

# Project Statement

## Sleep Pattern Analyzer

### 1. Problem Statement

Many individuals struggle to maintain healthy sleep patterns due to busy schedules, lifestyle choices, or the absence of regular self-tracking. Without proper monitoring, people fail to understand how much they sleep, how their sleep quality fluctuates over time, and how this impacts their overall well-being.

This project aims to provide a simple tool that analyzes daily and weekly sleep duration, categorizes sleep quality, and offers meaningful suggestions for healthier sleep habits.

### 2. Scope of the Project

The scope of this project includes:

- Accepting user input for daily or weekly sleep duration.
- Categorizing sleep quality based on predefined logic.
- Generating a numerical sleep score that represents the quality.
- Displaying feedback and suggestions to improve sleep patterns.
- Providing weekly insights such as:
  - Average sleep duration
  - Best and worst sleep day
  - Sleep debt and overall condition

The project does not include medical diagnosis, integration with external hardware, or sensor-based data collection. It is strictly analytical and based on user input.

### **3. Target Users**

This Sleep Pattern Analyzer is intended for:

- Students managing academic schedules and irregular sleep.
- Working professionals with varying workload and erratic sleep timings.
- Individuals aiming to improve lifestyle and maintain consistency.
- Anyone interested in monitoring and understanding their sleep behavior.

### **4. High-Level Features**

#### **4.1 Single-Day Analysis**

Users can input sleep hours for one day to obtain:

- Sleep score
- Sleep quality category
- Personalized suggestions
- Sleep debt calculation

#### **4.2 Weekly Sleep Summary**

Users can input data for seven days and receive:

- Average sleep duration
- Best and worst sleep values
- Weekly sleep score
- Category-based interpretation

#### **4.3 Easy Console-Based Interaction**

The system runs in a command-line interface with simple prompts and readable reports.

#### **4.4 Rule-Based Recommendations**

The tool offers suggestions derived from predefined logic based on sleep duration, helping users make incremental improvements.