**Project Name:** DriveGuard  
**Project Objective:** To develop a real-time Driver Sleep Detection System that uses a camera to monitor driver drowsiness and alert them with visual and audio warnings.  
**Start Date:** [Insert Start Date]  
**End Date:** [Insert Tentative End Date]

**Milestones:**

* **Milestone 1: Setup Development Environment**
  + Deadline: [Insert Date]
  + Tasks: Install Python, OpenCV, Dlib; test webcam integration.
* **Milestone 2: Implement Face and Eye Detection**
  + Deadline: [Insert Date]
  + Tasks: Code for face detection and eye tracking.
* **Milestone 3: Develop Drowsiness Detection Algorithm**
  + Deadline: [Insert Date]
  + Tasks: Create logic for detecting drowsiness based on eye aspect ratio.
* **Milestone 4: Initial Testing and Feedback Collection**
  + Deadline: [Insert Date]
  + Tasks: Test prototype under various conditions; collect user feedback.
* **Milestone 5: Refinement and Final Testing**
  + Deadline: [Insert Date]
  + Tasks: Refine detection algorithms and user interface; conduct final tests.

**2. Requirements Document**

**Technical Requirements:**

* Camera with real-time video capture capabilities.
* Software requirements: Python, OpenCV, Dlib.
* Operating System: Compatible with Windows, Mac OS, or Linux.
* Processing: Capable of processing video data in real-time with minimal latency.

**User Requirements:**

* The system must be easy to use and require minimal interaction from the driver.
* Alerts must be clear and noticeable but not overly alarming.
* The system should provide suggestions for rest areas when drowsiness is detected.

**3. Design Specifications**

**System Architecture:**

* **Input:** Real-time video stream from the laptop's webcam.
* **Processing Modules:**
  + Face Detection Module: Detects the presence of the driver’s face in the video.
  + Eye Tracking Module: Monitors the eyes for signs of sleepiness.
  + Alert Module: Activates audio and visual alerts when drowsiness is detected.
* **Output:** Visual alerts on the screen; audio alerts through the system speakers.

**User Interface:**

* Minimalistic UI displaying the video feed.
* Overlay warnings and suggestions for taking breaks.
* Simple settings menu to adjust alert sensitivity and volume.

**Interaction Flow:**

* Upon starting, the system immediately begins video capture and analysis.
* Alerts appear on-screen and are accompanied by an audio warning if drowsiness is detected.
* The user can dismiss alerts or follow on-screen suggestions to take a break.