Information and Resource Management System

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Certificate

We accept the work contained in this report as a confirmation to the required standard for the partial fulfillment of the degree of BS(CS).

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Head of Department	Supervisor
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Internal Examiner	External Examiner

Dedication

First of all obviously we would like to thank our parents without whom we would not have been able to achieve whatever we have achieved today and whatever we are today it is only because of their faith and belief in us, and the way they raised us. And secondly we shall be thanking our teachers, the way they taught us and proved that they really are spiritual parents.

Acknowledgements

First of all we would like to show our gratefulness towards Almighty Allah for the blessings he bestowed on us, because of which we got the strength and power to, accomplish this project. We are thankful to our families who supported us throughout our project but the person who deserved to be acknowledged the most is our supervisor. He is the one who gave us the right direction, told us how to approach towards project and guided us in most appropriate way that one can only think off.

Abstract

Information and Resource Management system mainly focuses on how to successfully manage company's resources. IRMS is a complex process because it is difficult to integrate and needs large number of resources. The implementation of this system has not been up to the mark in the past because it did not meet the expected goals.

The modules of IRMS basically are Finance & Accounting which includes pay salaries, Trainee's record, Trainee course registration, customer record, collect fee and generates income report. Human Resource which includes employee record and increment in pays. Procurement which includes resource needed by the company like stationary, furniture etc. And at last Project Management which includes project status, project deadline, ongoing projects and developer assigned to a project.

The methodology being followed includes the water fall model. For the implementation C# with SQL is being used. WCF (Windows Communication Foundation) is being used to ensure client server relation. A centralized database is integrated in the system. The system is made efficient enough to handle workplace daily tasks on time which includes resources. Complexity is being reduced and the system ensures that no data is lost.

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Chapter # 1

Introduction

1.1 Overview

It is an industrial project (For Harbinger Solutions). This project is a windows based application, making it distributive with the help of WCF (Windows Communication Foundation). The purpose of making this system is to minimize the human error and help the company in maximizing its production efficiently through this system by reducing work to time ratio and provides a secure record of all the data in a central database.

1.2 Objective

Is to design a fully automated system that shall eradicate the file system from the organization which is not feasible, difficult to manage, increases number of employees and all important records are not safe, as files could be lost. So we shall be designing this system which counters all these problems and shall manage all the records and data in a best possible way.

1.3 Problem Description

The idea of designing this system is to resolve the problem that many organizations are going through that is MANAGEMENT. This project shall help in maintaining records of all projects/tasks, employees, Trainee and resources. Managing everything gets a lot easier. Instead of hiring people for maintaining records which is not cost effective either, this single software shall be doing it trustworthily.

While designing this software we are keeping this thing in mind that it can be amended and new features can also be added if required. We got to be aware of the fact that what problems could arise, like server could be down, database might not be working and how these issues will be resolved. It has to be in perfect running position.

1.4 Project Scope

We are producing this system for a particular organization as windows based application using a central database. It could be used by any organization having Finance & Accounts, Procurement, Human Resource and Project Management as there modules. We can also make it web based and can add more features in its present modules and more modules can also be added.

1.5 Methodology

In this system we shall use water fall method for implementation. As all the requirements are predefined and no such changes are supposed to happen.

We shall be using WCF (Windows Communication Foundation) to create a distributed environment and a service based database. We shall use C# with SQL connectivity and for GUI we shall be embedding DEV EXPRESS in Visual Studio.

Chapter # 2

Literature Review

2.1 Introduction

In recent years the changing aspects of the global market have given rise to speeded competition between different suppliers and manufacturers, and also more demands of the consumer. Due to this Globalization we are facing more challenges and complex social, economic and cultural factors which are influenced by today's market that how these organizations operate and give challenges to each other.

Due to more consumer demand most of the organizations are moving towards electronic business and they are moving away from traditional way of doing business. This electronic business requires those systems which can collaborate easily, fast communication and synchronization, also the human resource and the infrastructure of Information Technology (IT). **[1]**

2.2 Background

ERP has evolved over the years into its present shape and scale. This journey was basically started by the manufacturing industries as applications for Inventory Control. When the need of requirements increased it progressed into Material requirements Planning (MRP), then again changed into MRP II i.e. Manufacturing Resources Planning.

Then in 1980's the next step of evolution was taken when Enterprise Resource Planning applications came into being. Today these applications have evolved into complex and big Enterprise Resource Planning applications. **[3]**

2.3 What is ERP

The ERP systems were the most essential improvement that is used in the IT commercial utilization in the 1990s. These systems allow compacts to obtain enhanced performance via normalizing data as well as incorporating several company functions, such as marketing, Human Resource (HR), project management, procurement, finance and accountings, sales, and economics. Thus, the ERP systems are the most enveloping dynamic company conditions characteristics. **[7]**

2.4 Why we need ERP

Purpose of the development of ENTERPRISE Resource Planning (ERP) systems is to integrate and automate enterprises' business processes in order to extract out maximum benefits from limited resources. The competition between organizations is increasing with rapid pace, so more and more enterprises are trying to identify the best possible tool which can help them improve their business processes. ERP is one of the best available tools. **[4]**

2.5 Some of the Companies using ERP:

- OMEGA
- DIAMAOND POLYMERS
- INTER TECH
- PRO PLAS TECHNOLOGIES
- DELTA SYSTEMS
- EMPIRE PRECISIONS
- WUNDER BAR **[1]**

2.6 The identified 12 major objectives are:

- Redundant / Homogenous IT environment
- Process approach for IT implementations
- Reduction of inventories
- Reduction in total logistic cost
- Improvement in Order cycle time/ accuracy
- Increased Return On Invest (ROI)
- Improved cash flow
- Increased accuracy of financial data
- Faster information Transaction
- Better managerial decision making
- Head count reduction
- Efficient work culture **[2]**

2.7 Assessment of ERP on Firm performance

Hitt, Wu and Zhou exposed that those firms which have implemented ERP systems have shown substantial improvements comparative to those who opposed it and did not feel comfortable to invest in such systems. ERP systems are able to integrate all the different departments of finance and accounting, project management, production, material, quality control, human resource, and information management together in order to have an efficient internal management and best possible customer service to meet the fast growing business. Those Firms which have implemented ERP systems have shown greater advantage of increased productivity rate, scheduling of auto-manufacturing, avoiding redundancy of information, the sharing of data and the reduced cost of human resources required in a firm. **[5]**

2.8 Critical Success Factors

In the early stages research on ERP implementations the Critical Success Factors were observed from the perspective of their being Tactical or Strategic. To find out more relevant Critical Success Factors to ERP Projects study has been done. Cultural and Business Changes, Managing Consultants, Managing Conflicts and Staff retention were the Critical Success Factors found in the study.
Some of the studies which have specifically focused on singular dimensions of Critical Success Factors like Importance of Change Management in ERP implementation and then they explain the how Change Management is the most important factor.

Then the second phase comes which is Post Implementation Period after ERP implementation is over. This is the main focus specifically on which studies have put on. For ERP Upgrades there are some Critical Success Factors. Critical Success Factors in China were explicitly identified. Similarly on ERP implementation studies have been done in Mexico and India. Some of the factors that have been the object of research for ERP Implementation over the years are as under:-

- Organization Structures
- Quality Issues
- Software Selection
- Planning and Control

Critical Success Factors that come into play in most of the studies are:

- Top Management Support
- Goal
- Objective
- Vision
- User Knowledge and Training
- Project Management

Existing resource planning processes of the enterprise have following limitations:

- These resource planning processes are not fully automated, integrated and computerized.
- Whenever temporary resource request occurs, resource plan generation needs to be adjusted manually.
- Planning of the resources is not optimal. Some important resource requests from the users are refused due this lack of planning of the resources. **[3]**

2.9 Failures of ERP:

51% of the of the users noticed their ERP as unsuccessful and 46% portrayed that their organizations have not been able to understand how to use this ERP effectively to improve the way they conducted their business as by 2001 Robins-Gioia Survey.
The participants of 2001 Conference Board Survey showed that only 34% of respondents were more than satisfied with what they got and that 40% of the projects could achieve their business case within one year after being in use.
[2]

2.10 Solution:

As we have explained everything about ERP, its advantages, its disadvantages, the benefits an enterprise can get out of it, its complexity, its maintenance, its difficulty to understand, the difficulty of getting used to it, firms not getting full grip onto it.
So, by keeping all these things in mind and how useful this system could be for the organizations and what major role this system can play in the development of our country we are making this system. The only problem this world is facing regarding this system is that they have not been able to understand it completely due its complex nature. Because of that, they have not been able to get full benefit out it and are not getting desirable results.
So we are making this system, but difference is, that this system will be easy to understand, no complexity and easily deployable.
[1]The key property of this system is that it has a common database which allows different departments to store data in that central location, and they will be able to access data in real time. Every component of this system is offered as module which will access a common data base.

Chapter # 3

Requirement Specifications

3.1. Introduction

3.1.1. Purpose of this document

The purpose is to collect and analyze all assorted ideas that define the system, its requirements with respect to consumers. This SRS document will provide a detailed overview of our software product, its parameters and goals. This document describes the project's target and its user interface, hardware and software requirements. It defines how the stake holders of this project will see the product and its functionality.

3.1.2 Scope of this document

This document will help the developers to understand in detail that what they are supposed to build and also will be very helpful for future enhancement in the system.

3.1.3 Overview

Our project is to build an **Information and Resource Management System**. Basically **IRMS** is a system that manages almost every work of an organization. This system will help in maintaining records of all projects/tasks, employees, Trainee and resources.
Our system will be dealing with finance and accounting, human resource, procurement and project management. In finance and accounting the system will keep track of project cost, developer cost, trainers and trainee fee. In human resources it will manage pay increments and hiring of developers and trainers. In the procurement section it will manage the resources required by the organization/company (**i.e.** furniture, stationary etc.). And in the last section that is project management our system will manage almost everything related to project like project cost, project deadline, project status, ongoing projects and resources required for the project.

3.1.4 Business Context

We are building this product for Harbinger Solutions. Their mission is to fully automate the management of the organization. Managing everything gets a lot easier. Instead of hiring people for maintaining the records and this method is not reliable either. Single software will be doing it trustworthily.

3.2 General Description

3.2.1 Product Functions

This system will handle:-

- **Finance and accounting**
- **Human resource**
- **Procurement**
- **Project management**

3.2.2 User Characteristics

As this system is for a particular organization so only employees of that organization will be using this system. Each employee will have their own login through which they will be able to access the system only to an extent how much they are allowed and can change the password of their account.

The user characteristics for this system are as followed:-

Manager:

Manager can access the whole system **i.e.** Finance and Accounts, Human Resource, Procurement. Manager can also keep check on the list of new projects and the resources available and can allocate the resource to the project through the resource id. Manager can also send a request to the procurement officer.

Human Resource:

Human resource manager can keep the record of new employees and can update their information. He/she can define a salary to the employees and can also increment the salary of an employee. Human resource manager can also send a request to the procurement officer.

Finance and Account:

Accountant can keep the record of the salaries being paid to the employees and also can keep record of the fee from Trainee. He/she can generate the income report of the company and can also keep the record of the Trainee and their course registration record and customer record. Accountant can also send a request to the procurement officer.

Procurement:

Procurement officer can keep check on the inventory record and can entertain the requests from other employees.

3.2.3 User Problem Statement

Some of the problems users are facing currently are defined as under:-

- Information is not trust worthy **i.e.** if records are up to date or not.
- Managing all records on paper.
- Tasks take a lot of time to process.
- Company income record is not authentic.

3.2.4 User Objectives

According to the human resource manager the system should keep the record of the employees and the record of the employee's salaries.

According to the accountant the system should keep the record of the Trainee and their fee record and should also keep the record of the customer and their payments to keep the company income record authentic. The system should provide the facility of requesting procurement to all the employees.

Manager wants to see the record of projects and the free resources. The system should provide a complete access of system to the manager.

Procurement officer wants to get notified every time he/she gets a request and want access to the inventory.

3.2.5 General Constraints

Some of the constraints are:-

- The system should be user friendly.
- The system should acknowledge the system state.
- The system should be speedy.
-

3.3 Functional Requirements

Features of the system:-

3.3.1 Login system:

The system shall provide every employee a login.

- **Criticality**

Without login system everyone will simply access the system for malicious use. Information will not be authentic anymore.

- **Technical issues**

  At this stage we do not have any technical issue in fulfilling these requirements.

- **Cost and schedule**

  There is no such cost involved in this project.

- **Risks**

  A possible risk exists if the system does not recognize a proper administrator login.

- **Dependencies with other requirements**

  User cannot use the system without login.

3.3.4 Finance and accounting:

The system shall maintain employee's salary record.

The system shall maintain trainee's fee record.

The system shall manage record of a project costs.

The system shall keep the record of trainee's courses.

The system shall keep the record of the customers.

The system shall generate the company income report.

The system shall be able to send a request for procurement.

- **Criticality**

  This requirement is very important for the system, the reports should be accurate otherwise anyone could be punished.

- **Technical issues**

  At this stage we do not have any technical issue in fulfilling these requirements.

- **Cost and schedule**

  There is no such cost involved in this project.

- **Risks**

  There is no such risk involved.

- **Dependencies with other requirements**

  This function is dependent on the login before login a user cannot get access to this function.

3.3.3 Human resource:

The system shall manage the hiring process.

The system shall manage the pay incremental of employees.

The system shall be able to send a request for procurement.

- **Criticality**

  The formula for incrementing employee's salary should be applied very carefully.

- **Technical issues**

  At this stage we do not have any technical issue in fulfilling these requirements.

- **Cost and schedule**

  There is no such cost involved in this project.

- **Risks**

  There is risk of implementing wrong formula.

- **Dependencies with other requirements**

  This function is dependent on the login before login a user cannot get access to this function.

3.3.4 Procurement:

The system shall be able to handle the requests.

The system shall be able to check the inventory.

The system shall be able to add the inventory.

- **Criticality**

The number of remaining and provided items should be exact in order to let the system work smoothly.

- **Technical issues**

At this stage we do not have any technical issue in fulfilling these requirements.

- **Cost and schedule**

There is no such cost involved in this project.

- **Risks**

There is no risk involved.

- **Dependencies with other requirements**

This function is dependent on the login before login a user cannot get access to this function.

3.3.5 Manager:

The system shall keep record of ongoing projects.

The system shall manage the resource to the project.

The system shall keep track of the project status.

The system shall manage the project deadlines.

The system shall be able to send a request for procurement.

- **Criticality**

  Allocated resource should not be allocated again.

- **Technical issues**

  At this stage we do not have any technical issue in fulfilling these requirements.

- **Cost and schedule**

  There is no such cost involved in this project.

- **Risks**

  There is a risk involved of allocating a resource again.

- **Dependencies with other requirements**

  This function is dependent on the login before login a user cannot get access to this function.

3.4 Interface Requirements

3.4.1 User Interfaces

The user interface shall be compatible to all Microsoft Operating Systems. As it is not supposed to be online, so we don't need any browser.

3.4.2 Hardware Interfaces

A high speed computer is needed to run this system. We also need a server to store the all of the data on that server.

3.4.3 Communications Interfaces

The system shall use wide area network for communication.

3.4.4 Software Interfaces

Microsoft visual studio (C#) ,Windows Communication Foundation Service and sql.

3.5 Performance Requirements

The performance of the product depends upon the following:

- Speed
- Security

3.6 Other non-functional attributes

3.6.1 Usability:

3.6.1.1 Graphical user interface:

The system shall provide use of icons and buttons.

3.6.1.2 Search option:

The system shall enable user to enter the search text on the screen.

3.6.1.3 Security:

The System shall not display confidential information.

The System shall not allow an unauthentic access.

The system shall acknowledge all the updates in database

3.6.1.4 Profile:

The System shall provide each employee with a different profile.

The System shall maintain customer's information separately.

The System shall be providing an updating, deleting option.

3.6.1.5 Data storage:

The system's back-end servers shall only be accessible to authenticated users **i.e.** employees.

3.6.1.6 Reliability:

The system shall handle exceptions.

The system shall recover quickly.

3.6.1.7 Extensibility:

The system shall be extensible for adding more features which includes Sms notifications, printing, and card swipe attendance.

3.7 Operational Scenarios

3.7.1 Login:

Only authentic user will get an access to their account/profile they are working with.

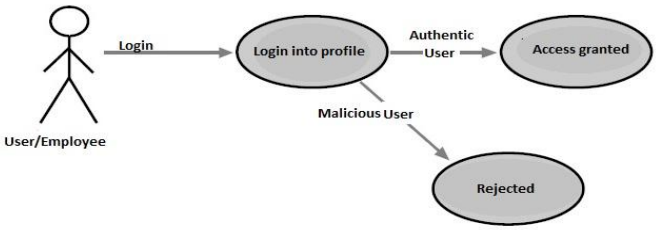

Figure 3.1

3.7.2 Manager

Manager will be able to Access other accounts, change password, Check resources.

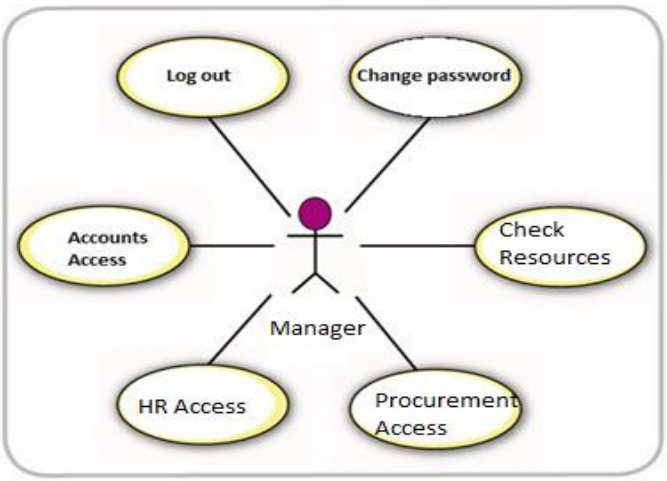

Figure 3.2

3.7.3 Accountant

Accountant will be able to add new Trainee record ,customer record,project cost record,employee salary record, Trainee fee record and he/she will also be able to send a request for procurement.

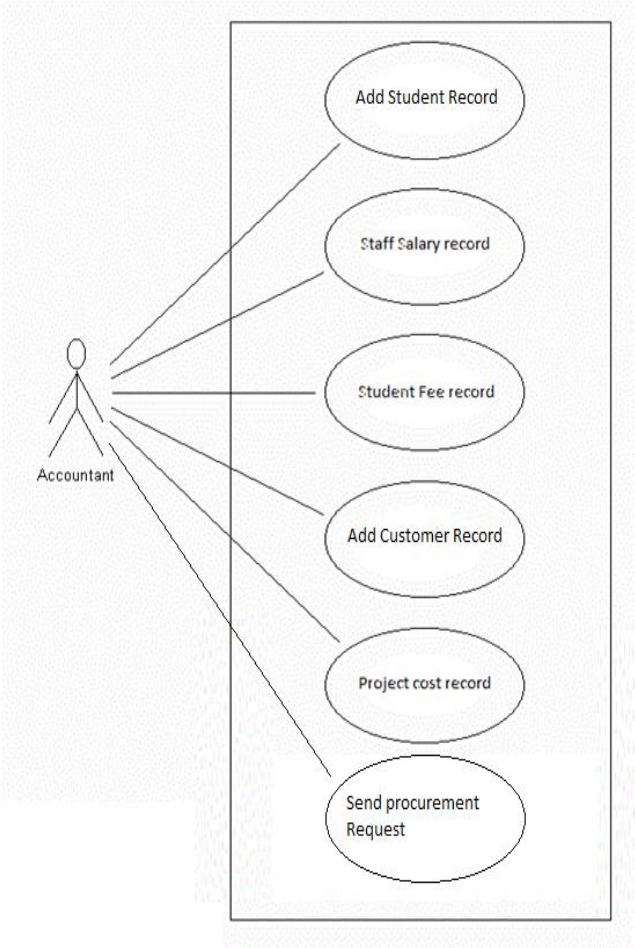

Figure 3.3

3.7.4 Procurement

Procurement Officer will be able to check requests from employees. He/she will be able to keep check on the inventory record and will be able to add inventory.

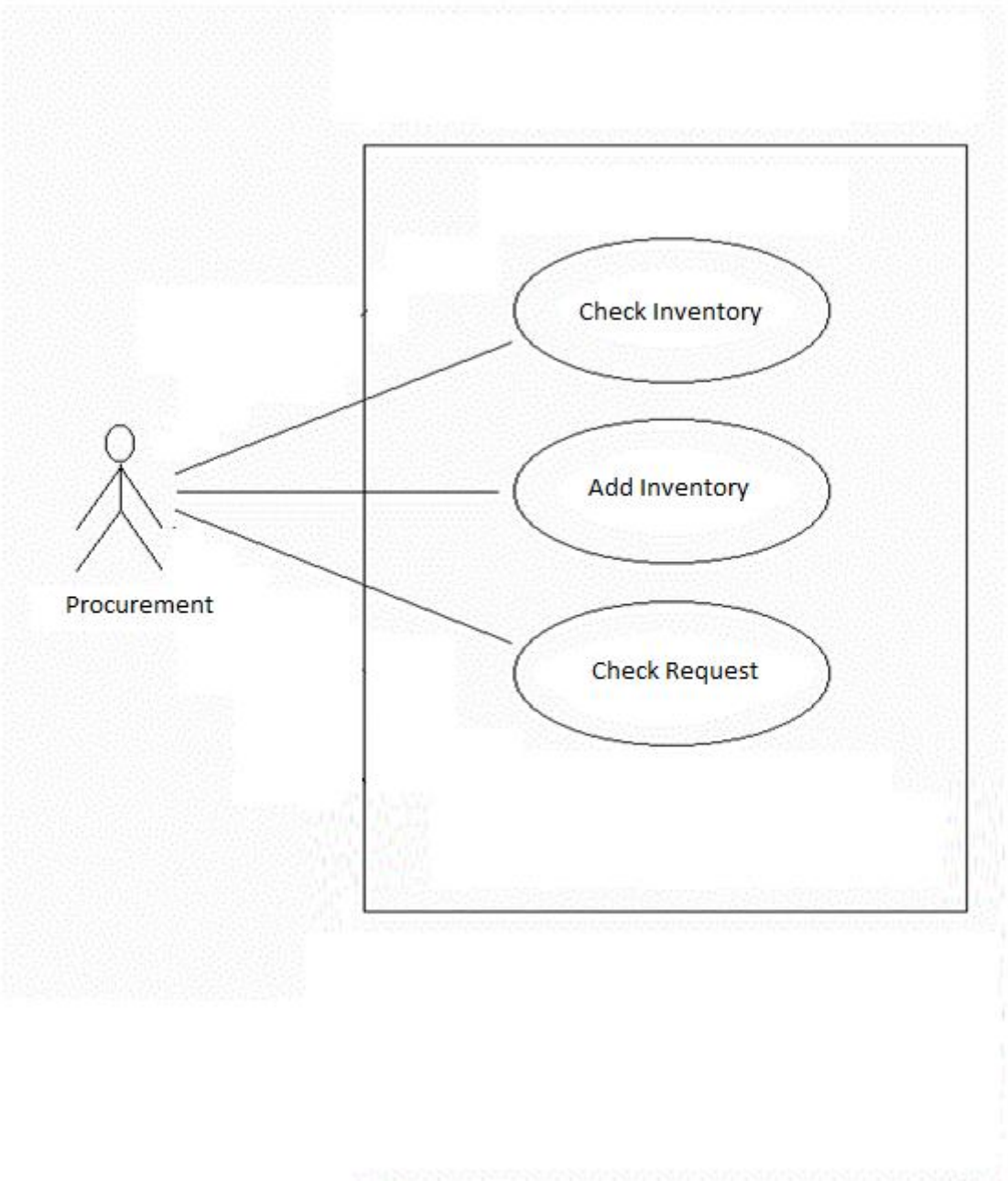

Figure 3.3

3.7.5. Human Resource

Human Resource manager will be able to hire employees, increment their salaries and will be able to send a request for procurement.

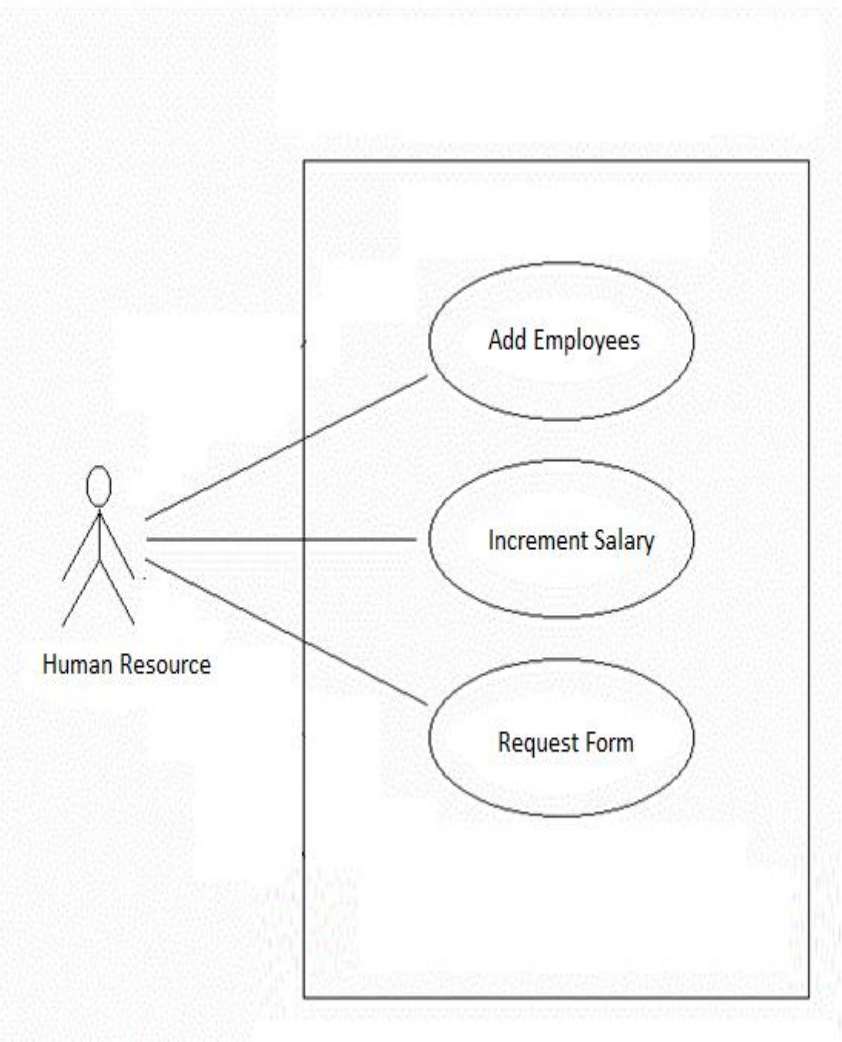

Figure 3.4

3.8. Preliminary Budget

There is no budget planned.

Chapter # 4

Design Specifications

4.1 Introduction

4.1.1 System Overview

Our project is to build an IRMS (Information and Resource Management System) to automate the information and resource management of the company. The system will provide employees with their profiles and a login to their profile for security purpose through which they will be granted a limited or full access to the database to handle their required job. This access will depend on their designation. System will store information on a server and database will acknowledge on every update in information.

4.1.2 Design Map

This section contain the design of a system starting with the consideration design which includes the constraint and assumption of the system further it covers the architectural design, high level and low level design, and the modules as well.

4.2 Design Considerations

4.2.1 Assumptions

System will be used in an organization.
All the computers in an organization will have the required system specifications.

4.2.2 Constraints

The system will be used on a computer. The computers will have a Microsoft operating system .Our system will use windows communication foundation to connect to Sql server database. The access will be granted on the position of the employees.

4.2.3 System Environment

The system will run on a computer having a Microsoft operating system

4.3 Architecture

4.3.1 Overview

As we all know that to implement Information and Resource Management System (IRMS) is not an easy job. Many firms, big companies have tried to use this product, but they have failed to use it successfully. The reason behind is the complexity of its architecture, due to which it is difficult to use. So we have kept it very simple, steps are defined as under:

- It starts with a login.
- Then logs on by giving user name and password.
- The designation chosen automatically gives the amount of authority he/she possesses.
- Like manager has all the authority, he/she can see look every data in the central database, can delete any data, can update any data and can insert any data in the central database.
- All the data is present in the central database.
- Whenever there is a new entry of trainee, trainer its record is saved in the central database.
- Accountant manages their fees, dues.
- This system has a central database that tracks and keeps record of everything.

4.3.2 Rationale

We have chosen to use this architecture to make sure it gives us the best possible results. We have to make it in this way, so that it is easy to use. Our first goal is to remove the complexities from the system, and we have been to achieve it.

4.4 High Level Design

4.4.1 Conceptual View

As our system is compatible with Microsoft operating systems, so it can run only on it. The system starts with a login page. User enters the username and password to get access to the account. There shall a manager, procurement department, finance and accounting department and the developers. Manager shall be managing almost everything; he has resource management under him and has all the powers to insert anything in the central database, delete anything from the central database and update anything from the central database. Then there is Human Resource department that manages hiring, pays, pay increments then there is a Finance and Accounting department that keep records of employee's salary, trainee fee, project cost and the developers cost. Then there is a procurement department that shall make sure that every request they get of either hardware resources or other resources is completed on time.

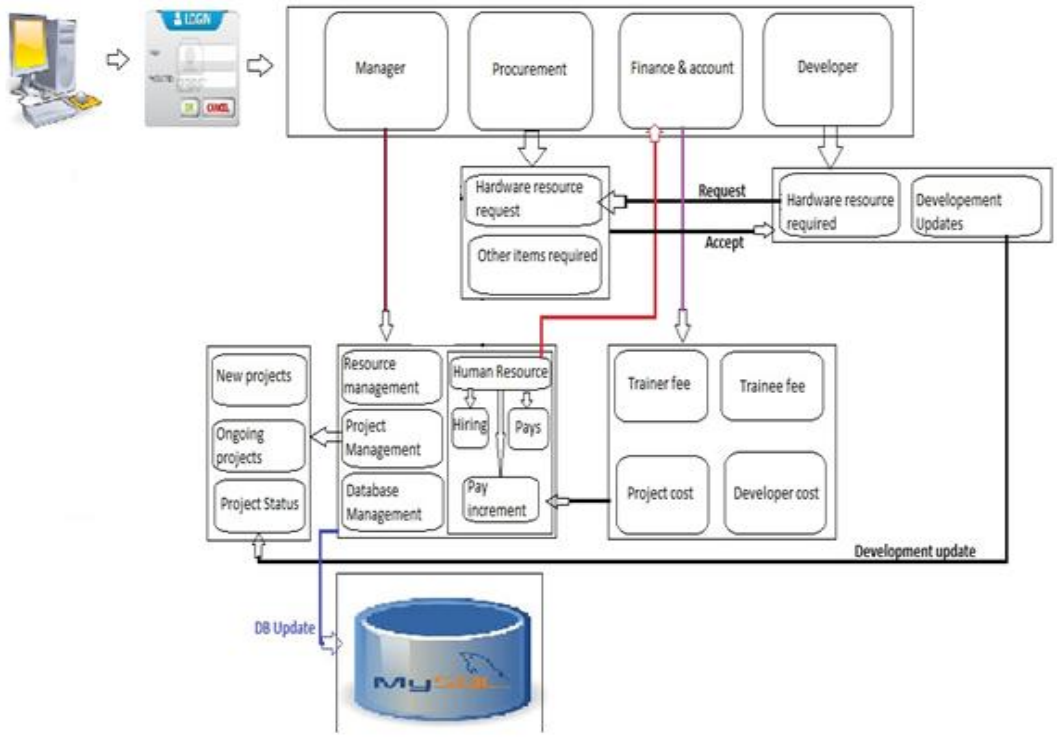

Figure 4.1

4.4.2 Process view

Sequence Diagram 1: Login

- The user shall start the system.
- Shall open the IRMS.
- Login page shall be displayed.
- Username and password shall be asked.
- If any of them is wrong, access shall be denied.
- If both (username & password) are correctly entered, access shall be granted

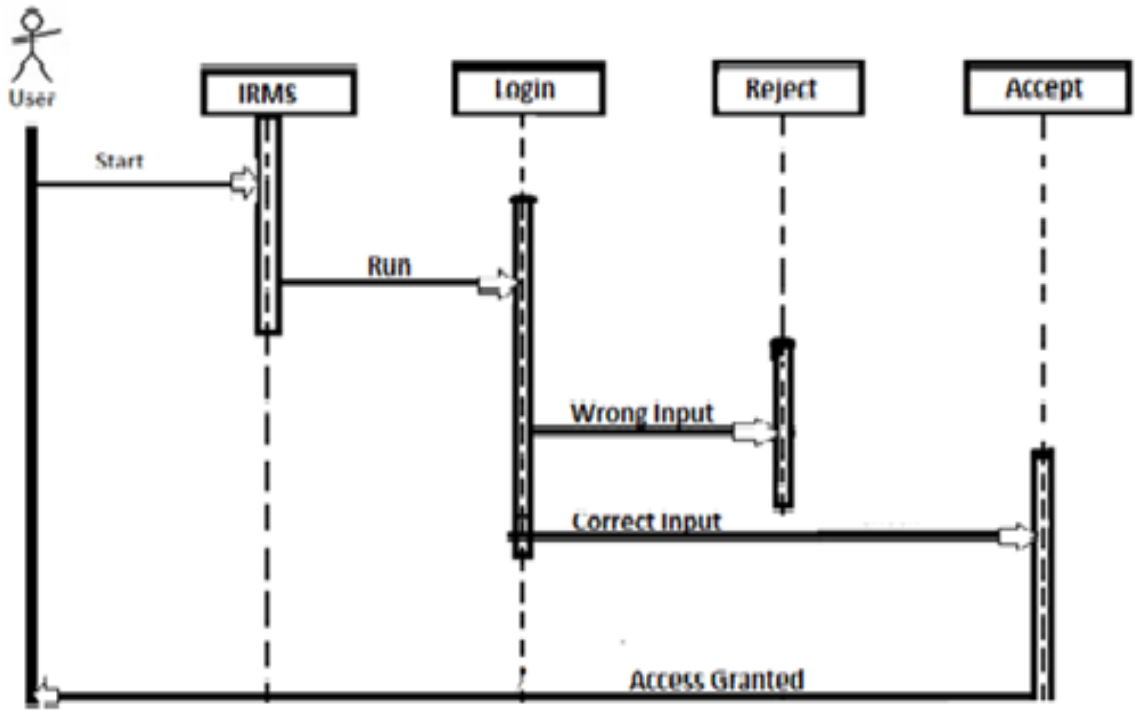

Figure 4.2

Sequence Diagram 2: Resource Management (Developer)

- Manager has got the authority to allocate the resource to project.

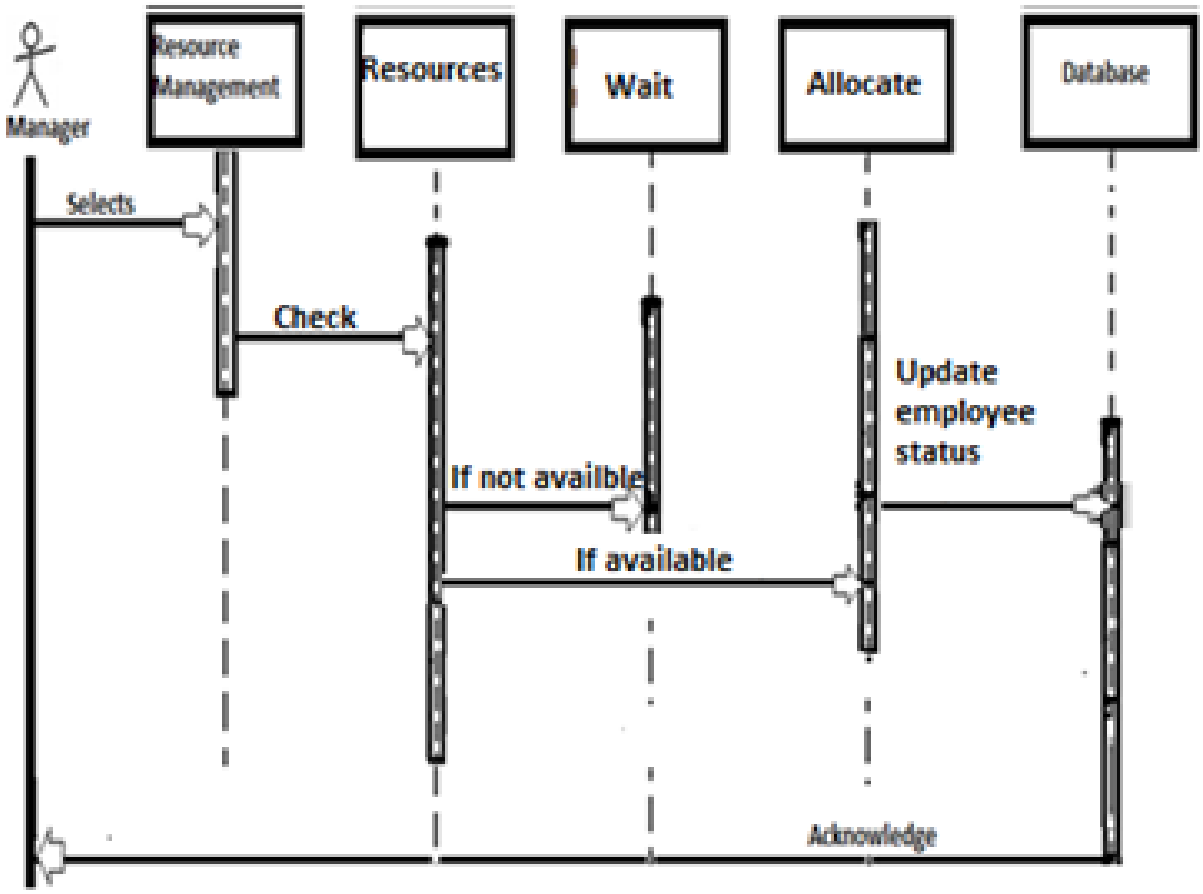

Figure 4.3

Sequence Diagram 3: Resource Management (other)

- Procurement officer has got the authority to accept the request by any of the staff member for inventory, like it could be stationary, furniture or any other thing required for the company.
- Procurement officer arranges the required thing.
- The company account is updated in the central database.

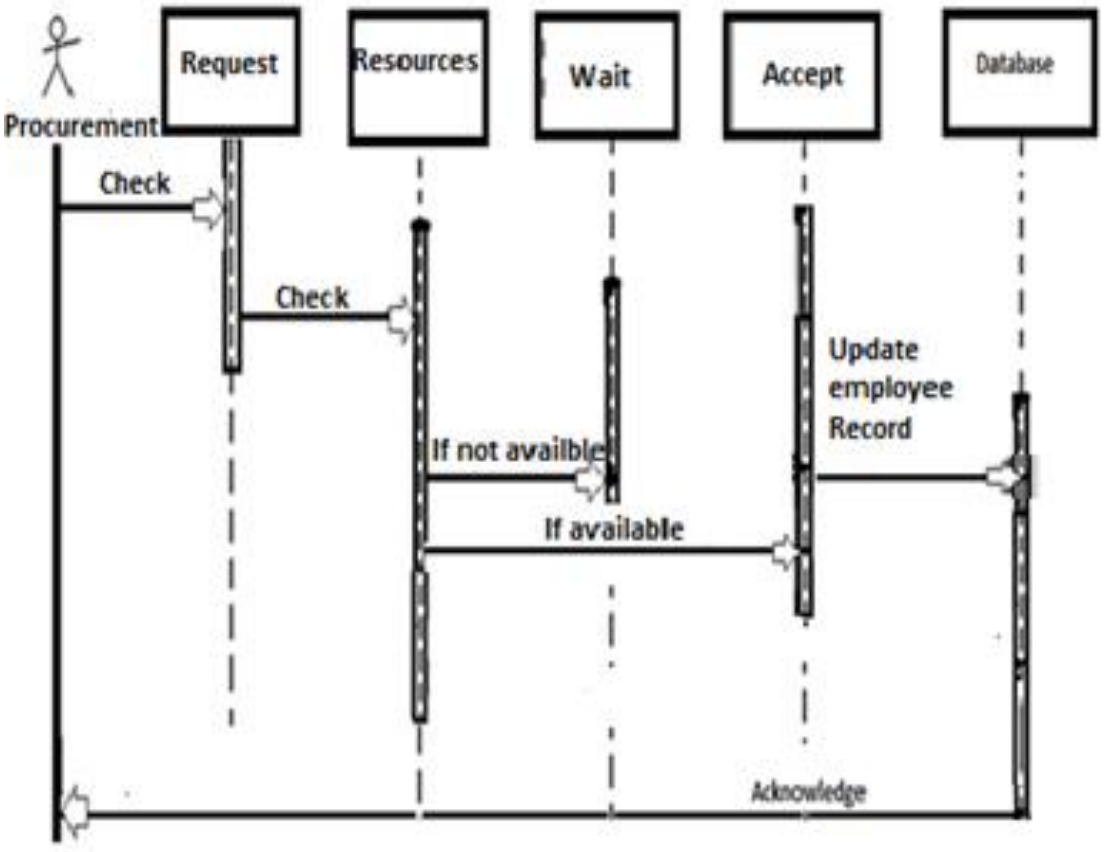

Figure 4.4

Sequence Diagram 4: Hiring

- Human Resource department is responsible for hiring new staff
- They add this new person's record.
- And the database is updated.

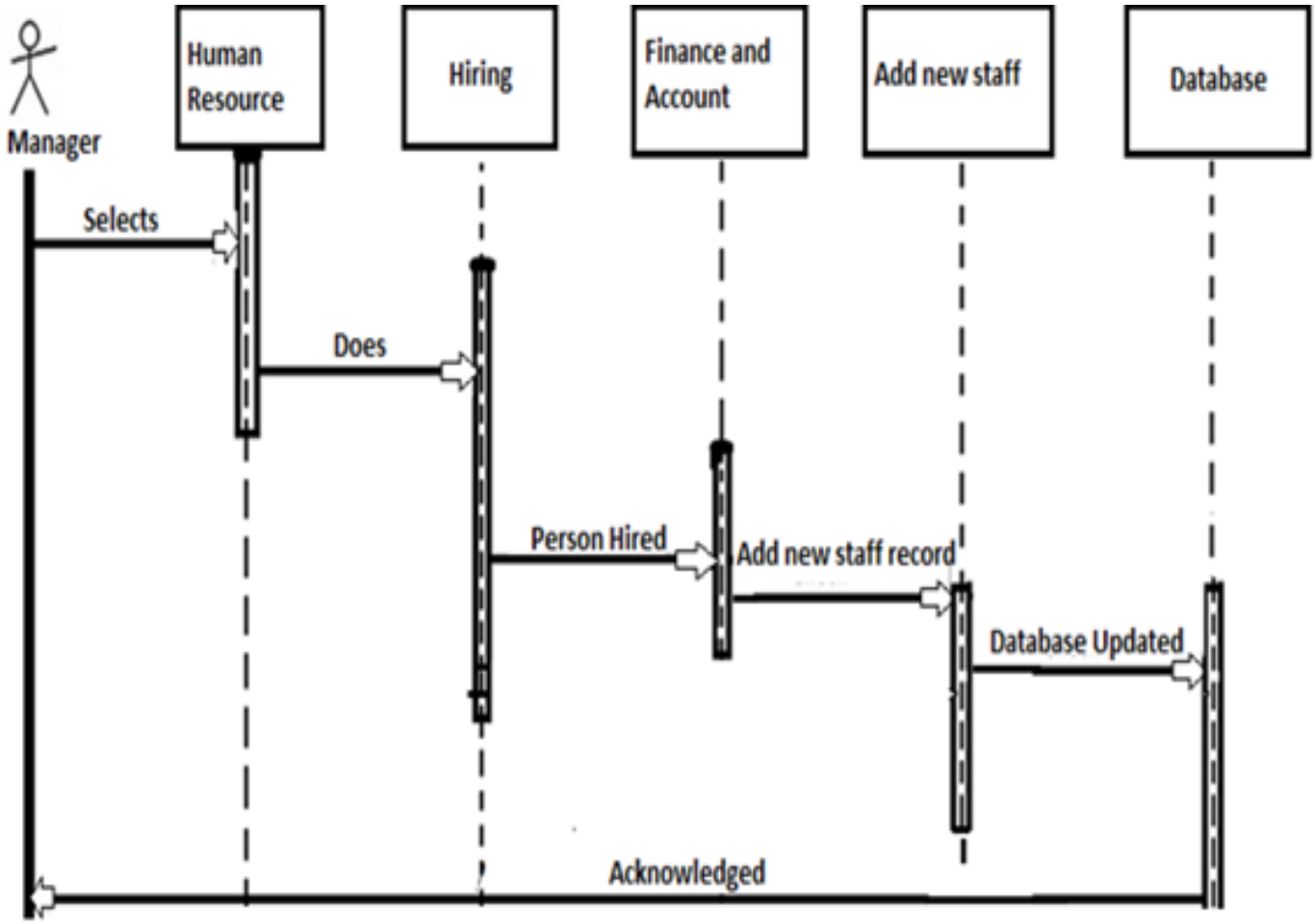

Figure 4.5

Sequence Diagram 5: PAY

- Human Resource department is responsible for giving salaries.
- Record is updated in the central database.

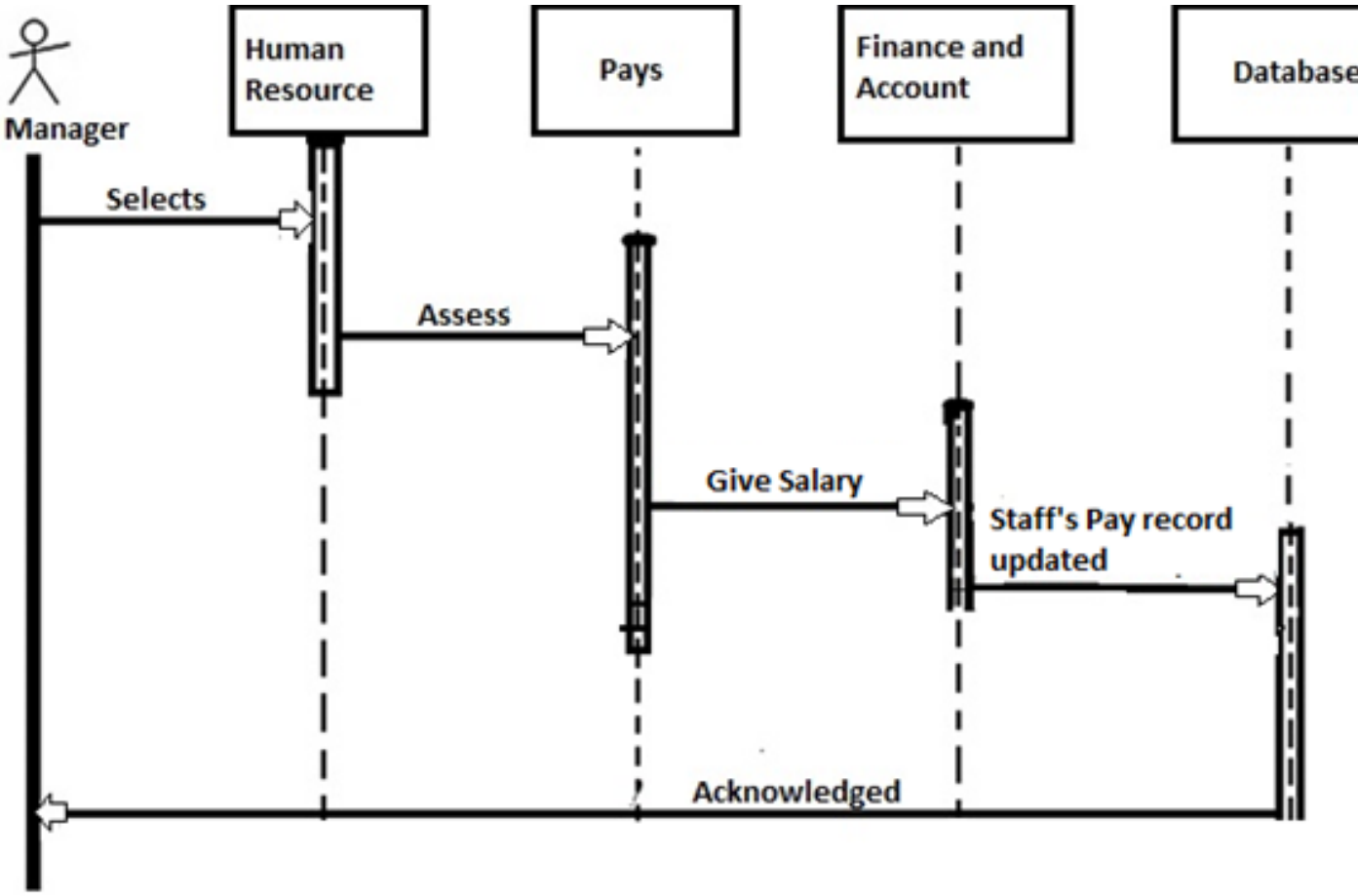

Figure 4.6

Sequence Diagram 6: Increment

- Human Resource department is responsible for the increment in salaries of the staff.
- Finance and Accounts department is informed.
- Record in the central database is updated.

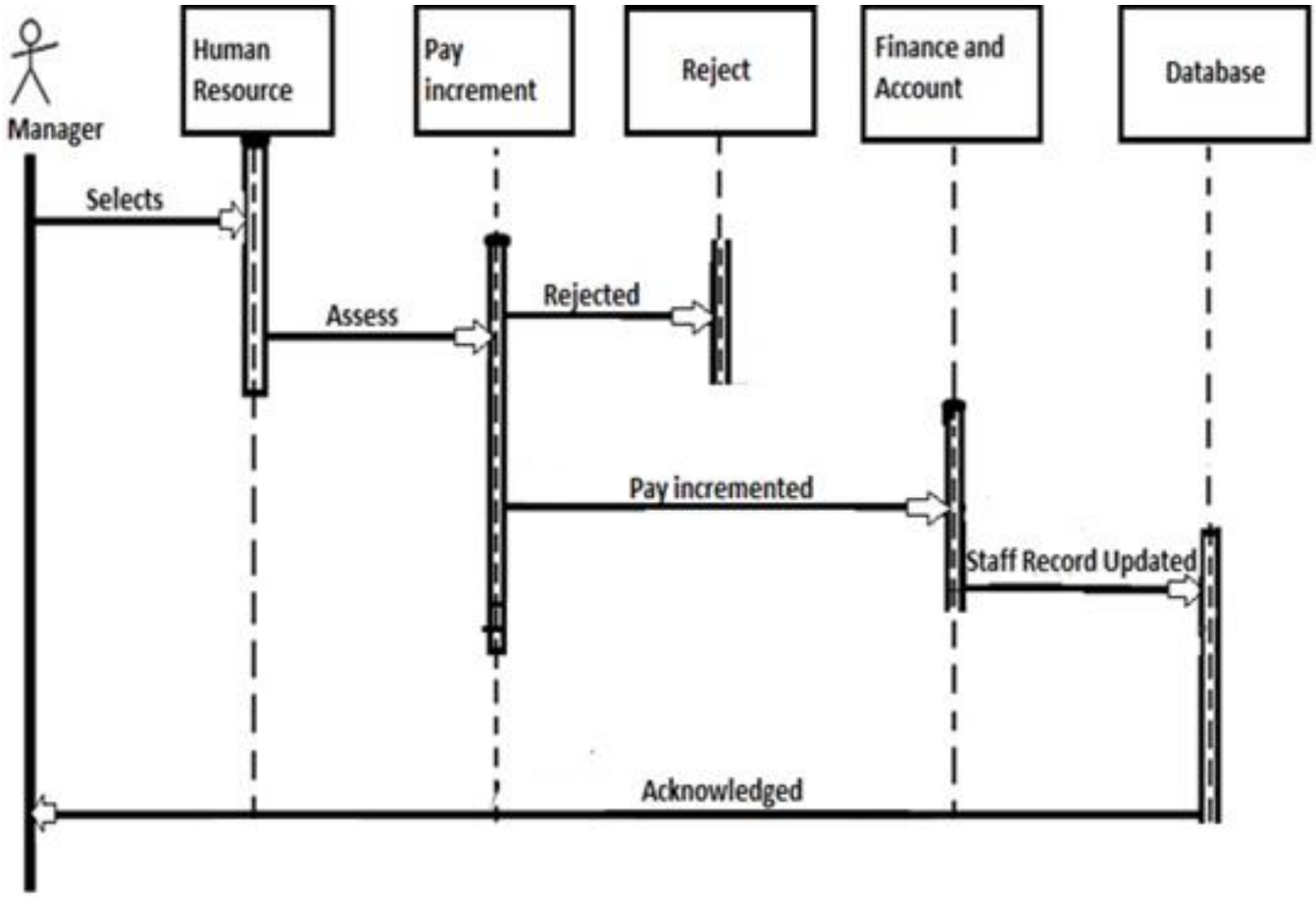

Figure 4.7

Sequence Diagram 7: Accountant trainee Fee

- Finance and accounts department is responsible for maintaining the records of fees paid by the trainees.
- Accountant collects fee from the trainee.
- The record of the trainee is updated in the central database.

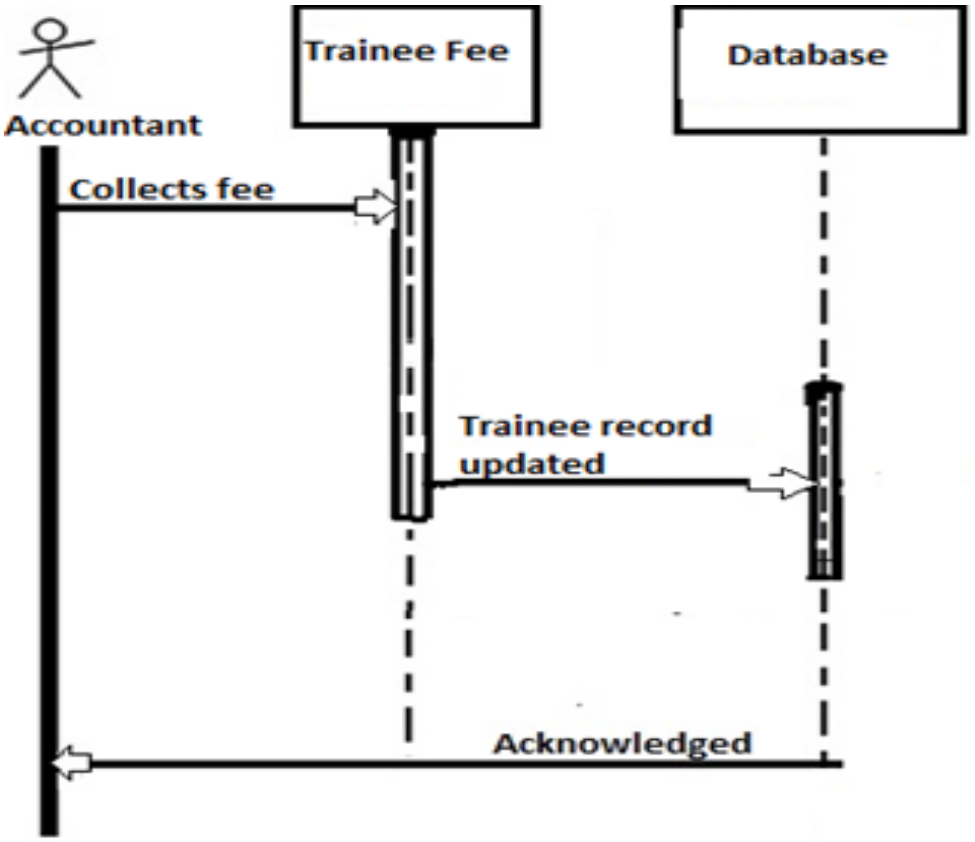

Figure 4.8

4.5 Low Level Design

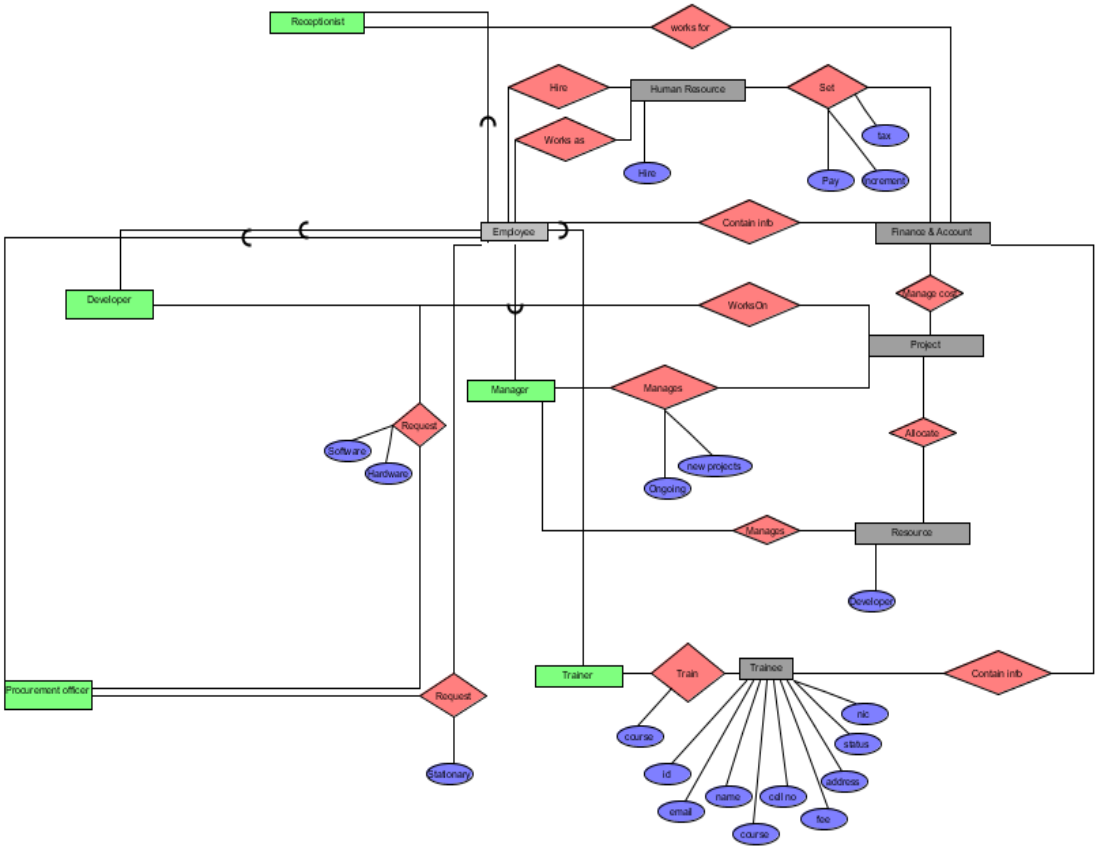

Figure 4.9

4.6 User Interface Design

4.6.1 Application Control

All screens shall have a lot in common. Some of the common features are defined as under:

- There shall be login button
- There shall be logout button
- There shall be a going back option
- There shall be change password option
- There shall be a viewing tables option
- There shall be acknowledgement pop ups

4.6.2 Login

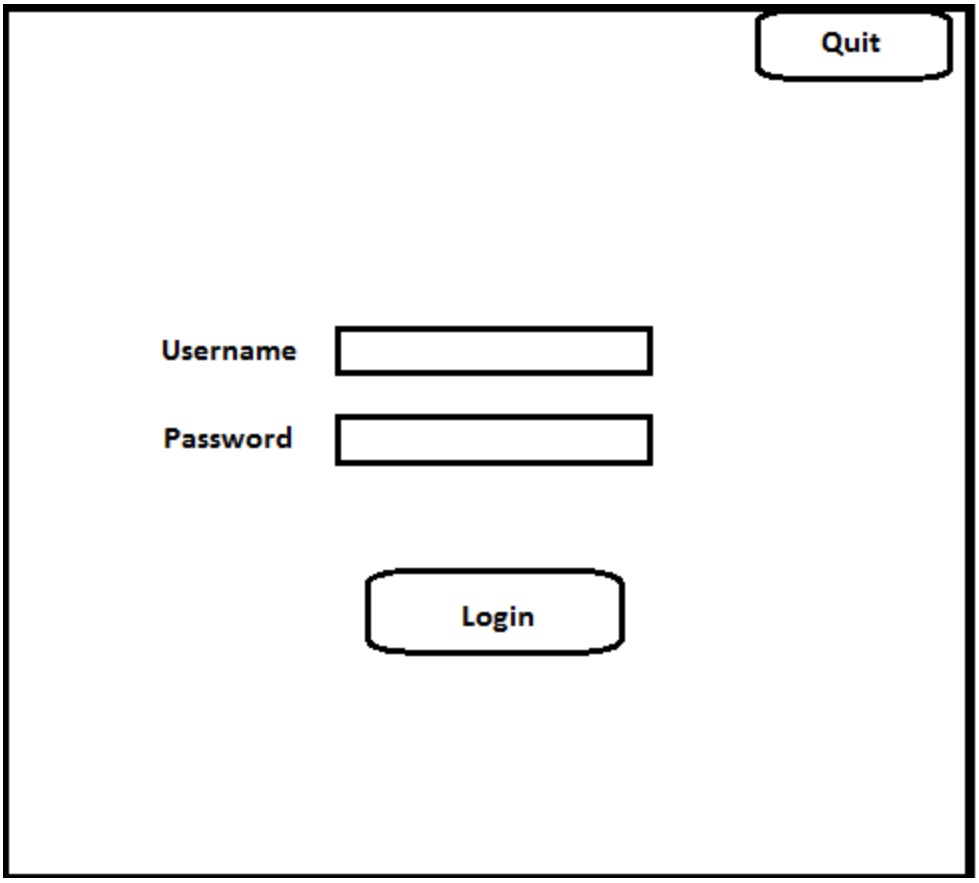

Figure 4.10

- This is the login page.
- Where the user shall put username and password.
- And then click the sign in button.

4.6.3 Manager

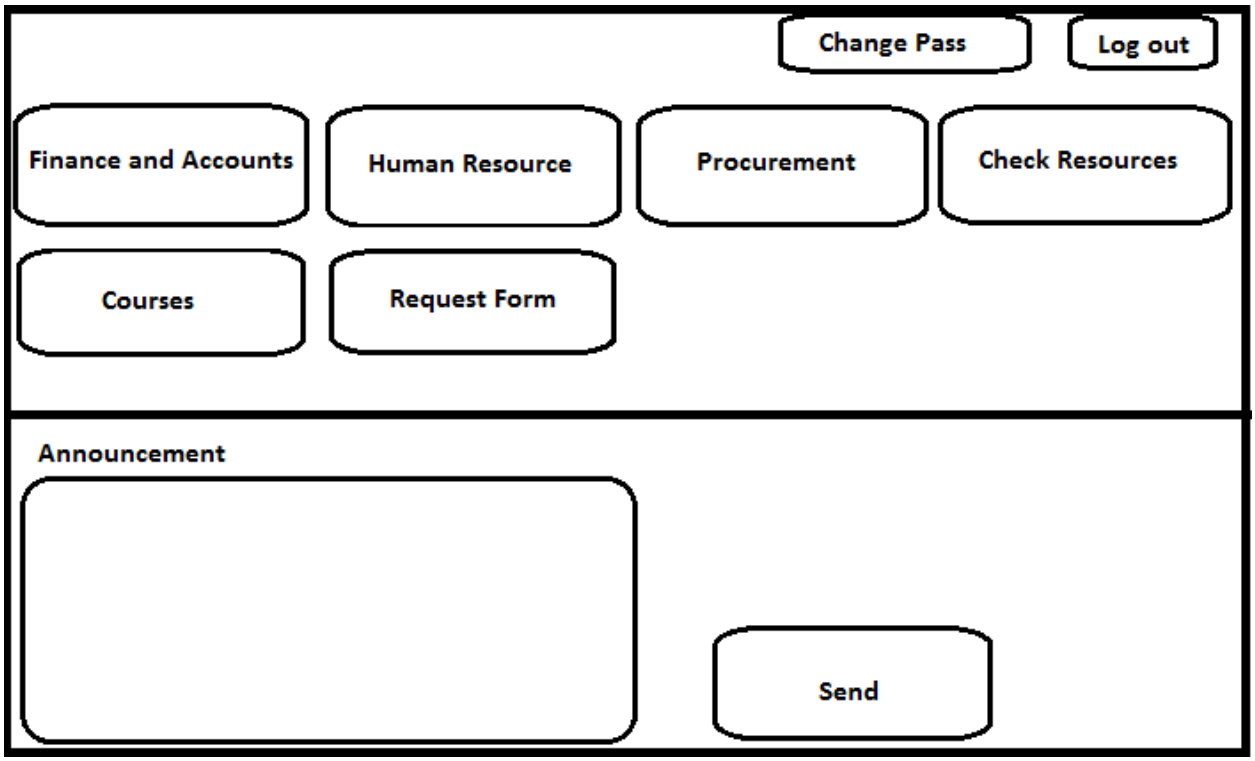

Figure 4.11

Chapter # 5

System Implementation

5.1 System Architecture:

This system comprises of four modules i.e. Human Resource, Procurement, Finance & Accounts and Project Management. Only Manager has the access to all other modules. The system shall start with a login page; every employee has username and password which they shall enter correctly to access the system.
Manager manages Project Management in which he/she assigns project to the developer; system shows free resources those which are available.
Procurement deals with stationary, cables or anything needed by the organization. Procurement Manager is asked for all these resources. Every employee can request to procurement Manager through request form present on their main page.
Human resource deals with employee record and increment in pays of employees. He/she can add new record, can edit record and can update record. Every function has its own form thorough which data is entered in the central database.
Finance & Account deals with paying salaries, collection of fee, Trainee records, Trainee course registration, customer record and generates company total income.
Exceptions are handled everywhere, no wrong input can be entered. Limitations and checks are defined. NIC differentiates every record from every other record.

5.2 Tools and Technology Used:

Tools used for the implementation of the system are defined as under:-

- We are developing this windows application on Microsoft Visual Studio (version 2010).
- Dev Express is embedded with Visual Studio for the designing of GUI (graphic user interface).

5.3 Development Environment/Languages Used:

- C#
- Sql(connectivity with C#)

5.4 Processing Logic/Algorithms:

The processing logic is based on the basic website architecture from login to logout.

Codes of some functions are defined as under:-

5.4.1 Login System:

```
public string hello(string username, string passw)
{

string a = null;

DataClasses1DataContext db = new DataClasses1DataContext();
var rows = from s in db.logins

where s.Username == username && s.Password == passw

select s;

if (rows.Count() > 0)
{
foreach (var row in rows)
{
a = row.type;


if (string.Compare(a,"manager")==0)
{
b = 1;

}

else if (string.Compare(a,"receptionist")==0)

{

b = 0;

}

else if (string.Compare(a, "hr") == 0)
{

b = 3;
```

```
}

else if (string.Compare(a, "pr") == 0)

{

b = 4;

}

}

else
{

b=2;

}

return b.ToString();

}
```

5.4.2 Adding Employee Record:

```
  public string put(string name, string nic, string post, string address,string

  Email,string Salary, string cellno, string type,string JoiningDate)


{

myconnection.Open();

SqlDataAdapter check = new SqlDataAdapter ("select * from Employees WHERE
Nic = '" + nic + "' ", myconnection);

DataSet ds = new DataSet();

check.Fill(ds);

if (ds.Tables[0].Rows.Count == 0)
{

SqlCommand insertCommand = new SqlCommand("insert into
```

```
Employees(Name,Nic,Post,Address,Email,Salary,Cellno,Type,JoiningDate)     values
('" +

name + "'," + nic + "'," + post + "'," + address + "'," + Email + "'," + Salary +

"'," + cellno + "'," + type + "'," + JoiningDate + "')", myconnection);

insertCommand.ExecuteNonQuery();

string rtype = "Developer";

SqlDataAdapter resr = new SqlDataAdapter("select * from Employees where

Type='" + rtype + "'", myconnection);

DataSet ds1 = new DataSet();

resr.Fill(ds1);

if (ds1.Tables[0].Rows.Count != 0)

{

nwname = ds1.Tables[0].Rows[0][1].ToString();

nwpost = ds1.Tables[0].Rows[0][3].ToString();

for (int i = 0; i < ds1.Tables[0].Rows.Count; i++)

{

int flag = 1;

int eid = Convert.ToInt32(ds1.Tables[0].Rows[i][0].ToString());

SqlDataAdapter resr1 = new SqlDataAdapter("select * from Resource",
myconnection);

DataSet ds11 = new DataSet();

resr1.Fill(ds11);

for (int j = 0; j <ds11.Tables[0].Rows.Count; j++)
{

int reid = Convert.ToInt32(ds11.Tables[0].Rows[j][1].ToString());

if (eid == reid)

{
```

```
flag = 0;

}


}

if (flag == 1)

{

string stattus = "free";

SqlCommand resource = new SqlCommand("insert into Resource

(EId,Name,Post,Status) values(" + eid + ",'"+nwname+"','"+nwpost+"','"+stattus+"')",

myconnection);

resource.ExecuteNonQuery();

}

}
}

}


else
{

return "error";

}

myconnection.Close();

return "done";

}
```

5.4.3 Update Employee Record

```
public string update(string eid,string name, string nic, string post, string address,
string Email, string Salary, string cellno, string type, string JoiningDate)
{
myconnection.Open();
SqlCommand cmd = new SqlCommand();

cmd.CommandText = "UPDATE Employees SET Name='" + name + "',Nic='" + nic +
"',Post='" + post + "',Address='" + address + "',Email='" + Email + "',Salary=" +
Salary + ",Cellno='" + cellno + "',Type='" + type + "',JoiningDate='" + joiningDate +
"' where EId= " + Convert.ToInt32(eid) + "";
cmd.Connection = myconnection;
cmd.ExecuteNonQuery();
DataClasses1DataContext cp = new DataClasses1DataContext();
try
{
cp.Employees.Context.SubmitChanges();
cp.SubmitChanges();
a = 0;
}
catch (Exception e)
{
MessageBox.Show("error", e.ToString());
}
myconnection.Close();
return "done";
```

```
}
```

5.4.4 Read Employee Record:

```
public DataTable read()
{

myconnection.Open();

DataTable dt = new DataTable();

SqlDataAdapter sda = new SqlDataAdapter("select * from Employees",
myconnection);

DataSet ds = new DataSet();

sda.Fill(ds,"Employees");

dt = ds.Tables["Employees"];

myconnection.Close();

return dt;


}
```

5.4.5 Employee Salary Increment

```
public string incremntal(string eid, string incr)

{

myconnection.Open();

SqlDataAdapter ad5 = new SqlDataAdapter("Select * from Employees where EId=" +

Convert.ToInt32(eid) + "", myconnection);

DataSet ds5 = new DataSet();

ad5.Fill(ds5,"Employees");

if (ds5.Tables[0].Rows.Count > 0)

{
```

```
float sal = Convert.ToInt32(ds5.Tables[0].Rows[0][7]);

float saal = Convert.ToInt32(sal);

int inc = Convert.ToInt32(incr);

float newsall = (sal * inc) / 100;

float newsal = sal + newsall;

SqlCommand cmd = new SqlCommand();

cmd.CommandText = "UPDATE Employees SET Salary=" + newsal + " where

EId= " + Convert.ToInt32(eid) + "";

cmd.Connection = myconnection;

cmd.ExecuteNonQuery();


}

else {

return "error";
}

myconnection.Close();

return "ok";

return sal;

}
```

5.4.6 Add Inventory:

```
public string addinvntry(string dster, string mrkr, string pwrcbl, string mouse, string kb)
{
myconnection.Open();

SqlDataAdapter uaad = new SqlDataAdapter("select* from Directprocure ", myconnection);

DataSet udss = new DataSet();

uaad.Fill(udss);

d = Convert.ToInt32(udss.Tables[0].Rows[0][1]);

m = Convert.ToInt32(udss.Tables[0].Rows[0][2]);

p= Convert.ToInt32(udss.Tables[0].Rows[0][3]);

mo = Convert.ToInt32(udss.Tables[0].Rows[0][4]);

k = Convert.ToInt32(udss.Tables[0].Rows[0][5]);

int ds = d + Convert.ToInt32(dster);

int ma = m + Convert.ToInt32(mrkr);

int pc = p + Convert.ToInt32(pwrcbl);

int mos = mo + Convert.ToInt32(mouse);

int kbb = k + Convert.ToInt32(kb);

SqlCommand cmd9 = new SqlCommand();

cmd9.CommandText = "UPDATE Directprocure SET Duster =" + ds + ",Marker= "

+ ma+ ",Powercable=" +pc + ",Mouse=" + mos + ",Keyboard=" + kbb + " where type='"+ol+"'";

cmd9.Connection = myconnection;

cmd9.ExecuteNonQuery();

myconnection.Close();


return "done";
}
```

5.5 Application Access Security:

Every user has his/her own account. They login to their accounts with username and password. The employee can login only if he/she knows exact username and password. Username and password is matched with the database, if it matches then the user is logged in to the account. Every employee has an option to change his/her password. So no random person can access the system. Only manager has access to all accounts, other employees can only access their own account. Like Human Resource cannot access Procurement account, Finance & Account cannot access Project Management account and so forth.

Chapter # 6

System Testing and Evaluation

6.1 Introduction

Testing is a process which makes sure that the system is working according to the requirements which includes both functional and non-functional requirements. Testing each module separately also helps the developer to debug the bugs in system conveniently. Testing also define the quality of the final product.

6.2 Approaches of Testing

User's Login:

Test Case ID	TC_FUNCT_01		
Description	Testing the Login		
Applicable for	Microsoft Operating System		
Dependency	Running IRMS		
Initial Conditions	Login screen is visible to the user.		
Step	**Task**	**Result**	**Expected result**
1	Run IRMS.		
2	Verify the login screen.	**Pass**	**Visible**
3	Verify the username.	**Pass**	**Static**
4	Verify the password.	**Pass**	**Hidden**
5	Verify the login with the provided username and password.	**Pass**	**Login**
6	Verify the rejection with incorrect password.	**Pass**	**Rejection**
7	Verify the account access according to user type.	**Pass**	**Respective access granted**

Table no 1

Finance and accounting:

Test Case ID	TC_FUNCT_02
Description	Testing Finance and Accounts
Applicable for	Microsoft Operating System
Dependency	Login
Initial Conditions	Respective home page is visible to the user with proper access.

Step	**Task**	**Result**	**Expected result**
1	Verify the employee's salary record.	**Pass**	**Maintaining**
2	Verify the trainee's fee record.	**Pass**	**Maintaining**
3	Verify the project costs.	**Pass**	**Maintaining**
4	Verify the trainee's courses.	**Pass**	**Maintaining**
5	Verify the customers.	**Pass**	**Maintaining**
6	Verify the company income report.	**Pass**	**Generating**
7	Verify the request for procurement.	**Pass**	**Working**

Table no 2

Human Resource:

Test Case ID	TC_FUNCT_03		
Description	Tests the Human Resource		
Applicable for	Microsoft Operating System		
Dependency	Login		
Initial Conditions	Respective home page is visible to the user with proper access.		
Step	**Task**	**Result**	**Expected result**
1	Verify the hiring process.	**Pass**	**Hiring**
2	Verify the incremental of employee's salary.	**Pass**	**Working**
3	Verify the request for procurement.	**Pass**	**Working**

Table no 3

Procurement:

Test Case ID	TC_FUNCT_04		
Description	Testing the Procurement		
Applicable for	Microsoft Operating System		
Dependency	Login		
Initial Conditions	Respective home page is visible to the user with proper access.		
Step	**Task**	**Result**	**Expected result**
1	Verify the requests being handling.	**Pass**	**Working**
2	Verify the access to inventory.	**Pass**	**Working**
3	Verify the addition in the inventory.	**Pass**	**Working**

Table no 4

Manager:

Test Case ID	TC_FUNCT_05
Description	Testing the manager.
Applicable for	Microsoft Operating System
Dependency	Login
Initial Conditions	Respective home page is visible to the user with proper access.

Step	**Task**	**Result**	**Expected result**
1	Verify the ongoing projects.	**Pass**	**Maintaining**
2	Verify the resource to the project.	**Pass**	**Allocating**
3	Verify the project status.	**Pass**	**Updating**
4	Verify the project deadline.	**Pass**	**Working**
5	Verify the request for procurement.	**Pass**	**Working**

Table no 5

Chapter # 7

Conclusion

7.1 Project Summary

Information and Resource Management System is a management system that eliminates file work from the organization, reduces human resource which helps the company in increasing its economy and growing at faster rate. We have automated procurement department, human resource department, finance & accounts department and project management department. Data is stored in a central database which prevents any loss of data, provides authenticity and easy access of data.

7.2 Future Enhancement

We have learnt a lot about C#, its SQL connectivity and about WCF (Windows Communication Foundation) by the end of this project. In future we can add more features, more modules and more functionality to this system.

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[5]Tsai, B.-H., 2008. The Impact of Enterprise Resource Planning Systems.
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Appendices

9.1 Login system:

A login refers to the credentials required to obtain access to a computer system.

9.2 Finance and accounts:

Accounting is the collection and recording of information on all financial transactions of an entity, reporting the results of those transactions and interpreting those results.

Finance is the function of managing the financial operations of an entity, including investing idle cash, managing financial investments, collecting money from customers, paying bills and payrolls, etc.

9.3 Human Resource

The division of a company that is focused on activities relating to employees. These activities normally include recruiting and hiring of new employees, orientation and training of current employees, employee benefits, and retention.

9.4 Procurement

The act of obtaining or buying goods and services. The process includes preparation and processing of demand as well as the receipt and approval of payment

9.5 Project Management

The planning and organization of an organization's resources in order to move a specific task, event or duty toward completion. Project management includes managing the ongoing projects, projects cost and resources management which includes both human and financial resources.

A project manager will help define the goals and objectives of the project, determine when the various project components are to be completed and by whom, and create quality control checks to ensure that completed components meet a certain standard.

9.6 Graphical User Interface

An interface between a user and a computer system that involves the use of a mouse controlled screen cursor to select option from menus, make choices with buttons, start programs by clicking icons etc.

9.7 Extensibility

In information technology extensible describes something, such as a program, programming language, or protocol that is designed so that developers can expand or add to its capabilities.