

Employee Expense Management System	Version 2.0
Software Requirements Specification	22-01-2013
Tech Mavericks	

# TECH MAVERICKS

## EMPLOYEE EXPENSE MANAGEMENT SYSTEM

### Software Requirements Specification

## KESHAV MEMORIAL INSTITUTE OF TECHNOLOGY

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## **1.0. Introduction**

### **1.1. Purpose:**

Motive of this project is to provide a detailed description on the management of Employee expenses. This system will explain how to react to various external stimuli and function under various constraints. This intends for both stakeholders and developers of the system.

### **1.2. Scope of the Project:**

Employee Expense Management is simple-to-use, browser-based solution that can automate the reimbursement process, help enforce corporate policies manage expense-related data effectively that can be turned into valuable business intelligence.

### **FEATURES:**

- ✚ Web-based, easy-to-use environment, reducing tour costs and increasing employee usage.
- ✚ Screen for entering expense vouchers for any reimbursable expenses borne by the employee.
- ✚ Monitoring, managing and enforcing corporate policies and improve the accuracy of expenses records.
- ✚ Workflow for routing reports, from employees to approving managers to receipt and payment approval, ensuring stakeholders prompted for action actively.
- ✚ Receipt verification approval, ensuring payment is only made when receipts provided are valid.
- ✚ System will provide the ability to save incomplete vouchers and submit them for approval later after completion.
- ✚ Real-time tracking and enquiry of expenses records, reducing time spent by accounting people dealing with enquiries.
- ✚ At any point in the workflow, managers have the option of rejecting any voucher stating appropriate reasons.

### .3. Definitions, Acronyms and Abbreviations:

Term	Definition
<b>HTML</b>	Hypertext Markup Language is a markup language used to design static web pages.
<b>JSP</b>	Java Server Pages is used to create dynamic web content.
<b>J2EE</b>	Java 2 Enterprise Edition is a programming platform— part of the Java Platform—for developing and running distributed multitier architecture Java applications, based largely on modular software components running on an application server.
<b>DB2</b>	DB2 Database is the database management system that delivers a flexible and cost effective database platform to build robust on demand business applications.
<b>WASCE</b>	Web sphere application server is an application server that runs business applications and supports the J2EE and web services standards.
<b>WSAD</b>	Web sphere studio application developer is a toolkit which is designed for the creation of more 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.
<b>HTTP</b>	Hypertext Transfer Protocol is a transaction oriented client/server protocol between web browser & a Web Server.
<b>XML</b>	Extensible Markup Language is a markup language that was designed to transport and store data.
<b>Ajax</b>	Asynchronous Java Script and XML is a technique used in java script to create dynamic web pages.
<b>Web 2.0:</b>	It is commonly associated with web applications which facilitate interactive information sharing, interoperability, user-centered design and collaboration on the World Wide Web.

## 1.4 References

- IEEE SRS Format
- Problem Definition (Provided by IBM)

## 1.5 Technologies to be used

- J2EE: Application Architecture
- DB2: Database
- XML: Extensible Markup language
- WAS: Web Server
- Rational ROSE: Design Tool
- UML: Unified Modeling Language
- AJAX: Asynchronous JavaScript and XML

## 1.6 Tools to be used

- ROSE/RSA / Web Sphere Modeler
- Eclipse/ RAD / Lotus Forms Designer / Portlet Factory
- Web Sphere Portal/ WAS/ WAS CE / WPS
- DB2 Express – ‘C’ or DB2 UDB
- Tivoli CDP/TSM / Tivoli Directory Server
- Linux will be the preferred OS.

## 1.7 Overview:

SRS will include two sections:

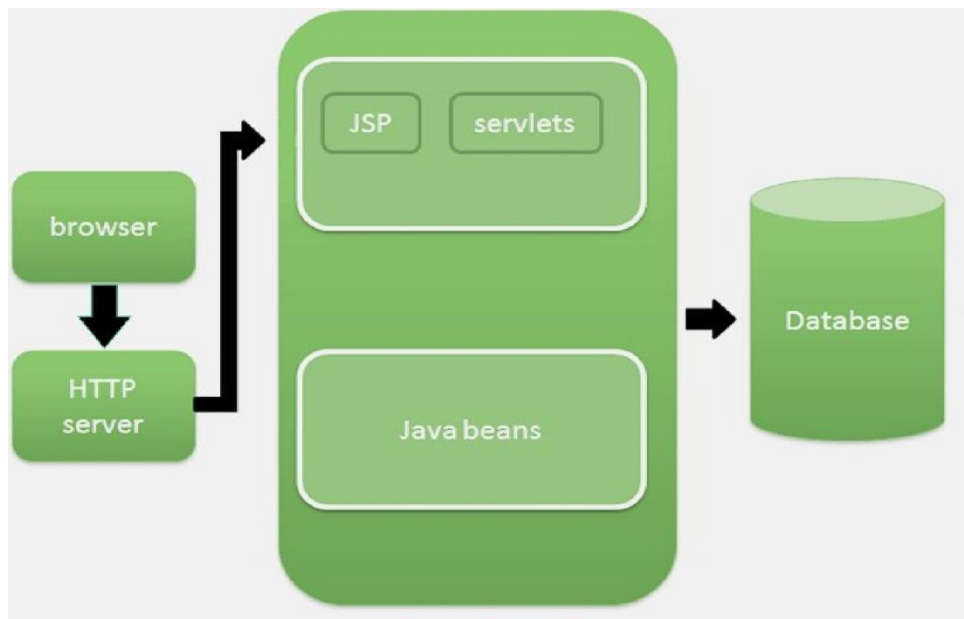
- **Overall Description** will describe major components of the system, interconnection and external interfaces.
- **Specific Requirements** will describe the functions of actors, their role in the system and constraints.



## 2. Overall Description

Describes the general factors that affect the product and its requirements:

### 2.1 Product Perspective:



- » The web pages (XHTML/JSP) are present to provide the user interface on customer client side. Communication between customer and server is provided through HTTP/HTTPS protocols.
- » The Client Software is to provide the user interface on system user client side and for this TCP/IP protocols are used.  
On the server side web server is for EJB and database server is for storing the information.

### 2.2 Software Interface:

- » **Client on Internet:** Web Browser, Operating System (any)
- » **Client on Intranet:** Client Software, Web Browser, Operating System (any) **Web**
- » **Server:** WAS, Operating System (any)
- » **Data Base Server:** DB2, Operating System (any)
- » **Development End:** WSAD (J2EE, Java, Java Bean, Servlets, HTML),

- » DB2, OS (Windows), Web Server.

## 2.3 Hardware Interface:

Client Side			
	Processor	RAM	Disk Space
Internet Explorer 6.0	Pentium II at 500 MHz	64 MB	1 GB

1

Server Side			
Web sphere Application server V2.0	Pentium III at 1 GHz	512 MB	2 GB
DB2 V9.1	Pentium III at 1 GHz	512 MB	1GB (Excluding data size)

## 2.4 Communication Interface:

- » Client on Internet will be using HTTP/HTTPS protocol.
- » Client on Intranet will be using TCP/IP protocol.

## 2.5 Product Function:

- » **Voucher Entry** – Screen for entering expense vouchers for any reimbursable expenses borne by the employee. A voucher will have one header and multiple lines providing detailed information of expenses incurred along with amount.
- » **Multi-level workflow** –Based on the Employees department and designation, the vouchers flow to his supervisors for their approvals. The number of approvals required will vary according to total amount of the voucher and approval limits set for supervisors.
- » **Case Management** – Every voucher starts a new process instance (case). Managers have the ability to view vouchers waiting for their approval in their Inbox by logging in to the application. Employee can track the progress of his vouchers.

- ▶▶ **Draft Vouchers** – System should provide the ability to save incomplete vouchers and submit them for approval later after completion.

**Rejection flow**– At any point in the workflow, managers have the option of Rejecting any voucher stating appropriate reasons. Rejected vouchers come back to the Employee, who is then allowed to change details on the vouchers or provide additional information required for the approval.

- ▶▶ **Accounts View** – Accounts department users can view approved vouchers of all employees and mark vouchers as paid. This step completes the lifecycle of the voucher and the associated process instance

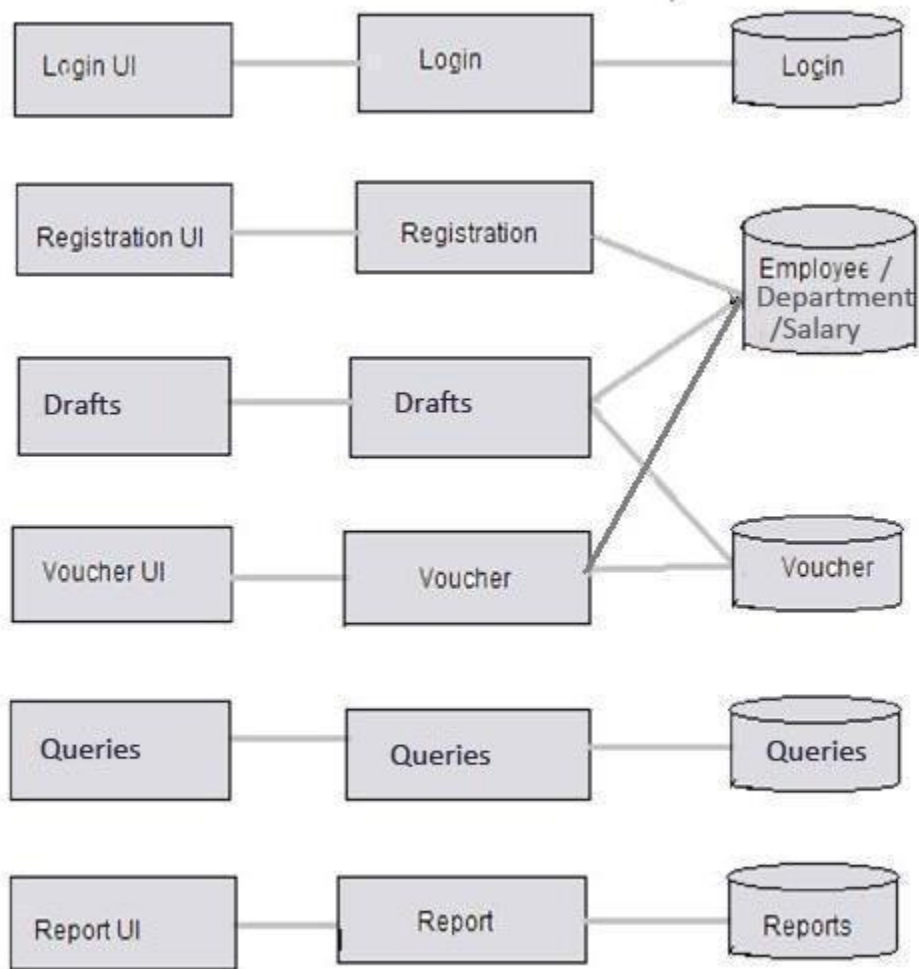
## 2.6 User Characteristics:

- ▶▶ Every user should be comfortable of working with computer and net browsing. He
- ▶▶ must have basic knowledge.

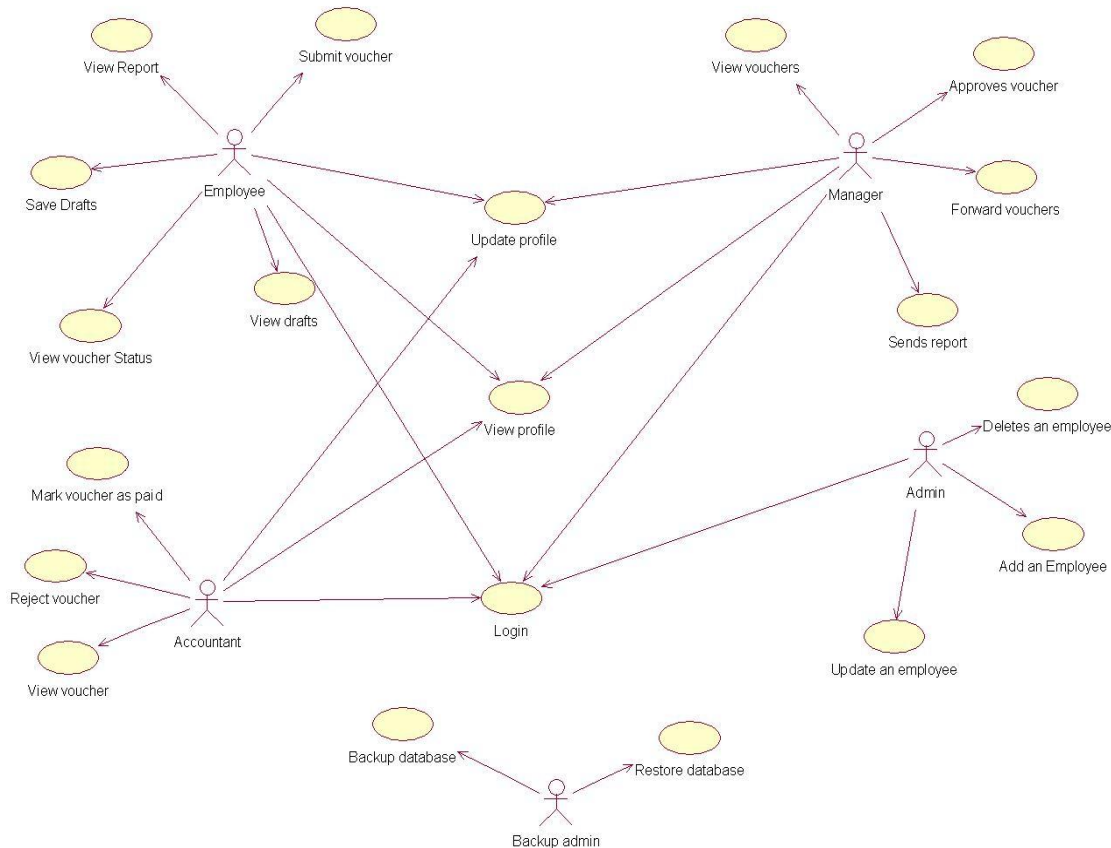
## 2.7 Constraints:

- ▶▶ GUI is only in english.
- ▶▶ Login and password is used for identification of Admin and there is no facility for
- ▶▶ guest.
- ▶▶ This system is working for single server.
- ▶▶ There is maintainability of back up so availability will not get affected.
- ▶▶ Limited to HTTP/HTTPS

## 2.8 Architecture design and database design:



## 2.9 Use-case Model Description



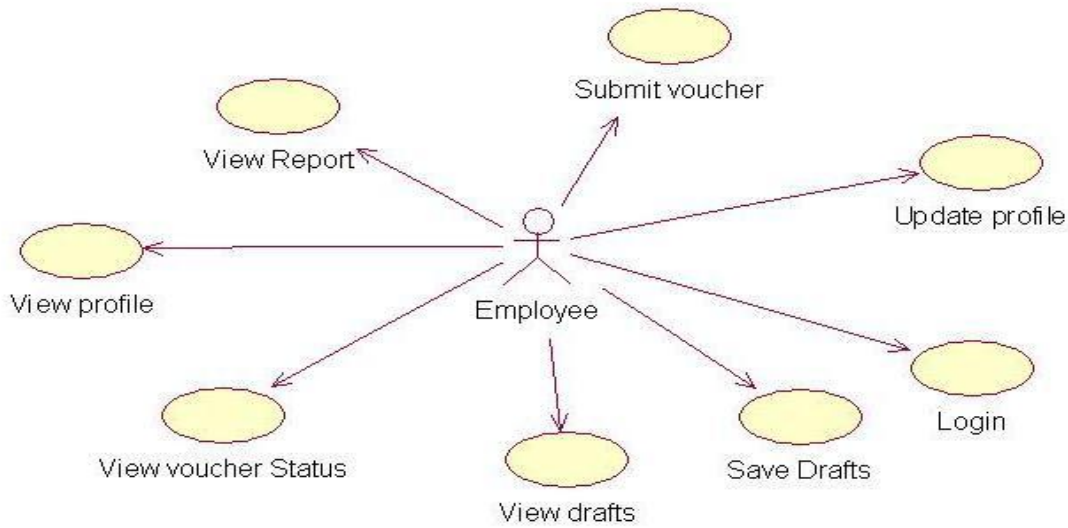
### Functional Requirements Specification:

This section outlines the use cases for each of the active readers separately.

- Every employee can login and access the vouchers depending on the limit they are allowed.
- The Admin only has the ability to register a company.
- Admin only can ADD, DELETE and MODIFY the details of different employees belonging to that company.
- The Employee can claim for the reimbursable amounts by filling in the details in the given vouchers.
- The Employee can view the status of the vouchers submitted.
- The manager can view all the vouchers waiting for his approval in the inbox.
- The Accountant once received the voucher marks the voucher paid.

- All the actors can view and update their profile.
- The backup admin maintains the database
- All the actors (Employees) can view their profile information.
- The Backup Admin maintains the system.
- The System generates the reports, sends the mails and sends SMS to the employees.

### Use-case Diagram for Employee: Diagram:



### Brief Description:

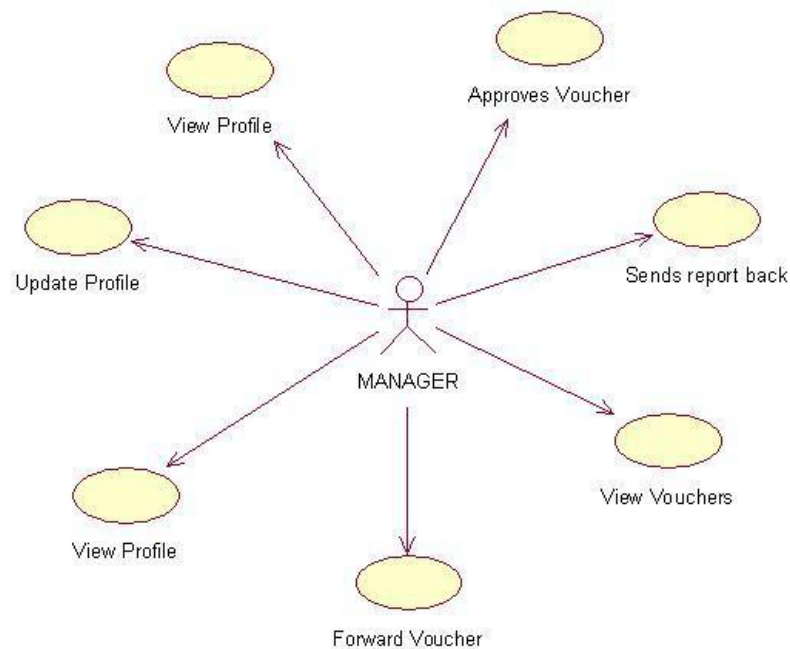
The Employee can access the site and can claim the reimbursable amounts.

### Step-by-step Procedure:

The initial condition to be satisfied is the Employee should belong to the company registered.

1. The Employee logs into our site with his username and password.
2. The system displays the options to the Employee.
3. The Employee selects the desired option.
4. The System presents the details of the desired page accordingly with the designation of employee.

## Use case diagram for Manager: Diagram



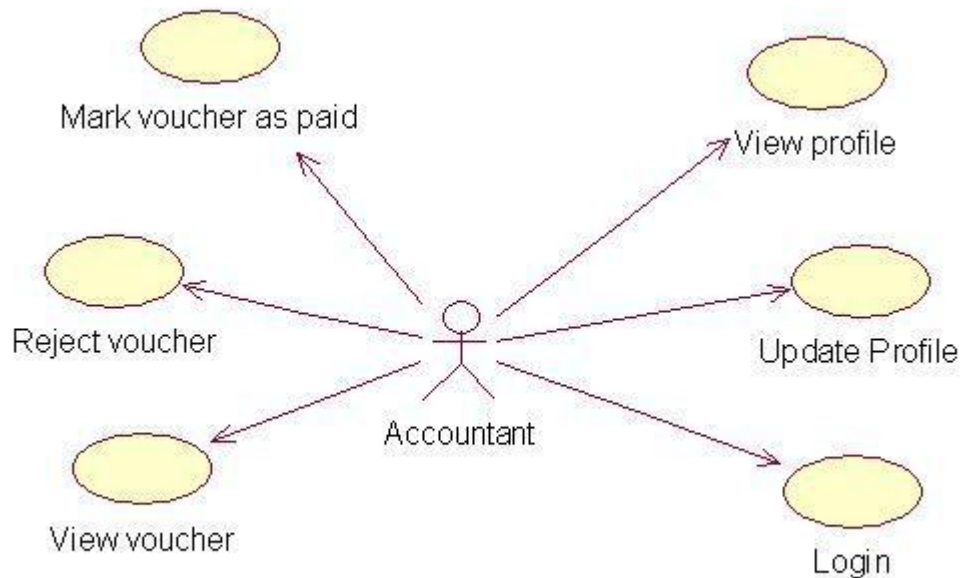
### Brief Description:

The diagram indicates that the manager is also an Employee with some additional functions.

### Step-by-step Procedure:

1. The Manager can access the site with his username and password.
2. With this the Manager lands into a page where the system displays him options different from the options of a normal Employee.
3. The Manager can select the desired option.
4. The Manager can then perform the operations of viewing the inbox for the vouchers waiting for his approval, forwards the vouchers to higher officials, can reject the voucher stating appropriate remarks.

## Use case diagram for Accountant: Diagram:



### Brief Description:

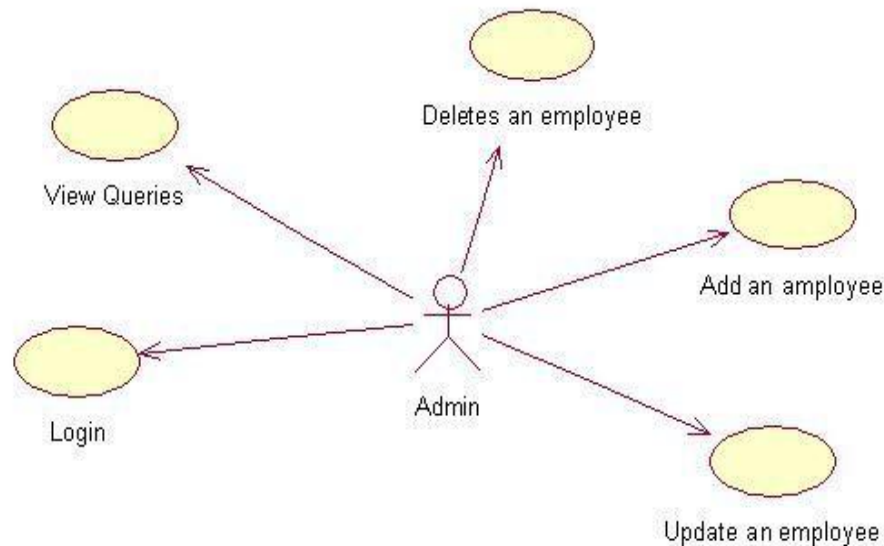
The diagram indicates that the accountant is also an Employee with some additional functions.

### Step-by-step Procedure:

1. The Accountant can access the site with his username and password.
5. With this the Accountant lands into a page where the system displays him options different from the options of a normal Employee.
6. The Accountant can select the desired option.
7. The Accountant can then perform the operations of viewing the inbox for the vouchers waiting for his approval, marks the voucher as paid and can also reject the voucher stating appropriate remarks.



## Use case diagram for Admin: Diagram:



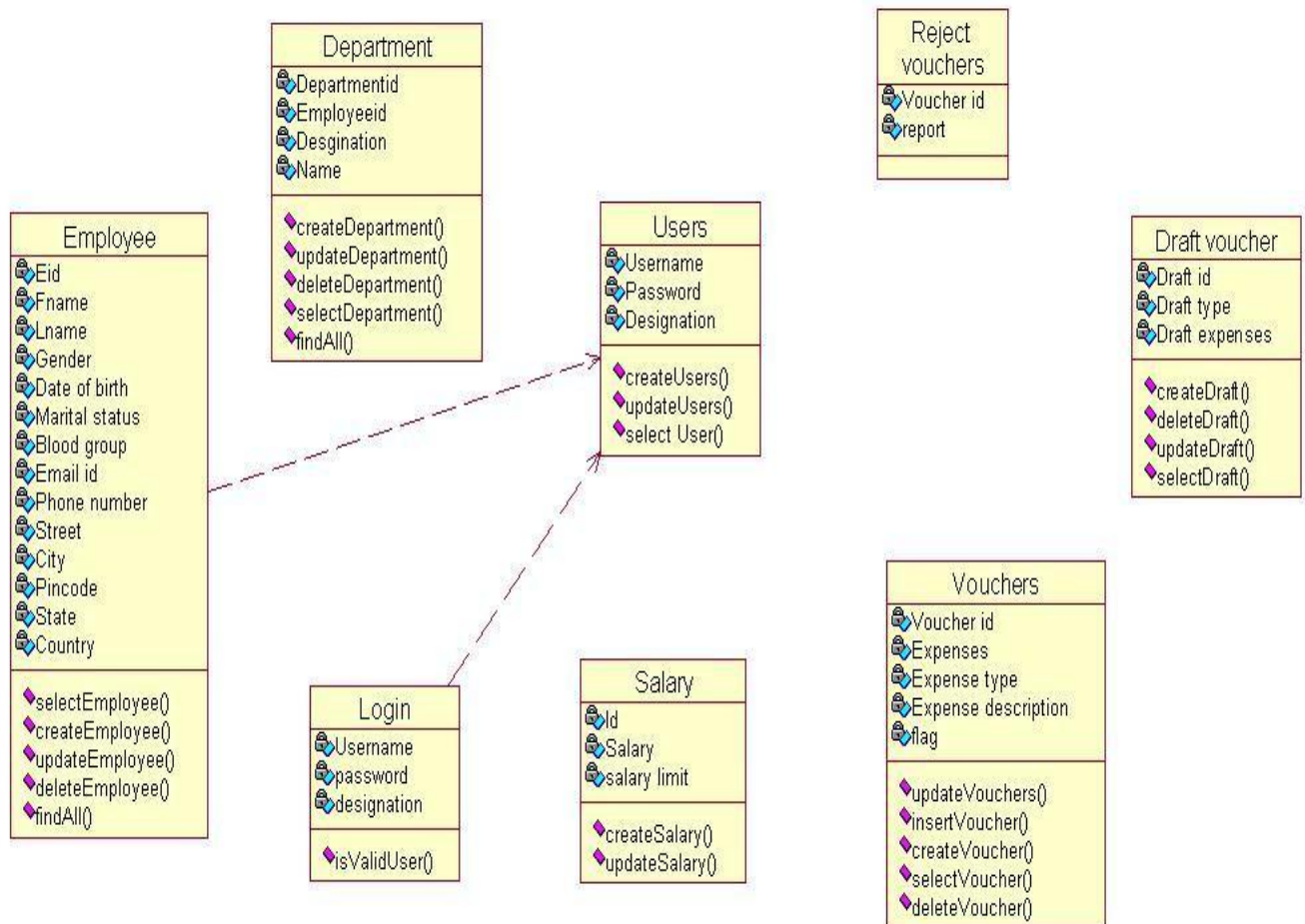
The Backup Admin is also an Employee with some additional functions assigned specially to him.

- ↳ Manages database and keeps the database always available by setting up restore points.

### Step-by-step Procedure:

- ↳ The Backup Admin can also access the site with his username and password given to him.
- ↳ With this the Backup Admin lands into a page where the system displays him options different from the options of a normal Employee.
- ↳ The Backup Admin can select the desired option.
- ↳ The Backup Admin can then perform the operations of maintaining the database, protects the system from crashes.

## 2.10. Class diagram:



## 2.11.1 Database Design:

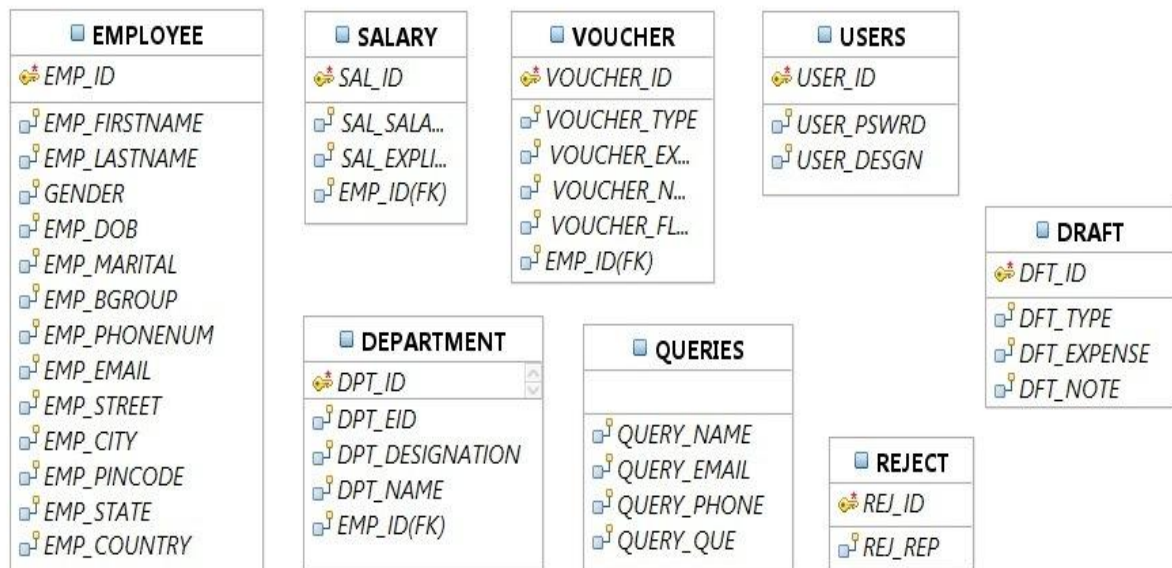
The following database is maintained as follows. Limitations of each database are as follows:

**Registration:** This database can be used to retrieve the information required by different departments.

**Login:** This database is used for logging into the system

**Expenses:** This database is used to store the various expenses and can be retrieved and can be used for validation.

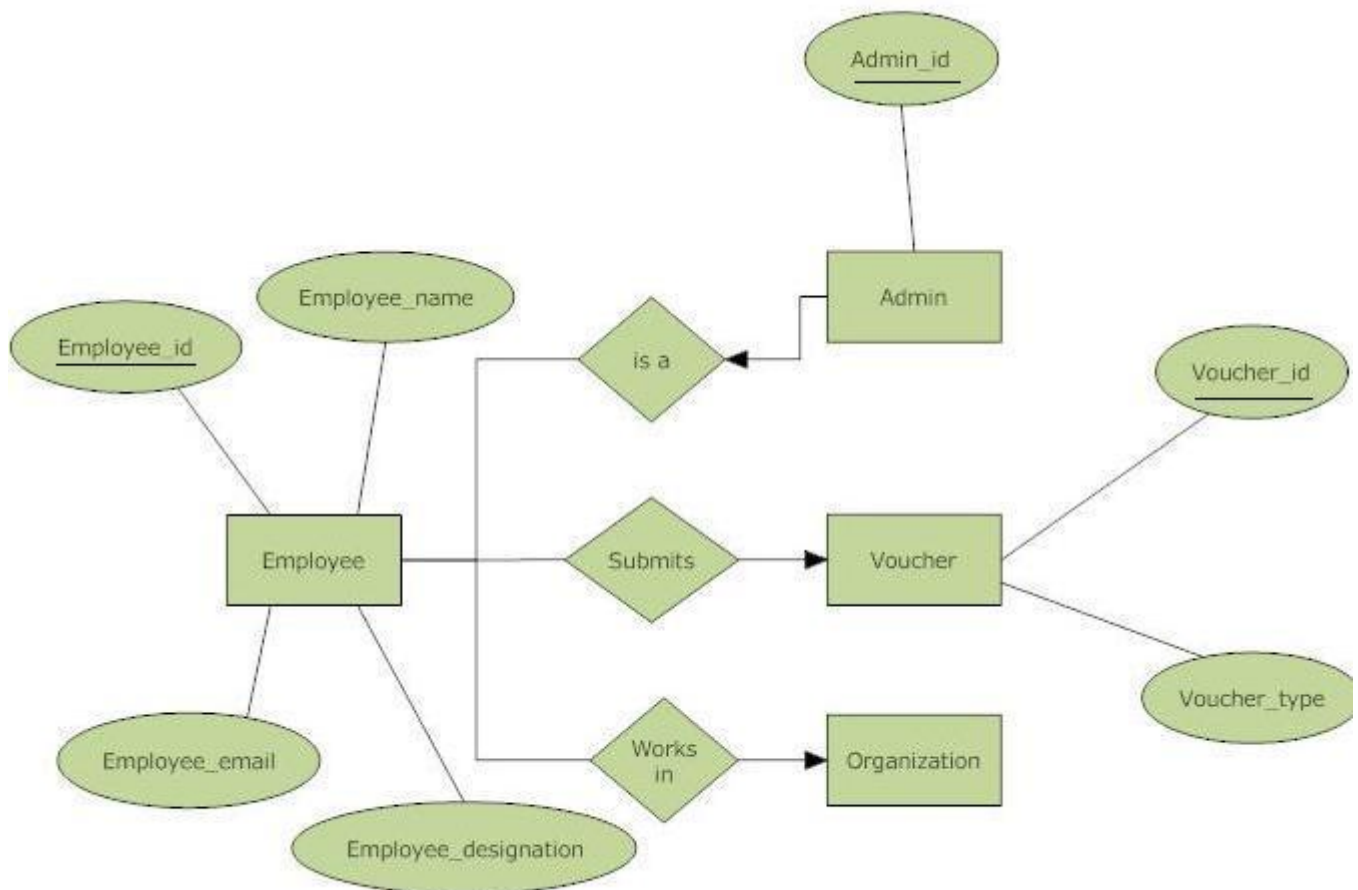
**Employee:** This database is used to store the information of each employee in an organization



## 2.11.2 ER DIAGRAM

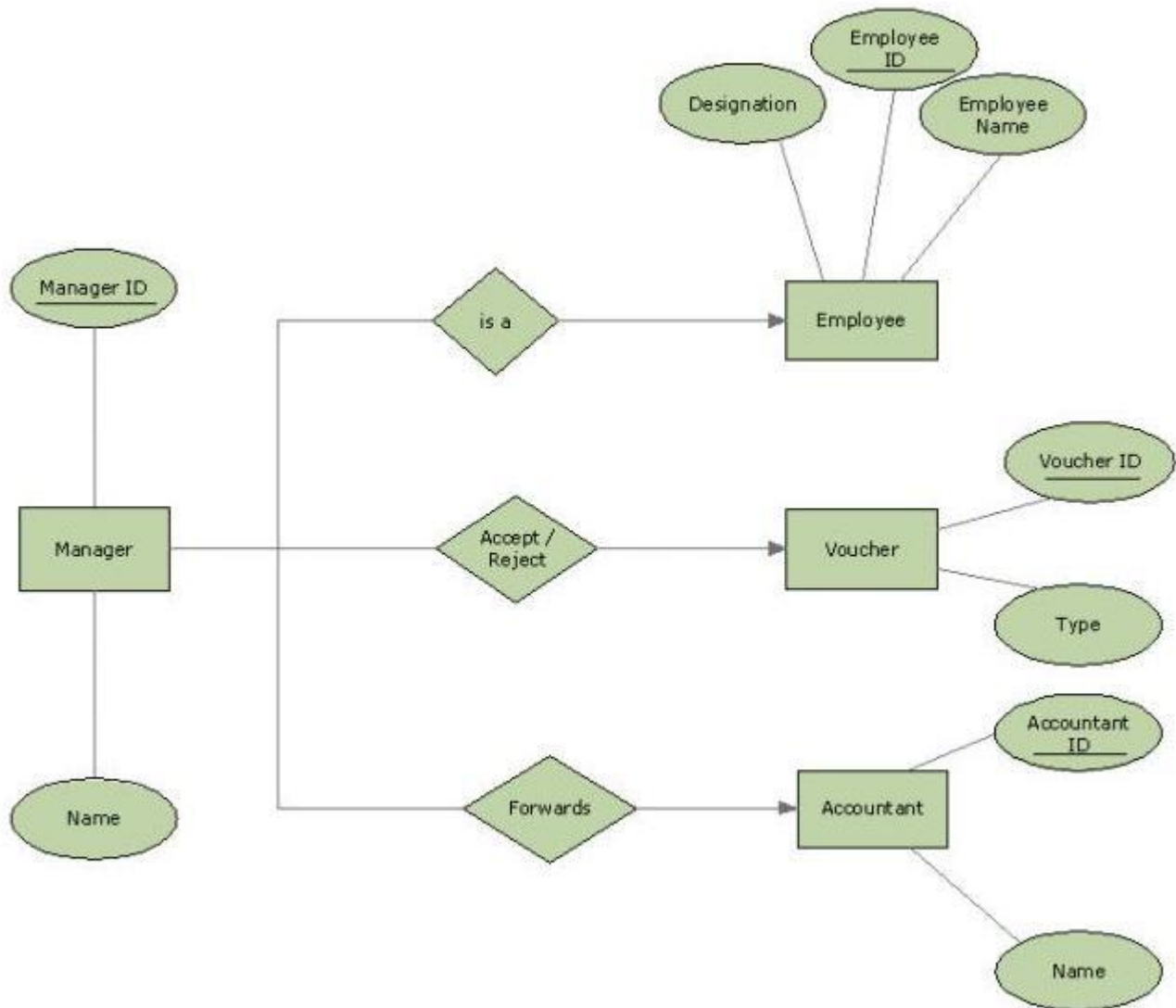
### ER DIAGRAM FOR EMPLOYEE:

This ER diagram shows the relationship between the employee and the activities performed by the Employee.



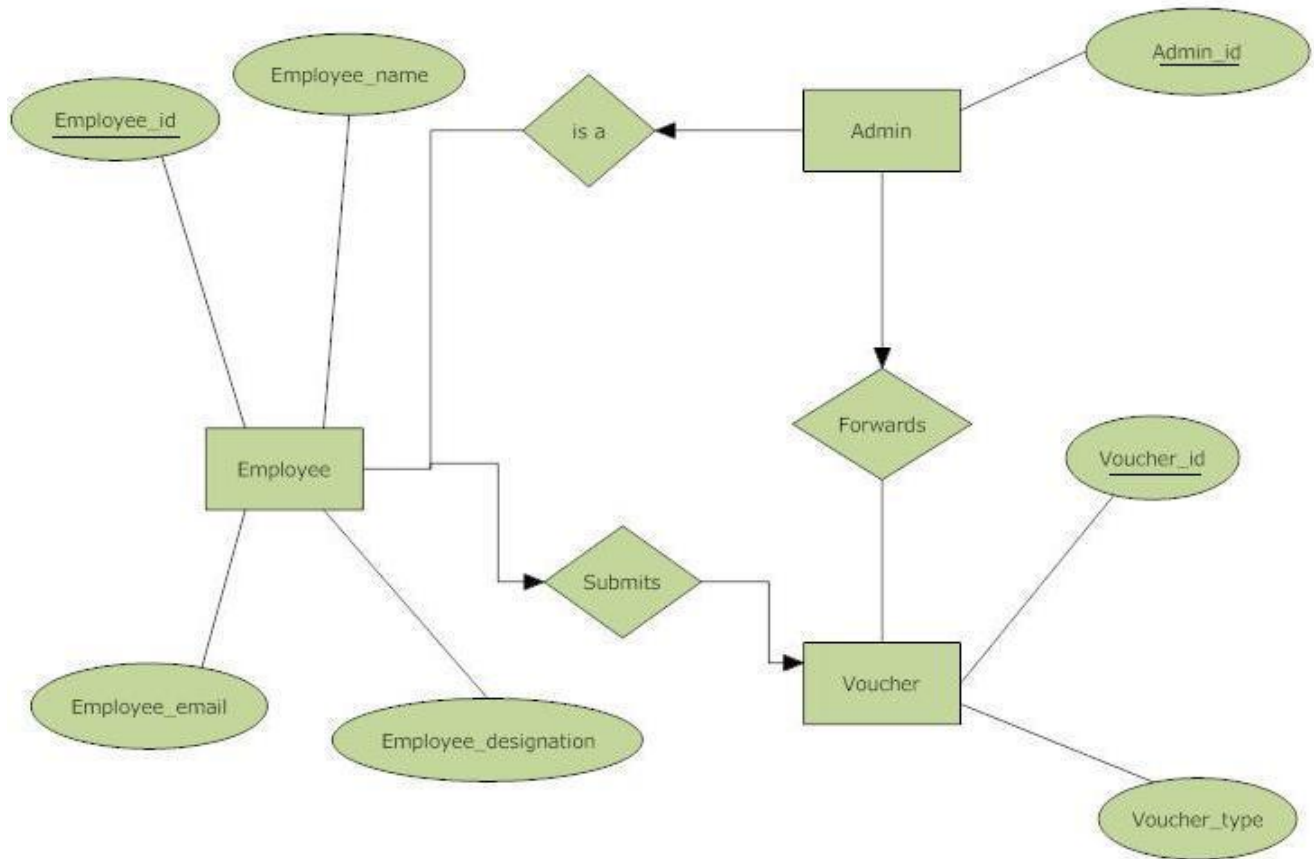
## ER DIAGRAM FOR MANAGER:

This ER diagram shows the relationship between the Manager and the activities performed by the Employee.



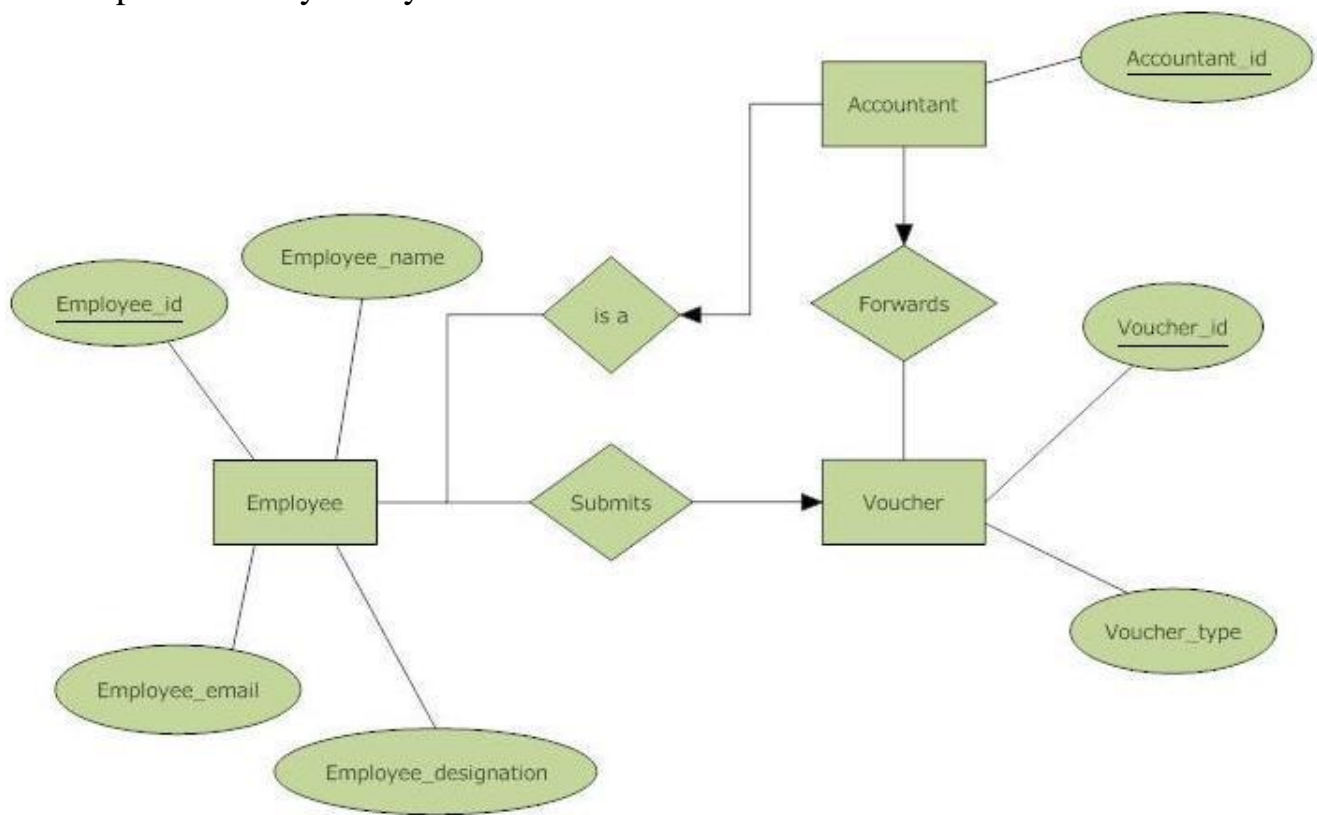
## ER DIAGRAM FOR ADMIN:

This ER diagram shows the relationship between the Employee and the activities performed by the Admin.



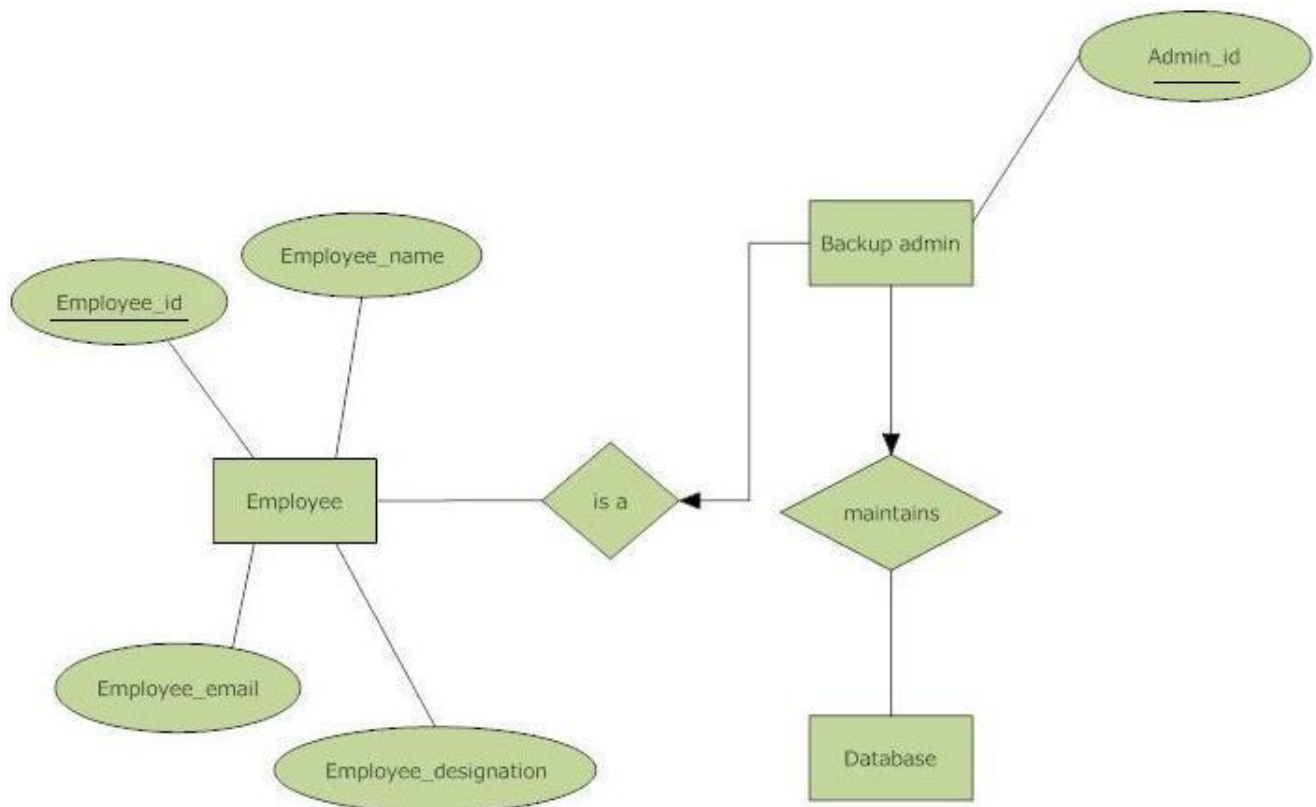
### ER Diagram for Accountant:

This ER diagram shows the relationship between the Accountant and the activities performed by the System



## ER DIAGRAM FOR BACKADMIN:

This ER diagram shows the relationship between the Back-up Admin and the activities performed by the System





### 3.1 Activity Diagrams:

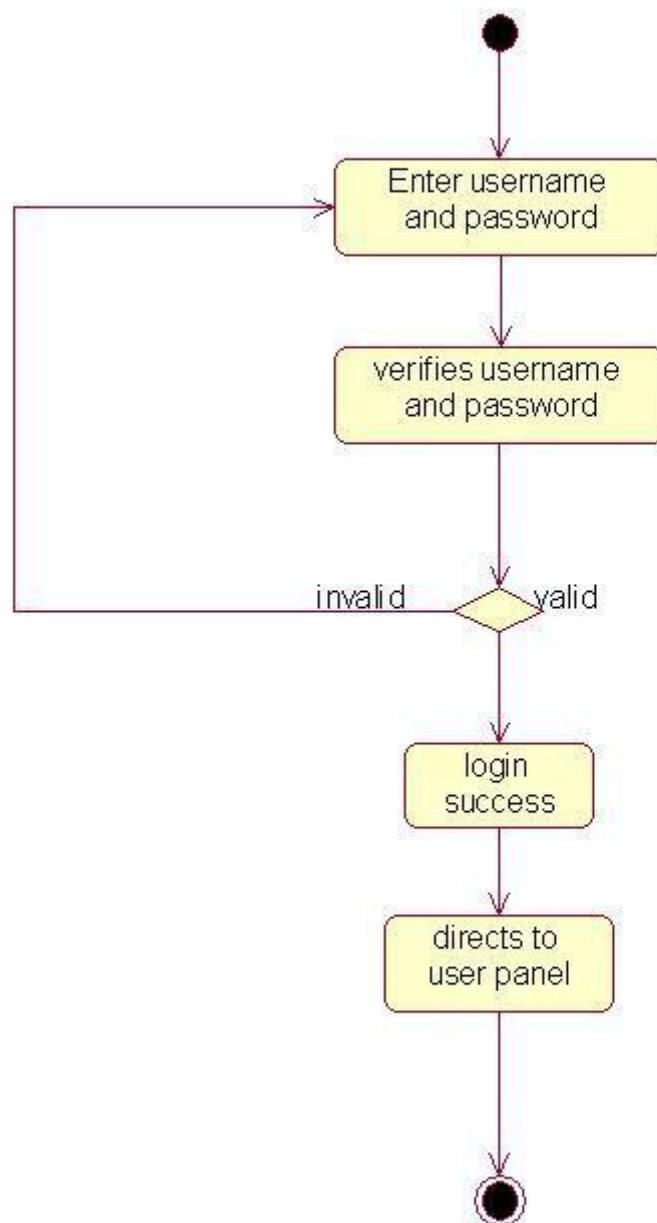
#### Activity diagram for login:

**Name of use case:** Registration and Login.

**Description:** Secure registration and Login facilities for all the employees and users of the system.

**Alternate flow of events:** A message appears if the user does not

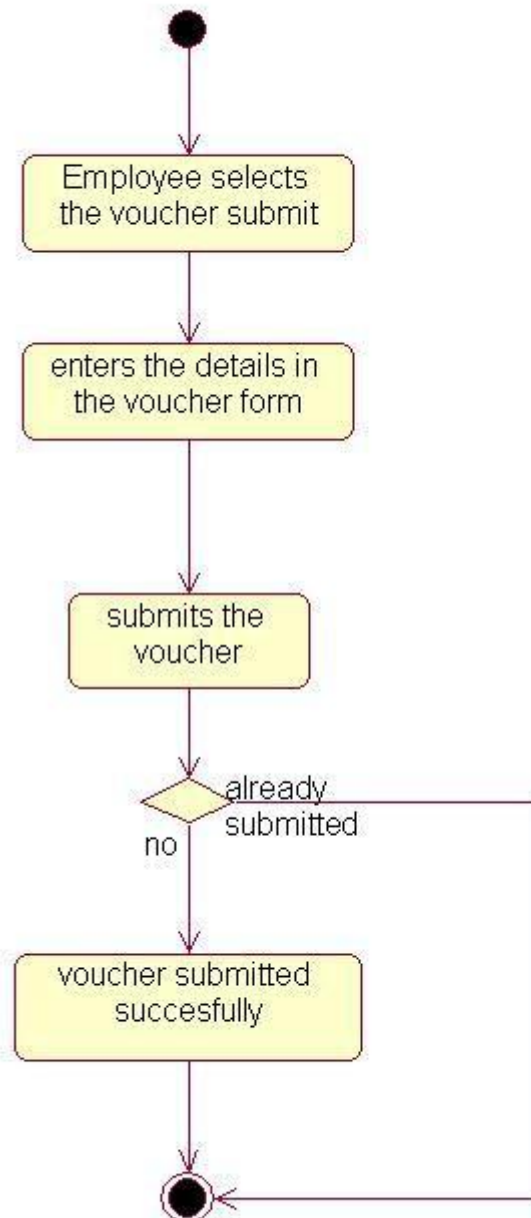
exist. **Post condition:** The changes must be saved.



## Activity diagram for requesting a Voucher:

**Name of use case:**Requesting for a voucher

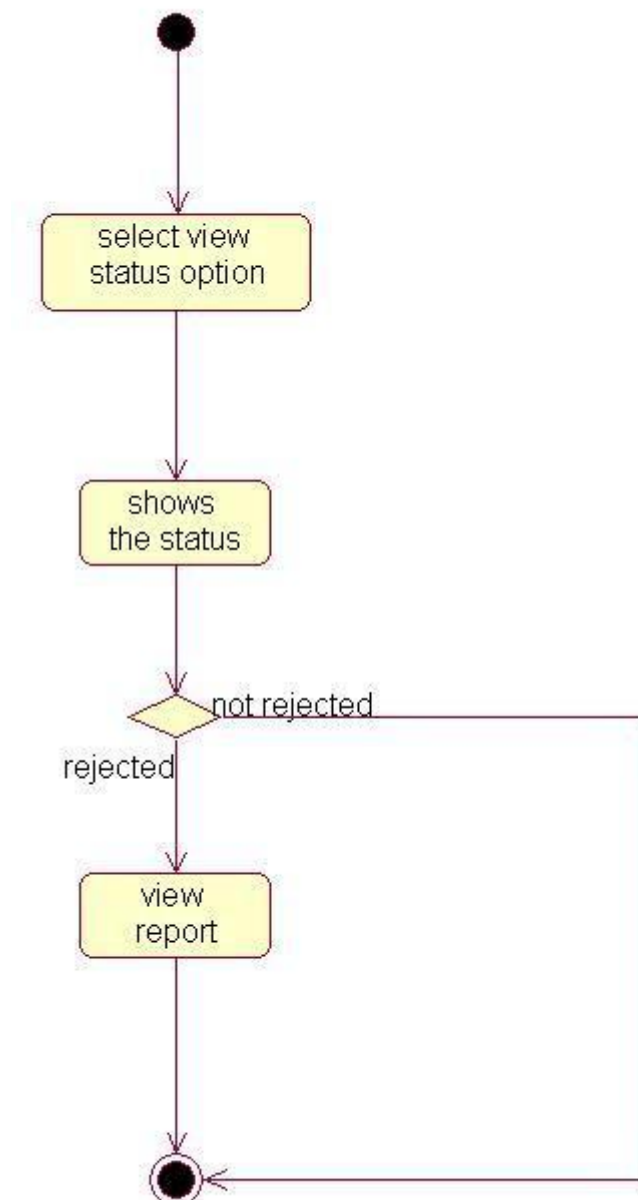
**Description:**Employee can request a voucher.



## Activity Diagram of tracking the status of voucher:

**Name of use case:**Tracking status of a voucher.

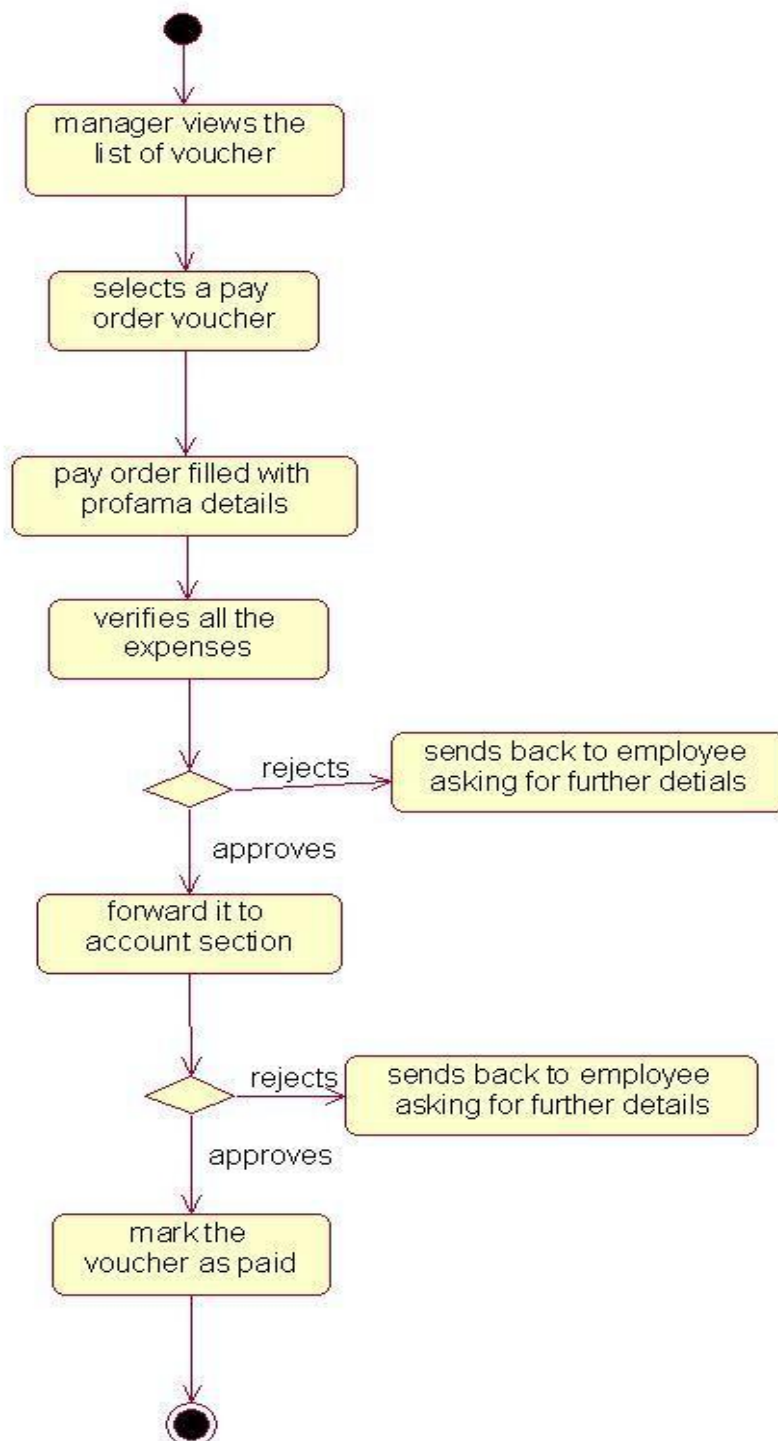
**Description:**Employee can check the status of the voucher at any point of the progress in processing of his voucher.



## Activity Diagram for voucher Approval:

**Name of use case:** Voucher approval.

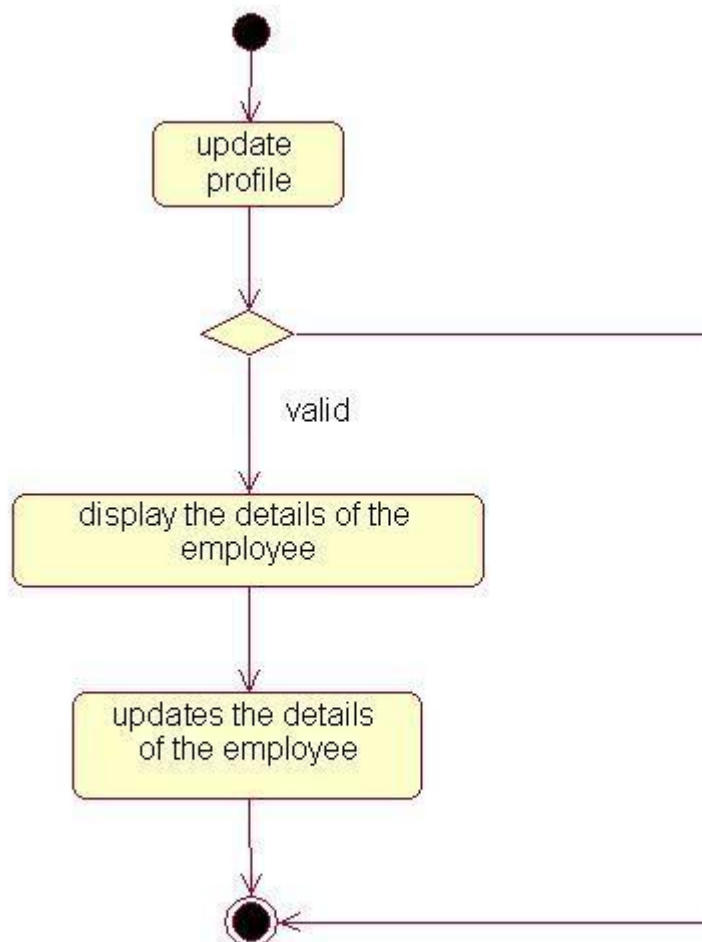
**Description:** Employee's completely filled voucher gets approved by the manager depending on his limits.



## Activity Diagram to Delete Details of Employee:

**Name of use case:** Delete the details of Employee

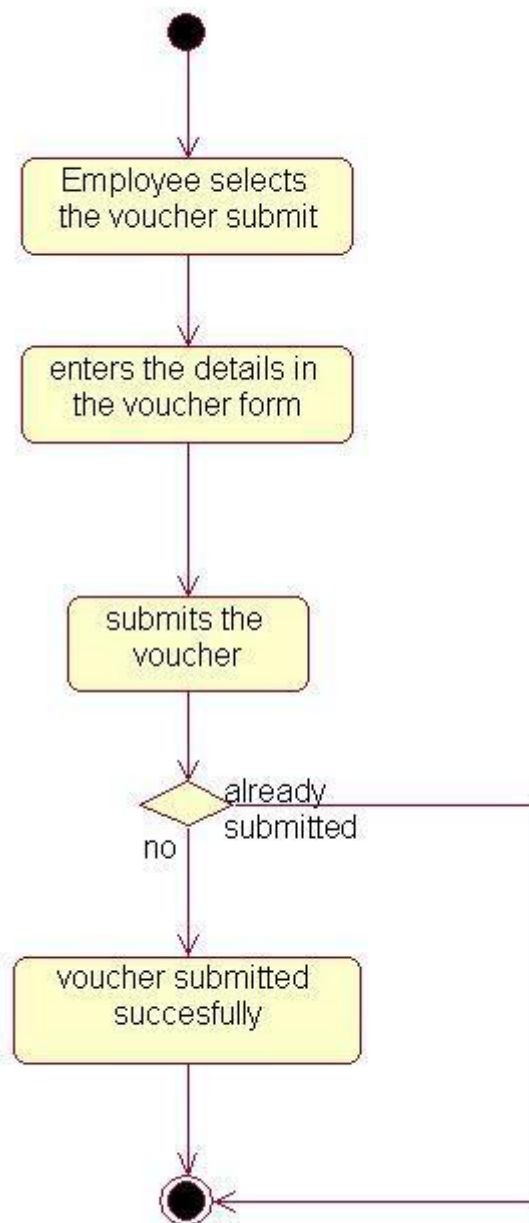
**Description:** Admin can delete the details of a employee regarding his designation in the organization.



## Activity Diagram for Submit voucher:

**Name of use case:** Approving the voucher and reimbursing money

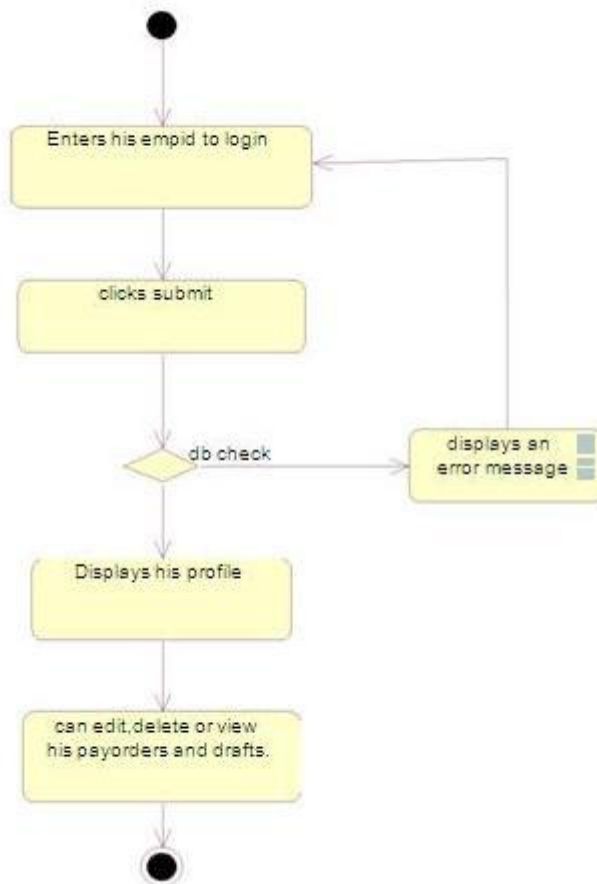
**Description:** Manager can approve voucher of an associated employee and get thereimbursement done depending on the voucher sent by the employee.



## Activity Diagram to view his Profile:

**Name of use case:** View profile of employee.

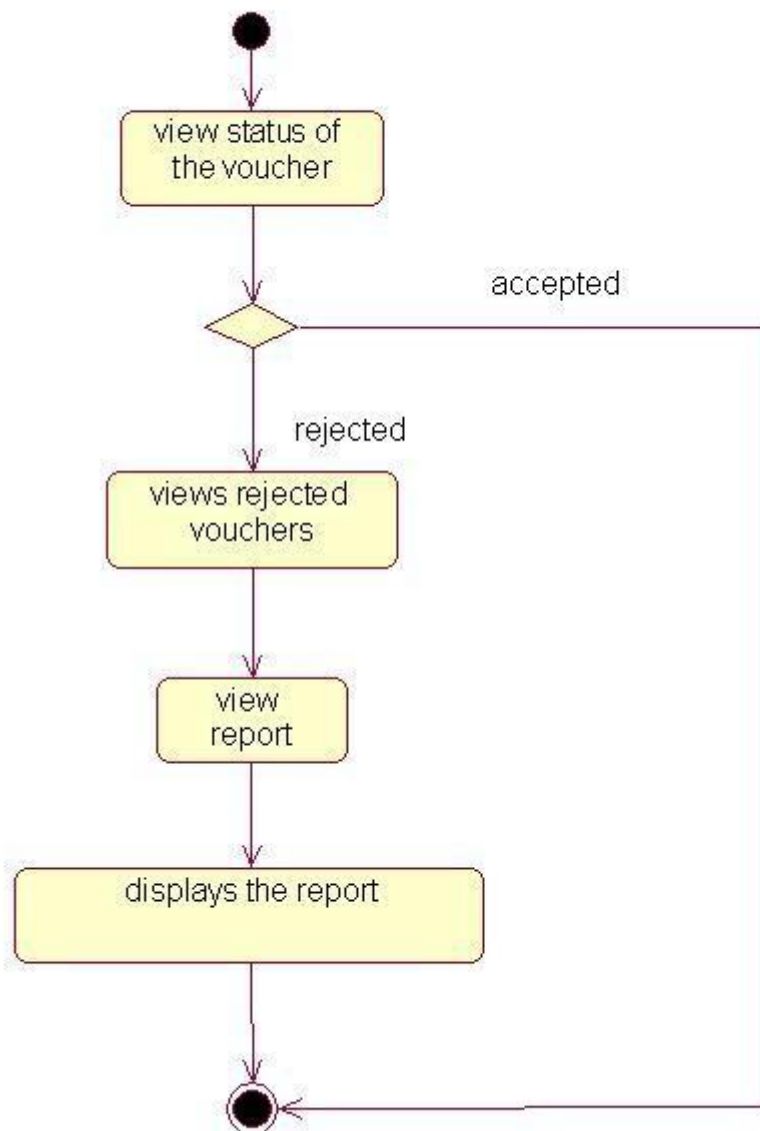
**Description:** Each and every employee can view his profile by logging into his account.



## Activity Diagram for Viewing a Report:

**Name of use case:** View report of the system.

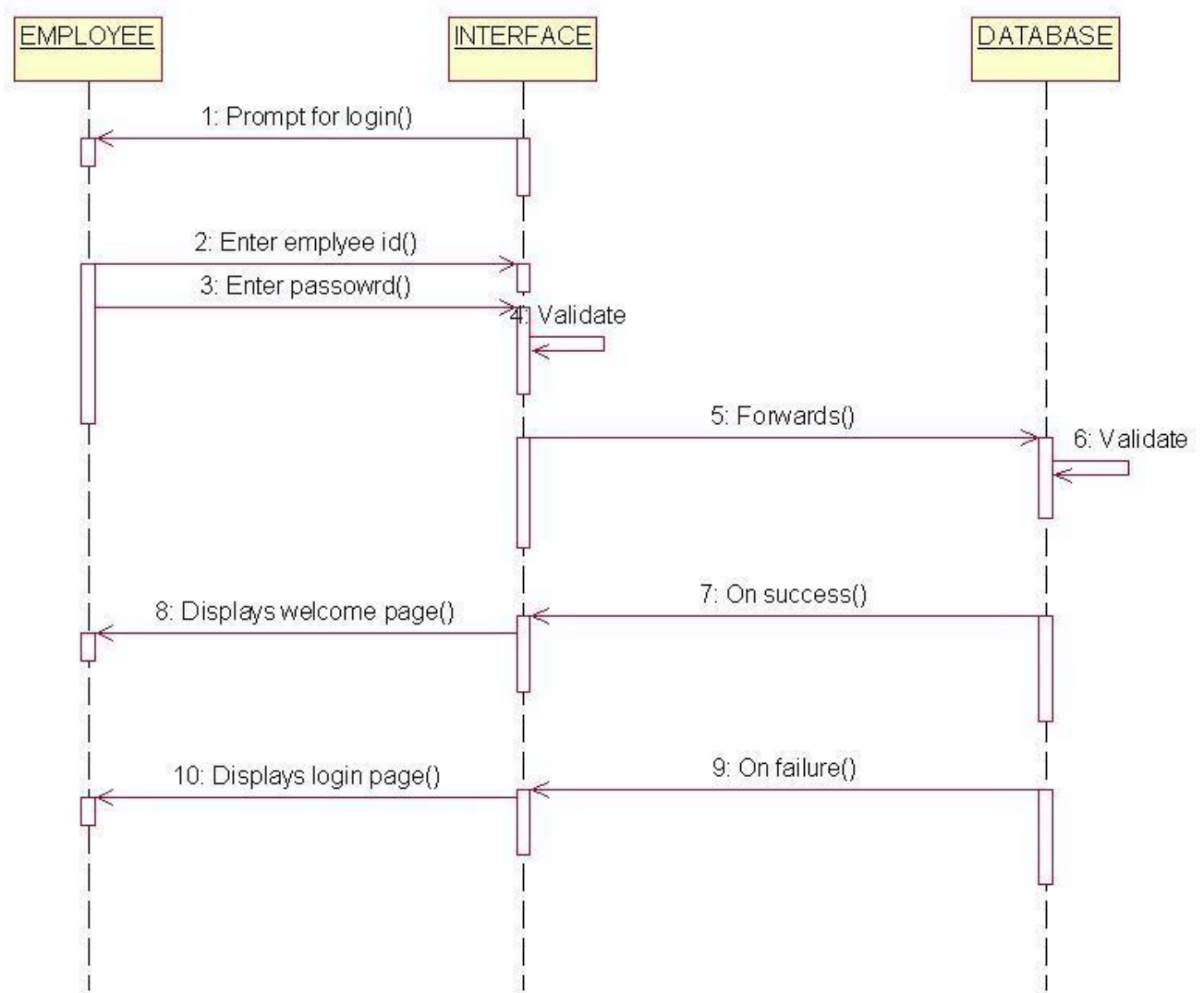
**Description:** Employee can see the report by the selecting the category of reports.



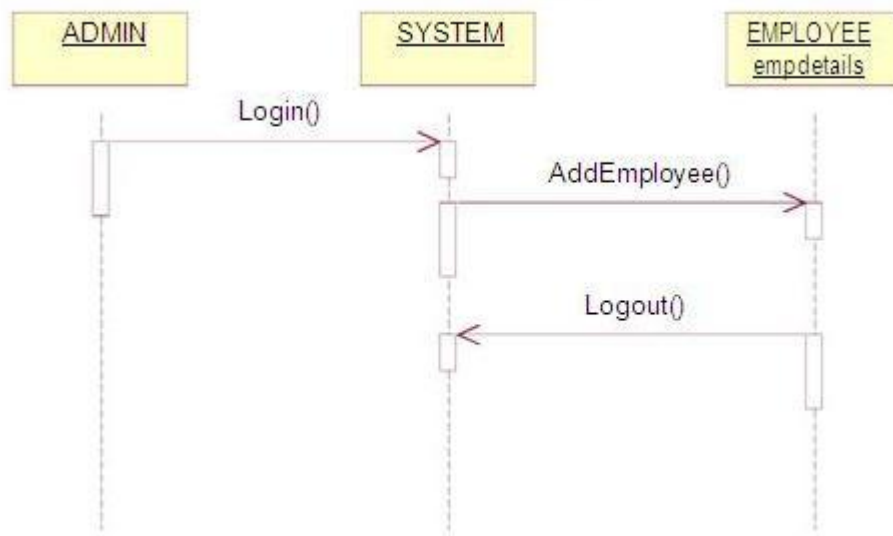


## 3.2 Sequence Diagrams:

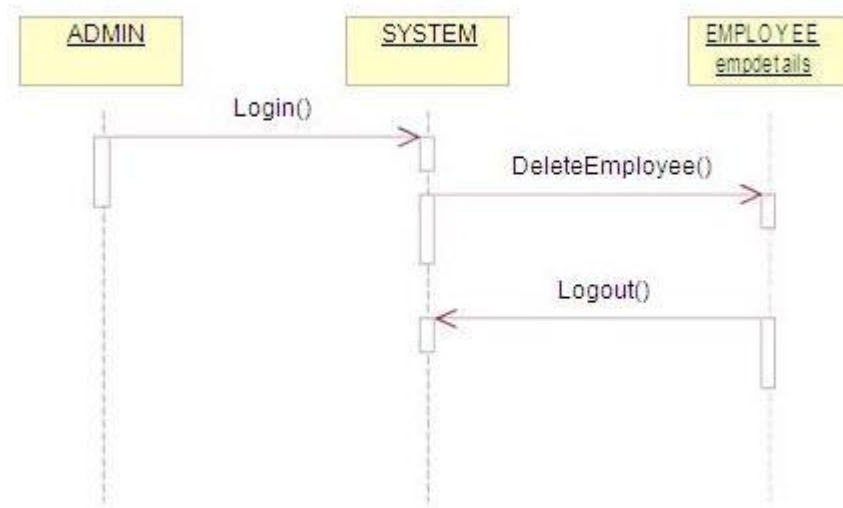
### Employees Login Sequence Diagram:



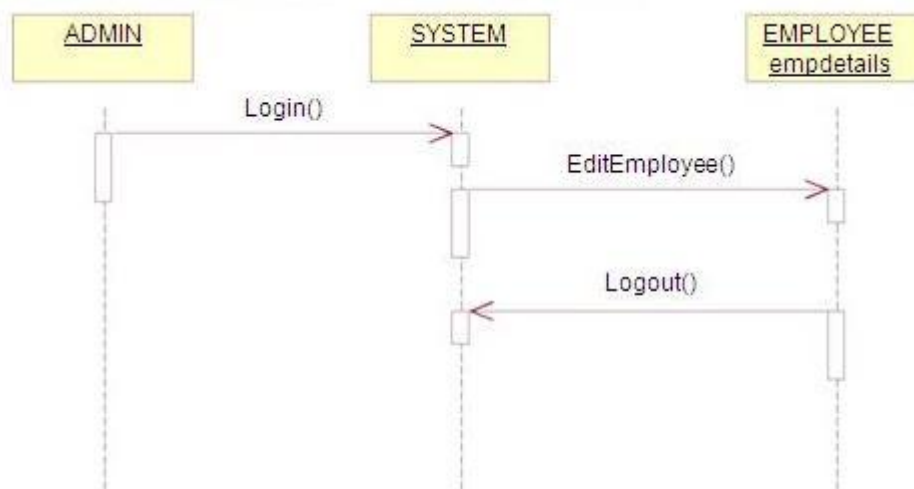
### Sequence Diagram for Adding an Employee:



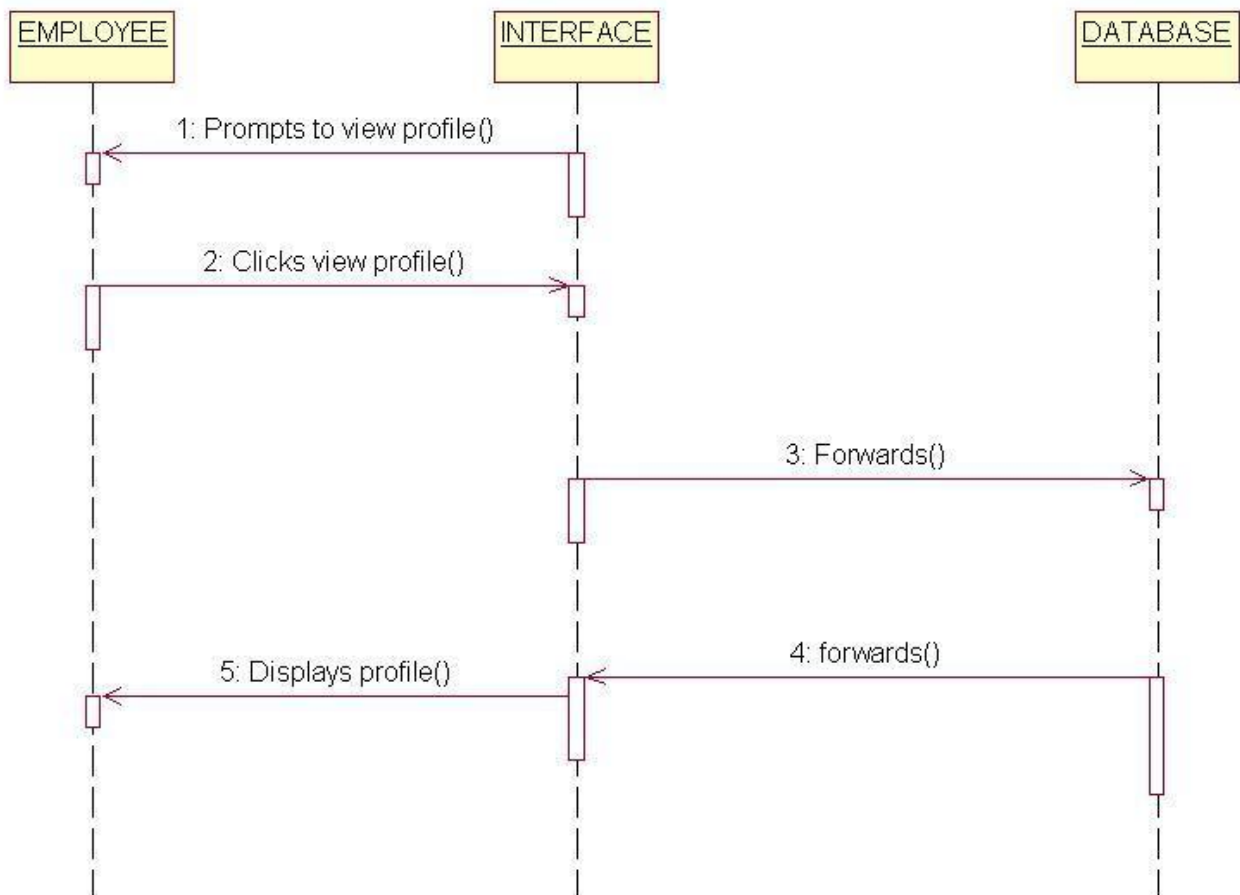
### Sequence Diagram for Deleting an Employee:



## Sequence Diagram for Editing an Employee:

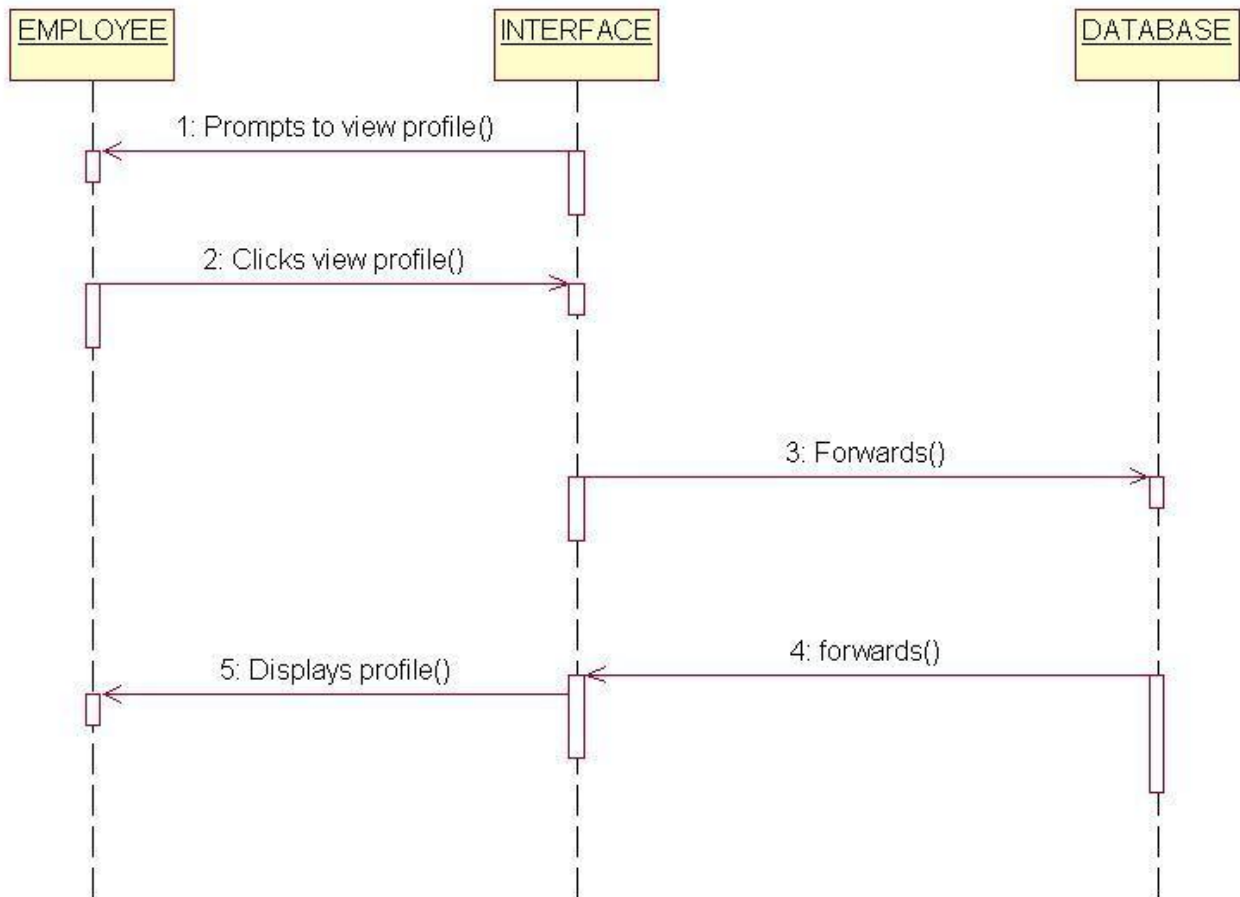


## Sequence Diagram to View Profile:



## Sequence Diagram for Approving a Voucher:

The employee here also includes manager, accounts and employees.



## Sequence Diagram for Voucher process:

