Industry Problem Statement

Employee Attendance & Leave Management System (Python)

Business Background

An organization wants to build a Python-based internal system to manage:

- Employee attendance records
- Leave tracking
- Attendance percentage calculation
- Appraisal eligibility decisions

The system should simulate a **real HR attendance workflow**, implemented incrementally using clean coding practices.

Task 1: Capture Employee Details (Input Validation)

Objective

Collect and validate employee information.

Requirements

Write a program to accept:

- Employee ID
- Employee Name
- Department
- Total Working Days in a Month

Business Rules

- Working days must be **greater than 0**
- Employee name must contain only alphabets

Expected Outcome

Validated employee attendance record.

Task 2: Capture Attendance Data

Objective

Record employee presence.

Requirements

- Accept number of days present

Business Rules

- Days present ≤ total working days
- Days present ≥ 0

Expected Outcome

Valid attendance data captured.

Task 3: Attendance Percentage Calculation

Objective

Calculate monthly attendance percentage.

Formula

```
Attendance % = (Days Present / Total Working Days) × 100
```

Expected Outcome

Accurate attendance percentage.

Task 4: Attendance Status Classification

Objective

Classify attendance performance.

Rules

Attendance %	Status
≥ 90%	Excellent
≥ 75%	Satisfactory
≥ 60%	Needs Improvement
< 60%	Poor

Expected Outcome

Readable attendance status.

Task 5: Leave Balance Initialization

Objective

Initialize leave entitlement.

Rules

- Monthly leave entitlement = **2 days**

Expected Outcome

Initial leave balance available.

Task 6: Leave Request Validation

Objective

Validate employee leave requests.

Requirements

- Accept number of leave days requested

Business Rules

- Requested leave ≤ available leave balance

Expected Outcome

Approved or rejected leave request.

Task 7: Leave Deduction Logic

Objective

Update leave balance after approval.

Formula

```
Remaining Leave = Available Leave − Approved Leave
```

Expected Outcome

Updated leave balance.

Task 8: Appraisal Eligibility Check

Objective

Determine appraisal eligibility.

Rules

Employee is eligible if:

- Attendance ≥ 75%
- Leave balance is not negative

Expected Outcome

Clear eligibility decision.

Task 9: Monthly Attendance Summary (Procedural)

Objective

Generate a monthly attendance summary.

Summary Should Include

- Employee ID & Name
- Attendance Percentage
- Attendance Status
- Leave Balance
- Appraisal Eligibility

Task 10: Store Attendance Records

Objective

Simulate database storage.

Requirements

- Store records in a list of dictionaries

Task 11: EmployeeAttendance Class Design (OOP)

Objective

Model attendance data as an object.

Create class `EmployeeAttendance` with:

Attributes

- emp_id
- name
- department
- total_days
- days_present
- leave_balance

Task 12: Attendance Calculation Method

Objective

Encapsulate attendance logic.

Method

- calculate_attendance_percentage()

Task 13: Leave Processing Method

Objective

Encapsulate leave logic.

Method

- process_leave_request()

Task 14: Appraisal Eligibility Method

Objective

Automate appraisal decision.

Method

- check_appraisal_eligibility()

Task 15: Final Attendance Report Generation

Objective

Generate a professional attendance report.

Output Format (Example)

```
Employee ID        : E204
Name               : Sunita Verma
Department         : HR
Attendance %       : 82%
```

```
Attendance Status  : Satisfactory
Leave Balance      : 1
Appraisal Eligible : Yes
```