**Chapter 1:**

**Introduction**

**1.1 Introduction**

Employee payroll management software solution is designed to streamline and automate the entire payroll process for your organization, ensuring accuracy, efficiency, and compliance. With our Employee Payroll Management System, you can say goodbye to manual calculations and paperwork. Our user-friendly interface allows you to easily input and maintain employee data, including personal information, employment details, and salary structures. With our Employee Payroll Management System, you can streamline your payroll processes, save time, and minimize the risk of errors. Experience the benefits of automation and ensure smooth payroll operations within your organization.

**1.2 Motivation**

Implementing an Employee Payroll Management System can provide numerous benefits and serve as a strong motivation for undertaking such a project. Here are some key motivating factors:

Efficiency and Time Savings: Manual payroll processing is a time-consuming task prone to errors. By automating the payroll process, you can significantly reduce the time and effort required to calculate salaries, deductions, and taxes. This allows your HR team to focus on more strategic initiatives, saving valuable time and increasing overall efficiency.

Cost Savings: While there is an initial investment in implementing a Payroll Management System, the long-term benefits outweigh the costs. The system automates manual tasks, reduces errors, and ensures compliance, all of which contribute to cost savings. Additionally, the time saved by HR personnel can be allocated to more value-added activities, positively impacting the organization's bottom line.

**1.3 Purpose**

The purpose of an Employee Payroll Management System is to efficiently and accurately manage the payroll process within an organization. Here are the key purposes served by such a system:

Enhance Employee Satisfaction: Timely and accurate payroll processing is vital for maintaining employee satisfaction and morale. A Payroll Management System ensures that employees are paid correctly and on time, which fosters trust and loyalty within the workforce.

Generate Accurate Payslips: The system generates comprehensive and accurate payslips for each employee, providing a clear breakdown of earnings, deductions, and taxes.

**1.4 Objective**

The primary objective of a Payroll Management System is to ensure accurate and precise payroll calculations. By automating the process, the system minimizes the risk of manual errors that can occur during manual calculations, thereby ensuring that employees are paid the correct amount. The system aims to improve the efficiency of the payroll process by automating time-consuming tasks, such as data entry, calculation of salaries, deductions, and taxes. By reducing the manual effort involved, the system allows HR personnel to focus on more strategic and value-added activities.

**Chapter 2**

**Literature Survey**

**2.1 Existing System**

Gusto is a popular payroll and HR platform designed for small and medium-sized businesses. It provides services like automated payroll processing, tax calculations and filings, employee self-service, time tracking, and integration with other HR tools. The system may lack advanced features required for enterprise-level payroll management. Gusto primarily focuses on payroll management for businesses operating within the United States.

**2.1.1 Limitations and challenges in existing system**

1. Need of extra manual effort.
2. Not very much accurate.
3. Time-consuming.
4. Has to check for more than 2-3 time before printing checks.
5. Paper filing is required with this system.

**2.2 Problem Statement**

The purpose of this document is to describe the functionality and specifications of the design of a stand-alone application for Managing Employees and their payroll. Now with the help of this system the admin has the information on his finger tips and can easily prepare a good record based on their requirements.

Employee payroll management system is a system developed with an aim to solve the problems faced by the organizations calculating the salary of each employee. This system aims to maintain proper automatic attendance so that the salary can be calculated easily.

**2.3 Proposed system**

The system would provide a centralized database to store and manage employee information, including personal details, salary structures, and tax information. It would allow HR personnel to easily add, edit, and update employee data as needed.

**2.4 Feasibility Study**

**Technical Feasibility:**

Evaluate the technical aspects of implementing the system, including hardware requirements, software compatibility, and network infrastructure. Determine if the organization has the necessary resources and infrastructure to support the system, or if any upgrades or investments are needed.

**Cost Feasibility:**

Conduct a cost analysis to determine the financial feasibility of implementing the system. Consider the initial investment required for software licenses, hardware, implementation, customization, and training. Also, factor in ongoing costs such as maintenance, support, and potential upgrades. Compare these costs with the expected benefits and potential cost savings derived from the system.

**Legal and Compliance Feasibility:**

Consider the legal and compliance aspects associated with payroll management. Assess if the system can accommodate local labour laws, tax regulations, and statutory requirements. Ensure that the system meets data privacy and security regulations, particularly regarding sensitive employee information**.**

**Chapter 3**

**Project Scope and Requirement Analysis**

**3.1 Project Scope**

• The system can allows to update the details of the employee, and can update the details such as paid leaves, unpaid leaves and overtime.

• This system can also generate the payment amount according to leaves and overtime.

**3.2 Requirement Gathering and Analysis**

Project has the following functional and non-functional requirements

1. **Functional Requirements**

Employee data management: Storing and managing employee information.

Payroll calculation and processing: Automated calculations of salaries, deductions, taxes, and net pay.

Employee self-service: Providing employees with access to payslips, salary history

2. **Non Functional Requirement**

* Usability: Creating an intuitive and user-friendly interface for easy navigation and efficient usage.
* Portability: The website is portable as it is online website running across the net.
* Flexibility: It is very flexible.
* Security: This website provide user and authentication so that only the legitimate user are allowed to use the website
* Maintainability: These website is capable to secure the data and easily retrieve the data.
* Scalability: These system can further modified in future.

**Chapter 4**

**Project Design and Modeling Details**

**4.1 Software and hardware requirements specification**

 Hardware tools:

• Personal Computer.

• Minimum 2gb RAM, any dual core processor and above, system type: 32/64-bit operating system

 Software Requirement:

• The programing language for this project we are using is C++ which is both object oriented and structural oriented

• To store the data we are using mysql server.

• Then for running the server we will be using xampp or apache.

 Software Tools:

• Python v3.11.2.

• IDE visual studio code v 1.79.

• MySQL server v8.0.32.

**4.2 System Modules**

**1.Setup module:-**

In this module we setup all the prerequisite to perform the main functionality of the payroll system i.e. the MYSQL relations needed to be created for storing all information and also single admin to run the system.

**2.Employee module:-**

In this module the employee has already got login information. The employee can login and only access their own information through this module.

**3.Admin module:-**

Admin module has all privileges to make changes. Admin is the payroll manager will use this module through login. Adding new employee, adding new admin login details, adding records of casual and medical leaves, overtime details and at the end of the month calculating the salary of employee.

**4.3 System Modeling and Design**

**Database:** Used MySQL as the relational database management system to store and manage employee related data

**User Authentication:** Implemented a user authentication mechanism using python .Store admin and employee details, such as username and hashed password**.**

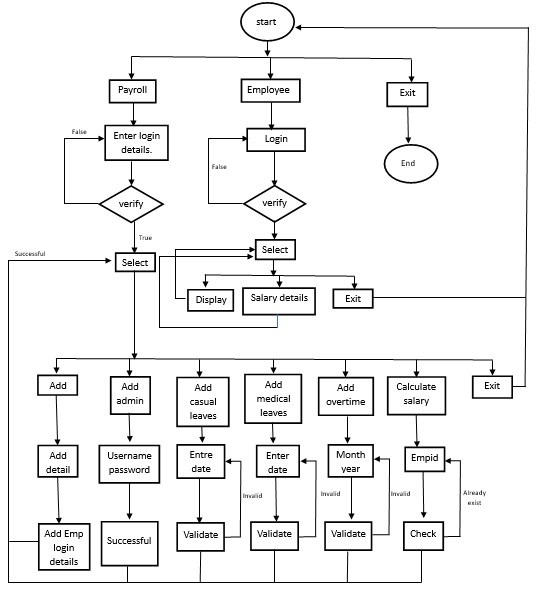
**Admin Management:** Created an make admin where existing admin can add new admin for handle the admin related functionalities.

**4.4 System Analysis**

This Project describes the different fact-finding techniques that were used for achieving the goals and objectives of the project such as Population of the study, Data Collection and Analysis, system analysis, system design and implementation, Testing and validation./

**Chapter 5**

**Implementation**

**5.1 FLOW CHART**

**5.2 ALGORITHM:**

**Algorithm for admin step:**

Step 1: -Start.

Step 2: - Enter username and password

Step 3: - if username==admin\_log.uname & password==admin\_log.pass continue else retry

Step 4: - Select option.

Step 5: - If selected add admin login uname, pass and owner will be asked

Step 6: -If selected Add employee details employee information and password for employee login will set.

Step 7: -If selected Add casual leaves then ID, start date, end date will be asked and charges stored in database

Step 8:-If selected Add medical leaves then ID, start date, end date will be asked and charges stored in database.

Step 9:-If selected Add overtime then ID, month, year and overtime hours asked and overtime payment stored.

Step10:-If selected Add salary details it will automatically take current month and year and ask for ID and calculate salary of only current month.

Step 11:-On selecting Exit it will return to select type of login.

**Employee Module Algorithm:-**

Step 1: - Start

Step 2: - Ask for credentials to login.

Step 3: -Credentials OK procced or Do step 2 again.

Step 4: -Ask to choose among options.

Step 5:- If Selected Display Employee details, details are displayed

Step6:- If Selected Display salary details, ask for month and year then display

**S**tep5: -If selected Exit back to Login mode

**Setup Module Algorithm:-**

Step 1: Ask for first Admin login details

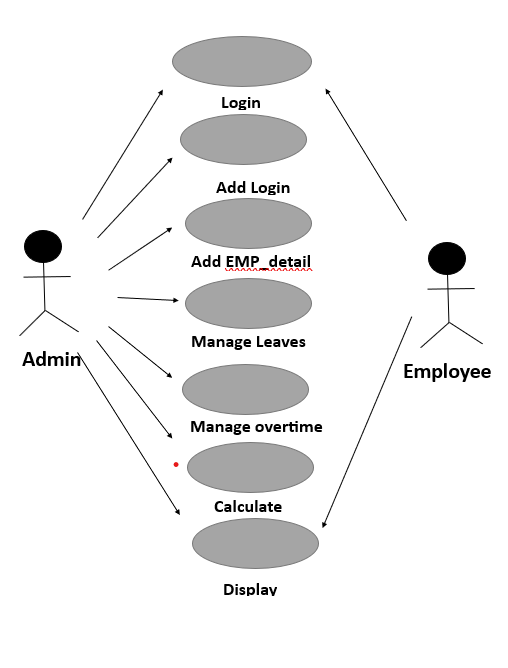
Step 2: Verify login details.

Step 3: Add the payroll manager employee details.

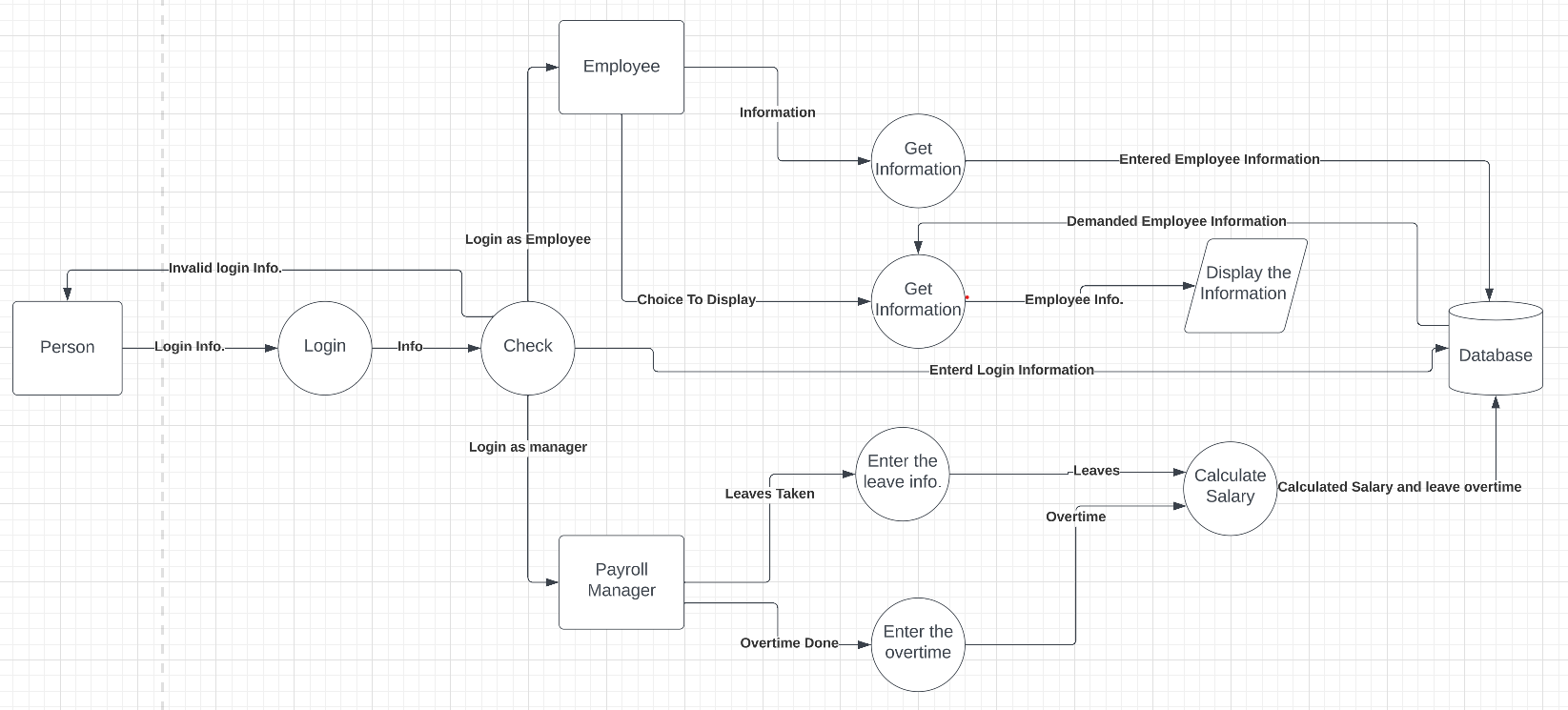
Step 3: Create employee login for payroll manager.

Step 4: Invokes main program and terminate itself.

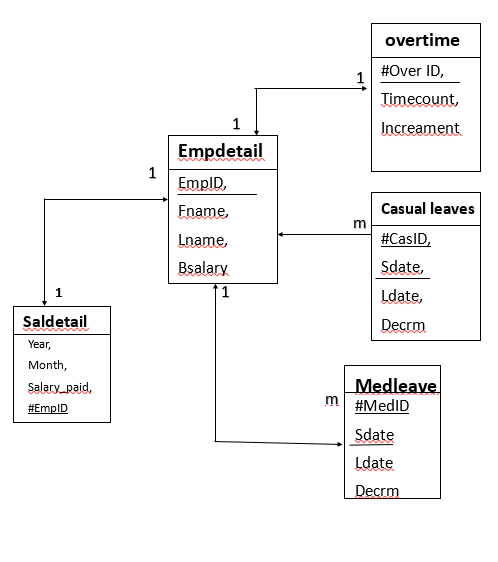
**5.3 Use case diagram: (Employee Payroll Management System)**

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**5.4 DFD:**



**5.5 E-R diagram:**



**5.6**

A picture containing screenshot, line, plot

Description automatically generated

**Chapter 6**

**Test Specification**

**6.1 Fundamental of testing**

Purpose: The primary purpose of testing is to identify defects or errors in software systems and ensure that they meet the specified requirements. Testing helps to improve the quality, reliability, and performance of the software.

Testing Process: Testing follows a systematic process that includes test planning, test design, test execution, and test evaluation. This process ensures that all aspects of the software are thoroughly tested and verified.

Test Objectives: Testing aims to achieve various objectives, including finding defects, validating the functionality of the software, verifying if it meets the requirements, ensuring usability, reliability, and performance, and assessing the overall quality of the software.

Test Levels: Testing is carried out at multiple levels to cover different aspects of the software. Common test levels include unit testing (testing individual components), integration testing (testing the interaction between components), system testing (testing the entire system), and acceptance testing (testing against user requirements).

Test Techniques: Various test techniques are employed to design effective test cases and scenarios. These include black-box testing (testing without knowledge of internal code structure), white-box testing (testing with knowledge of the internal code structure), and gray-box testing (a combination of black-box and white-box testing).

Test Types: Different types of tests are performed to address specific aspects of software quality. These include functional testing (testing the functionality of the software), performance testing (testing the system under specific workloads), security testing (testing for vulnerabilities and threats), usability testing (testing the user-friendliness of the software), and regression testing (retesting after modifications to ensure existing functionality is not affected).

Test Documentation: Documentation is an essential aspect of testing. It includes test plans, test cases, test scripts, test data, and test reports. This documentation helps in tracking the progress of testing, reproducing issues, and providing evidence of testing performed.

Test Automation: Test automation involves using specialized tools and scripts to automate repetitive and time-consuming testing tasks. Automation can improve efficiency, reduce human error, and enable frequent testing in agile development environments.

Test Environment: A suitable test environment, including hardware, software, and network configurations, is essential for accurate and reliable testing. The test environment should mimic the production environment as closely as possible.

Effective testing plays a vital role in ensuring the reliability and quality of software systems. By following the fundamentals of testing, organizations can mitigate risks, improve customer satisfaction, and deliver robust and reliable software solutions.

**6.2 Test plan**

**Test Plan for Employee Payroll Management**

Purpose: The purpose of this test plan is to outline the testing approach for the development of a secure and user-friendly website for a kindergarten school.

Scope: The test plan covers functional testing of the website's features, usability testing for user-friendliness, security testing to ensure data protection, and compatibility testing across different devices.

**Test Environment**

Devices: Desktop computer.

Interface : CMD

Operating Systems: Windows.

**6.3 Test cases and results**

|  |  |  |  |
| --- | --- | --- | --- |
| Test case scenario 1 | User enter all details correctly | |  |
| Test data | Username: admin  Password:123 | |  |
| Step | Expected output | Actual result | Pass/fail |
| 1 | Admin account login | Account successfully login | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Prerequisites | 1.User must be registered  2.Enter valid username password  3.Click login | |  |
| Test scenario 2 | User enter wrong email | |  |
| Test data | Username: prithvi  Password: prv123 | |  |
| Step | Expected output | Actual result | Pass/fail |
| 2 | Incorrect information | Incorrect details | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test case id | 2 | | |
| Test case description | Add Employee Details | | |
| Prerequisites | Admin must be log in | | |
| Test scenario 3 | User Added details | | |
| Step | Expected output | Actual result | Pass/fail |
| 1 | Details Added | Details Added | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test case id | 3 | | |
| Test case description | Add Casual Leaves | | |
| Prerequisites | Admin must be log in | | |
| Data | Sdate-05-06-2023  Edate-09-06-2023 | | |
| Step | Expected output | Actual result | Pass/fail |
| 1 | Details Added | Details Added | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test case id | 4 | | |
| Test case | Add Medical Leaves | | |
| Prerequisites | Admin must be log in | | |
| Data | Sdate-05-06-2023  Edate-09-06-2023 | | |
| Step | Expected output | Actual result | Pass/fail |
| 1 | Details  Added | Details Added | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test scenario 5 | User enter all details correctly of new admin | |  |
| Test data | Username: 23AHPS2  Password:pri555 | |  |
| Step | Expected output | Actual result | Pass/fail |
| 1 | Admin account  crated | Account successfully created | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test scenario 6 | User enter all details correctly of new admin | |  |
| Test data | Username: admin  Password:pri555 | |  |
| Step | Expected output | Actual result | Pass/fail |
| 1 | Wrong Credentials | Wrong Credentials | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test scenario 7 | Adding Wrong casual leaves | |  |
| Test data | Start Date: 03-06-2023  End Date : 31-05-2023 | |  |
| Step | Expected output | Actual result | Pass/fail |
| 2 | Incorrect Dates | Incorrect Dates | pass |

|  |  |  |  |
| --- | --- | --- | --- |
| Test scenario 8 | Adding Wrong medical leaves | |  |
| Test data | Start Date: 03-06-2023  End Date : 31-05-2023 | |  |
| Step | Expected output | Actual result | Pass/fail |
| 2 | Incorrect Dates | Incorrect Dates | pass |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test scenario 9 | | Adding Overtime of previous month | | |  |
| Test data | | Month: 05  Year :2023 | | |  |
| Step | | Expected output | | Actual result | Pass/fail |
| 2 | | Already Calculated | | Already Calculated | pass |
| Test scenario 10 | Adding Overtime | | | |  |
| Test data | Month: 06  Year :2023 | | | |  |
| Step | Expected output | | Actual result | | Pass/fail |
| 2 | Added Successfully | | Added Successfully | | pass |

**Chapter7**

**Conclusion and future scope**

* 1. **Conclusion**

• Employee payroll management system is a system developed with an aim to solve the problem faced by the organization calculating the salary of each employee. The system aims to maintain proper automatic attendance so that salary can be calculated easily.

• The system streamlines workflows, reduces manual effort, and minimizes the risk of errors, ensuring timely and accurate payroll processing. Employee Payroll Management System is a crucial tool for organizations to efficiently and accurately manage their payroll processes. It automates various aspects of payroll, from employee data management and salary calculations

• By implementing an Employee Payroll Management System, organizations can achieve several benefits. It simplifies the management of employee data, allowing HR personnel to easily update and maintain accurate records. The system automates salary calculations ensuring accurate and consistent payroll calculations for each employee.

**7.2 Future scope**

Scope of the Project:

The future scope of an employee payroll management project is likely to be influenced by advancements in technology, changing workforce dynamics, and evolving regulatory requirements. Here are some potential areas of development:

I. Automation and AI: Payroll management processes can be automated to a greater extent, reducing manual effort and minimizing errors. Artificial intelligence (AI) can be used to streamline calculations, generate accurate reports, and flag potential discrepancies.

II. Integration with HR Systems: Payroll management can be integrated more closely with other HR systems, such as time and attendance tracking, benefits administration, and performance management. This integration allows for better data synchronization, improved efficiency, and a unified employee experience.

III. Mobile and Self-Service Capabilities: Employees may expect self-service options to view their payslips, update personal information, and access relevant documents through mobile applications. Providing such features can enhance employee engagement and reduce administrative burden.

IV. Real-Time Payments: Real-time payment systems are gaining popularity, allowing employees to receive their salaries instantly. Integrating such payment options within payroll management can offer convenience and improve employee satisfaction.

V. Blockchain Technology: Blockchain has the potential to enhance data security, transparency, and auditability in payroll management. Smart contracts can automate payment processes and ensure accuracy, while distributed ledger technology can maintain a tamper-proof record of transactions.

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