

Attendance Predictor Using Java – Detailed Project Report

1. Introduction

The Attendance Predictor project is designed to help college students determine their current attendance status, forecast future attendance, and understand whether they can meet the minimum attendance percentage required by their institution. This tool eliminates the need for manual calculations and provides instant, reliable predictions. Built using Java, the system implements object-oriented programming principles to ensure clean, modular, and maintainable code.

2. Problem Background

Attendance is a critical requirement in most colleges, often with strict rules that mandate a minimum attendance threshold such as 75%. Students frequently struggle to calculate whether they can afford to miss a class or how many more classes they must attend to remain eligible for exams. Traditional manual calculations are error-prone, time-consuming, and confusing for many students. This project aims to automate and simplify this process.

3. Objectives

- Automate attendance percentage computation.
- Provide real-time prediction of future attendance.
- Determine whether a student is SAFE, AT RISK, or likely DETAINED.
- Calculate both bunkable and required classes.
- Demonstrate use of Java OOP concepts through a practical application.

4. System Design

The system follows an object-oriented architecture with a dedicated `AttendancePredictor` class that handles all calculations. The program accepts user inputs including total classes, attended classes, upcoming classes, and required attendance percentage. It then computes:

- Current attendance
- Predicted attendance after upcoming classes
- Number of mandatory classes needed to recover
- Number of classes that can still be safely skipped

5. Prediction Logic

The logic uses percentage-based formulas to calculate attendance metrics. It carefully accounts for edge cases such as negative required classes or impossible scenarios. The program ensures accurate

predictions by using Java's Math utilities for rounding and precision handling.

6. Features and Functionality

- User-friendly console interface
- Clean code with encapsulated methods
- Real-time prediction updates
- Accurate safety status generation
- Comprehensive attendance breakdown

These features make the tool practically useful for everyday academic monitoring.

7. Technologies Used

The system is implemented using:

- Java 17+
- Object-Oriented Programming
- Scanner for input collection
- Mathematical operations for prediction

This demonstrates practical application of core Java concepts relevant for academic and professional development.

8. Testing and Validation

The program was tested with multiple combinations of inputs including:

- Very low attendance
- Perfect attendance
- Borderline cases (73–76%)
- Large numbers of upcoming classes

Testing ensured that predictions remain consistent and correct across all conditions.

9. Conclusion

The Attendance Predictor project successfully automates complex attendance calculations and provides meaningful predictions for students. By applying OOP principles and clear logical structures, the program achieves reliability, scalability, and real-world usefulness. It can be extended into a GUI version, Android app, or integrated with college portals in the future.