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ಬೆಳಗಾವಿ, ಕರ್ನಾಟಕ

A DBMS MINI-PROJECT REPORT
ON

"PAYROLL SYSTEM"

Submitted to Visvesvaraya Technological University in partial fulfilment of the requirement for the award of Bachelor of Engineering degree in Computer Science and Engineering.

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National Educational Society ®

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CERTIFICATE
This is to certify that the DBMS - MINI project entitled

"PAYROLL SYSTEM"

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ABSTRACT

A payroll system involves everything that has to do with the payment of employees and the filing of employment taxes. This includes keeping track of hours, calculating wages, withholding taxes and other deductions, printing and delivering checks and paying employment taxes to the government. The Payroll System is developed in Java swings and back-end database as My sql. Java swings is the one of the powerful versions of Framework and object-oriented programming. Hence, we use this in our project. The Payroll System will allow only admin at a time. Admin will be required to enter username and password of the system – both of which will be sent to the database for validation as part of each entry. Then the admin will then be able to perform many operations like Entering the employee details, take attendance, generate salary, department. Also, admin will be able to take out payslip of particular employee. The payroll system will communicate each detail to the database and obtain payslip that it was allowed by the database. The admin can also update and delete the tables.

CONTENTS

Chapter 1

INTRODUCTION

1.1 Definition:

A database is a collection of related data. By data, we mean known facts that can be recorded and that have implicit meaning.

A database has the following implicit properties:

■ A database represents some aspect of the real world, sometimes called the mini world or the universe of discourse (UoD). Changes to the mini world are reflected in the database.

■ A database is a logically coherent collection of data with some inherent meaning. A random assortment of data cannot correctly be referred to as a database.

■ A database is designed, built, and populated with data for a specific purpose. It has an intended group of users and some preconceived applications in which these users are interested.

A database management system (DBMS) is a collection of programs that   enables users to create and maintain a database. The DBMS is a general-purpose software system that facilitates the processes of defining, constructing, manipulating, and sharing databases among various users and applications. Defining a database involves specifying the data types, structures, and constraints of the data to be stored in the database. The database definition or descriptive information is also stored by the DBMS in the form of a database catalogic or dictionary; it is called meta-data. Constructing the database is the process of storing the data on some storage medium that is controlled by the DBMS. Manipulating a database includes functions such as querying the database to retrieve specific data, updating the database to reflect changes in the mini world, and generating reports from the data.

1.2 History:

A Brief History of Database Applications and its Evolution:
We now give a brief historical overview of the applications that use DBMSs and how these applications provided the impetus for new types of database systems.

1.2.1 Early Database Applications Using Hierarchical and Network Systems:

One of the main problems with early database systems was the intermixing of conceptual relationships with the physical storage and placement of records on disk. Hence, these systems did not provide sufficient data abstraction and program-data independence capabilities. Although this provided very efficient access for the original queries and transactions that the database was designed to handle, It did not provide enough flexibility to access records efficiently when new queries and transactions were identified.

Another shortcoming of early systems was that they provided only programming language interfaces. This made it time-consuming and expensive to implement new queries and transactions, since new programs had to be written, tested, and debugged. Most of these database systems were implemented on large and expensive mainframe computers starting in the mid-1960s and continuing through the 1970s and 1980s. The main types of early systems were based on three main paradigms: hierarchical systems, network model-based systems, and inverted file systems.

1.2.2 Providing Data Abstraction and Application Flexibility with Relational Databases:

Relational databases were originally proposed to separate the physical storage of data from its conceptual representation and to provide a mathematical foundation for data representation and querying. The relational data model also introduced high-level query languages that provided an alternative to programming language interfaces, making it much faster to write new queries. Relational systems were initially targeted to the same applications as earlier systems, and provided flexibility to develop new queries quickly and to reorganize the database as requirements changed. Hence, data abstraction and program-data independence were much improved when compared to earlier systems.

1.2.3 Object-Oriented Applications and the Need for More Complex Databases:

The emergence of object-oriented programming languages in the 1980s and the need to store and share complex, structured objects led to the development of object-oriented databases (OODBs). Initially, OODBs were considered a competitor to relational databases, since they provided more general data structures. They also incorporated many of the useful object-oriented paradigms, such as abstract data types, encapsulation of operations, inheritance, and object identity. However, the complexity of the model and the lack of an early standard contributed to their limited use. They are now mainly used in specialized applications, such as engineering design, multimedia publishing, and manufacturing systems. Despite expectations that they will make a big impact, their overall penetration into the database products market remains under 5% today. In addition, many object-oriented concepts were incorporated into the newer versions of relational DBMSs, leading to object-relational database management systems, known as ORDBMSs.

1.2.4 Interchanging Data on the Web for E-Commerce Using XML:

The World Wide Web provides a large network of interconnected computers. Users can create documents using a Web publishing language, such as Hyper Text Mark-up Language (HTML), and store these documents on Web servers where other users (clients) can access them. Documents can be linked through hyperlinks, which are pointers to other documents. In the 1990s, electronic commerce (e-commerce) emerged as a major application on the Web. It quickly became apparent that parts of the information on e-commerce Web pages were often dynamically extracted data from DBMSs. A variety of techniques were developed to allow the interchange of data on the Web. Currently, eXtended Mark-up Language (XML) is considered to be the primary standard for interchanging data among various types of databases and Web pages. XML combines concepts from the models used in document systems with database modelling concepts

1.2.5 Extending Database Capabilities for New Applications:

The success of database systems in traditional applications encouraged developers of other types of applications to attempt to use them. Such applications traditionally used their own specialized file and data structures. The following are examples of these applications-

■ Scientific applications that store large amounts of data resulting from scientific experiments in areas such as high-energy physics, the mapping of the human genome, and the discovery of protein structures.

■ Storage and retrieval of images, including scanned news or personal photographs, satellite photographic images, and images from medical procedures such as x-rays and MRI topics (magnetic resonance imaging).

■ Storage and retrieval of videos, such as movies, and video clips from news or personal digital cameras.

■ Data mining applications that analyze large amounts of data searching for the occurrences of specific patterns or relationships, and for identifying unusual patterns in areas such as credit card usage.

■ Spatial applications that store spatial locations of data, such as weather information, maps used in geographical information systems, and in automobile navigational systems.

■ Time series applications that store information such as economic data at regular points in time, such as daily sales and monthly gross national product figures.

1.2.6 Databases versus Information Retrieval:

Traditionally, database technology applies to structured and formatted data that arises in routine applications in government, business, and industry. Database technology is heavily used in manufacturing, retail, banking, insurance, finance, and health care industries, where structured data is collected through forms, such as invoices or patient registration documents. An area related to database technology is Information Retrieval (IR), which deals with books, manuscripts, and various forms of library-based articles. Data is indexed, catalogued, and annotated using keywords. IR is concerned

with searching for material based on these keywords, and with the many problems dealing with document processing and free-form text processing. There has been a considerable amount of work done on searching for text based on keywords, finding documents and ranking them based on relevance, automatic text categorization, classification of text documents by topics, and so on. With the advent of the Web and the proliferation of HTML pages running into the billions, there is a need to apply many of the IR techniques to processing data on the Web. Data on Web pages typically contains images, text, and objects that are active and change dynamically. Retrieval of information on the Web is a new problem that requires techniques from databases and IR to be applied in a variety of novel combinations.

1.3   Applications of DBMS

Applications where we use Database Management Systems are:

Industry: Where it is a manufacturing unit, warehouse or distribution centre, each one needs a database to keep the records of ins and outs. For example, distribution centre should keep a track of the product units that supplied into the centre as well as the products that got delivered out from the distribution centre on each day; this is where DBMS comes into picture.

Banking System: For storing customer info, tracking day to day credit and debit transactions, generating bank statements etc. All this work has been done with the help of Database management systems.

Education sector: Database systems are frequently used in schools and colleges to store and retrieve the data regarding student details, staff details, course details, exam details, payroll data, attendance details, fees detail etc. There is a hell lot amount of inter-related data that needs to be stored and retrieved in an efficient manner.

Online shopping: You must be aware of the online shopping websites such as Amazon, Flipkart etc. These sites store the product information, your addresses and preferences,

credit details and provide you the relevant list of products based on your query. All this involves a Database management system.

1.4 Objectives and Scope of Project:

The main objective of this system is to provide a payslip for employees. Our system is password protected and it only allows authorized admin to access various functions available in the system. Our system will help the employer to get payslip of his salary report. It will Reduced manual work as most of the work done by computer. As all the manual work will be done automatically so it will increase work speed and reduce time consumption to complete any payroll related work. It will also increase the work efficiency.

This will reduce the manual workload and give information instantly. The Project Payroll system has been made to automate the Banking system. Through this Payroll management system user can manage all employee activity like Employee details, attendance, department etc.

Chapter 2

REQUIREMENTS ANALYSIS

2.1 Software Requirements:

The database management system is a soft-ware that enables the users to create the tables, insert the appropriate data, retrieve the data for the queries and also manipulate the data whenever required. The software employed for performing these tasks is the My sql. This software enables the users to implement the entities in the form of tables. The unique key constraint for the identification of each tuple is also incorporated with the concept of primary keys. The referential integrity constraint between the entities is applied with the concept of foreign keys. These foreign key constraints enable us to enter the data into each table in an order. The creation of tables can be done by using the create command. The insertion of values into the tuples is enabled by the use of insert command. The updating or manipulation of data can be done with the help of update command. This is the software requirement for the design of backend.

The graphical user interface required at the frontend for the convenience of users is done by the use of swings features of Java available in Eclipse IDE Software. The swing components such as J Table, J Combo Box, J Radio Button, J Button etc are being used. The Java to database connection is established with the help of j dbc- My sql dbc thin driver and appropriate methods available in the Java library are used to create the connection objects as well as the creation of a query.

Chapter 3

DESIGN AND IMPLEMENTATION

3.1 System Design:

The system design process involves developing several modules of the system at different levels of abstractions. Here we put ER diagram and schema diagram of payroll system.
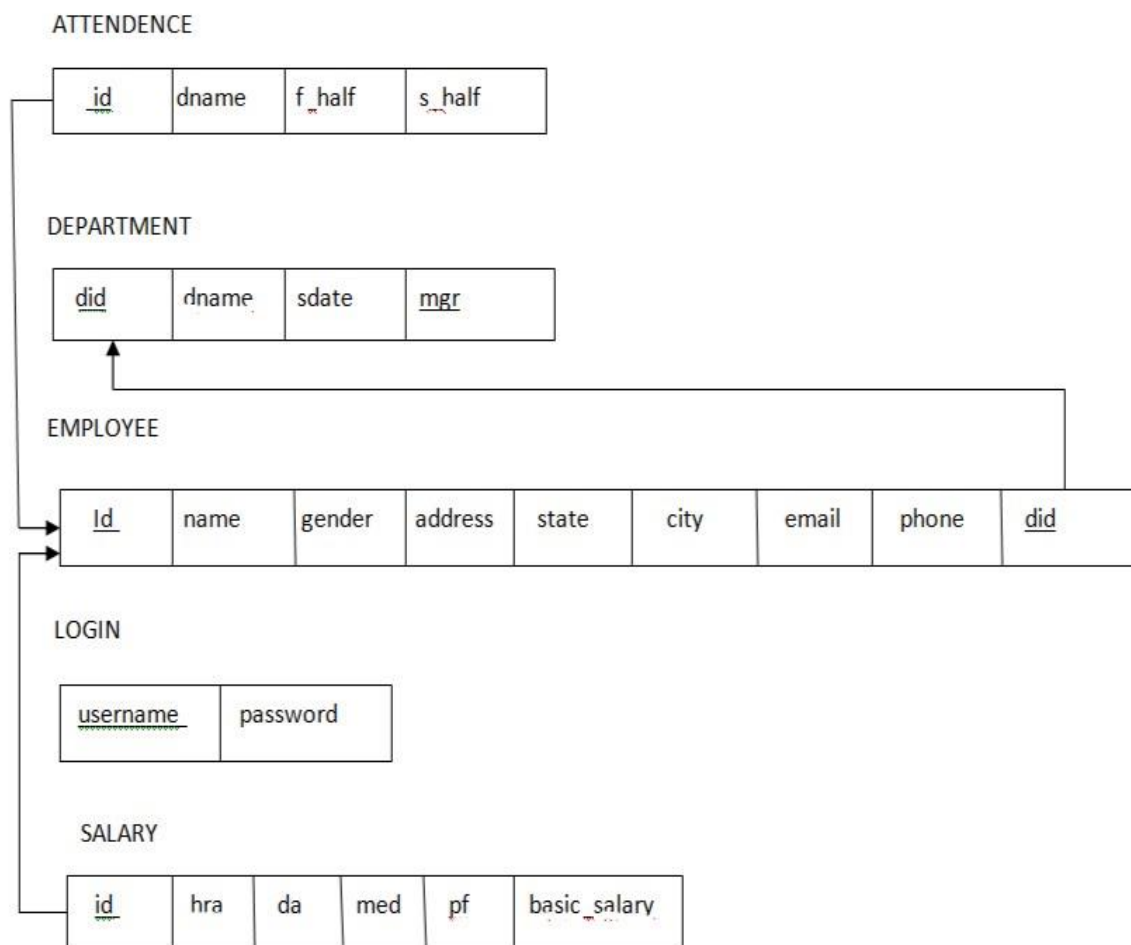
3.2 SCHEMA DIAGRAM:

ATTENDENCE

id	dname	f_half	s_half

DEPARTMENT

did	dname	sdate	mgr

EMPLOYEE

Id	name	gender	address	state	city	email	phone	did

LOGIN

username	password

SALARY

id	hra	da	med	pf	basic_salary

Fig 3.1 Relational schema diagram of Payroll

3.3 ER(Entity-Relationship) Diagram:
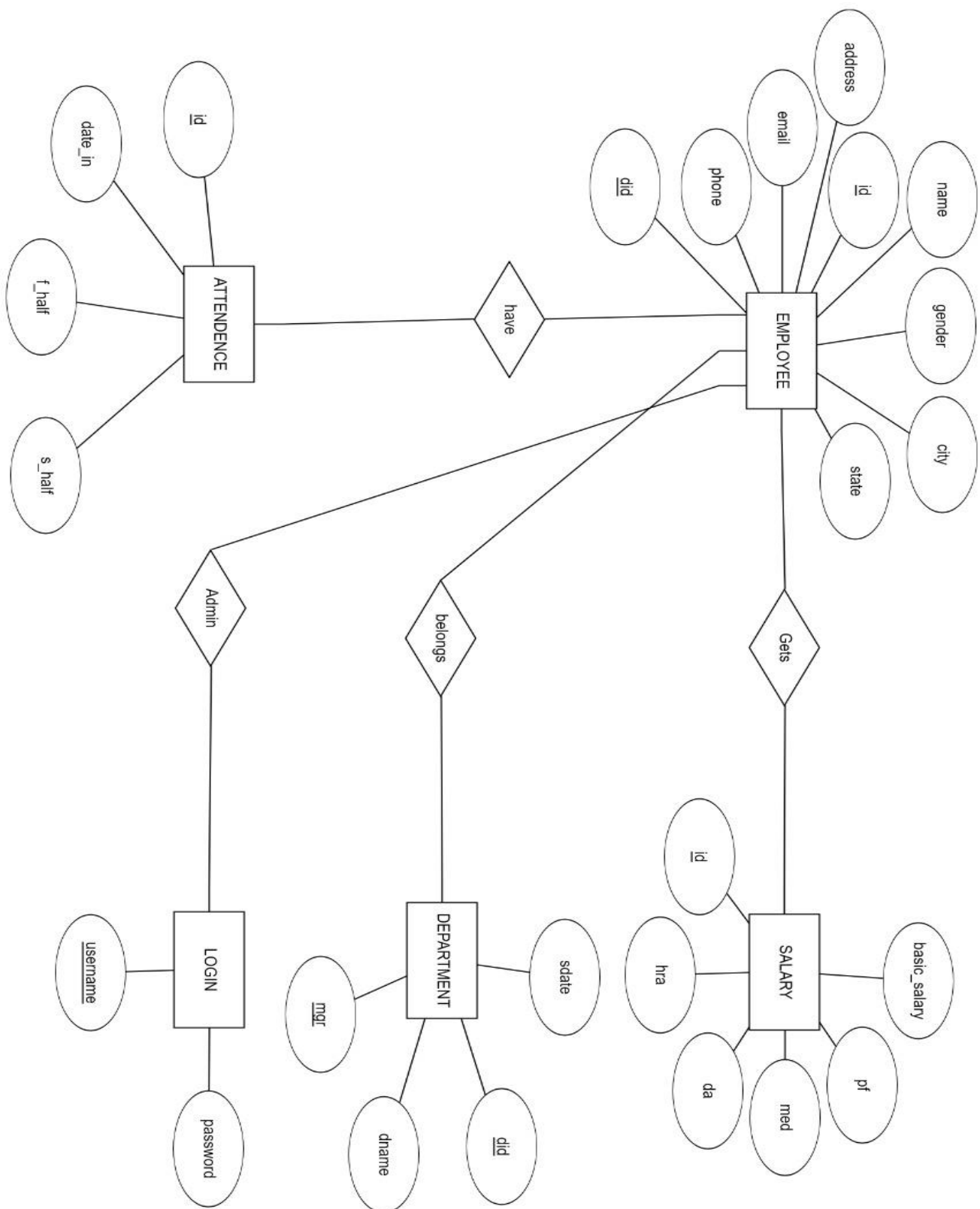
Fig 3.2 ER Diagram of Payroll System

3.4 The entities that are used in the Schema are:

LOGIN: This entity is used to maintain the Login credentials username and password for the admin to login to payroll system.

Employee: This entity is used to get the details of the employee like id, name, gender, address, state, city, email, phone, did.

Attendance: This entity maintains personal information of the employee attending office first half and second half.

Department: This entity is to maintain the details of the employee stating which department he belongs.

Salary: This entity is used to collect the personal information of the employee like id, hra, da, med, pf, basic salary.

Chapter 4

RESULT AND SNAPSHOTS

Login Page:
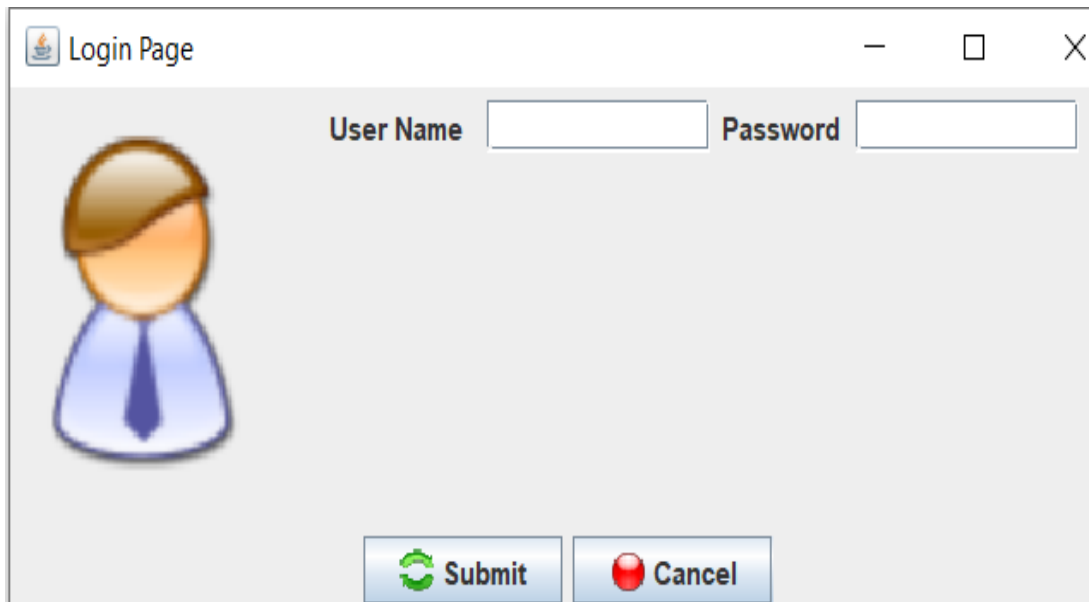
Fig 4.1 Admin Login Page

Admin who can create a New Employee details:
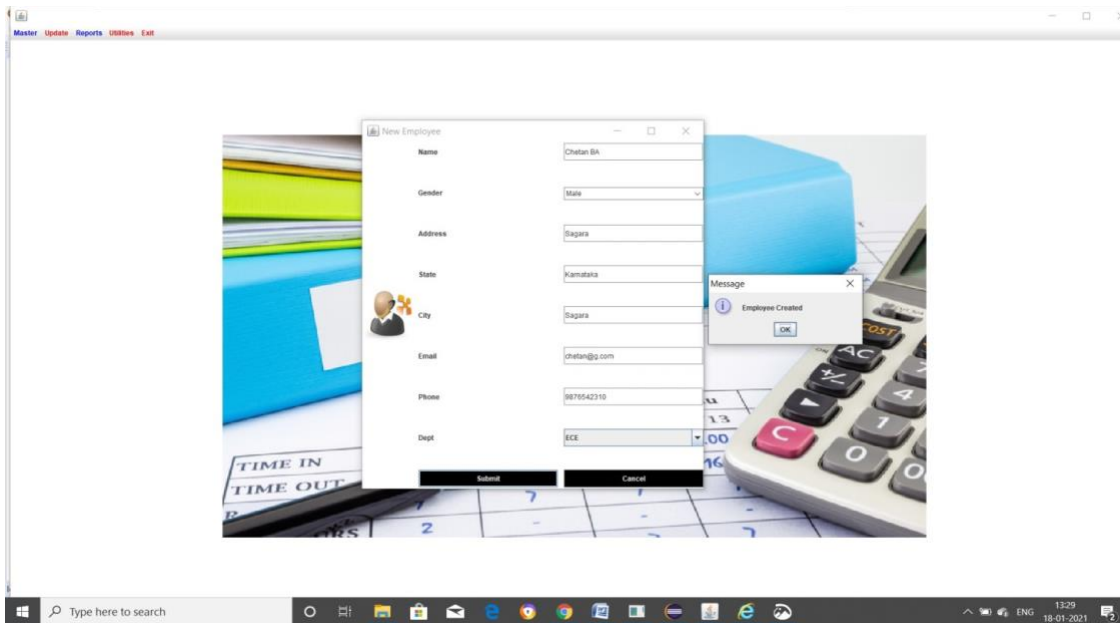
Fig 4.2 New Employee Details

List Employee:
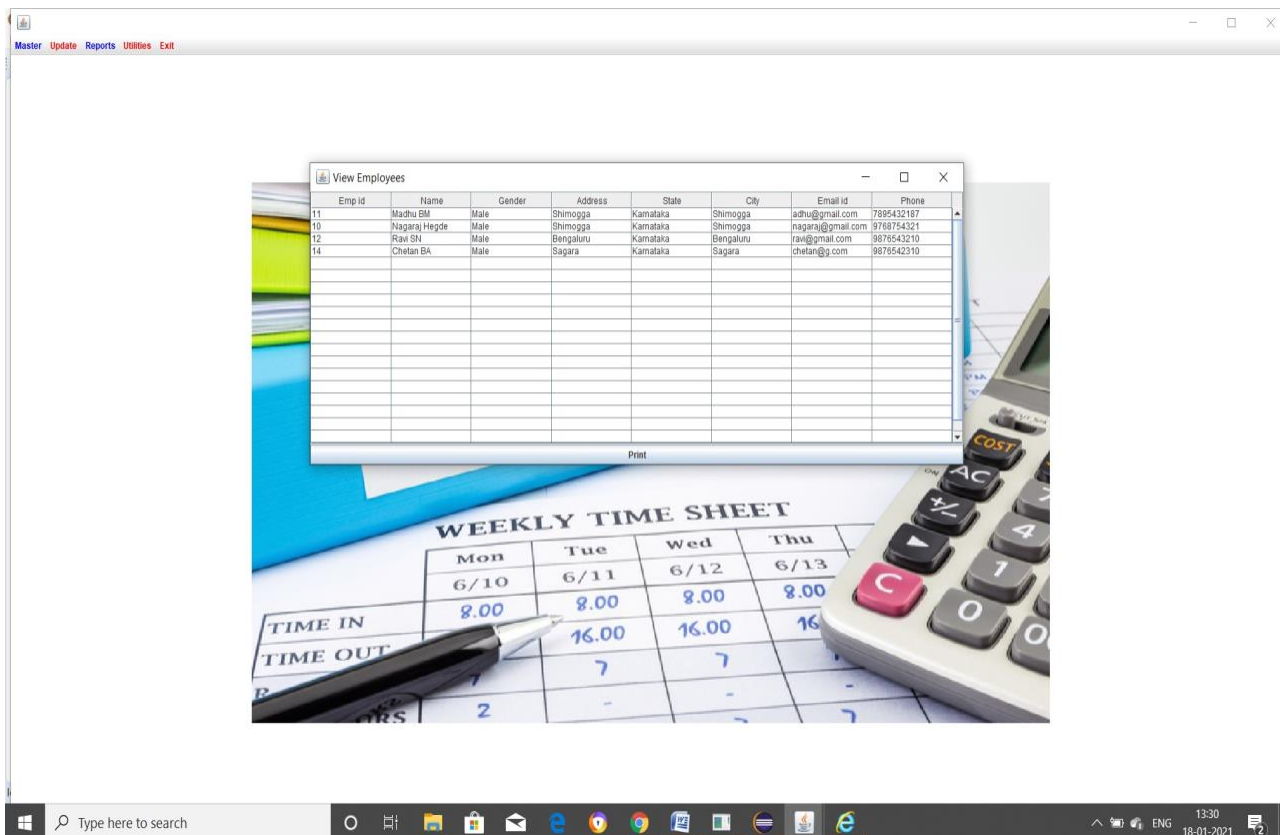
Fig 4.3 List Employees

Admin who can create a Salary Receipt:

Fig 4.4 Salary Details of the new Employee

Admin who can take attendance of the Employee:

Fig 4.5 Attendance Details of the Employee

List Attendance& Print:
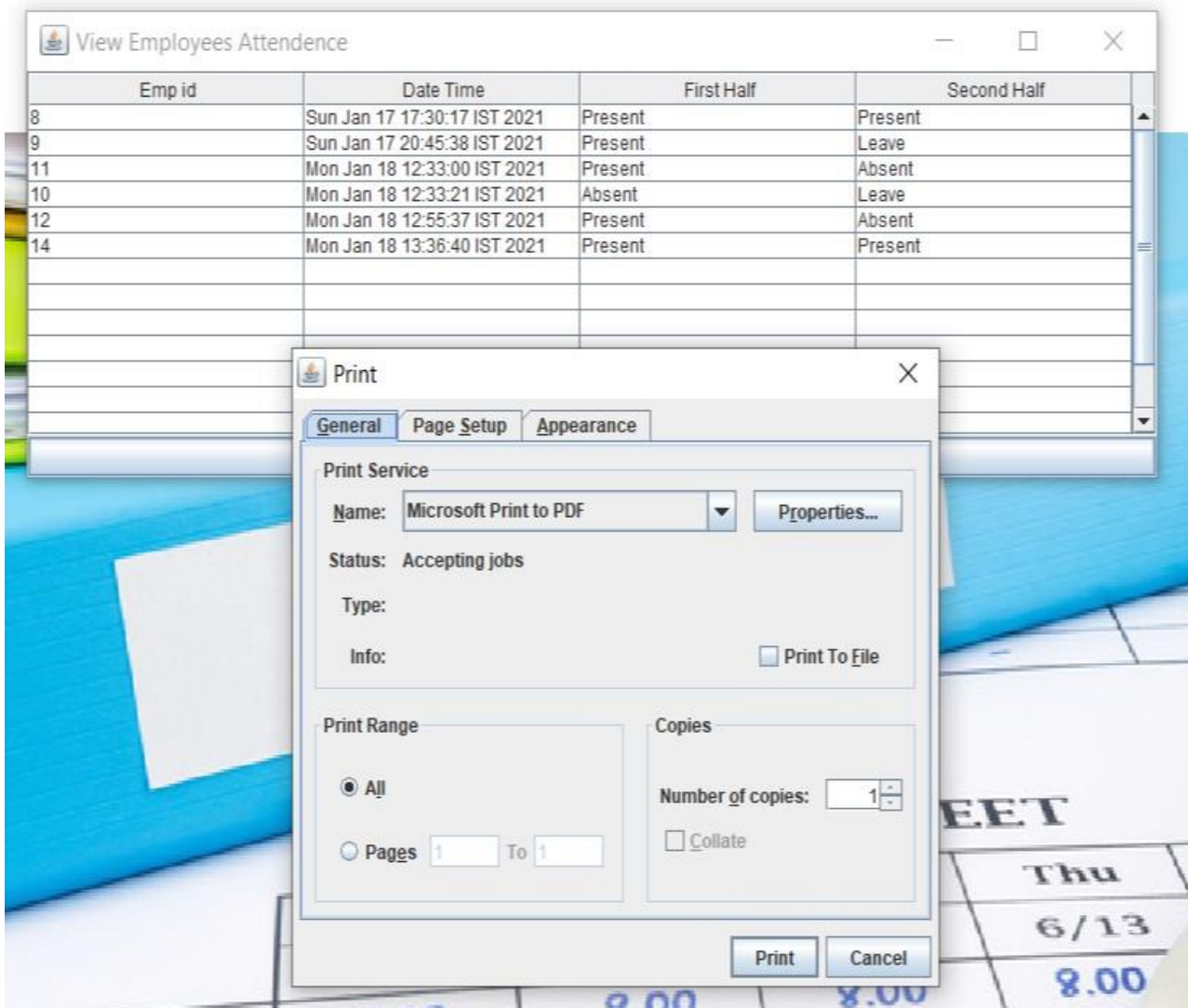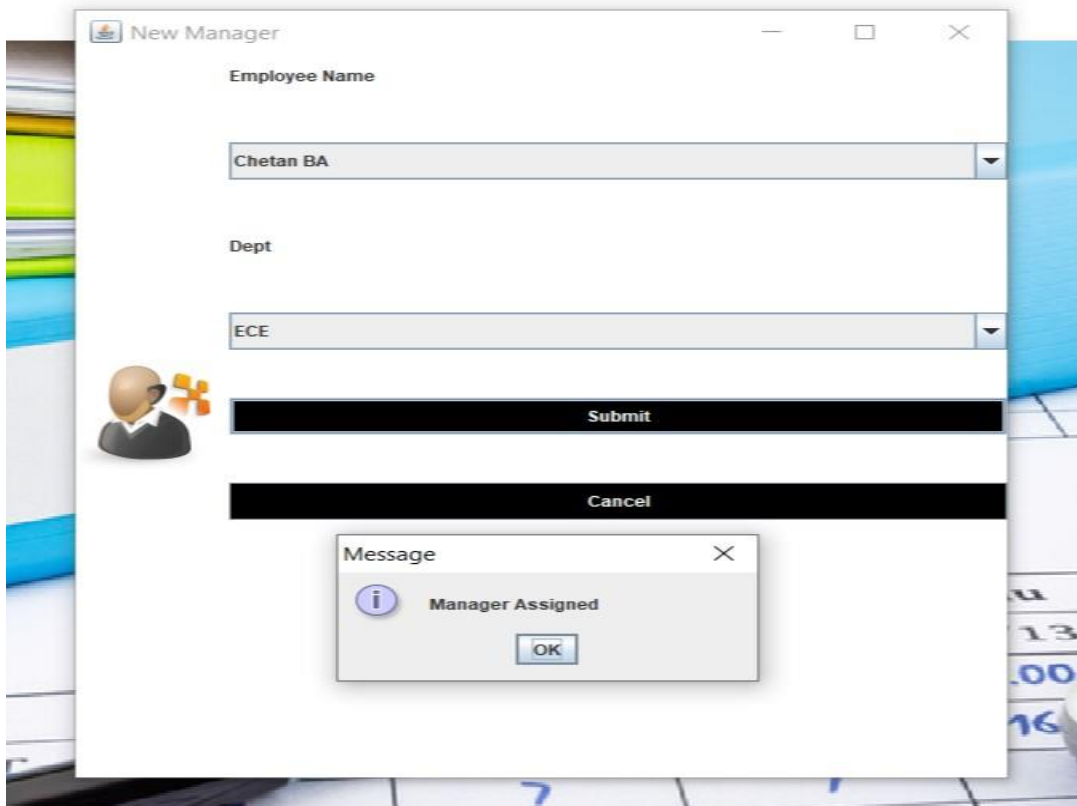

Fig 4.6 List Attendance of the New Employee

Admin who can assign Department& Update Department:

Fig 4.7 Assigning Department to the Employee
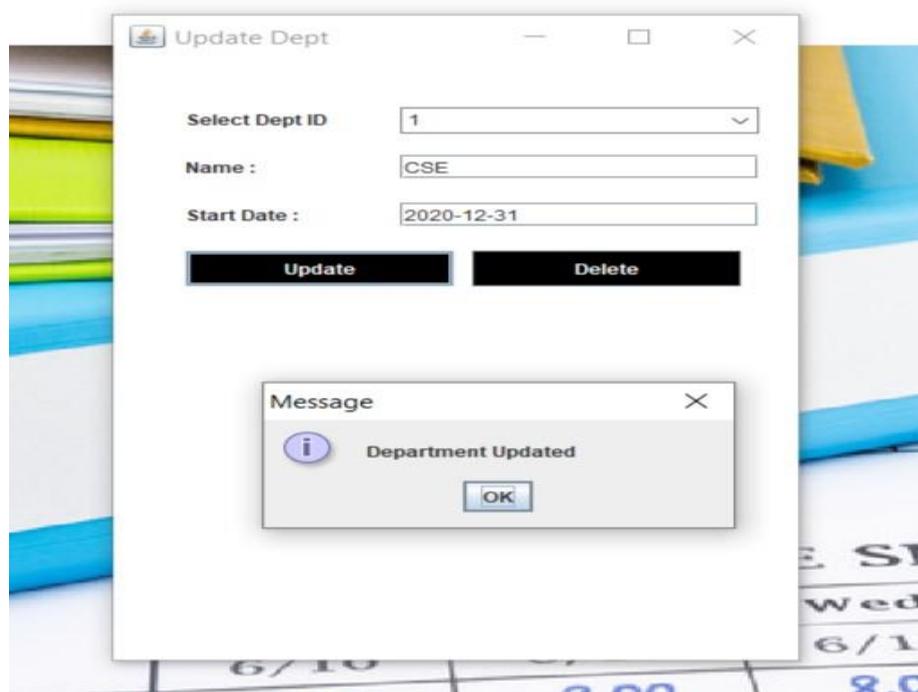
Fig 4.8 Updating the Departments

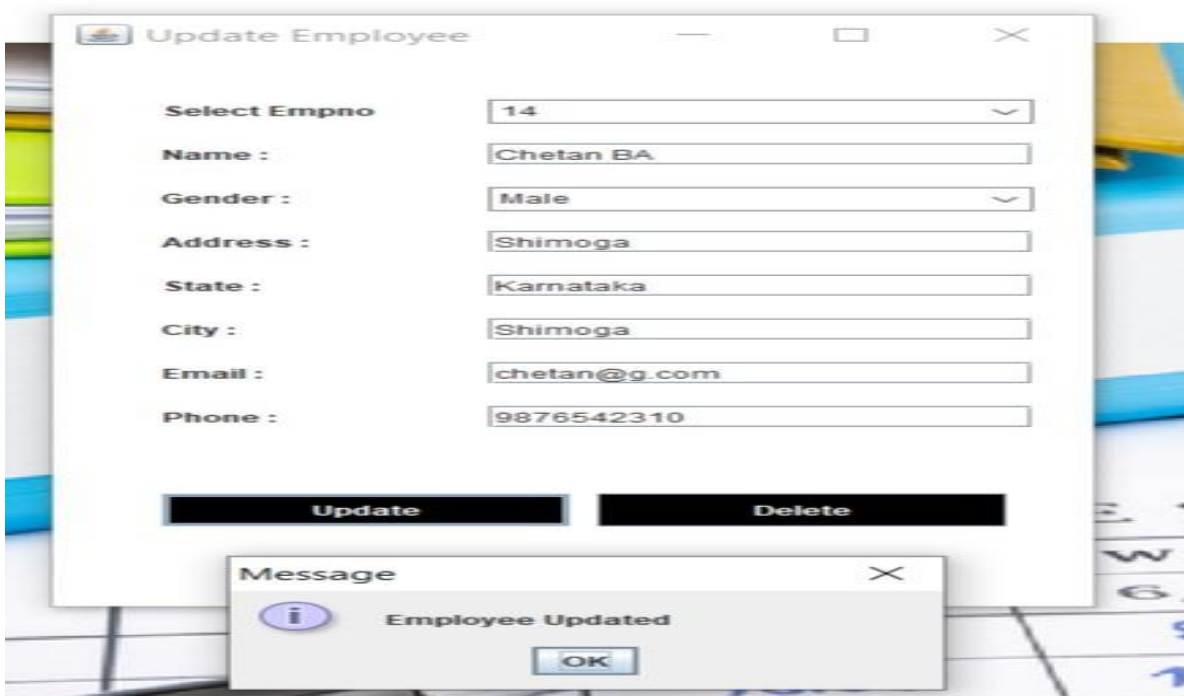## Employee Update & Salary Update:
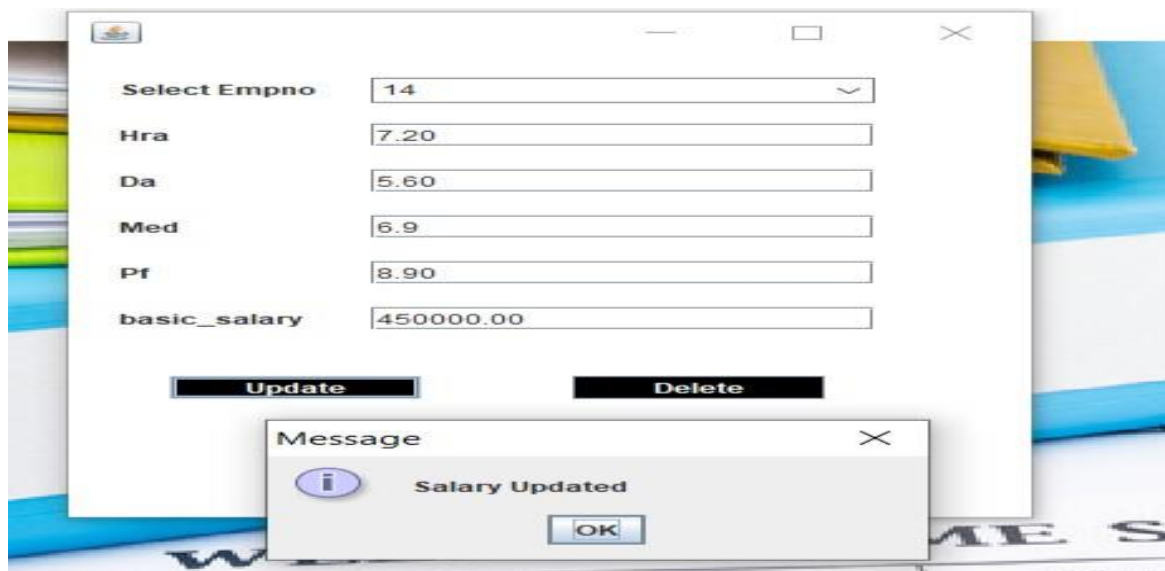
Fig 4.9 Employee Update

Fig 4.10 Salary Update

Payslip:
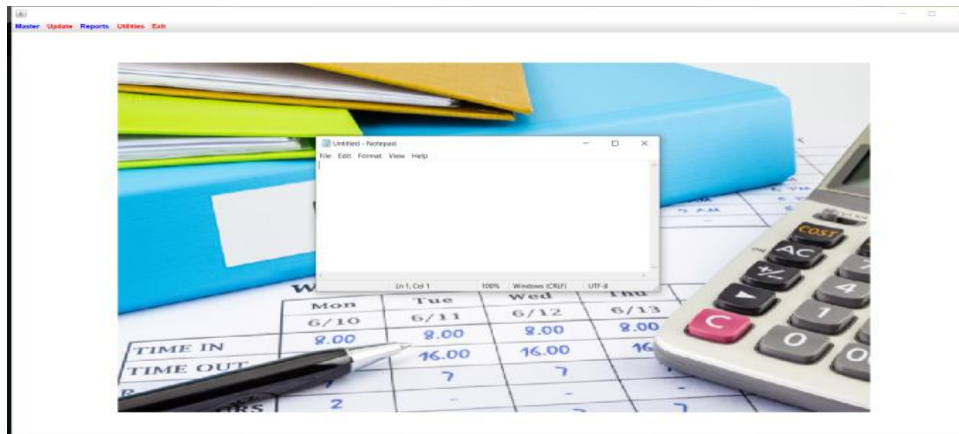

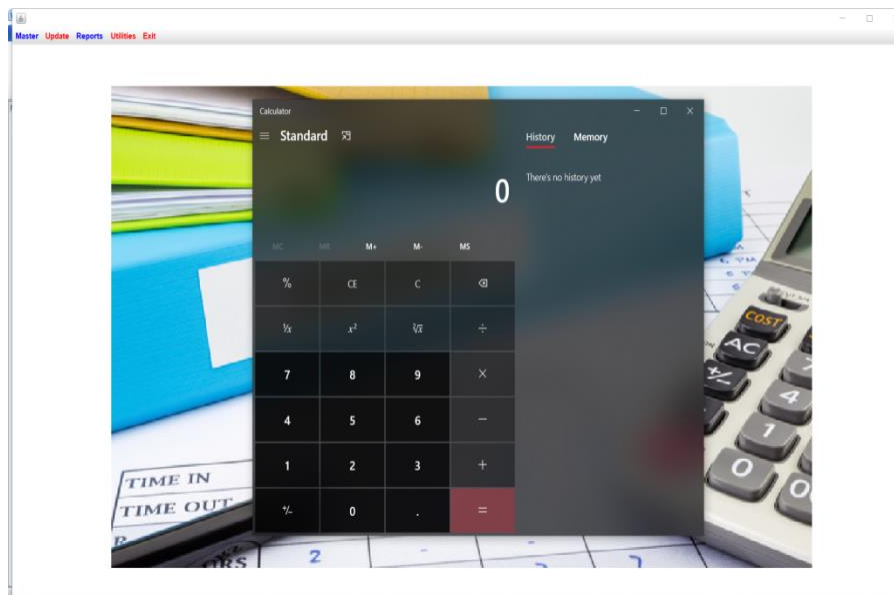Fig 4.11 Generating Employee Payslip

Utilities:

Fig 4.12 Notepad

Fig 4.13 Calculator

CONCLUSION

The purpose of conducting this study and doing project is to know how the Payroll database is maintained. This study of data reduces the time to fetch data. It is user friendly and very simple to understand and operate.

This project is initial proposal to show that this kind of information system is forcible. In addition to that all the major Payroll management systems should be provided with internet access and the necessary human resource personals to make this project reality. Maintaining backup servers in each Company for efficient service. Modifying database according to employee request.

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