EMPLOYEE MANAGEMENT SYSTEM

Group No.	18
Team Members	Aamin Lakhani Atreyee Mukherjee Prachi Shah Saneesha Dugyala Ghanashyam Alakke Yukai Xiao

Introduction

This project aims to develop an efficient Employee Management System which will combine all the features required to manage employees from one central application. The features which will be included are: employee information management, allocation of resources to projects, leave management for the employees, time clocking, employee expense management and reimbursements for the employees. The first three features will better equip the human resource manager and the project manager to efficiently manage the resources of the projects and the remaining features will facilitate the day to day activities of an employee.

Goals

To build a system which provides functionalities like employee personal information management, employee daily affairs management and project personnel management for the human resource managers, the project managers and the employees of a company.

Features of the project

Employee Information:

This module will provide an entry point for data into the system. The human resource manager can use this web form to enter the information of new employees or update information about the current employees. Also, the employees will be able to update certain information about themselves like address, phone number etc. Every employee has view/update their own data, whereas the human resource manager and the project manager will have access to the records of all the employees.

Resource Allocation

The employee management system is designed for multi-project environment. So, resource allocation forms a key feature of this system to enable efficient project planning. This module will enable the human resource manager to allocate an employee to a certain project based on his skill set. Only the human resource manager will have access to this module.

Time Clocking:

Every employee needs to report his/her working hours per day. This simple interface will allow the user to clock-in his time and clock-out on a daily basis. A report can then be generated by the upper management regarding the number of hours worked by an employee and these numbers in turn can be used for a lot of other calculations like employee revenue generation, employee performance report etc.

Leave Management

This module of the application will allow the employees to request for leaves which will be granted depending on a number of parameters. Firstly, every employee has a limited number of leaves he can avail in a financial year. Secondly, his leave request should be approved by his immediate supervisor (in case of employee, it is the project manager). Therefore, whenever an employee requests a leave, the supervisor will be able to view it on his dashboard and approve or reject it with appropriate comments.

Expenses Reimbursement

The expenses module of the employee management system deals with all the employee business expenses. This module allows the employee to claim reimbursement for certain types of expenses. The expenses claimed by the employees need to be approved by their project manager.

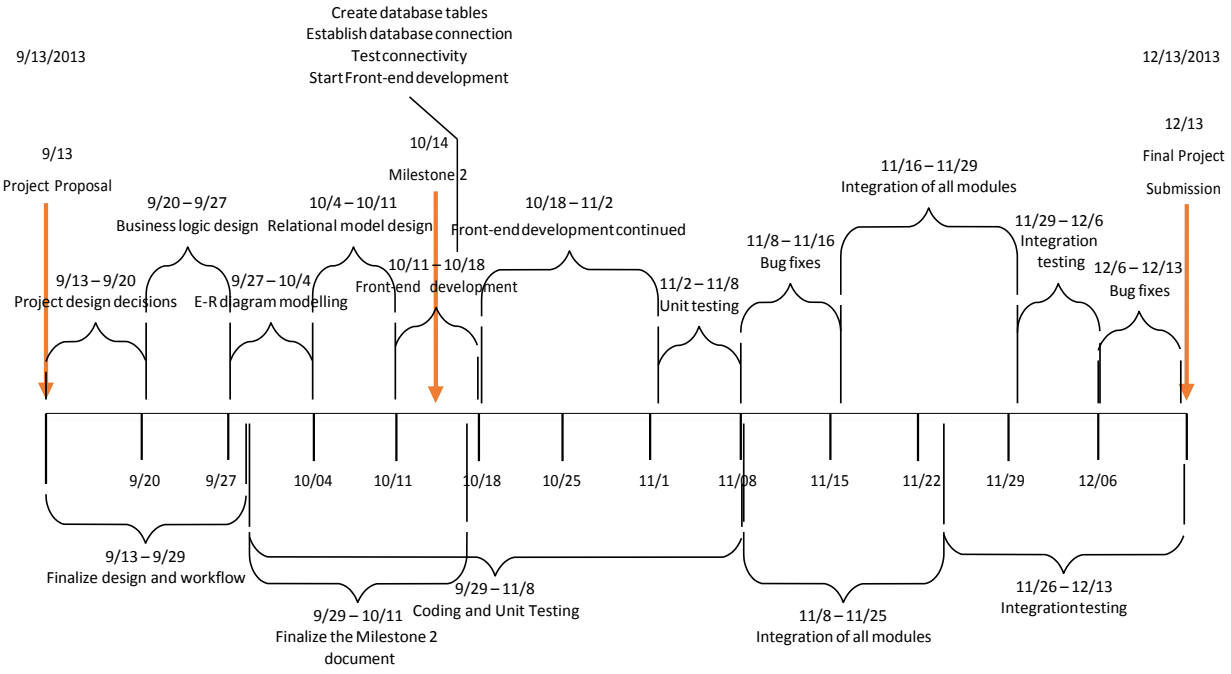
Target Users

The users that will be using the system are primarily the human resource managers, the project manager and the employees of the company.

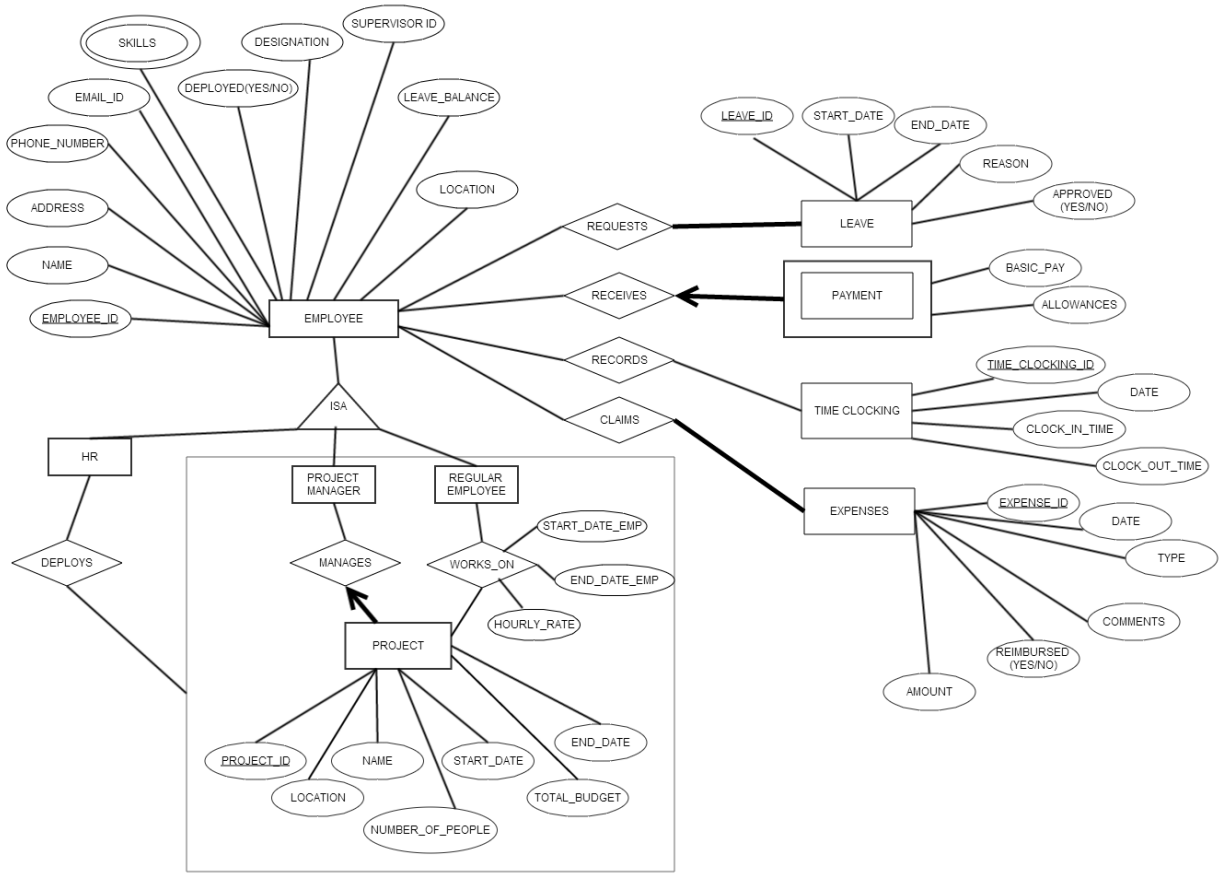
Member Responsibilities:

Atreyee Mukherjee Aamin Lakhani	• Project Allocation and Code Integration • Unit Testing for project allocation. • Test Cases, Testing and Defect Fixing • All project related documents and codes will be submitted by Aamin Lakhani (amlakhan) • Documentation
Prachi Shah	• Expenses • Unit testing • Environment Configuration
Saneesha Dugyala	• Leave Management • Unit testing
Yukai Xiao	• Time Clocking • Unit testing
Ghanashyam Alakke	• Employee Information • Unit testing • Table Creation

Key Milestones



ENTITY RELATIONSHIP DIAGRAM:



RELATIONAL MODEL:

The main tables of the relational model are listed below. Please note that there are intermediate tables for data manipulation purposes.

Employee *(this table holds the details of the employees working in a company, it includes the details of an HR, a project manager as well as an employee)*

(employee_id varchar(50) NOT NULL,
name varchar(100),
address varchar(200),
phone_number varchar(15),
email_id varchar(30),
designation varchar(30),
deployed Boolean,
leave_balance int(5),
location varchar(30),
supervisor_id varchar(50)
primary key employee_id)

Note: supervisor_id contains the employee id of the supervising employee, for regular employees, it is the project manager and for project manager it is the HR.

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Project *(this table holds the details of the projects of the company)*

(project_id varchar(10) NOT NULL,
name varchar(50),
start_date date,
end_date date,
location varchar(20),
number_of _people int(5),
total_budget int(10),
primary key project_id)

Manages *(this relation maps which project manager works in which project, i.e., when an HR deploys a project manager to a project, a record is inserted into this table)*

(project_id varchar(10) NOT NULL, employee_id varchar(50) NOT NULL, primary key project_id, employee_id, foreign key project_id references project, foreign key employee_id references employee)

Works_on *(this relation holds the information about which employee works in which project. Once the HR deploys an employee in a project, a record is inserted*

in the works_on table)

(project_id varchar(10) NOT NULL,
employee_id varchar(50) NOT NULL,
supervisor_id varchar(50),
hourly_rate float,
start_date_emp date,
end_date_emp date,
primary key project_id, employee_id
foreign key project_id references project,
foreign key employee_id references employee)

Skills_Mapping (*this relation maps the skill_id(s) to the corresponding skill_name(s))*

(skill_id varchar(10) NOT NULL,
employee_id varchar(50) NOT NULL
foreign key employee_id references employee)

Skills *(this relation will list all the skills corresponding to each employee)*

(employee_id varchar(50) NOT NULL,
skill_id varchar(10) NOT NULL,
primary key skill_id, employee_id,
foreign key employee_id references employee
foreign key skill_id references skill_mapping)

leave_emp *(this relation lists the leaves related information)*

(leave_id varchar(10) NOT NULL,
Start_date date,
End_date date,
reason varchar(200),
approved Boolean,
primary key leave_id
foreign key employee_id references employee)

Time_clocking *(this relation contains the information related to the time clocking of an employee)*

(time_clocking_id varchar(10),
clock_in_date date,
clock_in_time timestamp,
clock_out_time timestamp,
primary key time_clocking_id
foreign key employee_id
references employee)

Expenses *(this relation contains all the expenses related information of the employees)*

(expense_id
(sequence),
claim_date date,
claim_amount float,
type varchar(30),
reimbursed boolean
comments
varchar(200), primary
key expense_id,
foreign key employee_id references employee)

Authentication_table *(this table stores the usernames and the passwords for login)*

(username varchar(50) NOT NULL,
password varchar(50) NOT NULL,
role varchar(20) NOT NULL,
security question varchar(100),
security_answer varchar(100),
foreign key employee_id references employee)

claim_tp (
type_id int(10) NOT NULL AUTO_INCREMENT,
`type_name` varchar(50) NOT NULL,
PRIMARY KEY (`type_id`),
KEY `type_id` (`type_id`)
)

reimbursed_status (
re_id int(5) NOT NULL,
re_desc varchar(30) NOT NULL,
PRIMARY KEY (`re_id`)
)

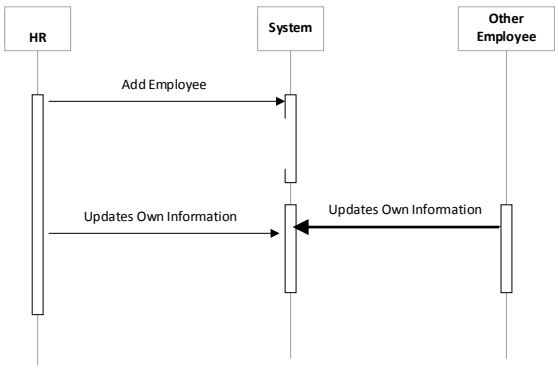
designation_mapping (
designation_id int(10) NOT NULL AUTO_INCREMENT,
designation_name` varchar(50) NOT NULL,
KEY designation_id` (`designation_id`)
)

leave_type (
type_id int(5) NOT NULL,
type_name char(20) NOT NULL
)

Payment (this relation lists the payment related information of each employee)
(employee_id varchar(50) NOT NULL,
basic_pay float,
allowances float,
primary key employee_id
foreign key employee_id references employee)

Business Logic & Control Flow Diagram:

Employee Information



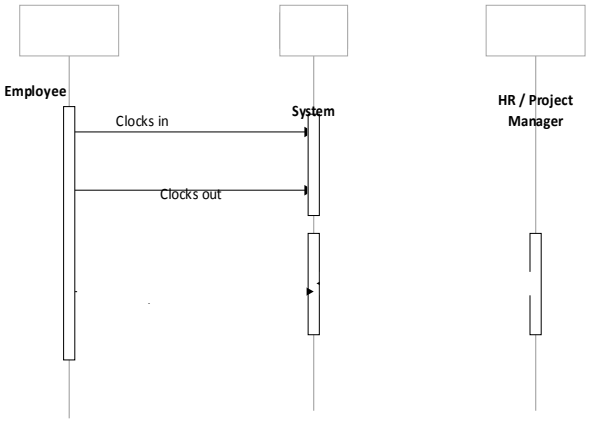
Employee information: The employee information module is used by the Human resource manager to add and remove new employees from the system. Project Managers and employees have access to update their own information.

Resource Allocation & Add Project

Resource allocation: The HR can search for resources based on various search parameters like the name, id, skill set etc and then deploy the appropriate candidate onto the project. The HR can also deallocate an employee from the project. There would also be an option for the HR to view all the employees who have not been allocated to any project irrespective of their skillsets. Only the HR exclusively operates on this module.

Add Project: The HR can add project details.

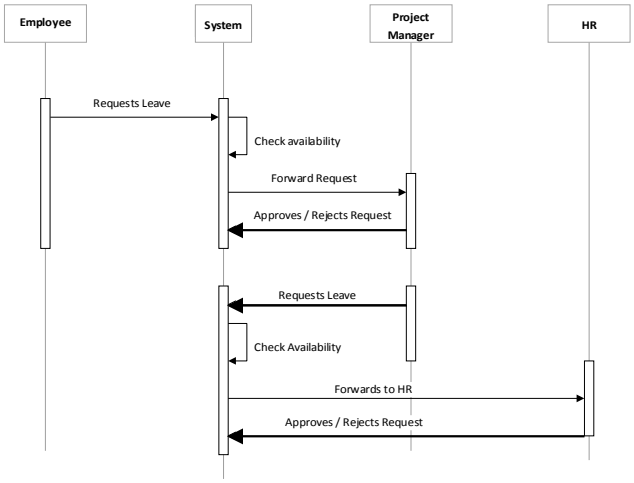
Time Clocking



Time Clocking: Every employee is responsible to accurately report his time worked irrespective of the role. There would also be a provision for the user to edit his previously entered time.

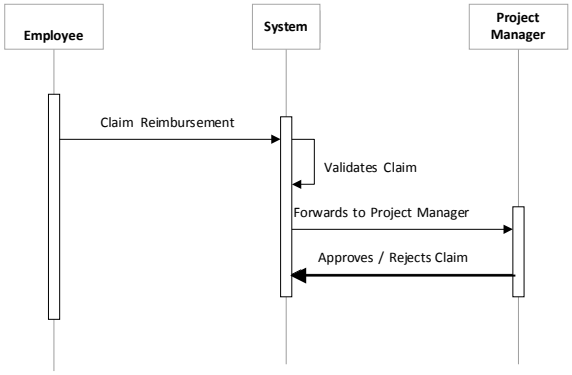
Reports: The Project manager and the HR can then generate an employee specific report for a specific time period capturing the details like the number of hours worked, the expenses claimed and the leaves taken.

Leave Management



Leave Management: Every employee has access to leave. The system will then check the leave balance of the employee and decide if the employee is eligible for the leave. If yes, the request will be routed to their respective supervisors (who will be the Project Manager for the employee and Human Resource Manager for the Project Manager). Human Resource Managers' leaves need no approval. In a scenario where the employee has run out of leave balance, then they can request emergency leaves subject to the approval of their supervisors.

Expense Reimbursement



Expense Reimbursement: Expenses management is very much similar to leave management. Every employee can claim all the expenses incurred on the project. The system will then check if the employee is eligible for a claim and the route the request to the supervisor who can then approve or decline it.

Feasibility Analysis:

It is a common knowledge that recruiting the highly skilled employees is essential for a company's progress. But, there needs to be an efficient employee management system in place to ensure that a company makes most of its employees. This project has been contemplated keeping this in mind. Various studies show that most of the companies outsource their human resource management systems and so an application which addresses the key human resource activities seem to be a feasible one.

Hardware requirements for this project is minimum in the initial phases of development. All the required software were downloaded from IUWARE. The application has been hosted on tank.cs.indiana.edu. Thus, the monetary cost for developing this application was none which deemed this project economically feasible.

The key components required for an employee management system has been provided in this application within a span of three months. An estimated duration of six months will be required to deliver the product at par with the current market standards and would meet the demands of the customer.

Tools & Technologies used:

The following software have been used for the development of this application.

- WAMP Server 2.4
- Adobe Dreamweaver CS6
- Notepad++
- EDIT+

Browser Compatibility

Although the application is supported in all the major browsers (IE, Mozilla, Safari), it is best viewed in Google Chrome.

Implementation Details:

The front end has been developed using HTML, PHP, Javascript, Bootstrap, CSS and JQuery. The backend (database) has been implemented using the MySQL database.

Website Roadmap:

This website has three different perspectives based on the login: the HR manager, the project manager and the employee. The details about each of these views have been given as below.

HR Manager

The HR manager has the highest privileges in the system. Upon logging in, the HR would be able to view the links of insertion and updating of employee information, resource allocation and de-allocation, approval of leaves and expenses reimbursements and adding projects. When an employee joins an organization, the HR would add him/her in the system through the insertion in employee information. Later on, HR can update any information about the employee. Only HR would be able to allocate and de-allocate employees in and from projects. HR would be able to approve leaves and reimbursements for the project managers. HR can also record the number of hours worked with the help of the time clocking module. HR can also extract reports on the information consisting of the details of an employee, including his expense claim information, leave information and his time clocking details for a specific period of time.

Project Manager

The project manager can approve the leaves and reimbursement requests of the employees to whom he/she is the supervisor. In addition to this, a project manager would be able to apply for leaves and reimbursements which will be approved by the HR. The project manager will also be able to clock in his hours of work. The project manager also has access to the reporting feature whereby he can extract reports containing the information on the employee, his expense information, leave information and time clocking information for a specific period of time.

Employee

The employee will be able to clock in his time information in the time clocking module. In addition to this, he can apply for leaves and reimbursements. He can also update his own information in the system.

Details of implementation from the perspective of pages:

Login:

User can login to the system through this page and there is also option for changing the password and entering requisite information about the first time users.

Home Page:

Home Page will show different links based on the type of user who logs in. The home page will also show a snapshot of employee's own information, leave information, expenses information and time information.

Employee Information:

This module will be visible to the HR and the features include insertion of employee, updating information about self and other employees.

Add New Project:

This page is visible only to the HR. It allows an HR to add a new project.

Resource Allocation:

This module is designed only for the HR. HR is required to search employees based on any parameters - employee name, employee id, designation, email id, location, skills. It also contains a link to the list of unallocated resources. The search results will give an option to check on the employees who would be deployed and there will be a button to allocate resources in the project selected from a dropdown.

Resource De-allocation:

This module is also designed for the only for the HR to de-allocate resources from project. The initial page is a search page where HR could fill in any of the search parameters like project name, employee name,

employee id, designation, email id, and location. The search would provide an option to check on the resources the HR wants to de-allocate and de-allocate them.

Time Clocking:

This module is accessible to HR, project manager as well as the employee. This module is designed to record the productive hours of an employee. There is a clock in button to start recording time and a clock out button to end it. There is also an option for editing previously filled time by selecting a specific date.

Leave Management:

This module will be visible to HR, project managers and employees. This module allows users (employees and project managers) to apply leave specifying the type, start date, end date. It also provides an option of viewing the history and the leave balance. After a leave has been applied it can be approved/rejected either by project manager or the HR (based on the supervisor of the employee applying for the leave). The approval page of the leaves will be visible only to the HR and project manager.

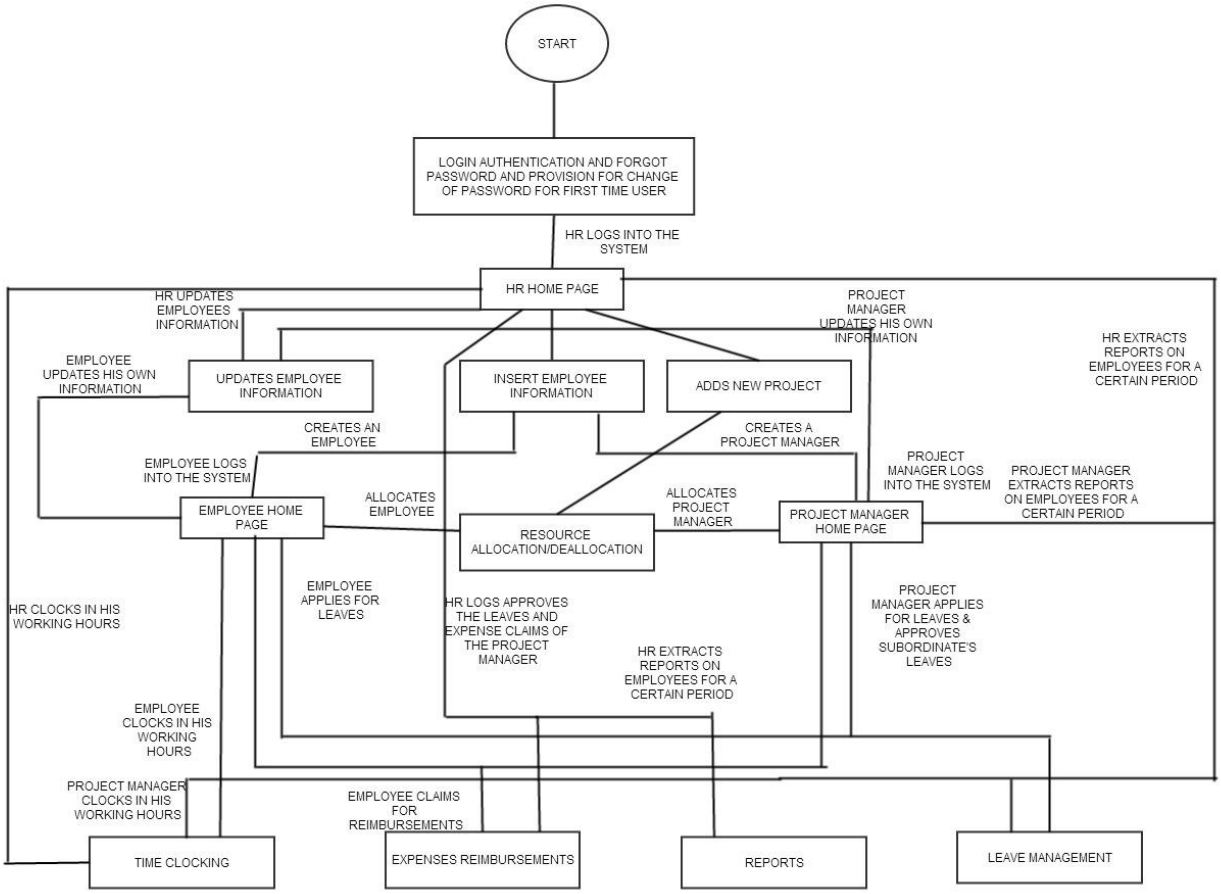
Expenses Reimbursements:

This module will be visible to HR, project managers and employees. This module allows users (employees and project managers) to apply for reimbursements for expenses. These reimbursements are done based on the budget of the project. After an expense has been claimed, it can be approved/rejected by either the project manager or the HR (depends on supervisor of the employee applying for the reimbursements). The approval page is visible for the HR and the project manager only which enables them to approve/ reject leaves.

Reports:

This module enables HR and project managers to generate report based on any of the criteria: employee name, employee id, email id and from and to date to specify the period for which the HR/ project manager wants to generate report for. The report shows the details of the employee, his expense information, leave information and the time information.

The diagram below shows the user's (employee, project manager & HR) perspective of the application.



Test Cases:

Scenario #	Scenario	Pass
1	Log in as the HR and add new project and employees	Yes
2	For the new employees set credentials through first time log in	Yes
3	HR Allocates the newly added employees to the project. If manager is not defined for the project then do not allow to allocate resource	Yes
4	Search employees based on various search parameters in the reports, project allocation and de-allocation module	Yes
5	Time clocked in and edited through various roles that is employee, manager and the HR	Yes
6	Employee leave request forwarded to the manager in case he is deployed else to the project manager	Yes
7	Unallocated employees and managers cannot claim expenses	Yes
8	Employee cannot claim more leaves than the balance he has	Yes
9	Access reports through the HR n and project manager users	Yes
10	Employee expense request forwarded to the manager in case of the employee and HR in case of the manager	Yes

Limitations & Future Work:

We intend to add the module wherein the whole payroll process of the employee would be controlled as a part of the future work for the application which is why we have kept the payment. We would also implement the appraisal process of the employee and rewards and recognition system. The reporting module can be further enhanced to show the payment information of an employee on the basis of his hourly rate and the information on whether a resource is deployed or not. A module can also be added to consolidate data about the employee such as his payroll related information. There is a limited number of expenses in the expenses module and newer types of expenses can be added. In the time clocking module, there is no check on the time that the user can edit. In resource allocation, we can incorporate the feature wherein a resource can be searched based on his past projects. We can also incorporate a tool for the automation of the termination process of employees.

URL where the application is hosted:

http://www.cs.indiana.edu/cgi-pub/amlakhan/login.html

http://www.cs.indiana.edu/cgi-pub/ghalakke/login.html

References:

[1] www.gliffy.com
[2] http://jquery.com/
[3] http://jqueryui.com/
[4] www.stackoverflow.com
[5] http://www.w3schools.com/
[6]http://bsu-managers-unieco.blogspot.com/2013/10/HRManagement.html - for the image