

Business Monitoring Software

A project report submitted in partial fulfillment of
the requirements for the degree of

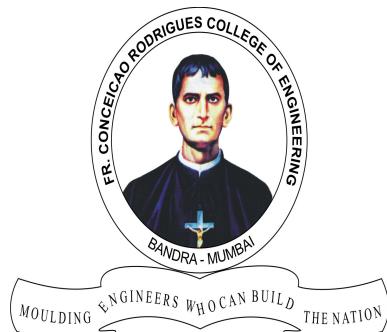
Bachelor of Engineering

by

Isha Naik (Roll No. 7153)
Prerana Tirodkar (Roll No. 7169)
Akshay Jadhav (Roll No. 6820)

Under the guidance of

Prof. Prachi Patil



DEPARTMENT OF INFORMATION TECHNOLOGY

Fr. Conceicao Rodrigues College of Engineering, Bandra (W), Mumbai -
400050

University of Mumbai

October 24, 2016

This work is dedicated to my family.

I am very thankful for their motivation and support.

Internal Approval Sheet

CERTIFICATE

This is to certify that the project entitled "**Business Monitoring Software**" is a bonafide work of **Isha Naik(7153)**, **Prerana Tirodkar(7169)**, **Akshay Jadhav(6820)** submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering in Information Technology**

(Name and sign)

Supervisor/Guide

(Name and sign)

Head of Department

(Name and sign)

Principal

Approval Sheet

Project Report Approval

This project report entitled by **Business Monitoring Software** by **Isha Naik, Prerana Tirodkar, Akshay Jadhav** is approved for the degree of Bachelor of Engineering

Examiners

1. _____

2. _____

Date:

Place:

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Isha Naik (Roll No. 7153) (**sign**)_____

Prerana Tirodkar (Roll No. 7169) (**sign**)_____

Akshay Jadhav (Roll No. 6820) (**sign**)_____

Date: October 24, 2016

Abstract

In today's fiercely competitive education segment the need for better interaction between the organisation and students (customers) and that for "should feel" feeling about being associated with the community and learn faster is growing day by day. An Enterprise resource planning system is a fully integrated business management system covering functional areas of an enterprise like Logistics, Production, Finance, Accounting and Human Resources. It organizes and integrates operation processes and information flows to make optimum use of resources such as men, material, money and machine. In simple words, Enterprise resource planning promises one database, one application, and one user interface for the entire enterprise, where once disparate systems ruled manufacturing, distribution, finance and sales. Thus easing work for the management as well as the employees, improving information availability and transparency. Helping the management track operations and cash flow, also meet primary goals of the organisation that of giving the students good experience by reducing the internal organisational confusion and availing smooth functioning of the system. Departmental information acts as a fundamental tool that assists employees and managers plan, monitor and control the entire business, centralize information and ease functioning. The Business Monitoring Software (BMS) is a concoction of all the essential entities to ensure hassle free functioning of the organization. Business monitoring software is influenced by a large number of factors and operational hurdles faced by the educational organization. It intends to abolish the man power and energy involved in the business operations carried out by the members involved. Thus ERP solution seek to streamline and integrate operation processes and information flows in the company to synergies the resources of organisation namely men, material, money and machine through information.

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Isha Naik(Roll No. 7153)

Prerana Tirodkar(Roll No. 7169)

Akshay Jadhav(Roll No. 6820)

Date: October 24, 2016

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Chapter 1

Introduction

An ERP -Enterprise Resource Planning system is a centralised software system that processes institution-wide transactions such as sales, marketing, finances, production, human resources etc on a single software system and a centralised data base. The initials of ERP originate as an extension of MRP (material requirements planning;later manufacturing resource planning) and CIM (Computer Integrated Manufacturing). It was introduced by research and analysis firm Gartner in 1990. ERP systems now attempt to cover all core functions of an enterprise, regardless of the organization's business or charter. [4] So as to avail real time data access to the managers and the end users if and when needed without any time slack. These multi-functional systems are designed to streamline almost every aspect of how institutions operate. Integrate institutional data and processes through one system, generate summary and provides with statistics and graphical reports. As a result of the same, organisations have moved to Enterprise resource planning (ERP) systems in the hope of helping them to cope with this changing environment. [5]

1.1 Project Introduction

The project proposes to serve as a solution and act as a charter to the working of an Education organisation and streamline its functioning . The business short backs considered are as stated : lack of centralized data availability, real time data access, funds tracking, excess cash flow and cash allocation, lack of fund tracking, high time slack due to top management and middle management dependency, low system automation. The company expansion plans with respect to which the project would be designed are that The management plans to increase its market share by 50 percent for the next academic year. It also plans to increase recruit more people both full time and part time thus increasing its employee force by 60 percent that of current and double its physical presence

by introducing itself in new markets and locations. They also plan to increase their digital market share by the next financial year by launching new programs. It plans to increase its marketing budget in the next financial year, also hire more interns thus improving sales. hence with the current future business plans it thus aims at introducing ERP at the budding stage so as to ease its internal functioning ,improve efficiency, increase profits and control the functioning throughout the system. [6]The Project end users will mainly include of the organisation employees who will be responsible for updating the system with organisational functioning from time to time bases for correct input data. This would be required in specific data modules. The Center manager and middle management will be responsible for system data entry and updatation . The top management which is highly responsible for decision making and performance monitoring would require thorough system analysis and performance monitoring. Their work would be made easier by performance forecasting which will help reduce human error. The users would require a user ID and password in order to access the system and would face security constraints where in each, different level management will have different access. The top management would be able to see the entire organisational functioning without much departmental restrictions, whereas the middle management will be able to view only individual center functioning and will have zero restriction for data entry but will have high security constraints in order to access other center information and statistics. Thus the project will cater to every user requirements and needs and improve his/her software experience. The project will thus help centralize the functioning of the system and improve the working in a more centralized and controlled way. Thus it is a system which helps increase employee working flexibility, ease functional tracking and automatize fund release hence reducing management dependency. The project would solve the problems specified by designing a system which helps automatize the system , centralize the database availability, Data summary and analysis generation, forecasting growth and development, Automatizing services thus reducing management dependency increasing prediction accuracy and reduce time slack, Give real time data access to the top management also availing organisation on demand reports and summary, Budget allocation and monitoring, Hence serving the problems considered and improving the organizational functioning. The area ERP has been receiving increasing attention among organizational functioning. Various Software have been developed which meet the objectives defined in the programming. They mainly cater to monitoring only the Student right from the time of an enquiry in the institute to the

payment. The project proposes to enhance this by adding various branches to the same (faculty and management) thus not only improving the student experience but also the easing the management functioning reduce the operational cost involved and increase the profits made by the company. We are thus serving as an amalgamation of a CRM, project management, analysis tool to the same.

1.2 Scope Of The project

The Project Scope [7] will serve the following purposes. It will act as an amalgamation of:

- student life cycle monitoring system
- departmental forecasting system
- financial accounting and controlling system
- integrated CRM system
- help management monitor employee performance
- automatise approvals and streamline organisational functioning

Chapter 2

Literature Review

This section describes ERP in detail. The characteristics, functional areas, advantages and disadvantages of ERP have been described. Also the top ERP vendors have been compared.

2.1 Introduction to ERP

Enterprise resource planning (ERP) [8] is a business management software usually a suite of integrated applications that a company can use to collect, store, manage and interpret data from many business activities, including:-

- Product planning, cost and development
- Manufacturing or service delivery
- Marketing and sales
- Inventory management
- Shipping and payment

ERP [9] provides an integrated view of core business processes, often in real-time, using common databases maintained by a database management system. ERP systems track business resources cash, raw materials, production capacity and the status of business commitments: orders, purchase orders, and payroll. The applications that make up the system share data across the various departments (manufacturing, purchasing, sales, accounting, etc.) that provide the data. ERP facilitates information flow between all business functions, and manages connections to outside stakeholders.

Enterprise resource planning (ERP) is a method of using computer technology to link programs that integrated the various smaller systems used in different parts of a company.

Fig. 2.1 below shows the various modules of an ERP System.



Figure 2.1: ERP System

2.2 Characteristics of ERP

ERP (Enterprise Resource Planning) [10] [11] systems typically include the following characteristics:

- An integrated system that operates in (or near) real time without relying on periodic updates
- A common database that supports all applications
- A consistent look and feel across modules
- Installation of the system with elaborate application/data integration by the Information Technology (IT) department, provided the implementation is not done in small steps.

2.3 Functional Areas of ERP

An ERP system covers the following common functional areas [12]. In many ERP systems these are called and grouped together as ERP modules:

- Financial accounting: General ledger, fixed asset, payables including voucherizing, matching and payment, receivables cash application and collections, cash management, financial consolidation
- Management accounting: Budgeting, costing, cost management, activity based costing
- Human resources: Recruiting, training, rostering, payroll, benefits, 401K, diversity management, retirement, separation
- Manufacturing: Engineering, bill of materials, work orders, scheduling, capacity, workflow management, quality control, manufacturing process, manufacturing projects, manufacturing flow, product life cycle management
- Order Processing: Order to cash, order entry, credit checking, pricing, available to promise, inventory, shipping, sales analysis and reporting, sales commissioning.
- Supply chain management: Supply chain planning, supplier scheduling, product configurator, order to cash, purchasing, inventory, claim processing, warehousing (receiving, putaway, picking and packing).
- Project management: Project planning, resource planning, project costing, work breakdown structure, billing, time and expense, performance units, activity management
- Customer relationship management: Sales and marketing, commissions, service, customer contact, call center support - CRM systems are not always considered part of ERP systems but rather Business Support systems (BSS).
- Data services: Various "self service" interfaces for customers, suppliers and/or employees.

Fig. 2.2 below summarises the functional areas of ERP.

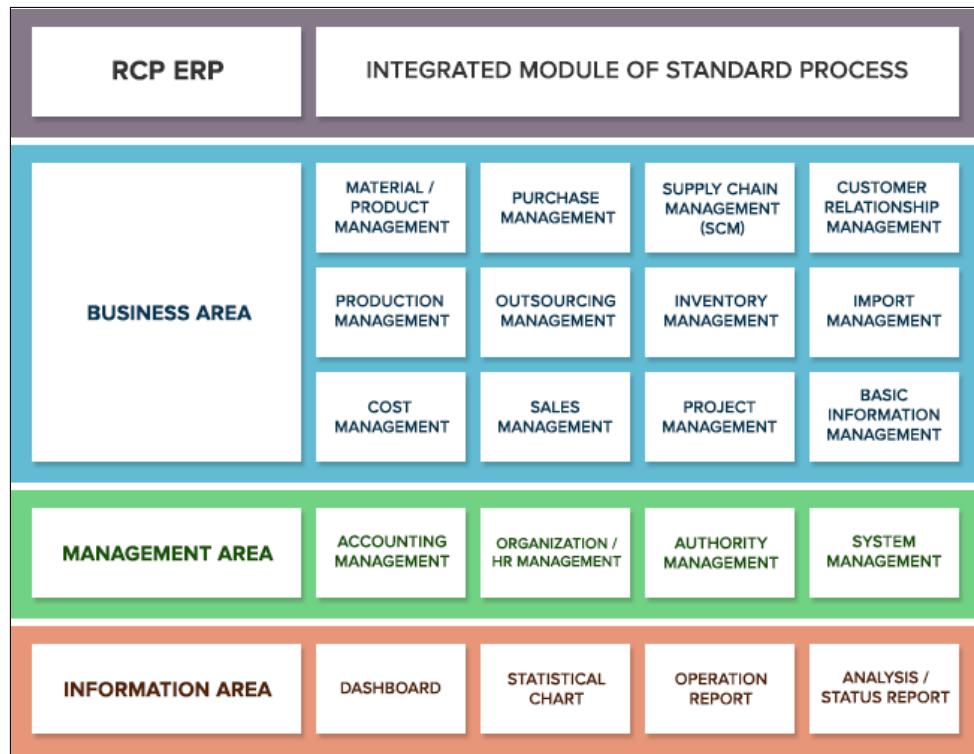


Figure 2.2: Functional areas of ERP

2.4 Advantages Of ERP [1]

- Complete visibility into all the important processes, across various departments of an organization (especially for senior management personnel).
- Automatic and coherent workflow from one department/function to another, to ensure a smooth transition and quicker completion of processes. This also ensures that all the interdepartmental activities are properly tracked and none of them is missed out.
- A unified and single reporting system to analyze the statistics/status etc. in real-time, across all functions/departments.
- Since same (ERP) software is now used across all departments, individual departments having to buy and maintain their own software systems is no longer necessary.
- Certain ERP vendors can extend their ERP systems to provide Business Intelligence functionalities, that can give overall insights on business processes and identify po-

tential areas of problems/improvements.

- Advanced e-commerce integration is possible with ERP systems. Most of them can handle web-based order tracking/ processing.
- There are various modules in an ERP system like Finance/Accounts, Human Resource Management, Manufacturing, Marketing/Sales, Supply Chain/Warehouse Management, CRM, Project Management, etc.
- Since ERP is a modular software system, its possible to implement either a few modules (or) many modules based on the requirements of an organization. If more modules implemented, the integration between various departments may be better.
- Since a Database system is implemented on the backend to store all the information required by the ERP system, it enables centralized storage/back-up of all enterprise data.
- ERP systems are more secure as centralized security policies can be applied to them. All the transactions happening via the ERP systems can be tracked.
- ERP systems provide better company-wide visibility and hence enable better/faster collaboration across all the departments.
- It is possible to integrate other systems (like bar-code reader, for example) to the ERP system through an API (Application Programming Interface).
- ERP systems make it easier for order tracking, inventory tracking, revenue tracking, sales forecasting and related activities.
- ERP systems are especially helpful for managing globally dispersed enterprise companies, better.

2.5 Disadvantages Of ERP [2]

- The cost of ERP Software, planning, customization, configuration, testing, implementation, etc. is too high.
- ERP deployments are highly time-consuming projects may take 1-3 years (or more) to get completed and fully functional.

- Too little customization may not integrate the ERP system with the business process and too much customization may slow down the project and make it difficult to upgrade.
- The cost savings/payback may not be realized immediately after the ERP implementation and it is quite difficult to measure the same.
- The participation of users is very important for successful implementation of ERP projects hence, exhaustive user training and simple user interface might be critical. But ERP systems are generally difficult to learn (and use).
- There maybe additional indirect costs due to ERP implementation like new IT infrastructure, upgrading the WAN links, etc.
- Migration of existing data to the new ERP systems is difficult (or impossible) to achieve. Integrating ERP systems with other stand alone software systems is equally difficult (if possible). These activities may consume a lot of time, money and resources, if attempted.
- ERP implementations are difficult to achieve in decentralized organizations with disparate business processes and systems.
- Once an ERP systems is implemented it becomes a single vendor lock-in for further upgrades, customizations etc. Companies are at the discretion of a single vendor and may not be able to negotiate effectively for their services.
- Evaluation prior to implementation of ERP system is critical. If this step is not done properly and experienced technical/business resources are not available while evaluating, ERP implementations can (and have) become a failure.

2.6 Top ERP Vendors

1. SAP ERP [13]

SAP is a market leader in providing ERP (Enterprise Resource and Planning) solutions and services. SAP stands for Systems Applications and Products in Data Processing. It was Founded in 1972 by Wellenreuther, Hopp, Hector, Plattner and Tschira. SAP by definition is also name of the ERP (Enterprise Resource Planing) software as well the name of the company. SAP system comprises of a number of

fully integrated modules, which covers virtually every aspect of the business management. SAP is No.1 in the ERP market. As of 2010, SAP has more than 140,000 installations worldwide, over 25 industry-specific business solutions and more than 75,000 customers in 120 countries. SAP offers a wide range of enterprise resource planning (ERP) applications including customer relationship management (CRM), financial management, human capital management, product lifecycle management, and supply chain management. They also have a large network of partners (i.e. the SAP Ecosystem) that provide unique integration and customization offerings for specific markets. For example, Et Alia has developed CREW All-in-One for the construction industry, which is built on SAP Business All-in-One.

2. Oracle EBS [14]

Oracle E-Business Suite (EBS), also commonly known as Oracle Applications, is a suite of business applications made up of a large number of distinct software modules. Some of the modules are: Oracle Financials, Oracle CRM, Oracle Supply Chain Application, Oracle Logistics, Oracle Order Management and Human Resources (HRMS). Oracle E-Business Suite is the most comprehensive suite of integrated, global business applications that enable organizations to make better decisions, reduce costs, and increase performance. With hundreds of cross-industry capabilities spanning enterprise resource planning, customer relationship management, and supply chain planning, Oracle E-Business Suite applications help customers manage the complexities of global business environments no matter if the organization is small, medium, or large in size. As part of Oracle Applications Unlimited strategy, Oracle E-Business Suite applications will continue to be enhanced, thus protecting and extending the value of your software investment.

3. Microsoft Dynamics AX [15]

Microsoft Dynamics AX 2012 is an ERP system for mid-size to large enterprises. It is the most robust, scalable, and functionally rich enterprise resource planning system in the Microsoft Dynamics family of products. The system was originally known as Axapta, owned by the Danish software company Damgaard. Damgaard later merged with Navision before Microsoft acquired Navision in 2002. It was later renamed to Microsoft Business Solutions Axapta, then Axapta 3.0, Dynamics AX 4.0 and Dynamics AX 2009. At the same time, Microsoft purchased Great Plains Soft-

ware and obtained two more ERP packages, Great Plains and Solomon. Microsoft subsequently rebranded the four systems as Microsoft Dynamics. In addition to core accounting, Microsoft Dynamics AX offers complete functionality for inventory control, warehouse management, transportation management, demand and supply chain planning, material requirements planning, production management, quality assurance, product lifecycle management, asset management, and business intelligence. It relies entirely on Microsoft .Net technology. It is often installed on-premise, but can be hosted remotely if the customer would prefer an on-demand system accessible over the web.

Fig. 2.3 below shows the comparison of top ERP vendors.

	SAP ERP	Oracle EBS	Microsoft Dynamics AX
Mobile	✓	✓	✓
Human Resources	✓	✓	✓
CRM	✓	✓	✓
Finance	✓	✓	✓
IT	✓	✓	✓
Warehouse MGMT	✓	✓	✓
eCommerce			✓
Cloud Deployment	✓	✓	✓
Industry Specific Software	25 Industries	23 Industries	4 Industries
Supply Chain	✓	✓	✓
Asset MGMT	✓	✓	✓
Procurement	✓	✓	✓
Processing	✓	✓	✓
Integration			SAP

Figure 2.3: Comparison of top ERP vendors [3]

Chapter 3

Problem Statement

3.1 Problem Statement

To create a software with:

- student life cycle monitoring
- intern and employee performance tracker
- reducing approvals time frame
- automating the data updating system
- reduction in excess fund allocation
- tracking the organizational targets
- attendance tracker

3.2 Our Solution

The Business Monitoring Software (BMS) is a concoction of all the essential entities to ensure hassle free functioning of the organization. Business monitoring software is influenced by a large number of factors and operational hurdles faced by the educational organization. It intends to abolish the man power and energy involved in the business operations carried out by the members involved. This system helps increase the organization real time inclusiveness and expunges the loss incurred due to the organizational hierarchy involved. This technique would scrutinize the current market situations, goals objectives set by the organization for the given time frame and would help take strategic actions to ameliorate the current policies adopted. This software would aim at reducing

the communication gap and time involved, operational transparency and will also simplify the interaction between the middle management, students, vendors, faculty and other members involved in the functioning. It will help the management track various factors such as marketing, sales, inventory, employee performance, operations, Student relations etc. This would be done by creating separate interfaces for each entity and setting minimum goals for the same. It will help systematically monitor the marketing and sales cost by sending alerts and reminders when the threshold set for funds for each functions would be reached well in advance so that the operational costs involved would be reduced and profits maximized. If the management sets a certain threshold for the marketing budget and a goal to be achieved in a time frame, the system would compare the two and send alerts to the management to alter the operational strategy if either are not met. It will simplify the payment approval structure by automatically monitoring the work done by the employee and approving the funds accordingly only after reviewing it, thus reducing human error involved. This could be done for the sales, operations team by monitoring their performance and releasing the funds involved for operations without wasting much communication time. It would reduce student installment payment delays by sending daily reminders to the defaulters about the due date and automatically exiting once the payment is received. It will also help reduce vendor payment delays by directly sending monthly payment updates and also automatizing certain funds(electricity bills, rents) so that the man hours involved would be reduced. This would be done by communicating over emails and SMS to the management about the due dates. It will create an interactive interface for the students to voice their suggestions and track their progress also schedule sessions with the faculty and reschedule the sessions missed by them due to unavoidable circumstances. It will also send daily questionnaires to the students and also track their attendance over SMS so that the students maintain consistency in their daily study schedule. It will ease tracking availability of the faculties, their working hours involved and their salary approvals(comparing their working hours and payment structure defined). It will help the institute maintain relations with their Ex students by sending festival wishes occasionally. Also help generate new business by directly linking the free workshop feedback forms to the database thus reducing the manual entry hours involved. It will send monthly analysis report to the management and also make a common interface so that the entire management is aware of the functioning done across the various centers and thus overcome the difficulties faced due to geographical distances.

Chapter 4

Project Description

4.1 Overview of the project

The system consist of mainly 4 major modules; Top Management, Branch Manager, HR and Staff. The functions of these modules are given below:

1. Top Management

It will help the Top Management monitor and control the functioning of the company.

Sections under this entity are as given below:

- List Students
- List Staff
- Approve Fund
- Approve Leave
- Installment
- Defaulters

2. Branch Manager

It will help the Branch Manager monitor and control the functioning of their respective branch. Sections under this entity are as given below:

- List Students
- Add Students
- Manage Leave
- Manage Fund
- Add Vacancy

- Installment

3. HR

HR module will help manage recruitment. Sections under this entity are as given below:

- List Staff
- List Students
- Add Staff
- Manage Leave
- Manage Vacancy

4. Staff

It will help the staff members manage their leave and schedule. Sections under this entity are as given below:

- Manage Leave
- Weekly Schedule

4.2 Modules

4.2.1 Modules Description

The description of the modules and sub-modules is as follows:

1. Top Management

- List Students**

In this section, the top management will get access to student data of all branches. Student data includes the student id, first name, last name, email, date of birth, contact, address and branch. The top management can search for a specific student using the search tab. The top management can also filter the students branch wise in order to view data of the students belonging to the desired particular branch. The top management can also update a particular student's data. The top management can also handle installments of students in this particular section, if the student wishes to pay installments.

- List Staff**

In this section, the top management will get access to staff data of all branches. Staff data includes the staff id, first name, last name, email, date of birth, contact, address, branch, salary and type. The top management can search for a specific staff using the search tab. The top management can also filter the staff branch wise in order to view data of the staff belonging to the desired particular branch. The top management can also update a particular staff's data. The top management can also delete a particular staff member.

- Approve Fund**

This will help the top management approve or reject the funds requested.

- Approve Leave**

This will help the top management approve or reject the leaves requested by the staff. The staff id, staff name, type, application date, leave date and branch will be displayed. The top management can filter the list branch wise and employee wise. The top management can also search for a specific leave using the search tab.

- **Installment**

This will help the top management check the installment summary. The student id, first name, last name, amount, branch, course, last payment date and whether the total instalment is paid or not will be displayed to the top management. The top management can also search for a specific student to check if his instalment is paid or not using the search tab. The top management can also filter the students branch wise in order to view installment summary of the students belonging to the desired particular branch.

2. Defaulters

This section will display the list of defaulters. Emails can be sent to the defaulters to notify about the same to them from here.

3. Branch Manager

- **List Students**

In this section, the branch manager will get access to student data of his branch. Student data includes the student id, first name, last name, email, date of birth, contact, address and branch. The branch manager can search for a specific student using the search tab. The branch manager can also update a particular student's data. The top management can also handle installments of students in this particular section, if the student wishes to pay installments.

- **Add Students**

This will help add new student entries with the help of a form. The details to be filled in the form are student surname, student first name, date of birth, gender, student address, email address, contact, type i.e the course, references if any, if the student is undergraduate or not, and if the student is working or not.

- **Manage Leave**

In this section, the branch manager can apply for leave by mentioning the 'from' date and 'to' date. Also, the list of leaves he has applied for will be displayed which will have details like the leave id, application date, start date, end date and whether that particular leave has been approved or not. The branch manager can also delete a particular leave request.

- **Manage Fund**

In this section, the branch manager can request for funds by mentioning the type of fund needed with a brief description of it and the amount required. Also, the list of funds he has requested for will be displayed which will have details like the fund id, type, purpose, amount and whether that particular fund has been approved or not. The branch manager can also delete a particular fund request.

- **Add Vacancy**

In this section, the branch manager can add vacancies by mentioning the designation e.g. teacher for math, brief description about the job, course and the estimated salary.

- **Installment**

This will help the branch manager check the installment summary. The student id, first name, last name, amount, course, last payment date and whether the total instalment is paid or not will be displayed to the branch manager.

4. HR

- **List Staff**

In this section, the HR will get access to staff data of all branches. Staff data includes the staff id, first name, last name, email, date of birth, contact, address, branch, salary and type. The HR can search for a specific staff using the search tab. The HR can also filter the staff branch wise in order to view data of the staff belonging to the desired particular branch. The HR can also update a particular staff's data. The HR can also delete a particular staff member.

- **List Students**

In this section, the HR will get access to student data of all branches. Student data includes the student id, first name, last name, email, date of birth, contact, address and branch. The HR can search for a specific student using the search tab. The HR can also filter the students branch wise in order to view data of the students belonging to the desired particular branch. The HR can also update a particular student's data. The HR can also handle installments of students in this particular section, if the student wishes to pay installments.

- **Add Staff**

This will help add new staff entries with the help of a form. The details to be filled in the form are staff surname, student first name, date of birth, gender, staff address, email address, contact, teaching experience, branch, type and salary.

- **Manage Leave**

In this section, the HR can apply for leave by mentioning the 'from' date and 'to' date. Also, the list of leaves he has applied for will be displayed which will have details like the leave id, application date, start date, end date and whether that particular leave has been approved or not. The HR can also delete a particular leave request.

- **Manage Vacancy**

In this section, the HR can view the list of vacancies requested by the branch managers and assign staff accordingly.

5. Staff

- **Manage Leave**

In this section, the staff can apply for leave by mentioning the 'from' date and 'to' date. Also, the list of leaves he has applied for will be displayed which will have details like the leave id, application date, start date, end date and whether that particular leave has been approved or not. The staff can also delete a particular leave request.

- **Weekly Schedule**

In this section, the staff can get access to their weekly schedule.

4.2.2 Data Flow Diagrams

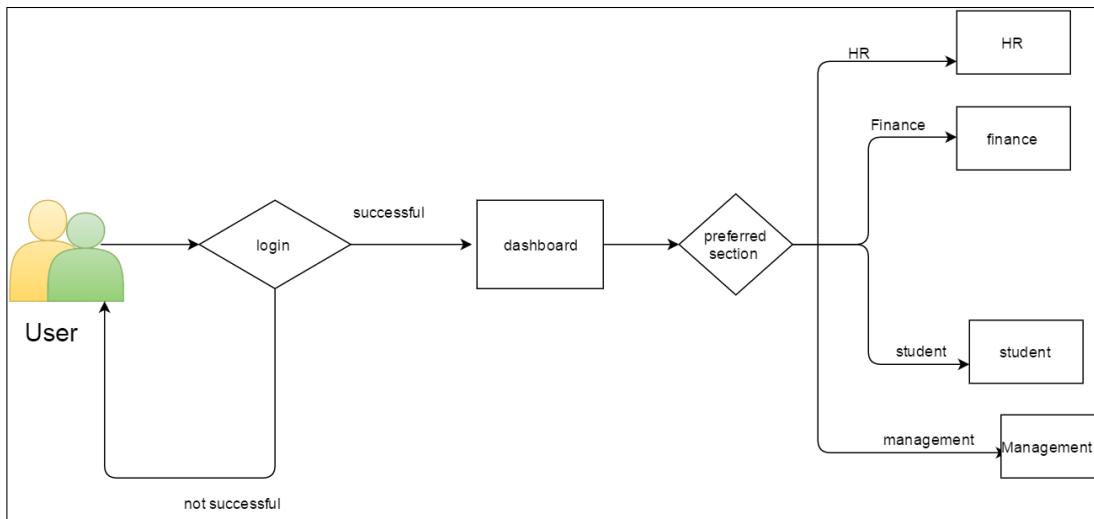


Figure 4.1: Code to insert installments

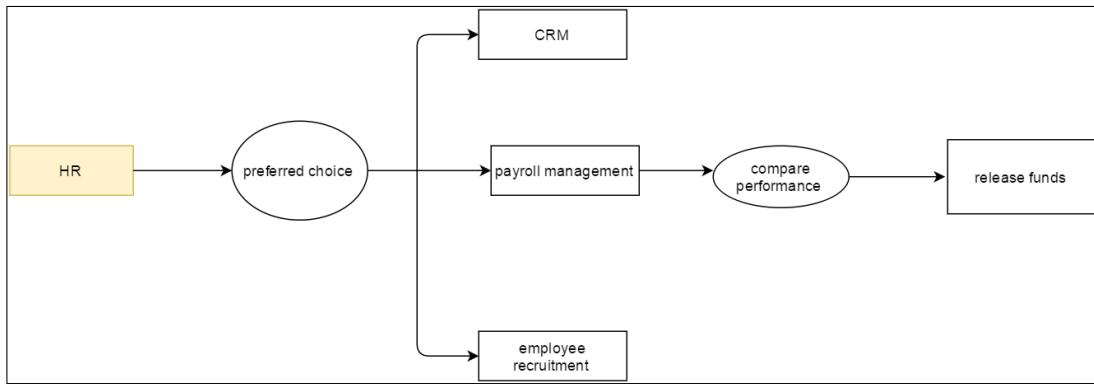


Figure 4.2: Code to insert installments

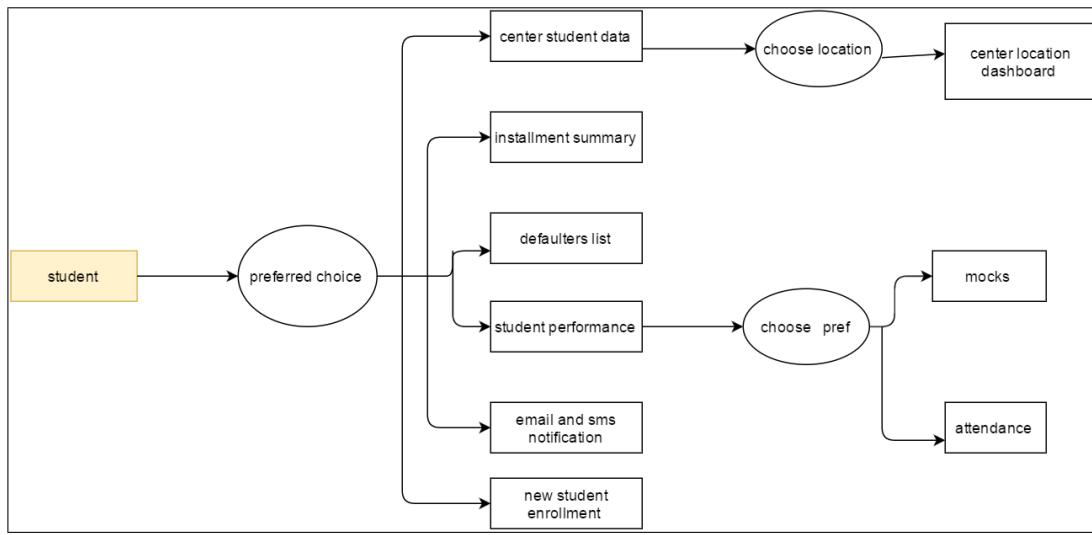


Figure 4.3: Code to insert installments

4.2.3 ER Diagram

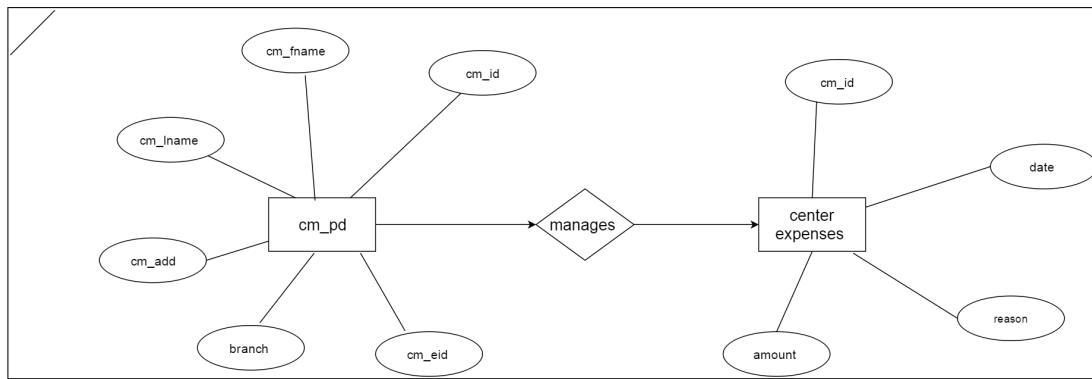


Figure 4.4: Code to insert installments

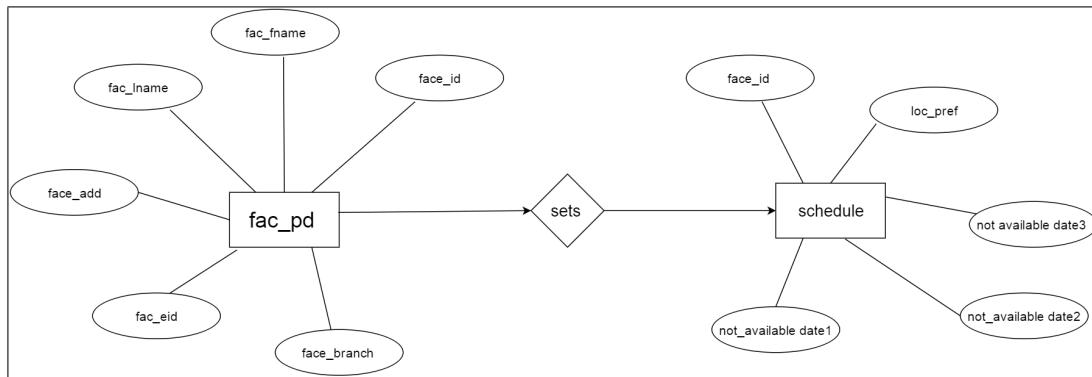


Figure 4.5: Code to insert installments

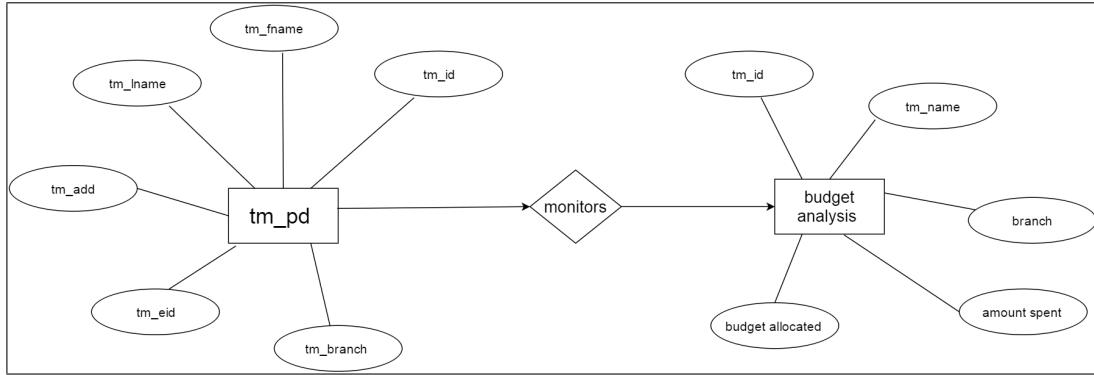


Figure 4.6: Code to insert installments

4.3 Hardware And Software Used

4.3.1 Hardware Used

PIV Desktop/Laptop with minimum

- 160 GB HDD
- 2GB RAM

4.3.2 Software Used

- Any Operating System
- xampp server/wamp server
- PHP, MySQL, Python
- Anaconda and Jupyter enviroment

Chapter 5

Implementation Details

5.1 Database Design

The screenshot shows the MySQL Workbench interface with the Allowance table selected. The left sidebar lists tables: allowance, branch, fund, installments, staff, stream, student, users, and vacancy. The main area displays a SELECT query: `SELECT * FROM 'allowance' LIMIT 0 , 30`. Below the query are options to Show rows (start at 0, 30 total), Headers every 100 rows, and + Options. The results table has columns: id, sdate, edate, bid, status, and adate. The data shows several rows with various statuses like Requested, Approved, and Rejected.

		id	sdate	edate	bid	status	adate	
<input type="checkbox"/>		5	530032017054438	2017-03-09	2017-03-21	Requested	2017-03-30 11:14:38	
<input type="checkbox"/>		1	130032017074907	2017-03-07	2017-03-14	BO	Approved	2017-03-30 13:19:07
<input type="checkbox"/>		3	330032017091706	2017-03-15	2017-03-20	C	Requested	2017-03-30 14:47:06
<input type="checkbox"/>		3	330032017091801	2017-04-12	2017-05-11	C	Rejected	2017-03-30 14:48:01
<input type="checkbox"/>		2	230032017092624	2017-03-02	2017-03-16	C	Requested	2017-03-30 14:56:24
<input type="checkbox"/>		1	130032017164229	2017-11-09	2017-11-23	BO	Requested	2017-03-30 22:12:29

Figure 5.1: Allowance table

The screenshot shows the MySQL Workbench interface with the Branch table selected. The left sidebar lists tables: allowance, branch, fund, installments, staff, stream, student, users, and vacancy. The main area displays a SELECT query: `SELECT * FROM 'branch' LIMIT 0 , 30`. Below the query are options to Show rows (start at 0, 30 total), Headers every 100 rows, Sort by key (None), and + Options. The results table has columns: bid, loc, add, and phone. The data shows branches located in Andheri, Borivali, Churchgate, Powai, Pune, and VileParle.

	bid	loc	add	phone
<input type="checkbox"/>	AN	Andheri	8-B Sharma Compound, 1st Floor, Old Nagardas Road...	8097607504
<input type="checkbox"/>	BO	Borivali	Ajanta Industrial Estate, 4th Floor, Flat No.13, G...	9029077114
<input type="checkbox"/>	C	Churchgate	5th Floor, Round Building, Bank Of India Kalbadev...	9833982635
<input type="checkbox"/>	PO	Powai	Office No 135, 1st Floor, Powai Plaza, Hiranandani...	09833615635
<input type="checkbox"/>	PU	Pune	3rd Floor, Next to IT source, Bhosle Shinde Arcade...	08149774534
<input type="checkbox"/>	VP	VileParle	2nd Floor, Pace House Opposite Bhaidas Hall Near M...	9619616915

Figure 5.2: Branch table

Fund Table Data:

fid	amount	type	status	purpose	bid	resultdate
Adv30032017054726	6000	Advertisement	Requested	social media	C	0000-00-00
Cmis30032017091736	50000	miscellaneous	Requested	Stationary	C	0000-00-00
CAdv30032017092201	20000	Advertisement	Rejected	Social media marketing	C	0000-00-00
CAdv30032017100744	4500	Advertisement	Requested	Offline Advertising	C	0000-00-00
Cinfra30032017100816	3500	Infrastructure	Requested	Painting	C	0000-00-00
Cinfra30032017100854	52222	Infrastructure	Rejected	Wallpaper	C	0000-00-00
Cmis30032017101019	9845	miscellaneous	Requested	Food and phone recharge	C	0000-00-00

Figure 5.3: Fund table

Installments Table Data:

installid	sid	std	amt	date	cid
1	3	3	3444440	2017-03-30 13:13:12	NMAT
2	2	4	40000	2017-03-30 14:20:46	CAT
3	3	4	60000	2017-03-30 14:21:19	NMAT
4	1	4	50000	2017-03-30 14:21:47	CAT
5	1	4	50000	2017-03-30 14:42:14	CAT
6	4	3	45000	2017-03-30 14:46:29	SNAP
7	9	3	5400	2017-03-30 15:40:44	NMAT
8	3	3	6548	2017-03-30 15:40:59	NMAT
9	7	3	4566	2017-03-30 15:41:29	CAT
10	1	4	30000	2017-03-30 15:47:09	CAT

Figure 5.4: Installments table

Staff Table Data:

staffid	firstname	lastname	dob	gen	add	mail	contact	experience	bid	type	sal	password
1	vivek	sharma	1987-03-06	M	Lotus Cafe Borivali	b@gmail.com	7981324650	5 years	BO	st	5000	staff123
2	Rajat	sharma	1994-03-22	M	Kalpana towers,Arndheri	r@gmail.com	9327894650	2 years	C	hr	15000	hr123
3	Bheem	Chota	1984-03-22	M	8-B Sharma Compound, 1st Floor, Old Nagardas Road...	c@gmail.com	9173564820	4 years	C	bm	12000	branch123
4	Kapil	Sharma	1992-02-27	M	Keingtons apartms,powai	k@gmail.com	4657893120	4 years	C	tm	150000	admin123
5	shravan	shah	2017-03-08	M	Lalavani towers,lohanwala	shravan@gmail.com	984652135	6 years	bm	52022	branch1234	
6	Sheetal	Pinto	2016-01-09	F	Pooja Casa,Palli Naka , Bandra	Sheetal@gmail.com	9846561239	2	C	st	120000	066922
7	Prachi	Shah	1980-12-30	F	Mhatre villa, Bhivandi	prachi@gmail.com	9845212354	2	PO	st	1200	679685

Figure 5.5: Staff table

Showing rows 0 - 8 (~9 total) Query took 0.0487 sec

```
SELECT *
FROM `student`
LIMIT 0 , 30
```

Show: Start row: 0 Number of rows: 30 Headers every 100 rows

Sort by key: None

+ Options

	sid	fname	lname	dob	gender	contact	address	email	refer	bid	upgrad	work	organization	streamid	FDOI	LDOI
<input type="checkbox"/>	1	Rahul	BhardhvaJ	1969-12-31	m	8461357290	Mumbai	rahul@gmail.com	student	BO	y	n	FrCrce	CAT	0000-00-00	0000-00
<input type="checkbox"/>	2	Tanish	rai	1969-12-30	m	4867921530	Evershine, goregaon	tanish@mymail.com	student	BO	y	y	JPMorgan	CAT	0000-00-00	0000-00
<input type="checkbox"/>	3	Sasha	john	1996-03-14	f	7785462223	Kamla mills, lower parel	sasha@gmail.com		PO	y	y	tcs	NMAT	0000-00-00	0000-00
<input type="checkbox"/>	4	Paras	Gala	2017-01-04	m	9846512435	Urmila Andheri west	Paras@gmail.com	Akshay	PU	y	y	Wipro	SNAP	0000-00-00	0000-00
<input type="checkbox"/>	6	Thompson	Naidu	1970-01-01	m	4867921530	Evershine	thompson@mymail.com	student	BO	y	y	JPMorgan	CAT	0000-00-00	0000-00
<input type="checkbox"/>	7	Rahul	Naik	1970-01-01	m	8461357290	Mumbai	Rahul@gmail.com	student	BO	y	n	FrCrce	CAT	0000-00-00	0000-00
<input type="checkbox"/>	8	Tanish	Shah	1970-01-01	m	4867921530	Evershine	Tanish@gmail.com	student	BO	y	y	JPMorgan	CAT	0000-00-00	0000-00
<input type="checkbox"/>	9	Vansh	Gandhi	1985-03-05	m	6521428845	Powai Hiranandani	Vansh@gmail.com	student	VP	y	y	TCS	NMAT	0000-00-00	0000-00
<input type="checkbox"/>	10	Radha	Sinha	1994-07-04	f	773895462	Bandra	Radha@gmail.com		CH	y	y	BCG	SNAP	0000-00-00	0000-00

Check All / Uncheck All With selected: Change Delete Export

Figure 5.6: Student table

Showing rows 0 - 4 (~5 total) Query took 0.0005 sec

```
SELECT *
FROM `vacancy`
LIMIT 0 , 30
```

Show: Start row: 0 Number of rows: 30 Headers every 100 rows

Sort by key: None

+ Options

	vid	purpose	amount	post	bid	streamid	Rtime	status
<input type="checkbox"/>	1	Work Hours , 9am to 8pm	20000	Verbal teacher	C	NMAT	2017-03-30 14:49:31	P
<input type="checkbox"/>	2	Location: Powai Days : Sat and Sunday	60000	Quants faculty	C	XAT	2017-03-30 14:56:45	A
<input type="checkbox"/>	3	Location :- Pune	54000	DI Staff vacancy	C	NMAT	2017-03-30 14:51:32	P
<input type="checkbox"/>	4	Location: Powai	65000	Maths junior assistant faculty	C	SNAP	2017-03-30 15:51:59	A
<input type="checkbox"/>	5	Location: Powai Time: 6pm to 9pm , weekends	8000	Assistant Faculty	C	CAT	2017-03-30 15:43:28	P

Check All / Uncheck All With selected: Change Delete Export

Show: Start row: 0 Number of rows: 30 Headers every 100 rows

Figure 5.7: Vacancy table

5.2 Input and Output Design

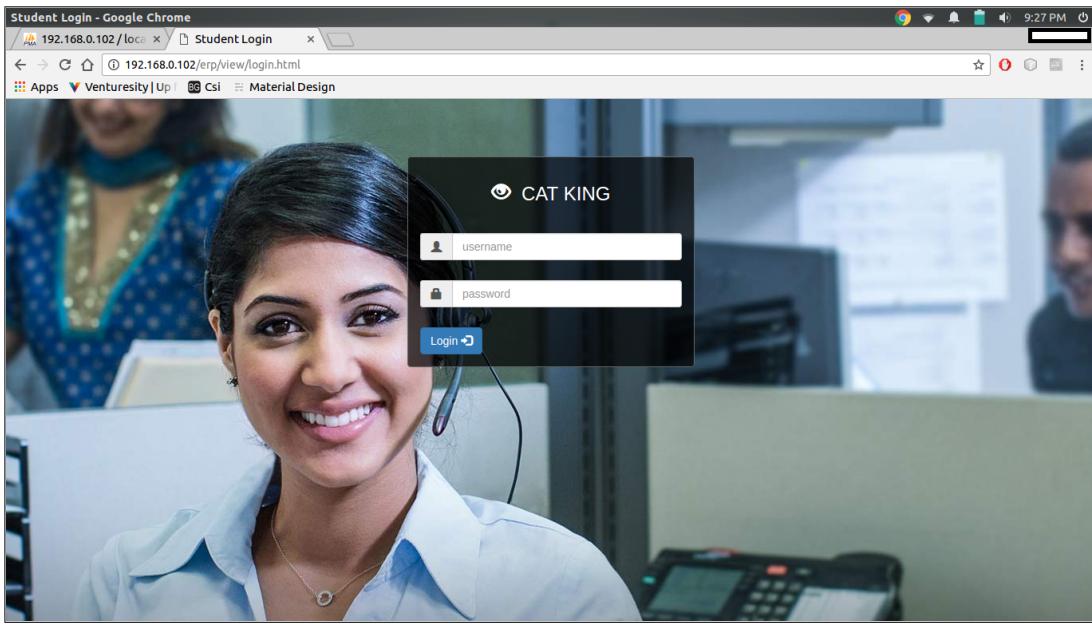


Figure 5.8: Login page

A screenshot of a Google Chrome browser window titled "Dashboard Student DataBank - Google Chrome". The address bar shows the URL "192.168.0.102/erp/view/dashboard.php#addstudent". The left sidebar shows navigation links: "CATKING", "List Students", "Add Students", "Manage Leave", "Manage Fund", "Add Vacancy", and "Installment". The main content area is titled "Student Details" and contains a form with fields for "Student Name" (Student SurName, Student First Name), "Date Of Birth" (dd/mm/yyyy), "Gender" (Male dropdown), "Student Address" (Address text area), "Email address" (Email text input), "Contact" (Phone Number text input), "Type" (Admission dropdown), "Refer" (No Reference dropdown), "UnderGraduate" (Yes dropdown), and "Working" (No dropdown). A blue "Bheem Chota" icon is visible in the top right corner of the main content area.

Figure 5.9: Add student (branch manager)

Dashboard Student DataBank - Google Chrome

192.168.0.102 /loc... Dashboard Student New Tab

Apply/Update Vacancy

Designation	eg:teacher for math
Description	Description
Course:	
Salary	Estimated salary
submit	

Designation	Description	Course	Estimates Salary	Requested Date	Operation
-------------	-------------	--------	------------------	----------------	-----------

Figure 5.10: Add vacancy (branch manager)

Dashboard Student DataBank - Google Chrome

192.168.0.102 /loc... Dashboard Student New Tab

Installment

Student Id	First Name	Last Name	Amount	Branch	Course	LastPayment	Paid
2	Sapna	Matre	3000	Borivali	SNAP	2017-03-12	Not Paid
1	Rakesh	Sharma	12734	Andheri	NMAT	2017-04-09	Paid

Figure 5.11: Installment (branch manager)

Student Details

Student Id	First Name	Last Name	Email	DOB	Contact	Address	Branch	Operation
1	Rakesh	Sharma	c@gmail.com	1996-08-13	9762417643	Mumbai Bandra	Andheri	<button>Update</button>
2	Sapna	Matre	sh@hm.com	1999-11-30	9762417643	Mumbai Borivali	Borivali	<button>Update</button> <button>Pay Installment</button>

Figure 5.12: List students (branch manager)

Add/Update New Fund Request

Type:	Description	Amount	submit
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="submit"/>

Filter

Search	Type	All	Type	All	No of Entries per page	50
--------	------	-----	------	-----	------------------------	----

Fund Id	type	purpose	Estimates Amount	Status	Operation
No Items Found					

Figure 5.13: Manage funds (branch manager)

The screenshot shows the 'Manage leave' section of the CATKING application. On the left, there's a sidebar with links for 'List Students', 'Add Students', 'Manage Leave', 'Manage Fund', 'Add Vacancy', and 'Installment'. The main area has a heading 'Apply For Leave' with 'From' and 'TO' date fields. Below that is a 'Filter' section with a search bar and dropdowns for status and entries per page. A table follows with columns for leave ID, Application Date, Start Date, End Date, Status, and Delete. A message 'No Items Found' is centered at the bottom of the table area.

Figure 5.14: Manage leave (branch manager)

The screenshot shows the 'Add staff' section of the CATKING application. The sidebar includes links for 'List Staff', 'List Students', 'Add staff', 'Manage Leave', and 'Manage Vacancy'. The main form is titled 'Staff Details' and contains fields for Staff Name (with first name and last name inputs), Date Of Birth, Gender (set to Male), Staff Address (with a large text area for address), Email address, Contact (with phone number input), Teaching Experience (with a text input for number of experience), Branch (set to Andheri), Type (set to Teacher), and Salary (with a text input for salary). A 'Add Staff' button is at the bottom right of the form.

Figure 5.15: Add staff (hr)

Staff Details											
Staff Id	First Name	Last Name	Email	Contact	Address	Branch	Salary	Type	Operation		
3	Bheem	Chota	c@gmail.com	9173564820	byander	Andheri	12000	Branch Manager	<button>Update</button>	<button>Delete</button>	
2	Rajat	sharma	r@gmail.com	03/23/1994	9327894650	efghbj,Andheri	Churchgate	15000	Human Resource	<button>Update</button>	<button>Delete</button>
1	vivek	sharma	b@gmail.com	03/07/1987	7981324650	bDTTSarf,Borivali	Churchgate	5000	Staff	<button>Update</button>	<button>Delete</button>
5	Rohit	Sharma	r@gmail.com	04/11/1987	9173486520	hewuo	Borivali	15000	Staff	<button>Update</button>	<button>Delete</button>
4	Kapil	Sharma	k@gmail.com	02/27/1992	4657893120	fhgu,powai	Churchgate	150000	Top level Manager	<button>Update</button>	<button>Delete</button>

Figure 5.16: List staff (hr)

Student Details											
Student Id	First Name	Last Name	Email	DOB	Contact	Address	Branch	Operation			
1	Rakesh	Sharma	c@gmail.com	1996-08-13	9762417643	Mumbai Bandra	Andheri	<button>Update</button>			
2	Sapna	Matre	sh@hm.com	1999-11-30	9762417643	Mumbai Borivali	Borivali	<button>Update</button>	<button>Pay Installment</button>		

Figure 5.17: List student (hr)

Dashboard Student DataBank - Google Chrome

192.168.0.102 / dashboard Student DataBank New Tab

Dashboard Student DataBank

Apps Venturesity | Up | Csi | Material Design

Rajat sharma

CATKING

- List Staff
- List Students
- Add staff
- Manage Leave
- Manage Vacancy

Apply For Leave

From: dd/mm/yyyy

TO: April 2017

Mon	Tue	Wed	Thu	Fri	Sat	Sun
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Request

Filter

Search: [] Status: All [] No of Entries per page: []

Leave Id Application Date Start Date End Date Status Delete

No Items Found

Figure 5.18: Manage leave (hr)

Dashboard Student DataBank - Google Chrome

192.168.0.102 / dashboard Student DataBank New Tab

Dashboard Student DataBank

Apps Venturesity | Up | Csi | Material Design

Rajat sharma

CATKING

- List Staff
- List Students
- Add staff
- Manage Leave
- Manage Vacancy

Approve Vacancy

Search: [] Status: Assigned [] Branch: All [] Entries per page: 50 []

Vacancy Id Post Description Amount Branch Date Operation

No Items Found

Figure 5.19: Manage vacancy (hr)

Dashboard Student DataBank - Google Chrome
192.168.0.102 /loc... Dashboard Student New Tab
Apps Venturesity | Up | Csi | Material Design

Rajat sharma

CATKING

List Staff
List Students
Add staff
Manage Leave
Manage Vacancy

Staff Details

Search: rajat Branch: All No of Entries per page: 20

Staff Id	First Name	Last Name	Email	DOB	Contact	Address	Branch	Salary	Type	Operation
2	Rajat	sharma	r@gmail.com	03/23/1994	9327894650	efghbjj,Andheri	Churchgate	15000	Human Resource	<button>Update</button> <button>Delete</button>

Figure 5.20: Staff filter (hr)

Dashboard Student DataBank - Google Chrome
192.168.0.102 /loc... Dashboard Student New Tab
Apps Venturesity | Up | Csi | Material Design

Rajat sharma

CATKING

List Staff
List Students
Add staff
Manage Leave
Manage Vacancy

Student Details

Search: sap| Branch: All No of Entries per page: 50

Student Id	First Name	Last Name	Email	DOB	Contact	Address	Branch	Operation
2	Sapna	Matre	sh@hm.com	1999-11-30	9762417643	Mumbai Borivali	Borivali	<button>Update</button> <button>Pay Installment</button>

Figure 5.21: Student filter (hr)

Dashboard Student DataBase - Google Chrome

192.168.0.102 /loc... Dashboard Student New Tab

Dashboard Student | 192.168.0.102/erp/view/dashboard.php#leave

Apps Venturesity | Up! CSI Material Design

vivek sharma

CATKING

Manage Leave

Apply For Leave

From dd/mm/yyyy

TO April 2017

Mon	Tue	Wed	Thu	Fri	Sat	Sun
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Request

Search Status All No of Entries per page

leave Id	Application Date	Start Date	End Date	Status	Delete
118042017162528	2017-04-18	2017-04-17	2017-04-20	Requested	

Figure 5.22: Manage leave (staff)

Dashboard Student DataBase - Google Chrome

192.168.0.102 /loc... Dashboard Student New Tab

Dashboard Student | 192.168.0.102/erp/view/dashboard.php#approvoleave

Apps Venturesity | Up! CSI Material Design

Kapil Sharma

CATKING

- List Students
- List Staff
- Approve Fund
- Approve Leave
- Installment

Approve Funds

Search Status Requested Branch All Employee All Entries per page 50

Staff Id	Staff Name	Type	Application date	Leave date	Branch	Operation
1	VIVEK SHARMA	Staff	2017-04-18	2017-04-17 to 2017-04-20	Churchgate	

Figure 5.23: Approve leave (top management)

Installment								
Student Id	First Name	Last Name	Amount	Branch	Course	LastPayment	Paid	
2	Sapna	Matre	3000	Borivali	SNAP	2017-03-12	Not Paid	
1	Rakesh	Sharma	12734	Andheri	NMAT	2017-04-09	Paid	

Figure 5.24: Installment (top management)

Installment								
Student Id	First Name	Last Name	Amount	Branch	Course	LastPayment	Paid	
2	Sapna	Matre	3000	Borivali	SNAP	2017-03-12	Not Paid	
1	Rakesh	Sharma	12734	Andheri	NMAT	2017-04-09	Paid	

Figure 5.25: Installment with filters (top management)

Staff Details											
Staff Id	First Name	Last Name	Email	DOB	Contact	Address	Branch	Salary	Type	Operation	
2	Rajat	sharma	r@gmail.com	03/23/1994	9327894650	efghbj,Andheri	Churchgate	15000	Human Resource	<button>Update</button>	
1	vivek	sharma	b@gmail.com	03/07/1987	7981324650	bDTTSarf,Borivali	Churchgate	5000	Staff	<button>Update</button>	
5	Rohit	Sharma	r@gmail.com	04/11/1987	9173486520	hewuo	Borivali	15000	Staff	<button>Update</button>	
4	Kapil	Sharma	k@gmail.com	02/27/1992	4657893120	fugu,powai	Churchgate	150000	Top level Manager	<button>Update</button>	

Figure 5.26: List staff (top management)

Student Details											
Student Id	First Name	Last Name	Email	DOB	Contact	Address	Branch	Operation			
1	Rakesh	Sharma	c@gmail.com	1996-08-13	9762417643	Mumbai Bandra	Andheri	<button>Update</button>			
2	Sapna	Matre	sh@hm.com	1999-11-30	9762417643	Mumbai Borivali	Borivali	<button>Update</button>			

Figure 5.27: List students (top management)

5.3 Code

```
<?php
    require 'connection.php';
    session_start();
    $sid=$_SESSION["uid"];
    $bid=$_SESSION["bid"];
    $date = json_decode(file_get_contents("php://input"),true);
    $start = mysqli_escape_string($con,date('Y-m-d', strtotime($date['startdate'])));
    $end = mysqli_escape_string($con,date('Y-m-d', strtotime($date['enddate'])));

    $lid=$id=date("dmYHis");
    $sql="INSERT INTO allowance (sid,lid,adate,edate,status,bid) VALUES('$sid', '$lid','$start','$end','Requested','$bid')"; //note to take the bid from the session global Array
    $result = mysqli_query($con,$sql);

    if($result)
        //success
        echo "Leave Request Made";
    else
        //failure
        echo "Leave Request Failed.Please Try Later";
    }
?>
```

Figure 5.28: Code to insert leave

```
<?php
    require 'connection.php';

    $data = json_decode(file_get_contents("php://input"),true);
    $id = mysqli_real_escape_string($con,$data["id"]);
    $status =strtolower(mysqli_real_escape_string($con,$data["status"]));
    $updateTo;
    //check whether id is valid
    $sql = "select * from fund where fid like '$id'";
    switch ($status) {
        case 'approved':
            $updateTo="Approved";
            break;
        case 'rejected':
            $updateTo="Rejected";
            break;

        default:
            return ;
            break;
    }

    if($result = mysqli_query($con,$sql)){
        if(mysqli_num_rows($result) > 0){
            $sql = "UPDATE `fund` SET `status`='$updateTo' WHERE `fid` like '$id'";
            if(mysqli_query($con,$sql)){
                echo "Fund Approved";
            }
            else{
                echo "Something went wrong Try Later";
            }
        }
        else{
            echo "No Such ID";
        }
    }
?>
```

Figure 5.29: Code to approve funds

```

<?php
    require 'connection.php';

    $data = json_decode(file_get_contents("php://input"),true);
    $id = mysqli_real_escape_string($con,$data['id']);
    $status = strtolower(mysqli_real_escape_string($con,$data["status"]));
    $updateTo;
    //check whether id is valid
    $sql = "select * from allowance where lid like '$id'";
    switch ($status) {
        case 'approved':
            $updateTo="Approved";
            break;
        case 'rejected':
            $updateTo="Rejected";
            break;

        default:
            return ;
            break;
    }

    if($result = mysqli_query($con,$sql)){
        if(mysqli_num_rows($result) > 0){
            $sql = "UPDATE `allowance` SET `status`='$updateTo' WHERE `lid` like '$id'";
            if(mysqli_query($con,$sql)){
                echo "Leave Approved";
            }
            else{
                echo "Something went wrong Try Later";
            }
        }
        else{
            echo "No Such ID";
        }
    }
}

```

Figure 5.30: Code to approve leaves

```

<?php
    require 'connection.php';
    session_start();
    $stid = $_SESSION["uid"];
    // read the request
    $data = json_decode(file_get_contents("php://input"),true);
    $id = mysqli_real_escape_string($con, $data['id']) ;
    $course= mysqli_real_escape_string($con, $data['scourse']);
    $amt = mysqli_real_escape_string($con, $data['sal']);

    $sql = "INSERT INTO `installments`(`sid`, `stid`, `amt`, `cid`) VALUES ($id,$stid,$amt,$course)";
    if(mysqli_query($con,$sql))
        echo "1";
    else
        echo "2";
?>

```

Figure 5.31: Code to insert installments

Chapter 6

Conclusion

Business Monitoring Software(BMS) has been successfully implemented. This software will help in automatic on-line functioning of the organization CatKing. This has helped reduce the cumbersome manual tasks thus reducing the work overload on the employees. The top management can now view all the student data across all the branches, approves leaves and allocate funds, notify defaulters about late payment of fees through automatic mailing system. They can also view summary and analysis of finance in the form of bar graphs and charts. This system will help the branch managers in managing the functioning of their respective branch. This will help save a lot of time and improve coordination between various branches. Branch managers can handle student data of their respective branch. They can also apply for leave and request for funds. HR can handle employee recruitment through this system according to the vacancies which are updated by the branch manager. Staff can also easily access their weekly schedules and apply for leaves and check the status of their leaves. Thus this system helps to automate a lot of manual tasks and ease the functioning of the organization.

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