

# **EMPLOYEE MANAGEMENT SYSTEM**

Using Python and SQLite

**Submitted by**

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# **1. INTRODUCTION**

The Employee Management System is a command-line based application developed using Python and SQLite. The primary objective of this project is to efficiently manage employee records, attendance, leave requests, and payroll using a centralized database system.

The system supports role-based access control with two types of users:

- **Admin**
- **Employee**

This project demonstrates practical implementation of database concepts, authentication mechanisms, and CRUD operations.

# **2. SYSTEM REQUIREMENTS**

## **2.1 Software Requirements**

- Python 3.x
- SQLite Database
- VS Code / PyCharm
- Windows / Linux / macOS

## **2.2 Hardware Requirements**

- Minimum 4 GB RAM
- Standard Processor

# **3. FUNCTIONAL REQUIREMENTS**

## **3.1 Admin Functions**

- Secure admin login

- Add and manage employee details
- Create employee login credentials
- Manage departments and job roles
- Mark attendance
- Approve or reject leave requests
- Generate payroll

### **3.2 Employee Functions**

- Employee login using ID and password
- View personal profile
- View attendance records
- Apply for leave
- View leave status
- View payroll details

## **4. DATABASE SCHEMA**

### **4.1 Employee Table**

<b>Attribute</b>	<b>Data Type</b>	<b>Description</b>
employee_id (PK)	INT	Unique employee ID
first_name	VARCHAR	Employee first name
last_name	VARCHAR	Employee last name
email	VARCHAR	Email address
phone	VARCHAR	Contact number
dob	DATE	Date of birth
gender	VARCHAR	Gender

hire_date	DATE	Joining date
department_id (FK)	INT	Department reference
job_id (FK)	INT	Job role reference
salary	DECIMAL	Salary
manager_id (FK)	INT	Reporting manager

## 4.2 Department Table

department_id (PK)	INT	Unique department ID
department_name	VARCHAR	Department name
location	VARCHAR	Department location

## 4.3 Job Table

job_id (PK)	INT	Unique job ID
job_title	VARCHAR	Job title
min_salary	DECIMAL	Minimum salary
max_salary	DECIMAL	Maximum salary

## 4.4 Attendance Table

attendance_id (PK)	INT	Attendance record ID
employee_id (FK)	INT	Employee reference
date	DATE	Attendance date
status	VARCHAR	Present / Absent / Leave

## 4.5 Leave Table

leave_id	INT	Leave record ID
employee_id (FK)	INT	Employee reference
leave_type	VARCHAR	Sick / Casual / Paid
start_date	DATE	Leave start date

end_date	DATE	Leave end date
status	VARCHAR	Approved / Pending / Rejected

## 4.6 Payroll Table

payroll_id (PK)	INT	Payroll record ID
employee_id (FK)	INT	Employee reference
month	VARCHAR	Salary month
basic_salary	DECIMAL	Basic salary
deductions	DECIMAL	Deductions
net_salary	DECIMAL	Final salary

## 5. SCREENSHOTS

The following screenshots illustrate the working of the Employee Management System.

The screenshot shows the PyCharm IDE interface with the following details:

- File Structure (Left):** Explorer view showing the project structure. The `miniproject.py` file is open, containing a `task2.py` file. Other files include `calls.py`, `challenge_2.py`, `challenge1.py`, `deco.py`, `employee.db`, `employeemanagement.py`, `first.py`, `first.txt`, `fun.py`, `HelloWorld.py`, and `mTass.py`.
- Code Editor (Top Right):** The `task2.py` file is being edited. It contains a function `main` that prompts the user for a choice (1, 2, or 3). If choice 1, it logs in as admin; if choice 2, it logs in as employee; if choice 3, it prints "Goodbye!" and breaks. If none, it prints "else".
- Terminal (Bottom):** A terminal window is open with the command `python miniproject.py`. The output shows the program's welcome message and a menu with options 1, 2, and 3. The prompt "Enter choice: " is visible.

Figure 1: Welcome Screen with Admin and Employee Login Options

The screenshot shows a Python application window titled "Entrypython". The left sidebar lists files and folders, including "miniproject.py", "task2.py", "callms.py", "challenge 2.py", "challenge1.py", "deco.py", "employee.db", "employeemanagement...", "first.py", "first.txt", "fun.py", "hello.txt", "m1ass.py", and "miniproject.py". The main area displays the following code and output:

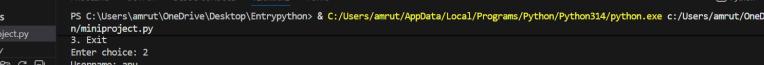
```
PS C:\Users\amrun\OneDrive\Desktop\Entrypython & C:/Users/amrun/AppData/Local/Programs/Python/Python314/python/miniproject.py
```

---- ADMIN MENU ----

1. Add Employee
2. View Employees
3. Add Department
4. View Departments
5. New Attendance
6. Add Payroll
7. View Leaves
8. Approve/Reject Leave
9. Logout

Choice: 1  
First Name: amu  
Last Name: amrun  
Email: amu@gmail.com  
Phone: 6732962326  
Department ID: 3  
Job ID: 5  
Salary: 50000  
Create username: amu  
Create password: amu123  
 Employee added successfully

Figure 2: Admin Adding New Employee Details



PS C:\Users\amrut\OneDrive\Desktop\Entrypython> & C:/Users/amrut/AppData/Local/Programs/Python/Python314/python.exe c:/Users/amrut/OneDrive/Desktop/Entrypy...  
n/miniproject.py  
3. Exit  
Enter choice: 2  
Username: anu  
Password: anu123  
 Login successful as employee!  
  
--- EMPLOYEE MENU ---  
1. View Profile  
2. View Attendance  
3. AddLeave  
4. View Leave Status  
5. View Payroll  
6. Logout  
Choice: 1  
(3, 'anu', 'anu@gmail.com', '6792862526', 3, 5, 500000.0)

Figure 3: Admin Viewing Employee Records

Figure 4: Admin Adding Department Information

```

File Edit Selection View Go Run ... ← → Q Entrypython
OPEN EDITORS PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\amrut\OneDrive\Desktop\Entrypython> & C:/Users/amrut/AppData/Local/Programs/Python/Python314/p
hon/miniproject.py

--- ADMIN MENU ---
1. Add Employee
2. View Employees
3. Add Department
4. View Departments
5. Mark Attendance
6. Add Payroll
7. View Leaves
8. Approve/Reject Leave
9. Logout
Choice: 4
(1, 'HR', 'Bangalore')
(2, 'IT', 'Hyderabad')
(3, 'Sales', 'Kerala')
(4, 'Insurance', 'Thrissur')

--- ADMIN MENU ---
1. Add Employee
2. View Employees
3. Add Department
4. View Departments
5. Mark Attendance
6. Add Payroll
7. View Leaves
8. Approve/Reject Leave
9. Logout
Choice: 5
Employee ID: 2
Date (YYYY-MM-DD): 11-11-2025
Present/Absent/Leave: leave
Attendance marked

```

Figure 5: Admin Marking Employee Attendance

```

File Edit Selection View Go Run ... ← → Q Entrypython
OPEN EDITORS PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\amrut\OneDrive\Desktop\Entrypython> & C:/Users/amrut/AppData/Local/Programs/Python/Python314/p
hon/miniproject.py

--- ADMIN MENU ---
1. Add Employee
2. View Employees
3. Add Department
4. View Departments
5. Mark Attendance
6. Add Payroll
7. View Leaves
8. Approve/Reject Leave
9. Logout
Choice: 6
Employee ID: 2
Basic Salary: 48000
Deductions: 5000
Payroll added

```

Figure 6: Payroll Generation and Salary Details

```

File Edit Selection View Go Run ... ← → Q Entrypython
OPEN EDITORS PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\amrut\OneDrive\Desktop\Entrypython> & C:/Users/amrut/AppData/Local/Programs/Python/Python314/p
hon/miniproject.py

--- ADMIN MENU ---
1. Add Employee
2. View Employees
3. Add Department
4. View Departments
5. Mark Attendance
6. Add Payroll
7. View Leaves
8. Approve/Reject Leave
9. Logout
Choice: 8
Leave ID: 2
Approved / Rejected: approved
Leave updated

```

Figure 7: Admin Approving or Rejecting Leave Requests

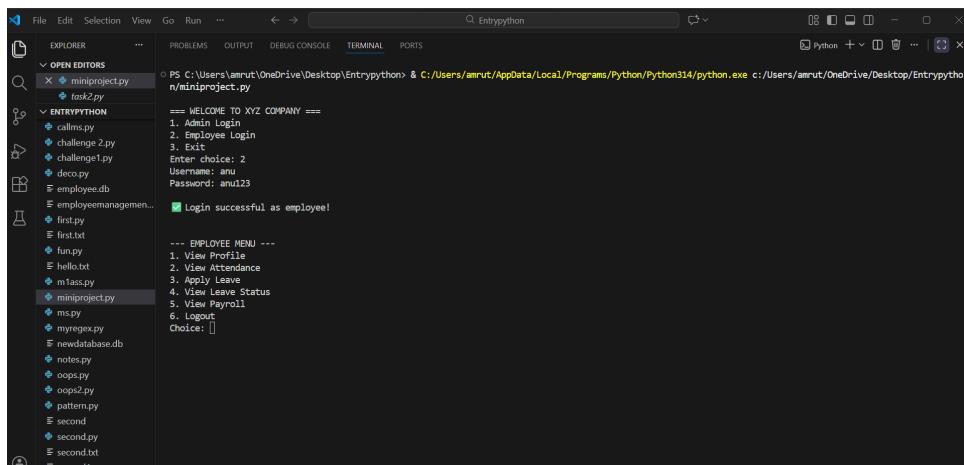


Figure 8: Employee Login Screen

The screenshot shows a terminal window running in a code editor. The terminal output is as follows:

```
Choice: 2
[]
--- EMPLOYEE MENU ---
1. View Profile
2. View Attendance
3. Apply Leave
4. View Leave Status
5. View Payroll
6. Logout
Choice: 3
Leave Type: sick
Start Date: 12
End Date: 20
Leave applied
```

Figure 9: Employee Applying for Leave

## **6. CONCLUSION**

The Employee Management System developed using Python and SQLite provides an efficient and secure solution for managing employee data within an organization. The system enables administrators to control employee records, attendance, leave approvals, and payroll processing, while employees can independently view their information and submit requests.

This project demonstrates practical understanding of database design, authentication, and software development principles. The modular structure and command-line interface make the system lightweight and easy to maintain. Future enhancements may include a graphical user interface, web-based deployment, and enhanced security features for enterprise-level use.