

Problem Statement: Employee Attendance Management System

Context:

You are working for a mid-sized company that has recently grown and now has multiple departments and a significant number of employees. The company needs a system to manage and track employee attendance. The HR department has been doing this manually using spreadsheets, but as the company grows, this method has become inefficient and prone to errors.

Objective:

Develop a Python-based Employee Attendance Management System that reads, updates, and manages employee attendance records using file handling.

Requirements:

1. Data Storage:

- Employee data, including their ID, name, department, and daily attendance records, should be stored in text files. Each employee should have a unique file named using their employee ID (e.g., `emp123.txt`).
- The file should store daily attendance logs in the format: `Date, Check-in Time, Check-out Time, Hours Worked`.

2. Features:

- Check-in/Check-out:**
 - Allow employees to check in and check out. The system should log the current date, time of check-in, and check-out, and calculate the hours worked for the day.
- Add New Employee:**
 - Provide a function to add a new employee to the system. This should create a new file for the employee.
- Update Employee Information:**
 - Allow updates to employee information, such as name or department.
- Generate Attendance Report:**
 - Generate a monthly attendance report for each employee that summarizes the total hours worked each day and overall for the month. This report should be saved in a separate file (e.g., `emp123_report.txt`).

3. Constraints:

- The system should handle file errors gracefully, such as trying to access a file that does not exist.
- Ensure data integrity by preventing duplicate entries for the same day.
- Implement basic input validation to avoid invalid data entries (e.g., incorrect date format, check-out before check-in).

Example Workflow:

1. An employee checks in at 9:00 AM. The system logs the check-in time.
2. At 5:00 PM, the employee checks out. The system logs the check-out time and calculates the hours worked (e.g., 8 hours).
3. At the end of the month, HR generates a report showing the employee's daily attendance and total hours worked.

Deliverables:

- Python script(s) implementing the system.
- Text files representing employee records and attendance logs.
- A report for at least one employee showing a month's worth of attendance data.