requirements, project management.

3.4.5 Security:

Security is also a prime requirement of any application. For the security purpose we have used Login authentication before using any feature of the application. We have also encrypted the password of the user in the database to make more secure database.

4.1 SYSTEM ANALYSIS

4.1.1 STUDY OF CURRENT SYSTEM

- Bitrix24

Bitrix24 is very popular, actively maintained and free trial given to each user till 100 employees and one month validity. Bitrix24 is based on very large organization. It desired to make its users pretty happy by using different graphics and animations.

4.1.2 PROBLEMS AND WEAKNESS OF CURRENT SYSTEM

- Bitrix24

It is giving free trial for one month only. Bitrix24 is too complex to understand it whole. It is not reachable to small to medium business organization. It can not be maintained easily by owner as well because it is for more than 5000 employees.

4.1.3 REQUIREMENTS OF THE NEW SYSTEM

- Functional Requirements

- Administration

It is the function of the person who has the authority to bring about any changes, decide what data should be there and what should not be the part of the project

- Software

It is the part that provides the information about the process which is done by the project.

- Services

Services provide with the information about the various functions and the services offered and provided by the site which can be availed by the users or the members.

Non-Functional Requirements

- System should work efficiently even on slow internet connections.
- System should be user friendly and user can understand how to use it efficiently.
- Secure Database.
- Communication between owner and employee easily.
- Allow requirements changes and can request for updating.
- Provide customer support and feedback facility.
- Customer satisfaction

4.2 REQUIREMENT ANALYSIS

what is FEASIBILITY ?

Feasibility is the measure of how beneficial the development of an information system will be to an organization. A process by which we measure feasibility is called as the feasibility analysis. The Feasibility analysis is categorized under four different types.

- Operational Feasibility

Operational feasibility is measures of how will the solutions work in the organization and is mostly people oriented. The problem is worth serving, as it would let the users download and upload. The solution would definitely work. The simple reason being that the problems are dealt with the help of good books and expert faculties & also very useful to search topics in the internet.

- Technical feasibility

It is a measure of practically of a specific technical solution and the availability of technical resource and expertise .The analyst must find out whether current technical resources, which are available in the system is capable of handling the visitor's requirements or not. If not, then the analyst with the help of developers should confirm whether the technology is available and capable or not.

Factor Considering:-

- Here we have to consider those tools, which will be requiring for developing the project.
- The tools which are available and the tools, which will be required, have to take in account.
- As far as basic knowledge is concerned we have studied we have basic knowledge of JAVA and ORACLE/MYSQL
- Dealing with database is the main issues in our system. Using MYSQL and MongoDB as backend provided this functionality.
- Schedule feasibility

Schedule feasibility corresponds to whether sufficient time is available to complete the project.

Factor considered:

- Schedule of the project.
- Time by which the project has to be completed.
- Reporting period.

Considering all above factors it was decided that we have sufficient time and we decide to start the project. By marinating the schedule we were able to complete the project on time.

4.3 REQUIREMENT VALIDATIONS

This project contains the following validations: These validations include input validation for the members or the users while registration.

- Some fields are compulsory to be filled by the owner.
- At the time of Login, User-id & Password must be required.
- The email id should contain symbols like '@' and '.'
- Compare validation is used to compare and confirm the password.

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