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A Java Internship Report on
Employee Management System

Submitted in partial fulfillment of the requirements for the final year degree in
Bachelor of Engineering in Computer Science and Engineering
of Visvesvaraya Technological University, Belagavi

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Department of Computer Science and Engineering
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(Accredited by NBA upto 30-06-2025)

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CERTIFICATE

Certified that the Java JDBC project entitled **Employee Management System** has been successfully carried by **NAVANEETH N** bearing USN **1RN21CS098** bonafide students of **RNS Institute of Technology** in partial fulfillment of the requirements of final year degree in **Bachelor of Engineering in Computer Science and Engineering of Visvesvaraya Technological University, Belagavi** during academic year **2022-2023**.

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Chapter 1

Abstract

The employee management system is an efficient way to store the employee details and suggest the better tax regimes to them. This system is built using java JDBC server and MySQL. The system consists of four main modules:

- 1) Class JDBC connection
- 2) Class Employee
- 3) Employee Interface
- 4) Class for Employee Implementation

Firstly, we have established a class called "DBConnection" which helps to connect to the MYSQL database.

Next we have a class called "Employee" for specifying all the attributes of the table created in the MySQL database. This also contains the getters and setters which are required for retrieving and storing the data into the respective attributes.

An interface called "EmployeeIntrf" has been used which consists of all the unimplemented methods required for various operations such as insertion, deletion, display and many more.

Another class called "EmployeeImpl" is used to provide the implementations for all the methods declared in the interface previously mentioned.

The rest of this report will provide a detailed description of the problem statement, functional and non-functional requirements, system design, methodology, and implementation details of the Employee Management System. The rest of this report will provide a detailed description of the problem statement, functional and non-functional requirements, system design, methodology, and implementation details of the Employee Management System.

Chapter 2

Introduction

The project "Employee Management System" deals with handling the employee details and suggesting them a better tax regime to move into. The system is built using Java, JDBC server and SQL to validate an employee's details.

After the introduction of the new tax regime it has been difficult for the employees to choose the tax regime in which they pay minimum amount of tax. So our main intention is to accept the employee's salary from the database and calculate the tax according to both the old and new tax regime and suggest the tax regime in which the tax to be paid is minimum.

Chapter 3

Problem Statement

The new tax regime was introduced for the financial year 2020-21. After the introduction to the new tax regime there has been a lot of ambiguity among the tax payers to choose between the old and new tax regimes. There are different tax slabs for different annual incomes and the percentage of the tax paid in the old and new tax regimes are different.

Even though in the new tax regime there is no tax to be paid until the annual income of Rs.7,50,000, it can be disadvantageous once the salary rises above Rs7,50,000. And it is also not feasible to change the tax regimes every financial year.

Well, coming about the advantages of the new tax regime, they are:- 1) Reduced tax rate and reduced complications.

2) Greater disposable income.

3) Increased liquidity.

4) Greater flexibility in making objective based investment portfolio.

Talking about the disadvantages of the same, they are:- 1) Non availability of tax deductions.

2) Reduced flexibility for choosing new tax regime for those having business income.

3) Absence of automatic mechanism of inculcating savings habit.

Considering all the above objectives, our project helps in deciding the better tax regime to the tax payer in-order to pay minimal amount of tax which renders being highly beneficial.

Chapter 4

Requirement Analysis

4.1 Hardware Requirements

The Hardware requirements are very minimal and the program can be run on most of the machines. Table 4.1 gives details of hardware requirements.

Processor	Intel Core i3 processor
Processor Speed	1.70 GHz
RAM	4 GB
Storage Space	40 GB
Monitor Resolution	1024*768 or 1336*768 or 1280*1024

Table 4.1: Hardware Requirements

4.2 Software Requirements

The software requirements are description of features and functionalities of the system. Table 4.2 gives details of software requirements.

Operating System	Windows 10
IDE	Eclipse
Tools	MySQL Workbench
Libraries	MySQL JDBC driver, util

Table 4.2: Software Requirements

4.2.1 Windows 10

Windows 10 is a major release of Microsoft's Windows NT operating system. It is the direct successor to Windows 8.1, which was released nearly two years earlier. It was released to manufacturing on July 15, 2015, and later to retail on July 29, 2015. Windows 10 was made available for download via MSDN and TechNet, as a free upgrade for retail copies of Windows 8 and Windows 8.1 users via the Windows Store, and to Windows 7 users via Windows Update. Windows 10 receives new builds on an ongoing basis, which are available at no additional cost to users, in addition to additional test builds of Windows 10, which are available to Windows Insiders. Devices in enterprise environments can receive these updates at a slower pace, or use long-term support milestones that only receive critical updates, such as security patches, over their ten-year lifespan of extended support. In June 2021, Microsoft announced that support for Windows 10 editions which are not in the Long-Term Servicing Channel (LTSC) will end on October 14, 2025.

4.2.2 Eclipse

Eclipse is an integrated development environment (IDE) used in computer programming. It contains a base workspace and an extensible plug-in system for customizing the environment. It is the second-most-popular IDE for Java development, and, until 2016, was the most popular. Eclipse is written mostly in Java and its primary use is for developing Java applications, but it may also be used to develop applications in other programming languages via plug-ins, including Ada, ABAP, C, C++, C, Clojure, COBOL, D, Erlang, Fortran, Groovy, Haskell, JavaScript, Julia, Lasso, Lua, NATURAL, Perl, PHP, Prolog, Python, R, Ruby (including Ruby on Rails framework), Rust, Scala, and Scheme. It can also be used to develop documents with LaTeX (via a TeXlipse plug-in) and packages for the software Mathematica. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++, and Eclipse PDT for PHP, among others. Eclipse software development kit (SDK) is free and open-source software, released under the terms of the Eclipse Public License, although it is incompatible with the GNU General Public License. It was one of the first IDEs to run under GNU Classpath and it runs without problems under IcedTea.

4.2.3 MySQL Workbench

MySQL Workbench is a unified visual tool for database architects, developers, and DBAs. MySQL Workbench provides data modeling, SQL development, and comprehensive administration tools for server configuration, user administration, backup, and much more. MySQL Workbench is available on Windows, Linux and Mac OS X. MySQL Workbench enables a DBA, developer, or data architect to visually design, model, generate, and manage databases. It includes everything a data modeler needs for creating complex ER models, forward and reverse engineering, and also delivers key features for performing difficult change management and documentation tasks that normally require much time and effort. MySQL Workbench delivers visual tools for creating, executing, and optimizing SQL queries. The SQL Editor provides color syntax highlighting, auto-complete, reuse of SQL snippets, and execution history of SQL. MySQL Workbench provides a visual console to easily administer MySQL environments and gain better visibility into databases. MySQL Workbench provides a suite of tools to improve the performance of MySQL applications.

4.2.4 MySQL JDBC driver

JDBC (Java Database Connectivity) is a programming interface that lets Java applications access a relational database. SuperCHANNEL needs a JDBC driver so that it can access the relational database system (e.g. SQL Server, Oracle, etc) where your source data is stored. Before you can run SuperCHANNEL, you need to install the appropriate JDBC driver and configure SuperCHANNEL so that it can access the driver. In most cases the JDBC drivers are supplied by the database vendors; they are not supplied with SuperCHANNEL.

Chapter 5

Functional and Non-Functional Requirements

5.1 Functional Requirements

- 1) Employee Details Validation: The system should be able to validate employee details. It should check the salary and deductions of each employee for accuracy.
- 2) Employee Details Storage: The system should be able to store employee details in a MySQL database. It should ensure that the records are stored securely.
- 3) CRUD Operations: The system should implement the CRUD (Create, Read, Update, Delete) operations for employee details. Users should be able to add, view, update and delete an employee detail.

5.2 Non-Functional Requirements

- 1) Security: The system should be secure and protect the employee details from unauthorized access and misuse.
- 2) Performance: The system should perform efficiently, with minimal delays in any processing. It should be able to handle a large number of employee records without affecting the system's performance.
- 3) Scalability: The system should be scalable as per the requirements and be able to handle an increasing number of records as the business grows.
- 4) Usability: The system should be easy to use and navigate. Users should be able to understand and use the system without extensive training.
- 5) Reliability: The system should be reliable and available 24/7. It should have backup and recovery mechanisms in place to ensure that the records are not lost in case of system failures.

Chapter 6

Design and Methodology

The project mainly consists of five modules: 1) Main class
2) Class JDBC connection
3) Class employee
4) Employee interface
5) Class for employee implementation

Firstly talking about the main class. In this class, initially the menu is displayed which asks the user to insert, delete, display details of all employees, display a particular employee details based on his ID, update the details of an employee if necessary and lastly to know and update his tax regime.

The class DBConnection mainly helps in connecting to our MySQL server and our program thereby creating the connectivity bridge for accessing the database through our source code.

The class Employee consists of a constructor to initialize the attributes mentioned specific to the employees. It also has getters and setters used to access and assign these attributes during the computations. This mainly helps in creating a new employee record.

The interface EmployeeIntr is created which specifies all the methods required for the operations to be performed. All the methods are declared and not given any definition or implementation. So this basically acts as the framework for all the manipulation operations performed on the databases. The implementation of all these methods must and should be given in its derived class or implementation class.

The implementation class basically contains all the logic which drives this entire project. This requirement is fulfilled by creating a class EmployeeImpl which gives the implementation of all the abstract methods declared in the above mentioned interface.

Chapter 7

Conclusion and Future Enhancements

The employee management system was developed using an iterative and incremental software development methodology. The development process was divided into multiple phase including requirements gathering an employee, design, implementation and testing.

During the requirements gathering phase, the development team worked closely with the employees to identify and prioritize the functional and non functional requirements for the system. The team also conducted a feasibility study to ensure that the project was technically and financially viable.

In the design phase, the development team created a high-level architecture and design for the system. This included defining the database schema, designing the user interface, and creating a workflow diagram and data flow diagram.

During the implementation phase, the team wrote the code for the system using Java and JDBC for database connectivity. The team followed object-oriented programming principles and best practices for code maintainability and extensibility. The code for the system included CRUD (Create, Read, Update, Delete) operations for employee details, and used PreparedStatement class to execute SQL statements and bind the parameters to prevent SQL injection attacks.

In the testing phase, the development team conducted unit testing, integration testing, and system testing to ensure that the system met the functional and non-functional requirements. The team also conducted user acceptance testing to gather feedback from the stakeholders and ensure that the system was user-friendly and easy to use.

The employee management system was developed using an iterative and incremental software development methodology. The development process was divided into multiple phase including requirements gathering an employee, design, implementation and testing.

Coming to the future enhancements on this project, we further look up to consider each and every forms of deductions individually so that it gives an extra edge and more accuracy in choosing a better tax regime to the employee. Few more improvisations such as implementing user authorization which enhances the data security of the employees and adding a front-end application for this project for the better user experience are also being looked up.