

Employee Expense Management System	Version 1.0
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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Project Guide:

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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.

1.3. Definitions, Acronyms and Abbreviations:

Term	Definition
HTML	Hypertext Markup Language is a markup language used to design static web pages.
JSP	Java Server Pages is used to create dynamic web content.
J2EE	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.
DB2	DB2 Database is the database management system that delivers a flexible and cost effective database platform to build robust on demand business applications.
WASCE	Web sphere application server is an application server that runs business applications and supports the J2EE and web services standards.
WSAD	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.
HTTP	Hypertext Transfer Protocol is a transaction oriented client/server protocol between web browser & a Web Server.
XML	Extensible Markup Language is a markup language that was designed to transport and store data.
Ajax	Asynchronous Java Script and XML is a technique used in java script to create dynamic web pages.
Web 2.0:	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:

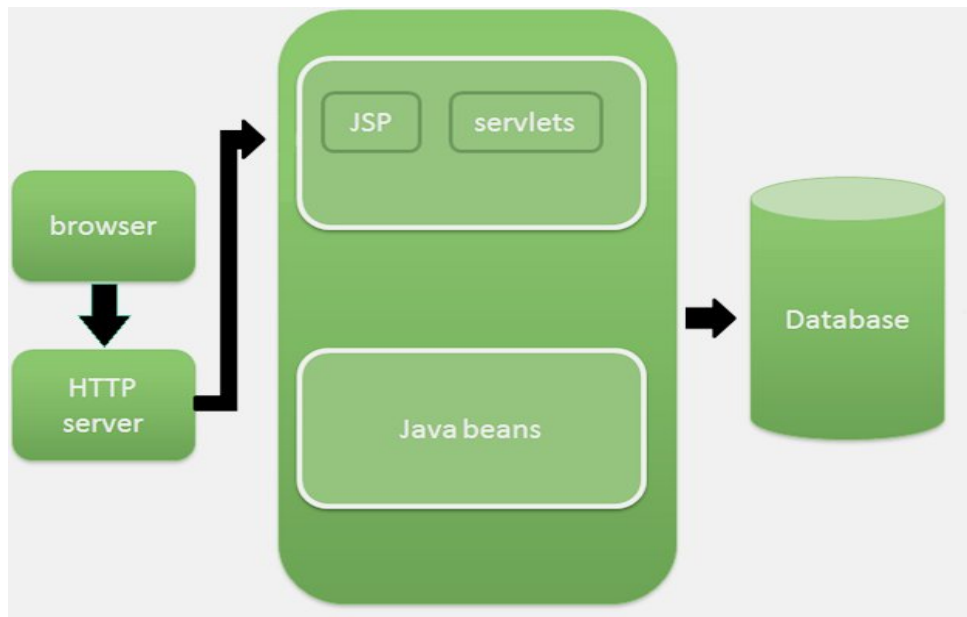
SRS will include two sections:

- **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

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 flows 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

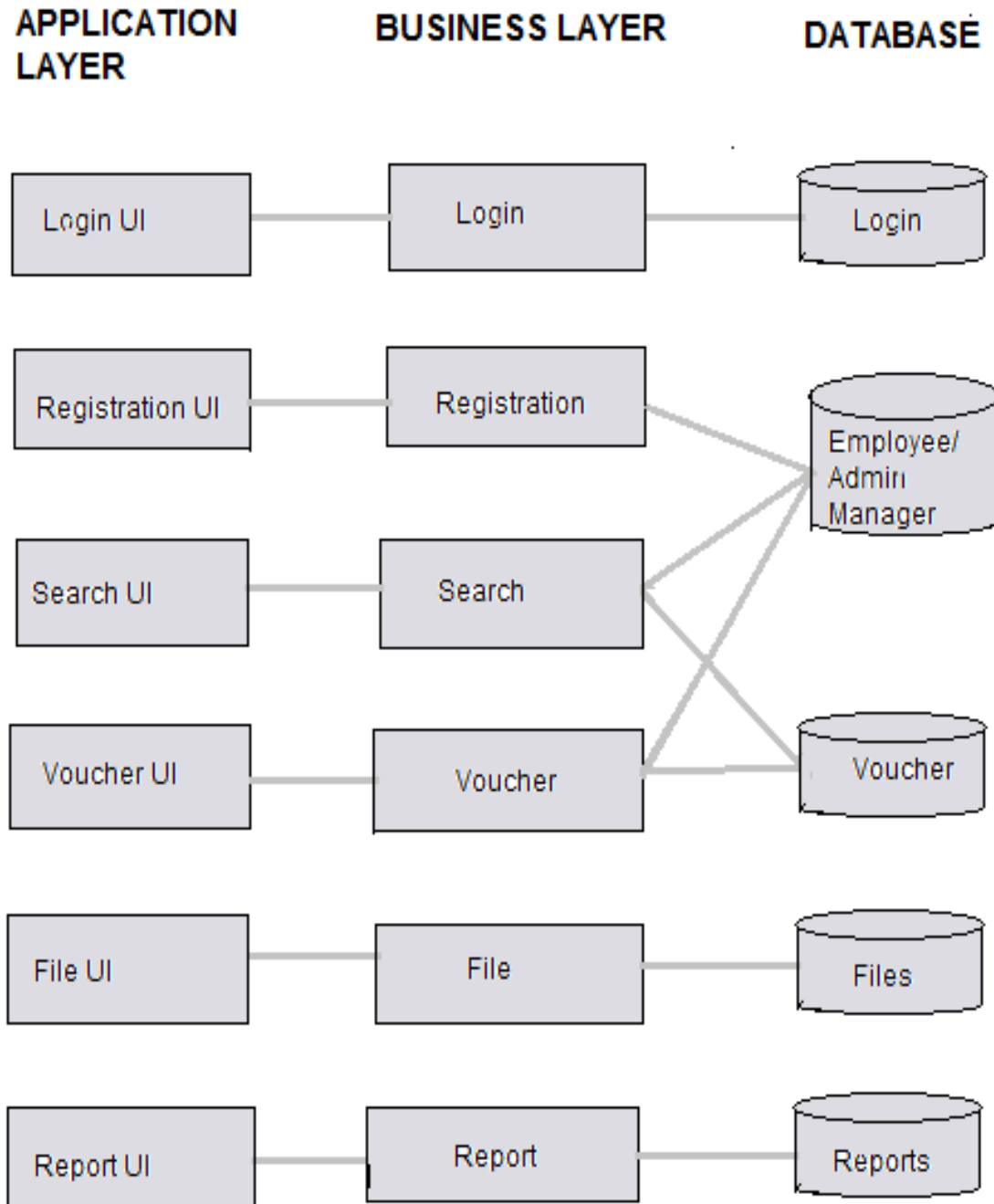
2.6 User Characteristics:

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

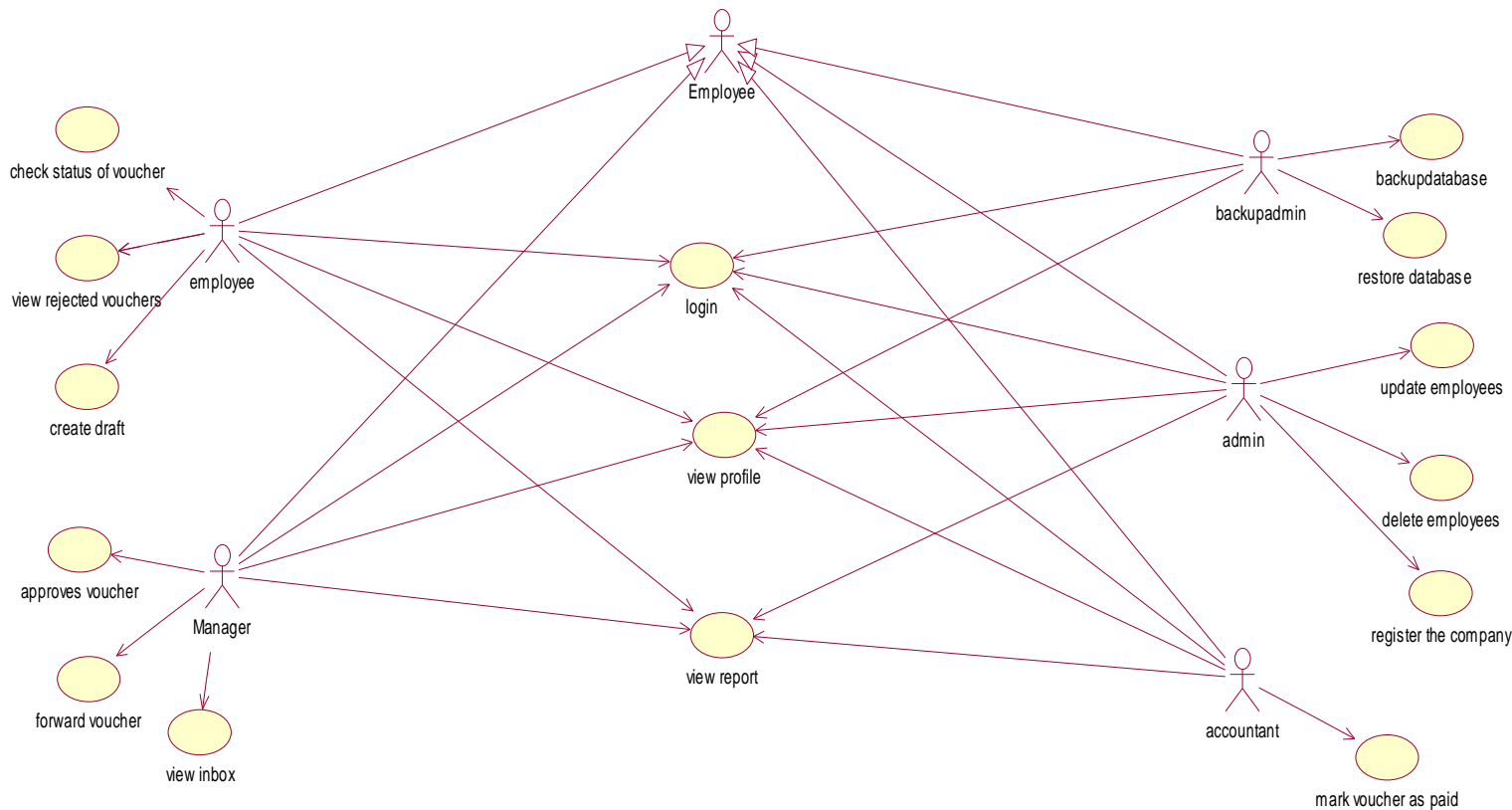
2.7 Constraints:

- ▶▶ 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.

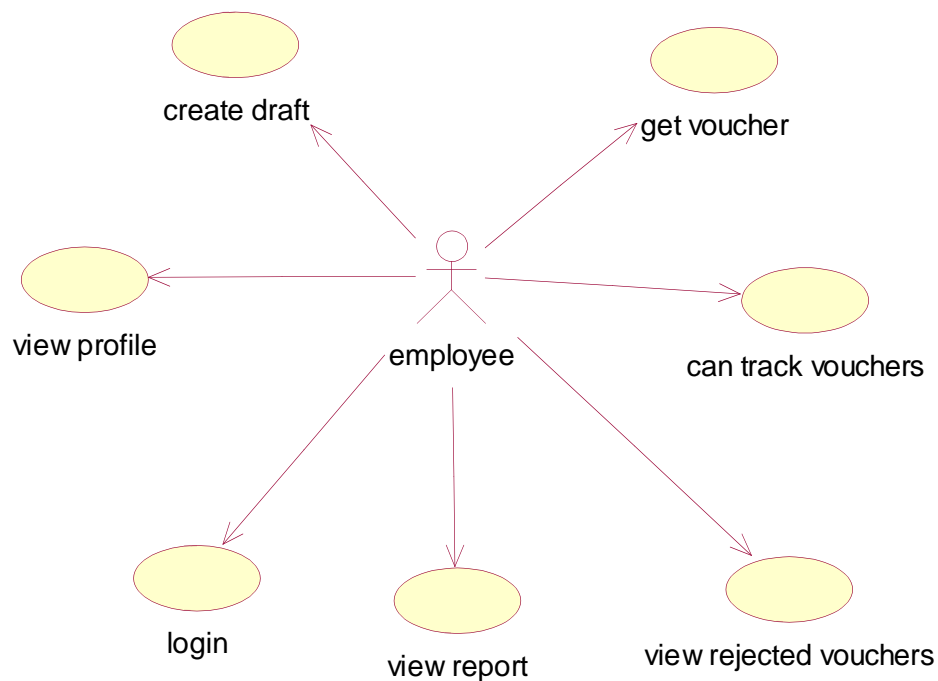
- Every employee can login and access the vouchers depending on the limit they are allowed.
- The Admin only has the ability to register a company.
- Admin only can ADD, DELETE and MODIFY the details of different employees belonging to that company.
- The Employee can claim for the reimbursable amounts 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.

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- 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:

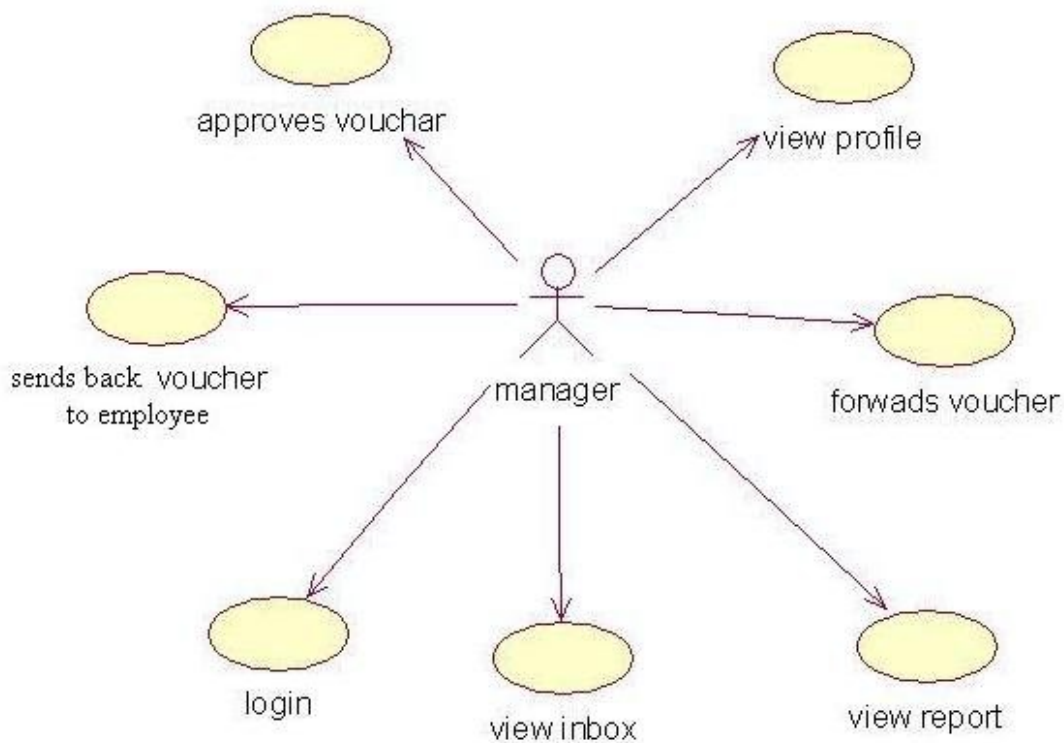
The initial condition to be satisfied is the Employee should belong to the company registered.

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.

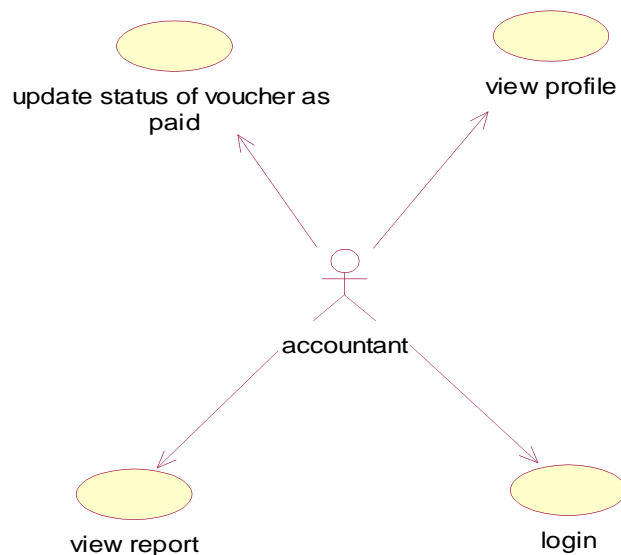
Step-by-step Procedure:

1. The Manager can access the site with his username and password.

Employee Expense Management system

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:

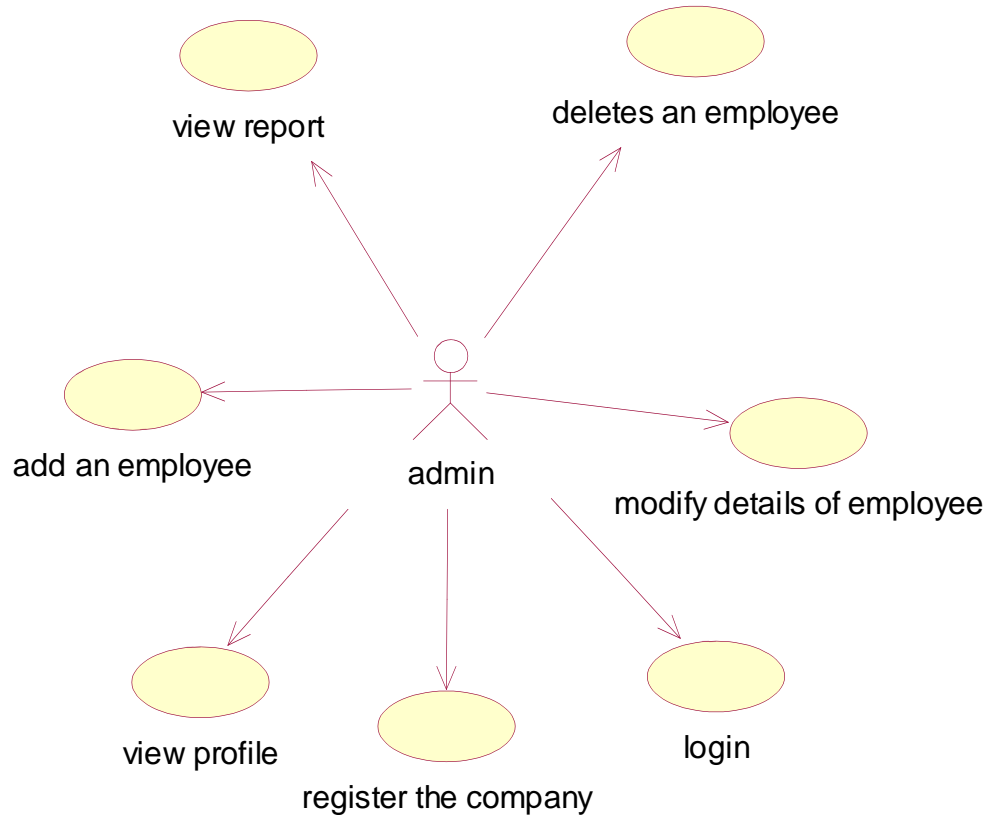
The Accountant is also an Employee with some additional functions assigned especially to him.

Step-by-step Procedure:

1. The Accountant can also access the site with his username and password given to him.
2. With this the Accountant lands into a page where the system displays him options different from the options of a normal Employee.
3. The Accountant can select the desired option.
4. The Accountant can then perform the operations of changing the status of the voucher from waiting to paid, can view the reports.

Use-case Diagram for Admin:

Diagram:



Brief Description:

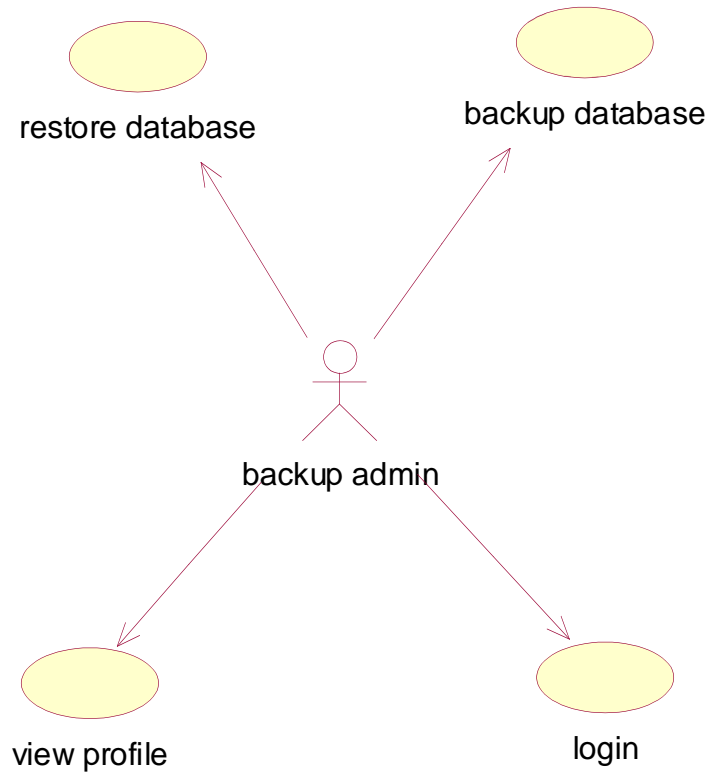
The Admin is an Employee with some additional functions assigned specially to him.

Step-by-step Procedure:

- The Admin can also access the site with his username and password given to him.
- With this the Admin lands into a page where the system displays him options different from the options of a normal Employee.
- The Admin can select the Desired.
- The Admin can then perform the operations of adding an Employee, deleting an Employee or modifying the details of the Employee.

Use-case Diagram for Back-up Admin:

Diagram:



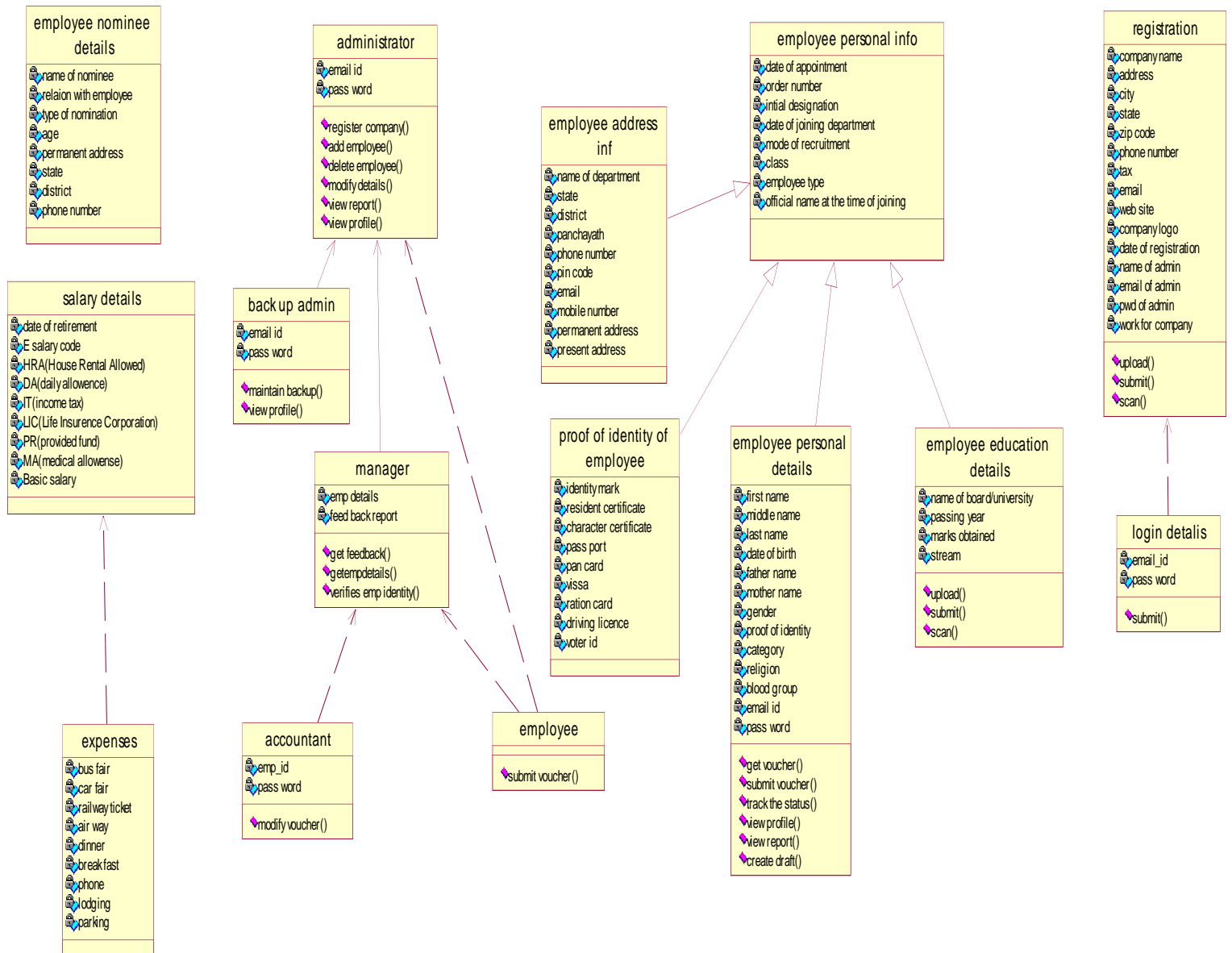
Brief Description:

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

Step-by-step Procedure:

1. The Backup Admin can also access the site with his username and password given to him.
2. With this the Backup Admin lands into a page where the system displays him options different from the options of a normal Employee.
3. The Backup Admin can select the desired option.
4. 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.

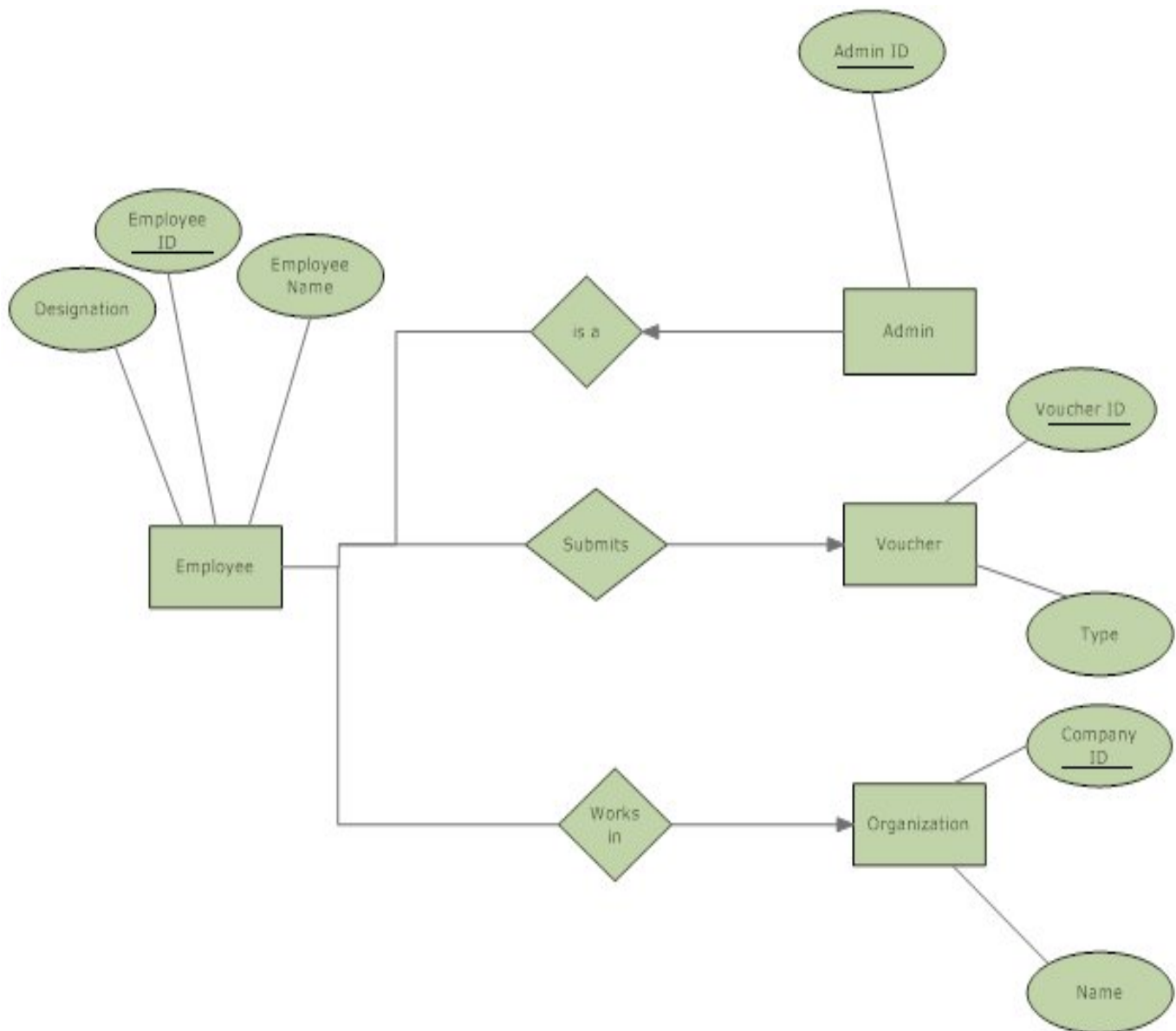
Employee: This database is used to store the information of each employee in an organization

<div><div>Salary Details</div><div><div>E-Salary code</div><div>Basic Pay:Rs</div><div>Date Of Retirement</div><div>HRA(House Rent Allowance)</div><div>DA(Dearly Allowance)</div><div>IT(Income Tax)</div><div>LIC(Life Insurance Corporati...</div><div>PF(Provident Fund)</div><div>LTA(Leave Travel Allowance)</div><div>CA(Conveyance Allowance)</div><div>MA(Medical Allowance)</div><div>Emp ID(FK)</div><div>Salary Details_I1</div></div></div>	<div><div>Employee Professional Information</div><div><div>Order Number</div><div>Emp ID(FK)</div><div>Organisation Name At The Time Of Joining</div><div>Date Of Appointment</div><div>Designation</div><div>Date Of Joining Of Department</div><div>Mode Of Recruitment</div><div>Class</div><div>Employee Type</div><div>Gazetted/Non-Gazetted</div><div>Salary</div><div>Employee Professi1</div></div></div>	<div><div>Employee Nominee Details</div><div><div>EN ID</div><div>Name Of Nominee</div><div>Relation With Employee</div><div>Type Of Nomination</div><div>Nomination Percentage</div><div>PIN Code</div><div>Permanent Address of Nominee</div><div>State</div><div>District</div><div>Phone Number</div><div>Employee Nominee 1</div></div></div>	<div><div>Proofs of Employee</div><div><div>POEID</div><div>Identity Marks</div><div>Medical Fitness</div><div>Passport</div><div>Visa</div><div>Driving License</div><div>Voter ID</div><div>Emp ID(FK)</div><div>Proofs of Employee1</div></div></div>	
<div><div>Registration</div><div><div>REGID</div><div>Company Name</div><div>Legal Name</div><div>Address</div><div>State</div><div>City</div><div>ZIP Code</div><div>Phone Number</div><div>FAX</div><div>E-mail</div><div>Website</div><div>Company Logo</div><div>Date Of Registration</div><div>Proof Of Identity</div><div>Name Of Admin</div><div>E-mail of admin</div><div>Password Of Admin</div><div>WorkFlow Of Company</div><div>Registration_IDX</div></div></div>	<div><div>LOGIN</div><div><div>Email ID</div><div>Password</div><div>LOGIN_IDX</div><div>Expenses</div><div><div>Exp ID</div><div>Bus Fair</div><div>Car Fair</div><div>RailWay Fair</div><div>Airways</div><div>Breakfast</div><div>Dinner</div><div>Phone Expenses</div><div>Lodging</div><div>Taxi Fair</div><div>Parking</div><div>Other Expenses</div><div>Emp ID(FK)</div><div>Expenses_IDX</div></div></div></div>	<div><div>Employee Personal Details</div><div><div>Emp ID</div><div>First Name</div><div>Middle Name</div><div>Last Name</div><div>Gender</div><div>Marital Status</div><div>Proof Of Identity</div><div>Height (in cms)</div><div>Category</div><div>Religion</div><div>Blood Group</div><div>Home District</div><div>Home State</div><div>LTC Home Town</div><div>Remarks</div><div>Email ID</div><div>Password</div><div>Employee Personal1</div></div></div>	<div><div>Employee Education Info</div><div><div>EmpEdu ID</div><div>Higher Education</div><div>Name Of Board/University</div><div>Marks Obtained</div><div>Passing Year</div><div>Stream</div><div>studies in India/Abroad</div><div>Emp ID(FK)</div><div>Employee Educatio1</div><div>Employee</div><div><div>Em ID</div><div>EMPAD ID(FK)</div><div>Order Number(FK)</div><div>POEID(FK)</div><div>Exp ID(FK)</div><div>EmpEdu ID(FK)</div><div>EN ID(FK)</div><div>E-Salary Code</div><div>Email ID</div><div>Employee_IDX</div></div></div></div>	<div><div>Employee Adress Information</div><div><div>EMPAD ID</div><div>Emp ID(FK)</div><div>Name Of Department</div><div>Present Address</div><div>permanent Address</div><div>State</div><div>District</div><div>Panchayat</div><div>Phone Number</div><div>PIN Code</div><div>Email ID</div><div>Mobile Nmber</div><div>Employee Adress I1</div></div></div>

2.11.2 ER DIAGRAM

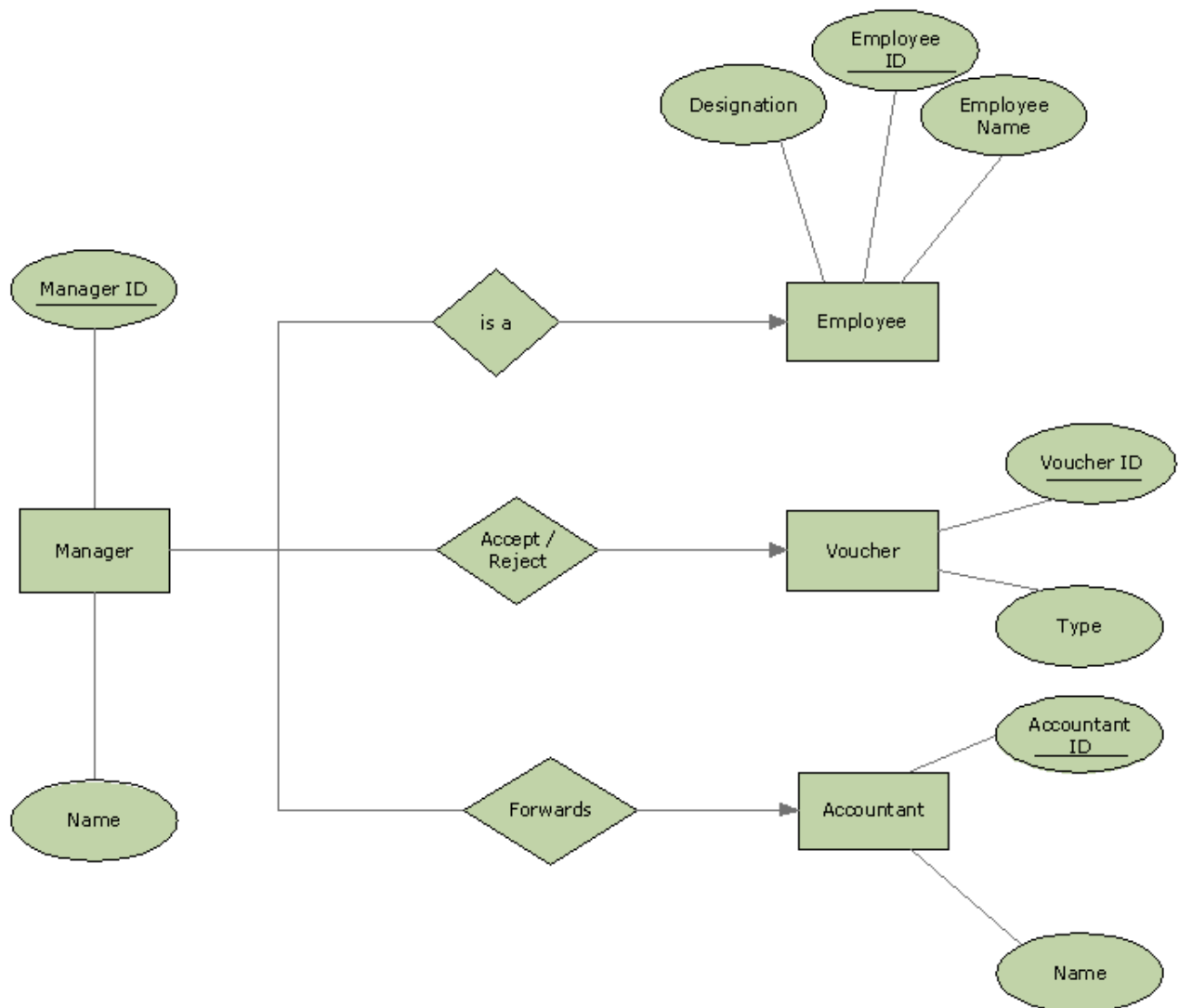
ER DIAGRAM FOR EMPLOYEE:

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



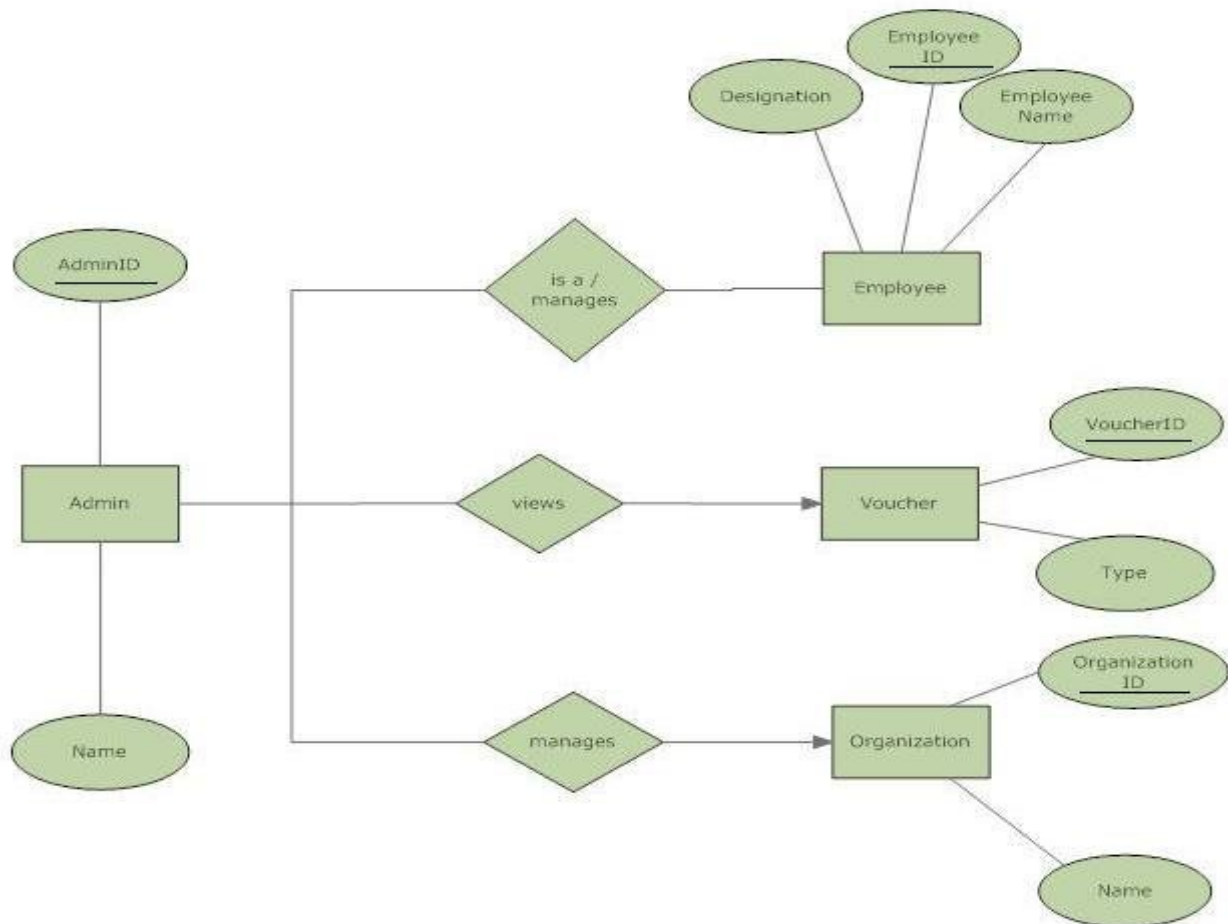
ER DIAGRAM FOR MANAGER:

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



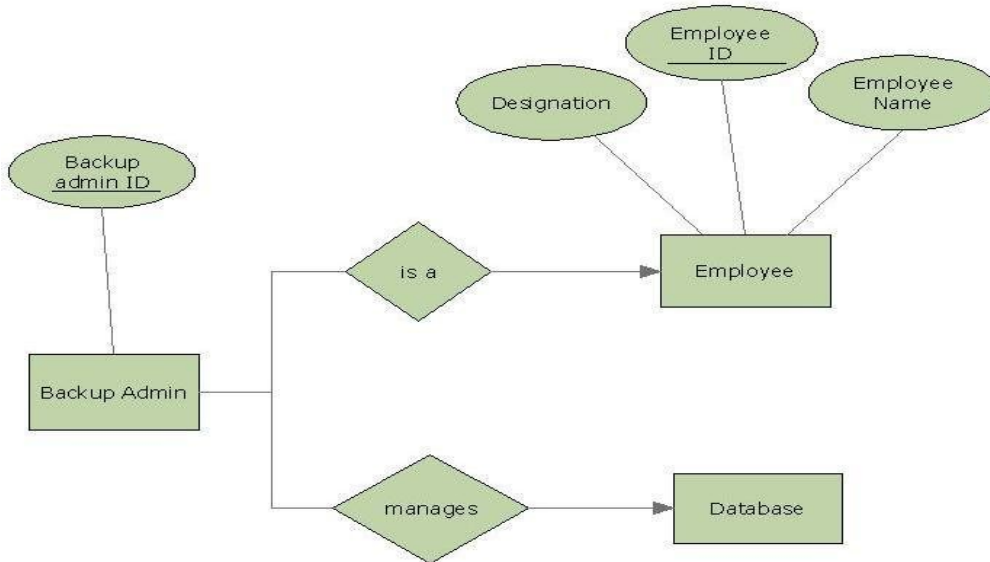
ER DIAGRAM FOR ADMIN:

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



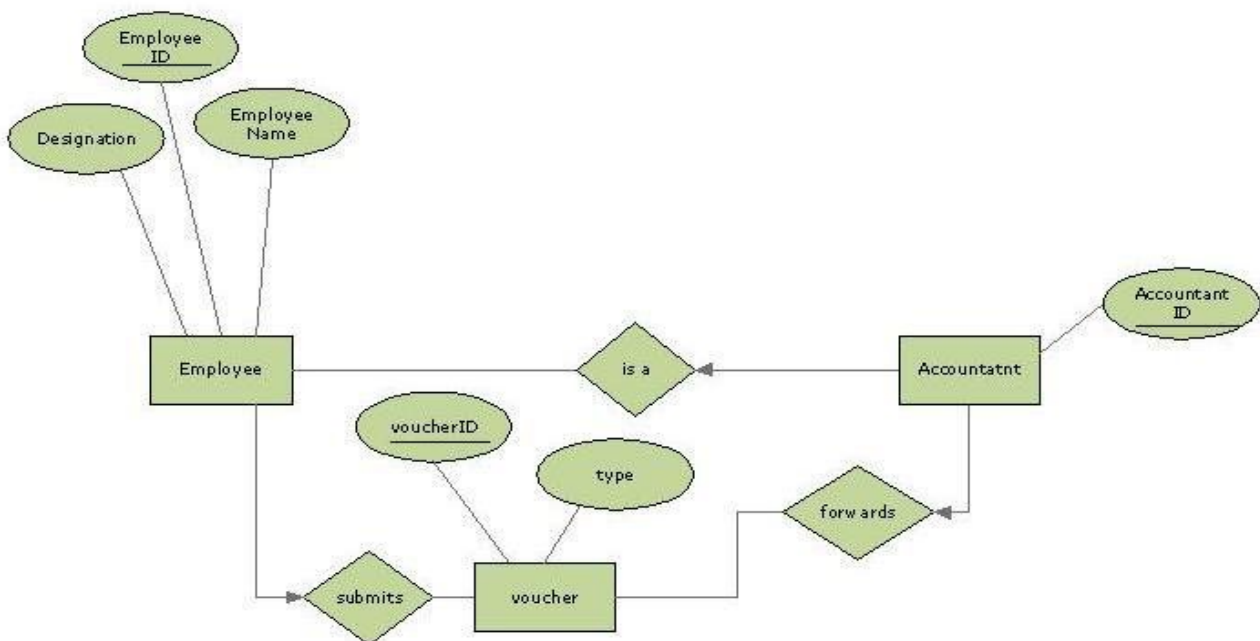
ER DIAGRAM FOR BACKADMIN:

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



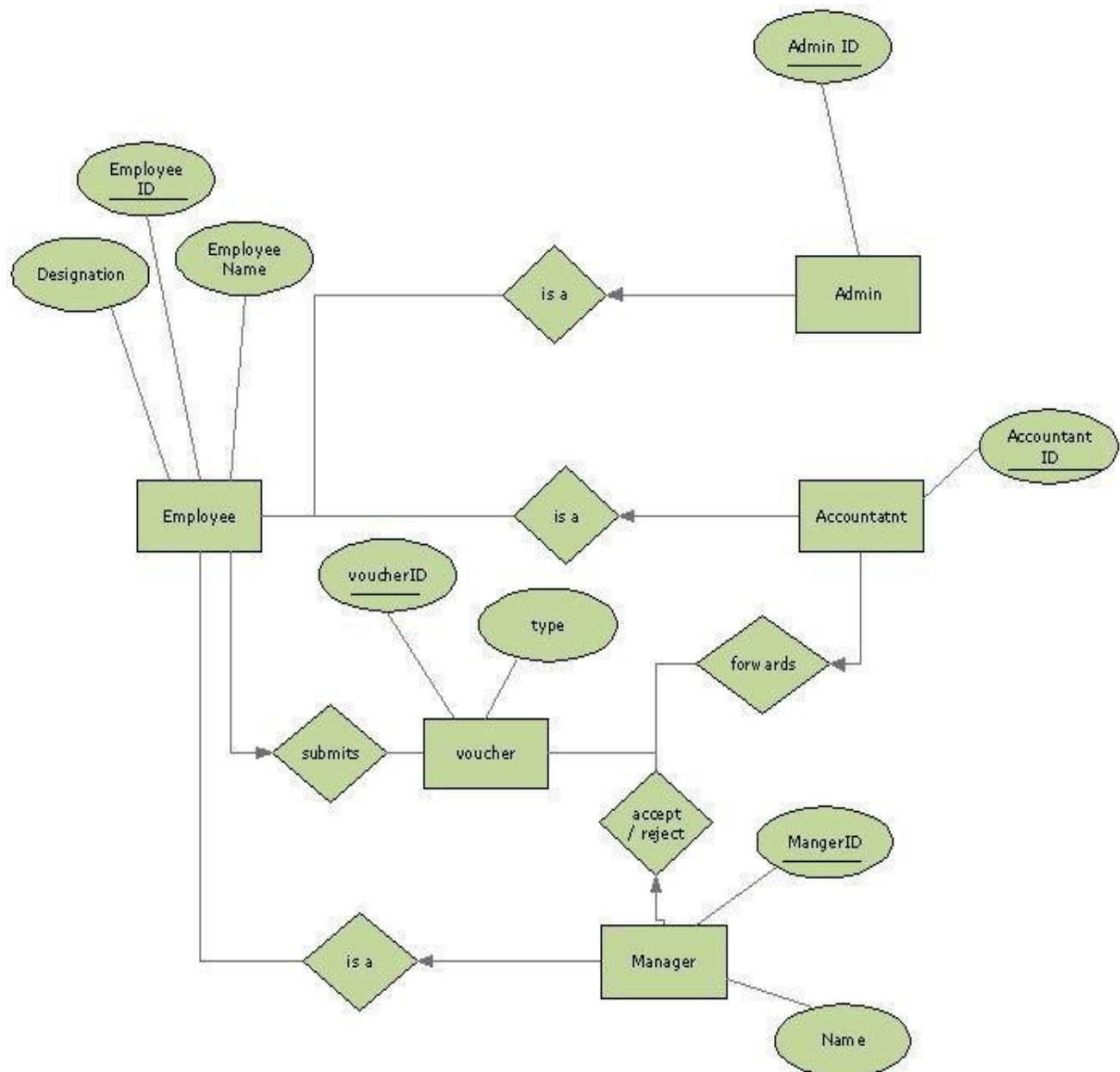
ER DIAGRAM FOR ACCOUNTANT:

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



ER DIAGRAM FOR SYSTEM:

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

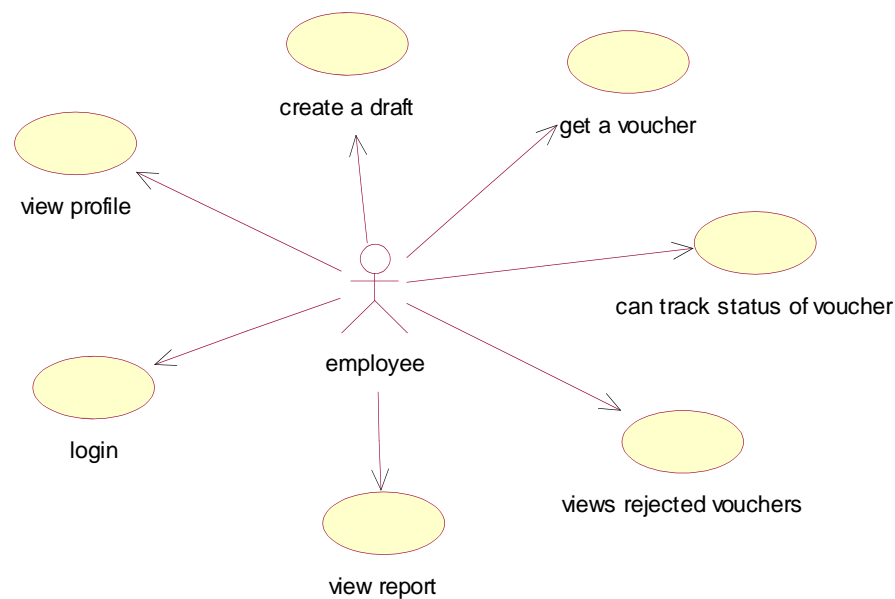


3. Specific Requirements

3.1 Use-Case Reports:

Employee:

Diagram:



Brief Description:

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

- ↳ **View Status:** Employee should be able to track progress of his vouchers
- ↳ Employee can check the rejected vouchers, which are then allowed to change details on the vouchers or provide additional information required for the approval.
- ↳ Employee can check the saved vouchers in the drafts.

Step-by-step Procedure:

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

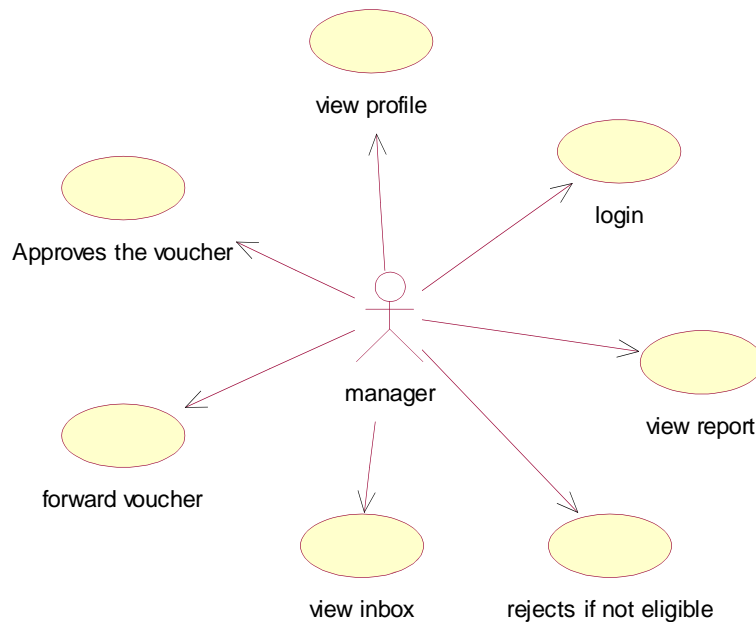
- ↳ The Employee logs into our site with his username and password.
- ↳ The system displays the options to the Employee.

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- ↳ The Employee selects the desired option.
- ↳ The System presents the details of the desired page accordingly with the designation of employee.

Manager:

Diagram:



Brief Description:

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

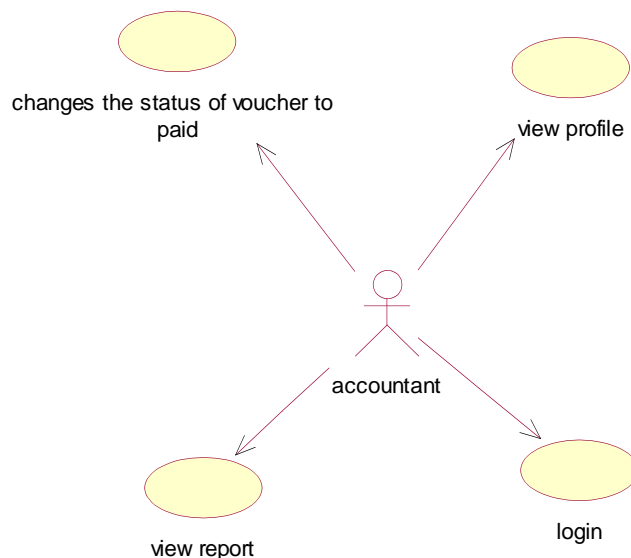
- ↳ **Viewing details:** Manager should be able to view vouchers waiting for their approval in their Inbox by logging in to the application.
- ↳ Manager should be able to track progress of his vouchers if any.
- ↳ Manager should be able to forward the vouchers to higher authorities if not in his limits.

Step-by-step Procedure:

- ⇒ The Manager can access the site with his username and password.
- ⇒ With this the Manager lands into a page where the system displays him options different from the options of a normal Employee.
- ⇒ The Manager can select the desired option.
- ⇒ 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.

Accountants:

Diagram:



Brief Description:

The Accountant is also an Employee with some additional functions assigned especially to him.

⇒ **View vouchers:** Accountants should be able to view approved vouchers.

⇒ **Set Status of Voucher:** The status of approved vouchers is changed to paid.

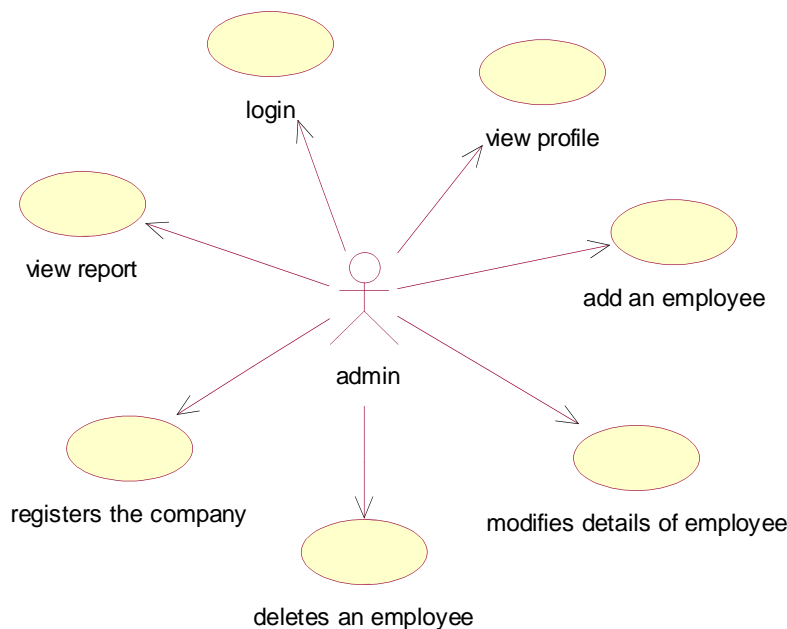
Step-by-step Procedure:

Employee Expense Management system

1. The Accountant can also access the site with his username and password given to him.
2. With this the Accountant lands into a page where the system displays him options different from the options of a normal Employee.
3. The Accountant can select the desired option.
4. The Accountant can then perform the operations of changing the status of the voucher from waiting to paid, can view the reports.

Admin:

Diagram:



Brief Description:

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

⇒ **Add Employee:** Admin can add a new Employee to the existing database if a new employee joins the organization.

⇒ **Delete Employee:** Admin can delete any Employee if he/she leaves the organization.

⇒ **Modify Details:** Admin can change the details of any Employee of the organization.

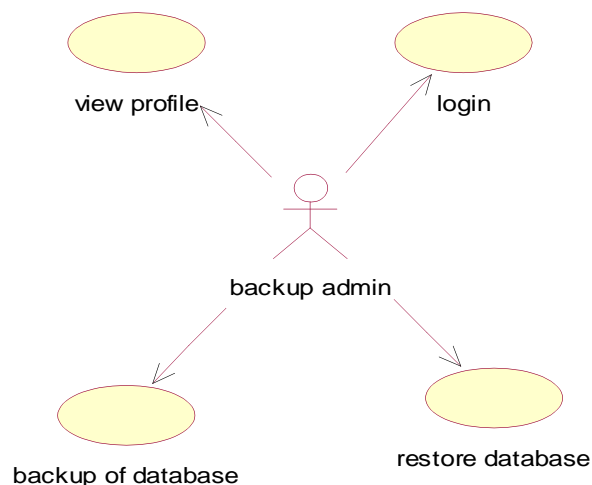
⇒ **View Report:** Admin has the authority to keep track of the systems progress.

Step-by-step Procedure:

- ⇒ The Admin can also access the site with his username and password given to him.
- ⇒ With this the Admin lands into a page where the system displays him options different from the options of a normal Employee.
- ⇒ The Admin can select the Desired.
- ⇒ The Admin can then perform the operations of adding an Employee, deleting an Employee or modifying the details of the Employee.

Back-up Admin:

Diagram:



Brief Description:

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.

3.2 Activity Diagrams:

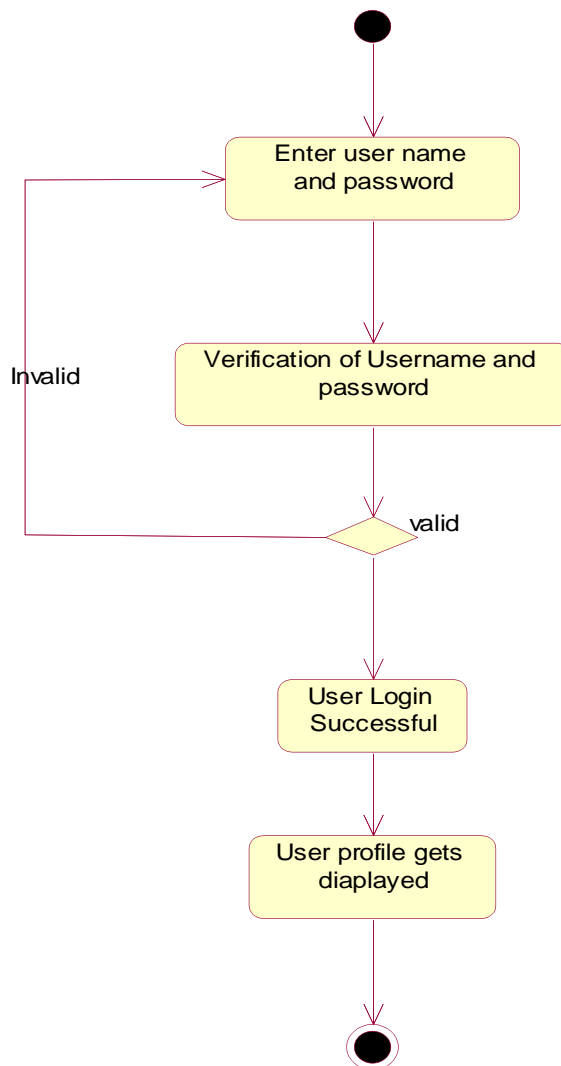
Activity diagram for login:

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.

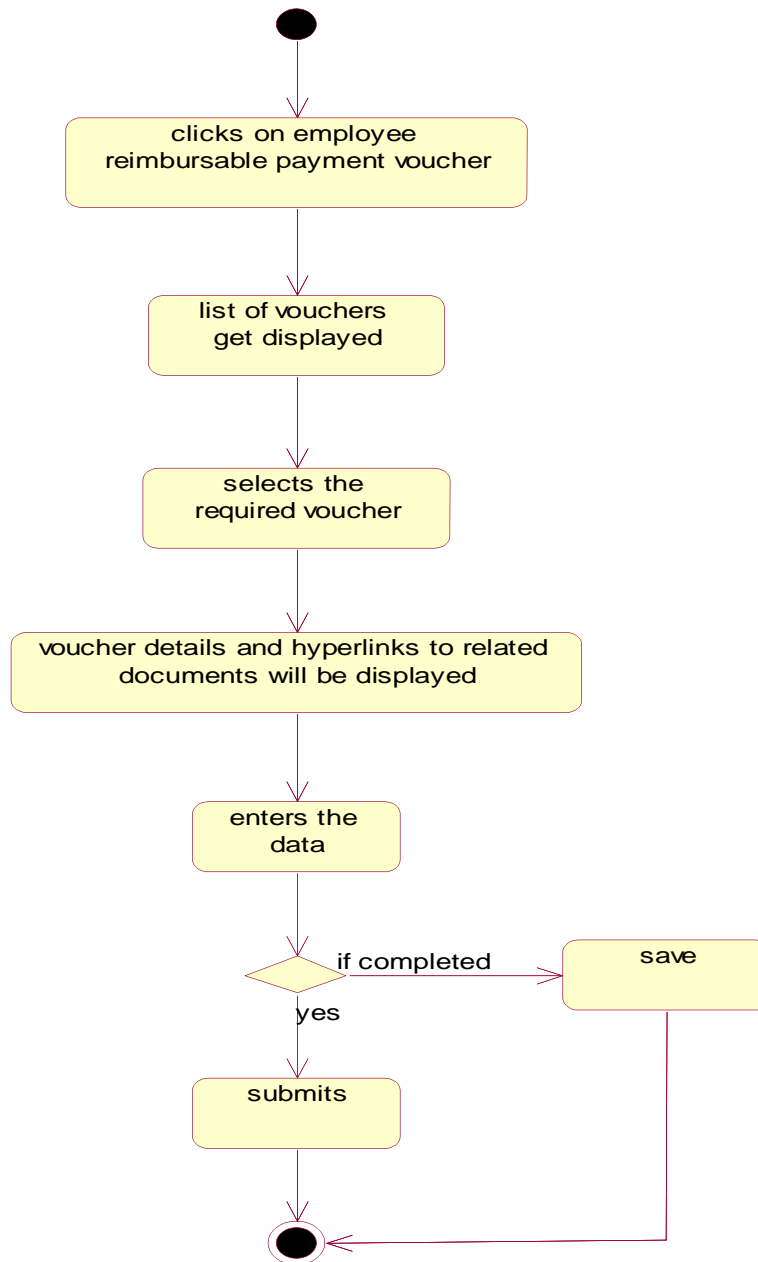
Post condition: The changes must be saved.



Activity diagram for requesting a Voucher:

Name of use case:Requesting for a voucher

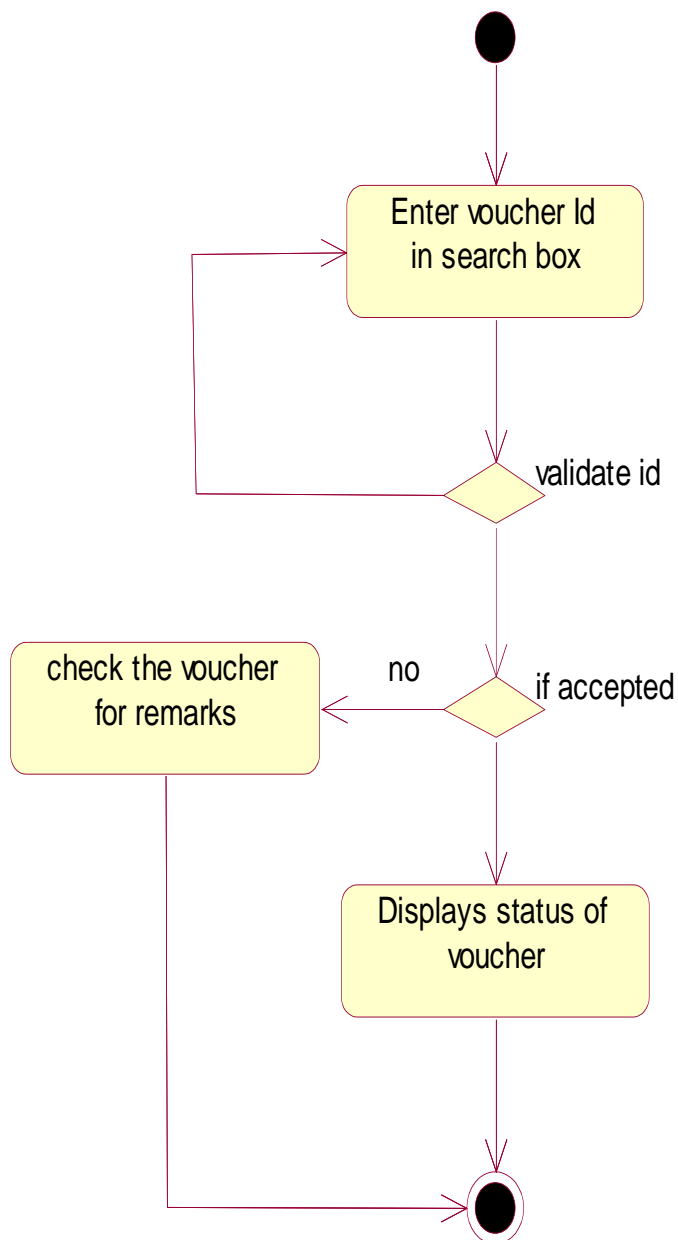
Description:Employee can request a voucher.



Activity Diagram of tracking the status of voucher:

Name of use case:Tracking status of a voucher.

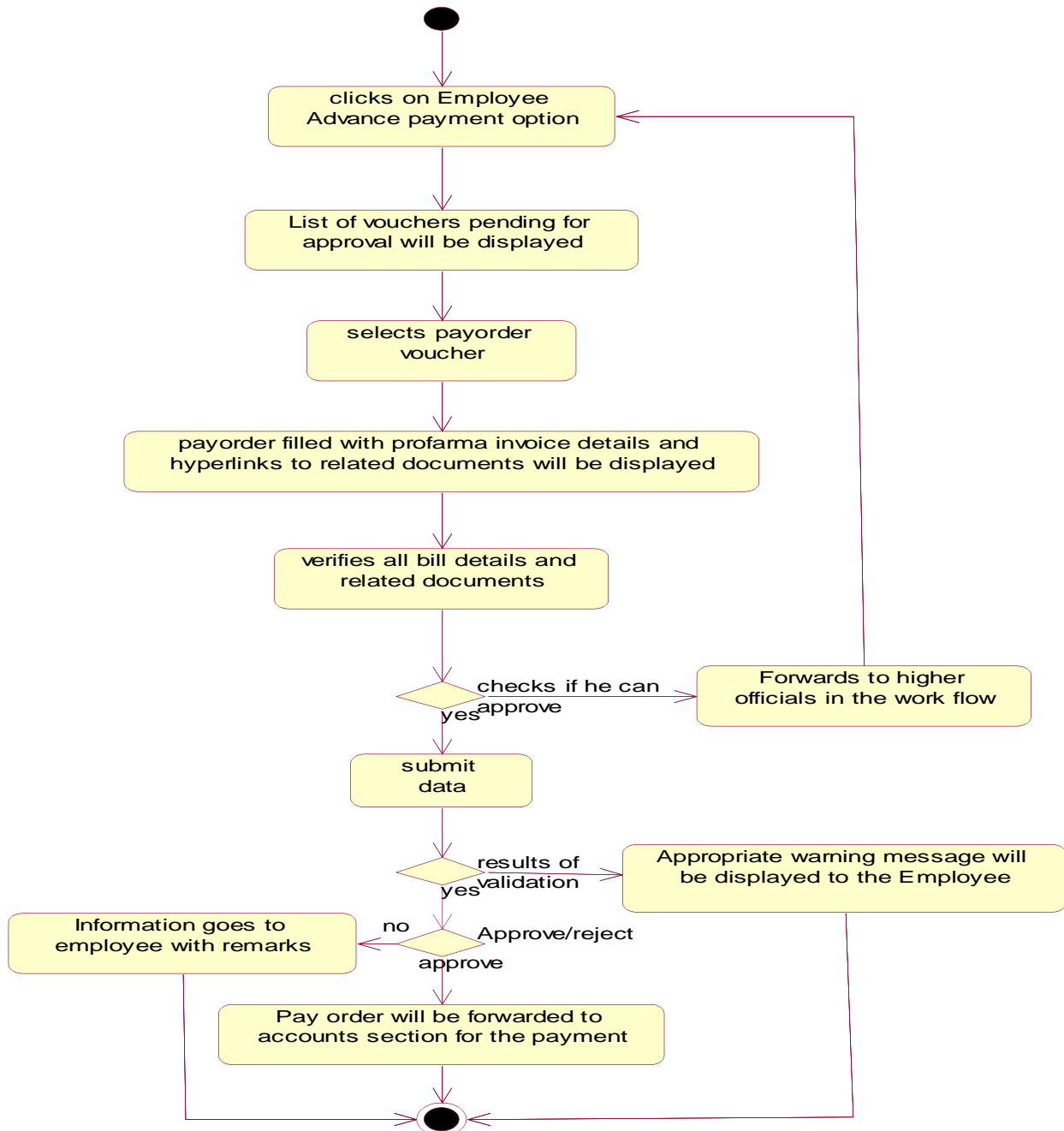
Description:Employee can check the status of the voucher at any point of the progress in processing of his voucher.



Activity Diagram for voucher Approval:

Name of use case: Voucher approval.

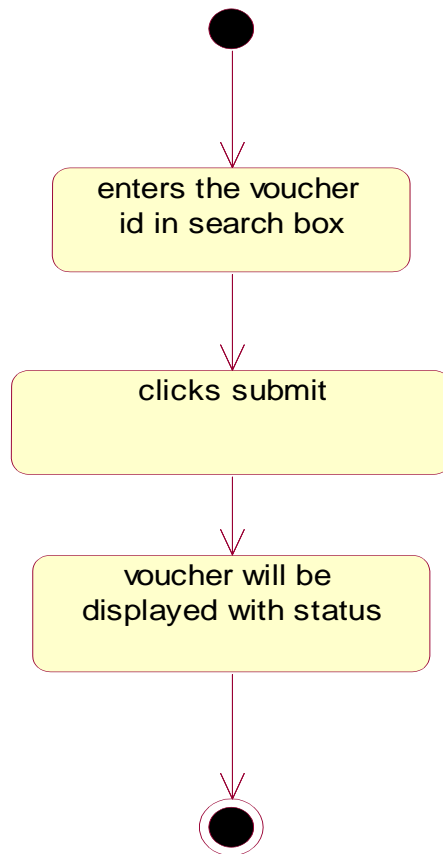
Description: Employee's completely filled voucher gets approved by the manager depending on his limits.



Activity Diagram for viewing status of a Voucher :

Name of use case: View status of a Voucher

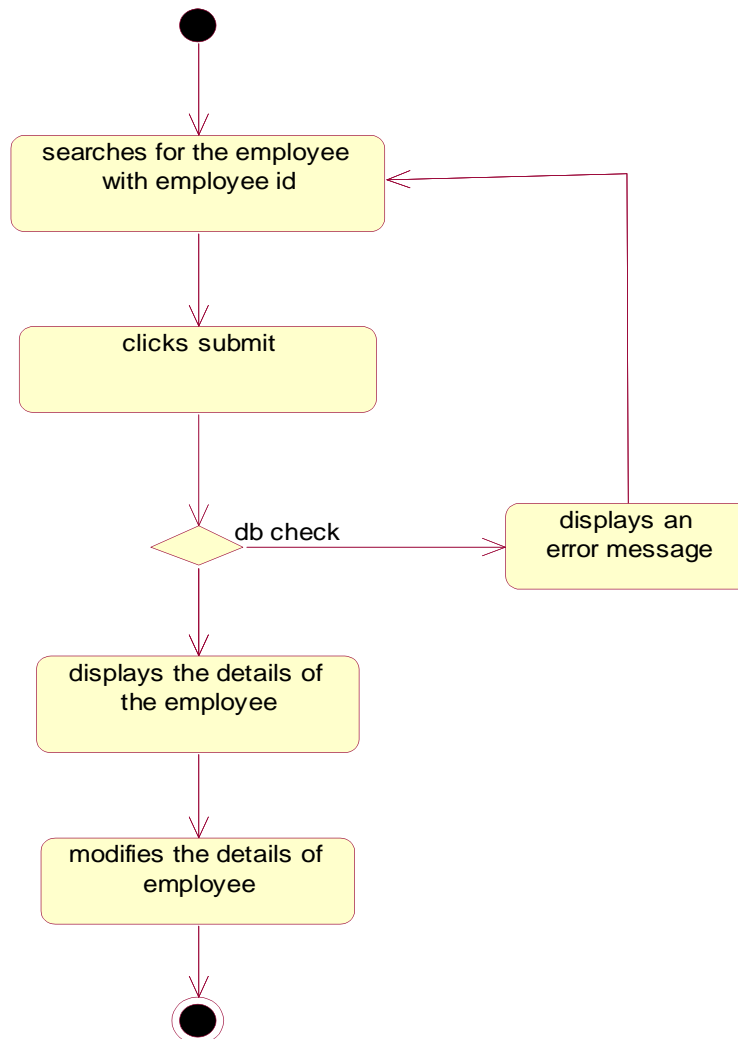
Description: Employee can track the status of his voucher at any point.



Activity Diagram to Modify Details of Employee:

Name of use case: Modify the details of Employee

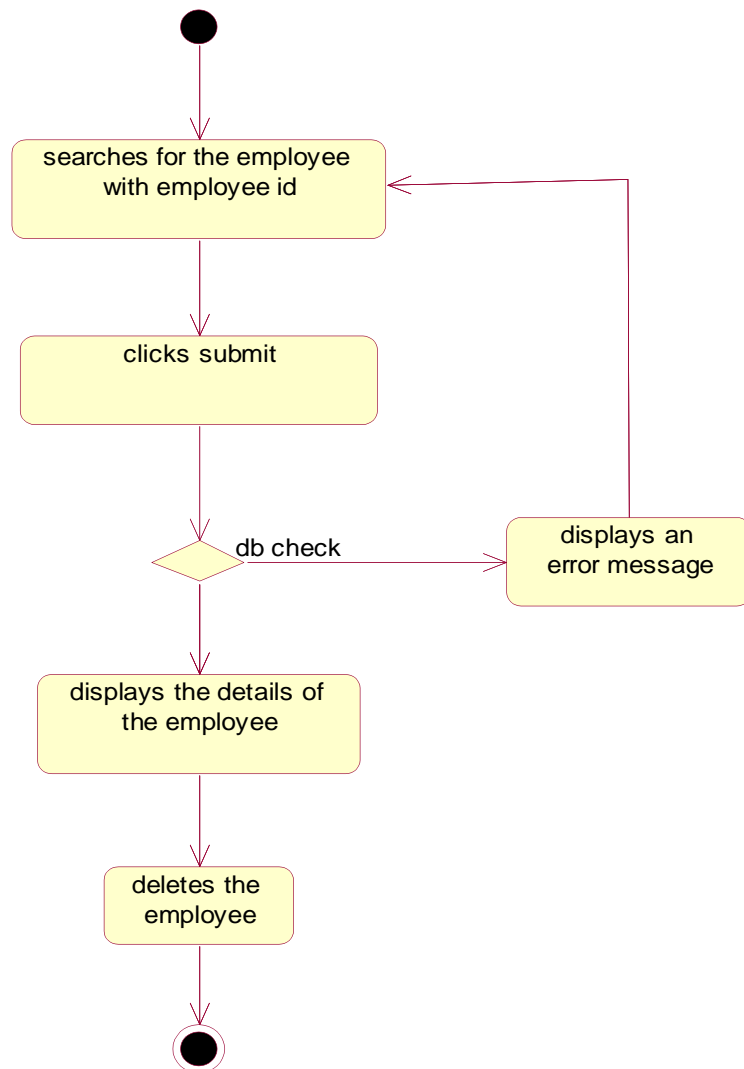
Description: Admin can change the details of a employee regarding his designation in the organization.



Activity Diagram to Delete Details of Employee :

Name of use case: Delete the details of Employee

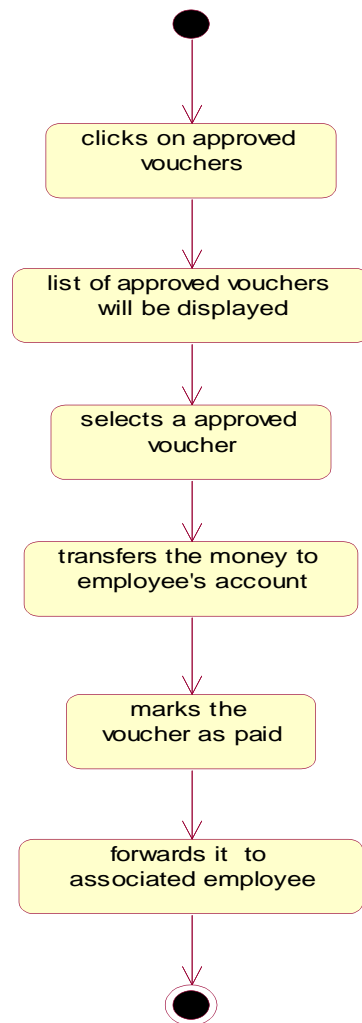
Description: Admin can delete the details of a employee regarding his designation in the organization.



Activity Diagram for Reimbursing Money:

Name of use case: Approving the voucher and reimbursing money

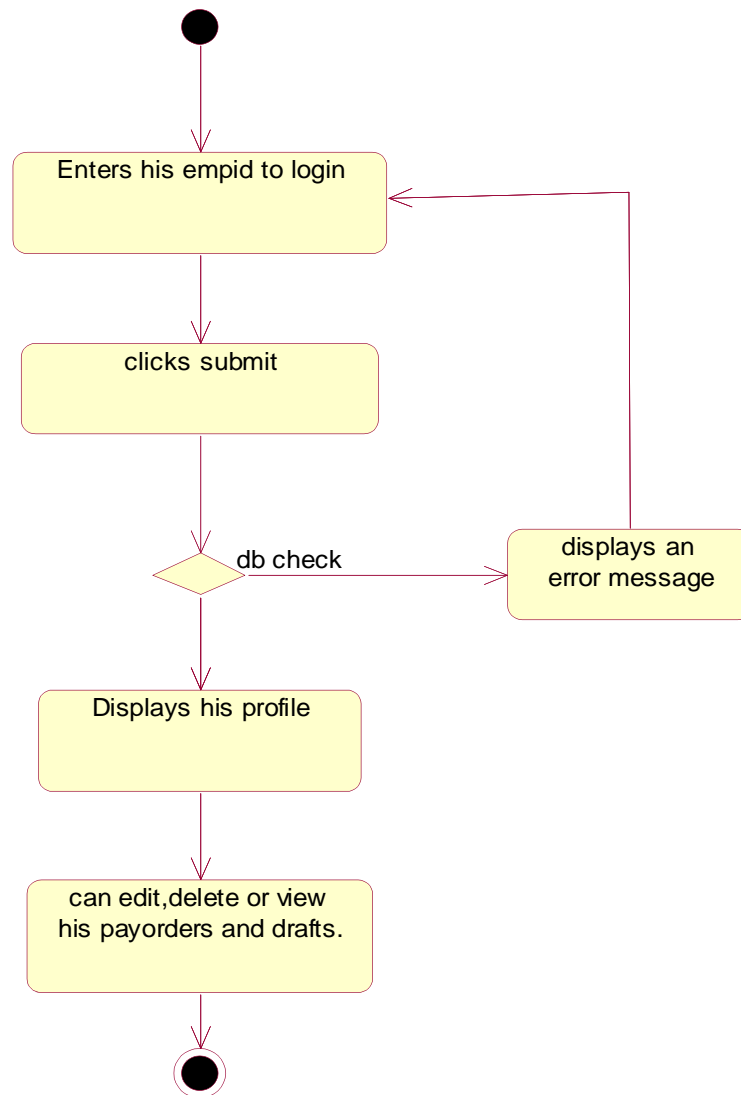
Description: Manager can approve voucher of an associated employee and get the reimbursement done depending on the voucher sent by the employee.



Activity Diagram to view his Profile:

Name of use case: View profile of employee.

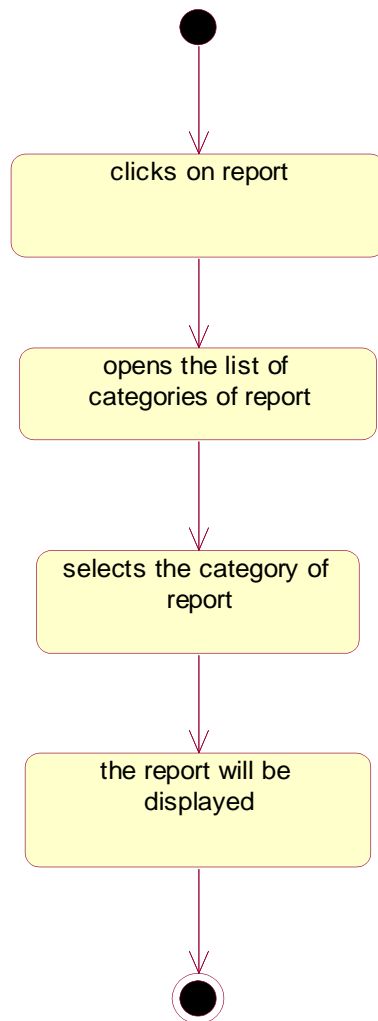
Description: Each and every employee can view his profile by logging into his account.



Activity Diagram for Viewing a Report:

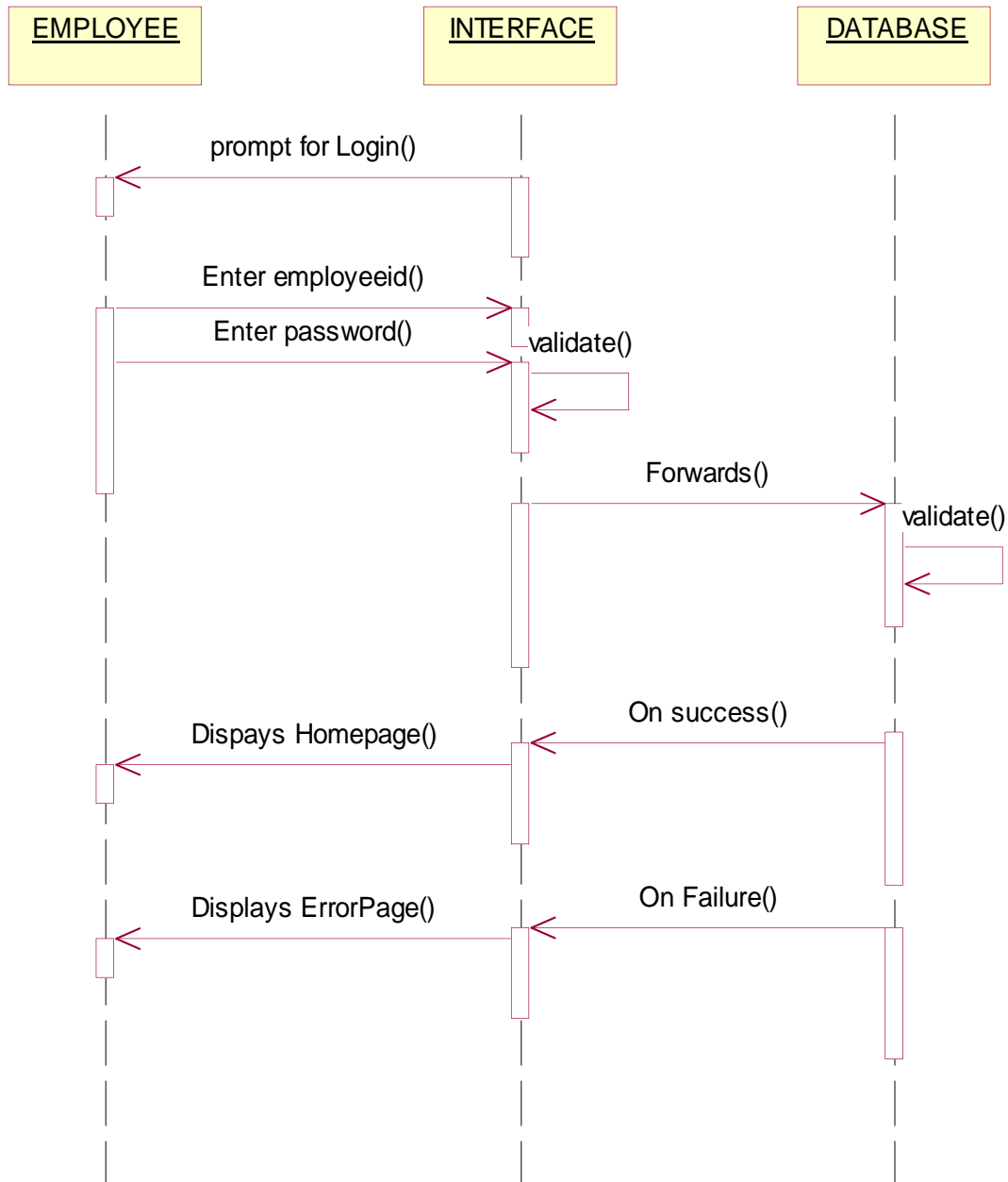
Name of use case: View report of the system.

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

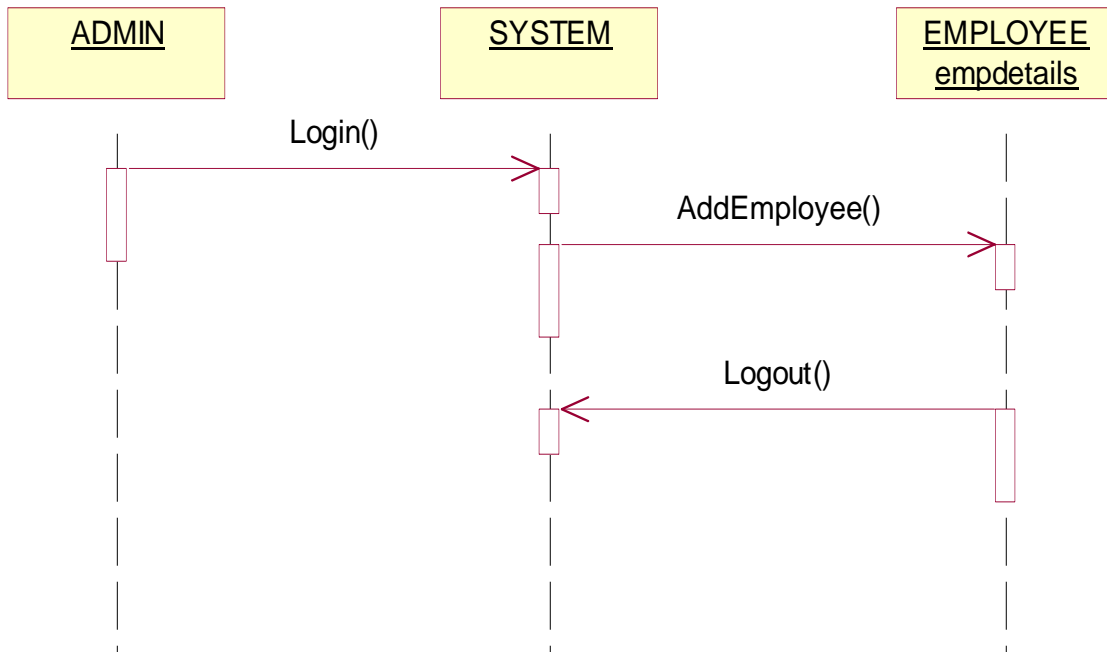


3.3 Sequence Diagrams:

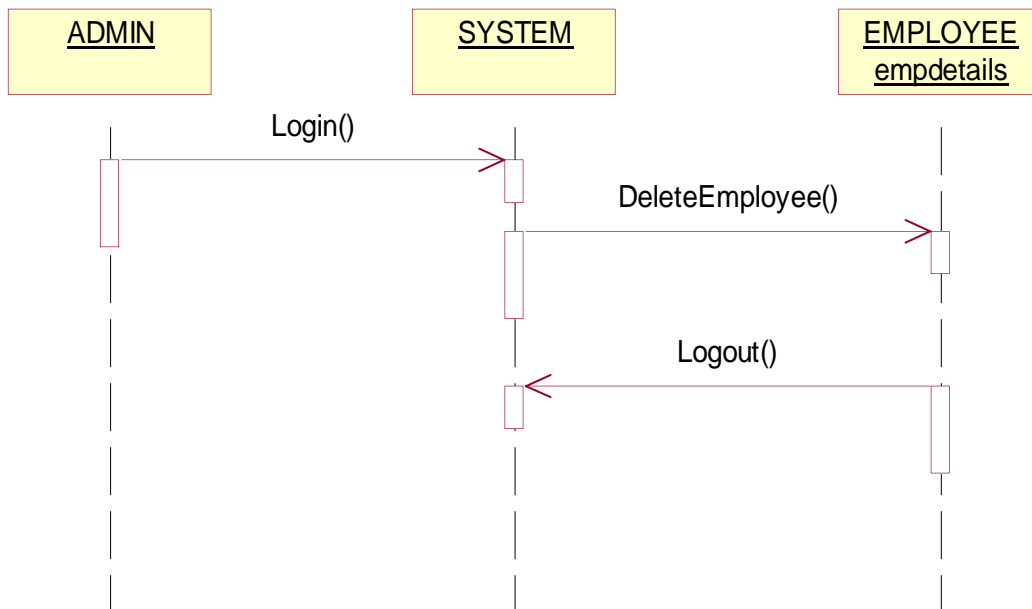
Employees Login Sequence Diagram:



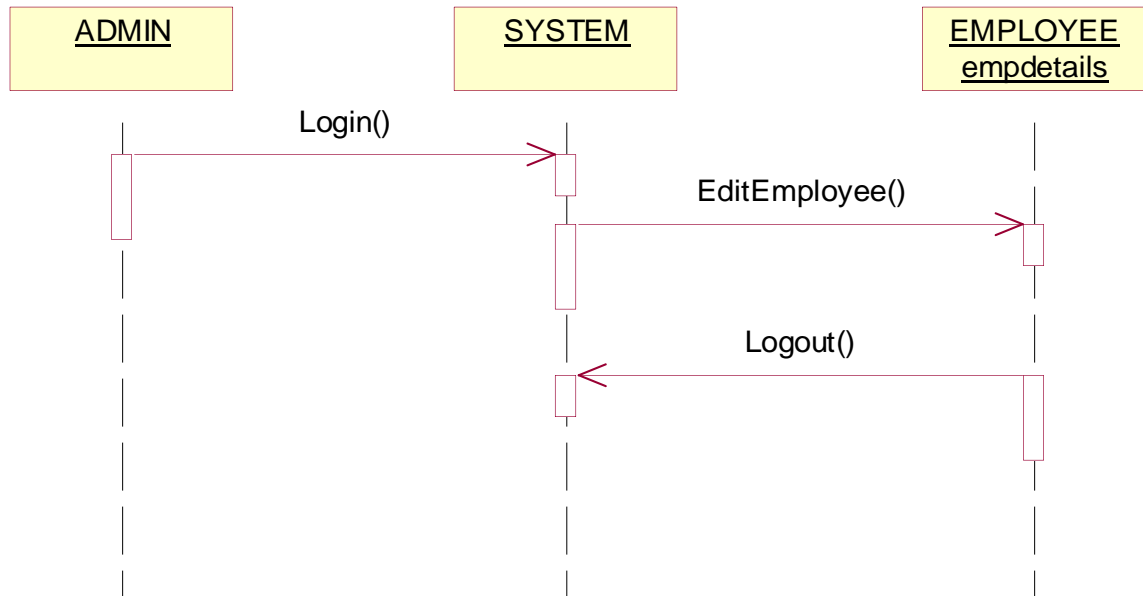
Sequence Diagram for Adding an Employee:



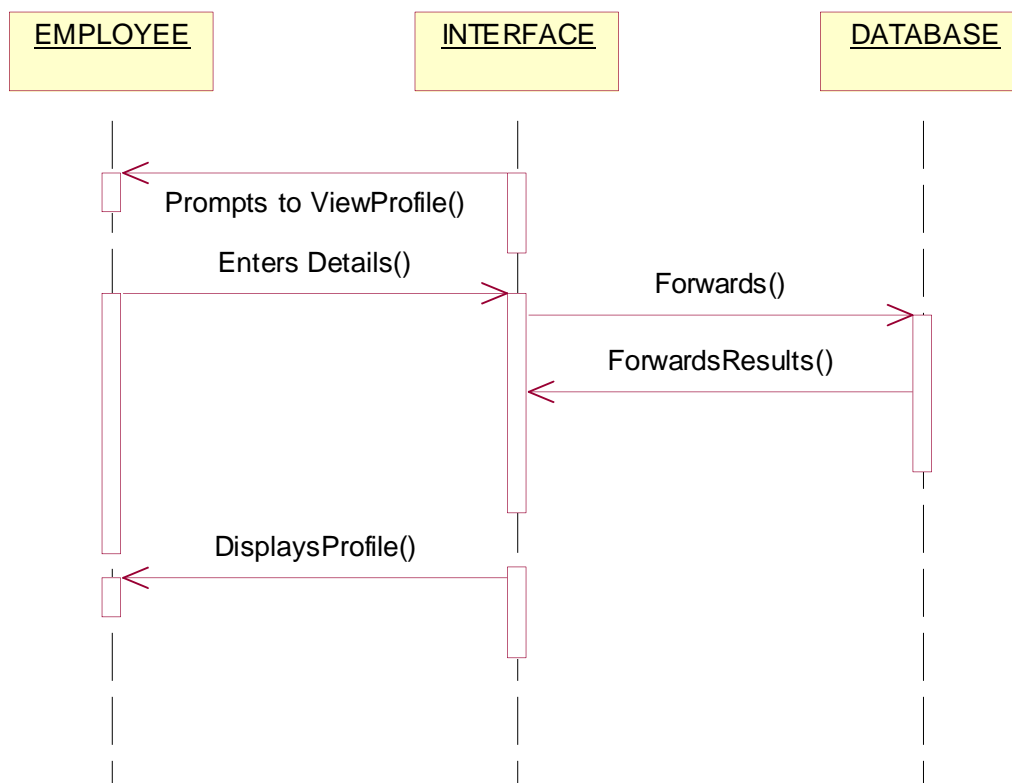
Sequence Diagram for Deleting an Employee:



Sequence Diagram for Editing an Employee:

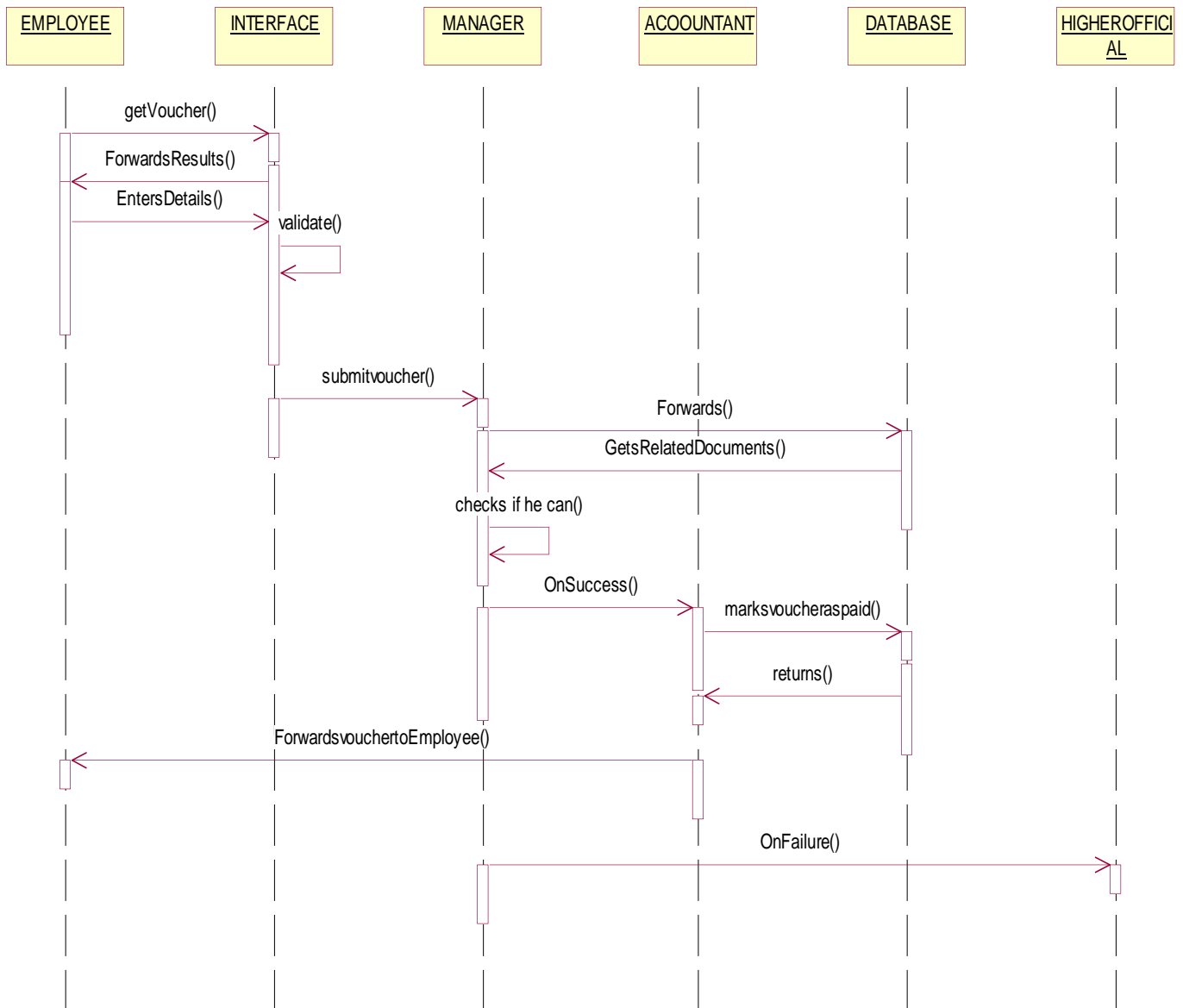


Sequence Diagram to View Profile:



Employee Expense Management system

Sequence Diagram for Approving a Voucher:



Sequence Diagram for Rejecting a Voucher:

